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Cover Page Footnote

Professor Randall Amster, Sophie Faaborg-Andersen, Mandy Lee, and Justin McCartney made up the EFI's historic delegation to UNEA II. Professor Randall Amster and Professor Yuki Kato provided guidance for, and contributed research to, this collection of articles. For more information about the Environmental Future(s) Initiative, please visit our website, <http://environmentalfutures.georgetown.domains/>.



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URBANISM AND SUSTAINABLE DEVELOPMENT: USEFUL FRAMEWORKS FOR COMBATING CLIMATE CHANGE

SOPHIE FAABORG-ANDERSON

Abstract

Our globe is undergoing the greatest surge of urban growth in history, and the number of people living without access to basic services is increasing. As cities and poverty skyrocket in positive correlation, the concept that saving the environment must come at the price of slowed social and economic development becomes increasingly convincing. While sustainability and urbanization are not mutually exclusive, creating a framework for development that fulfills the needs of an increasingly urbanized world without undermining the ability of future generations to satisfy their needs is modeled by a variety of theoretical approaches. Faced with the challenges presented by a growing population limited by natural resources, realizing sustainable development will require a unique style of leadership that capitalizes on new opportunities through innovation at the national and regional levels. This paper seeks to outline the demands of two major sustainable urban design theories, free

market environmentalism (FME) and the eco-city movement, and to address their social justice implications.

Introduction

A frequently cited definition of sustainable development comes from the Brundtland Report by the United Nations World Commission on Environment Development (WCED) – “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”¹. The definition implies two essential components that create two different sets of best practices for urban development. The first half of the definition addresses the needs of the collective and the individual by suggesting the importance of meeting standards for an equitable and comfortable lifestyle. The later part of the Brundtland definition concerns itself with the idea of limitations imposed by social organization in the context of a finite set of resources. Densely populated urban areas focus on efficiency in providing services to inhabitants, but the best practices for achieving sustainability are widely debated. Free market environmentalism finds its roots mostly in the first part of the Brundtland definition and focuses on economic implications of urban design. On the other hand, eco-city approach stresses the “ability of future generations to meet their own needs” by considering functional planning and social implications of urban development.

Proponents of a first approach to urban design, free market environmentalism (FME), view urban sustainability as a prerogative of the individual and marketplace, maintaining that economic

¹ "Topic." *Sustainable Development*. International Institute for Sustainable Development (IISD), n.d. Web.

growth is a prerequisite to improving environmental quality. As part of a larger neoliberal approach, free market sustainability prioritizes individual freedoms and innovation in the capitalist marketplace and views economic incentives as the driving mechanism for urban development². Thus, sustainability and green consumption are parts of the individual consumer's freedom and citizenship in a self-regulated marketplace. The free market is the engine of growth and innovation that powers an economically preferable green lifestyle. Free market environmentalists believe that since property rights allow for legitimate exchanges and gains from trade, the marketplace makes the environment an asset rather than a liability. By putting a price value on environmental assets like land and natural resources, the market incentivizes stewardship³. Defaulting to political and regulatory processes presents several challenges in water management, city planning, and regulatory regimes.

The state of California has been plagued by severe drought for decades, exacerbated by the inflexible water laws and regulatory environment that discourages conservation. More than 24 million people have been impacted by the most recent period of drought, which State Governor Jerry Brown declared a state of emergency in January of 2014⁴. Free market environmentalists point to the \$900 million loss in crop revenues in 2015 alone to stress the severity of the situation. As California's population is projected to rise by 6 million by 2030, water allocation and conservation is a major component of urban sustainability

across the state⁵. Government ordered reallocation of water creates inefficient outcomes with winners and losers in which voluntary, social beneficial trades are discouraged⁵.

The free market approach to urban sustainability emphasizes adopting market prices that reflect the scarcity and value of goods. Until December of 2011, residents of Folsom, California were charged a constant monthly rate of \$35 for water services, rather than a price relative to the volume of water consumed⁶. Daily consumption averaged an incredible 429 gallons per person in 2014. Residents of Sacramento, where water services are priced according to use, consumed an averaged 150 gallons less per day, at 279 gallons per day in 2014.

Government-led urban sustainability further leads to contradictions across and between states and regions. The Endangered Species Act (ESA) includes a stipulation that water from certain river systems that are home to protected species like the Delta smelt, endemic to the Sacramento-San Joaquin Estuary of California, may not be compromised by commercial and recreational use of the water source. At the same time, the U.S Bureau of Reclamation, U.S Army Corp of Engineers, and federally funded Central Valley Project provide water subsidies for farming, hydropower generation, and other purposes⁷. The Wildlife & Marine Resource Section (WMRS) of the U.S Department of Justice represents these federal action agencies in litigations seeking to balance the contentious junction between water use for farming and the biological demands of endangered species. The U.S Fish and Wildlife Service

² Baumol, William J. *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*. N.p.: Princeton UP, 2002. Web.

³ Lorr, Michael J. "Defining Urban Sustainability in the Context of North American Cities." *Nature and Culture*. Berghahn Journals, Spring 2012. Web.

⁴ "California Drought." *California Water Science Center*. United States Geological Survey (USGS), 26 Jan. 2017. Web.

⁵ Watson, Reed. "Tapping Water Market in California: Six Policy Reforms." *Property and Environment*

⁶ "Council Approves Utility Rate Changes." *Navigation*. City of Folsom, California, Jan. 2011. Web.

⁷ "The Endangered Species Act and the States." *The Endangered Species Act of 1973(2012): 173-202*. U.S Fish & Wildlife Service. Web.

and National Marine Fisheries Services, who defend the biological needs of ESA-protected resources and species, are often the defendants in such litigations. Conflicting regulation creates tensions between state entities, farming communities, and commercial users of the water sources. The conflicting regulation is worsened by a culturally entrenched “use it or lose it” conceptualization of water as a resource in California.

A second approach to urban sustainable development recognizes the interconnected nature of environment and equity, supporting governmental reform and new policy ideas for smart growth. Designing urban environments is becoming an increasingly cross-cutting discipline, including everything from green mass transit to sustainable movements like New Urbanism and European Urban Renaissance. At 6.5 billion urban residents, more than two thirds of the world’s population is projected to live in urban areas by 2050⁸. The ethos of the eco-city approach is rooted in a synergistic integration of economic productivity and healthy living, pioneered by theorist and author Richard Register in the mid 1970’s⁹. Register, who founded the California based nonprofit Ecocity Builders, spearheaded the eco-city movement which harmonizes citizenship, regional differences, and existing policies to develop functionally integrated yet green urban centers¹⁰.

Eco-city design includes functional/operational and social dimensions that must

both be considered to holistically understand and execute urban development¹¹. Functionally, urban planning deals with use of shared space and mobility within the city. A challenge in urban design is making use of multi-use green spaces that can translate to greater urban vitality and a healthier lifestyle. The social dimension concerns itself with how the physical environment impacts social groups and individuals. Eco-city design views urban space as an extension of public life as a platform for ecological citizenship and social interaction¹¹. Striking the right balance between collective sustainability and individual wellbeing within a shared urban environment is a concern of the eco-city movement.

Most urban design theories highlight the importance of compact and high density development in making a city functional and green. Functional zoning, or the sectioning of urban centers into areas of similar purpose or tract of activity, is often cited as a roadblock to effective urban planning¹². Zoning inhibits socially diverse communities, as racial and economic gaps separate the haves from the have-nots. Integrated, multitrack city centers are necessary and desirable to minimize commute time and thus car dependency, provide more opportunities for social engagement and interactions, and greater choice in lifestyle, location, and access to facilities¹³. This conventional understanding has broadened the policy initiatives and support for city farming movements; city

⁸ Turner, Vicotria. "Sustainable Urbanism: An Integrative Analysis of Master Planned Developments as a Vehicle for Urban Environmental Sustainability." *Requirements for the Degree Doctor of Philosophy*. Arizona State University, Aug. 2013. Web.

⁹ Balula, Luis D. "Urban Design And Planning Policy: Theoretical Foundations and Prospects For A New Urbanism." *Urban Design and Planning Policy - Metadata*. The Graduate School of New Brunswick, Jan. 2010. Web. 2017.

¹⁰ "Founder and Emissary of Ecocity Builders." *Visionary Revolutionary - Richard Register*. Ecocity Builders, n.d. Web.

¹¹ Balula, Luis D. "Urban Design And Planning Policy: Theoretical Foundations and Prospects For A New Urbanism." *Urban Design and Planning Policy - Metadata*. The Graduate School of New Brunswick, Jan. 2010. Web. 2017.

¹² Frug, Gerald E. *City Making: Building Communities Without Building Walls*. N.p.: Princeton UP, 2001. Print.

¹³ Grace, Lee Ka Lee. "Sustainable Urban Renewal Model for a High Density City - Hong Kong." *Department of Building and Real Estate*. The Hong Kong Polytechnic University, June 2008. Web.



governments have crafted policies permitting small-scale livestock and revisited building codes to authorize rooftop gardens, while both state and municipal governments promote commercial urban farming with tax incentives.

The disproportionate focus and reliance on traffic engineering has led to city layouts that prioritize transport by car and make travel by bike or foot impractical if not hazardous. Functional urban design must focus on reducing dependency on cars by creating more integrated green spaces within city centers. Disproportionate reliance on finite resources like oil and natural gas result in high transportation costs and serious environmental externalities¹⁶. As finite resources are increasingly unable to satisfy growing demand for an energy-intensive way of life, existing land use patterns of separating residential and commercial use areas will no longer suit urban needs¹⁴. Functionally zoned areas will be replaced by multi-functional, dense, green urban hubs.

Interpersonal relationships are influenced by the layout of urban spaces which seek to balance collective sustainability with individual freedoms. While urban design in isolation may not be enough to bring about social change, the ability of an environment to provide accessible public spaces for improving quality of life is an important component of sustainability. The Slow Food Movement, founded by Carlo Petrini in 1986, promotes consuming locally by promoting small businesses and opposing industrialized food production¹⁵. The movement expanded to include branches in Switzerland, Germany, France, Japan, the UK, and Chile among others. Slow Food's political agenda

¹⁴ Lorr, Michael J. "Defining Urban Sustainability in the Context of North American Cities." *Nature and Culture*. Berghahn Journals, Spring 2012. Web.

¹⁵ "Association." *CittaSlow - Philosophy*. CittaSlow International, n.d. Web.

includes educating citizens about the disadvantages of commercial agribusiness and mass farming, and lobbying against the use of pesticides and genetic engineering. The shift towards less polluted, congested urban centers is a cornerstone of the social dimension of eco-city urban development¹⁶.

A growing literature on urban sustainability casts cities in a new light, characterizing urban hubs less as epicenters of consumption and rather as the drivers of urban sustainable development and environmental citizenship. Both free market environmentalism and the eco-city movement address hard questions about land use and access to green space, urban transportation, urban ecology, and utilities. In an increasingly globalized and networked world, the connections between environmental issues and social justice are demanding greater attention. Advocates of urban design often view city farming and creation of green space, whether through government regulation or free-market balancing, as a way to mitigate deep-seated social justice issues. Both proponents of FME and eco-cities often frame urban agriculture and green spaces in a positive light, but a thorough analysis of sustainable development must consider the social justice implications of new city designs. Even though urban farming has historically been a means for low-income residents of densely populated city spaces to survive and feed their families, some parts of sustainable design theory focus heavily on design elements that benefit a predominantly middle-class, white population of city farmers¹⁷.

¹⁶ Balula, Luis D. "Urban Design And Planning Policy: Theoretical Foundations and Prospects For A New Urbanism." *Urban Design and Planning Policy - Metadata*. The Graduate School of New Brunswick, Jan. 2010. Web. 2017.

¹⁷ Reynolds, Kristin, and Nevin Cohen. *Beyond the Kale: Urban Agriculture and Social Justice Activism in New York City*. Athens: U of Georgia, 2016. Print.

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COMMUNITY-BASED WATER MANAGEMENT IN RURAL KENYA

MANDY LEE

Abstract

Access to safe, reliable, and affordable water remains a major challenge for many communities and households across Kenya, and this challenge will likely be exacerbated by the impacts of climate change and rapid population growth in coming decades. A diversity of approaches is needed to protect and enhance livelihoods that are vulnerable to environmental changes. In contrast to significant foreign aid projects and non-profit involvement in Kenya, community-based development acknowledges the ways in which Kenyan communities themselves are best suited to prioritize, design, and guide development solutions. This article seeks to identify the benefits of a community-based approach for sustainable water management in rural Kenya, as well as explore the role of outside actors under this framework.

Introduction

A useful starting point for thinking about community empowerment is the concept of asset-based community development (ABCD). Developed by John McKnight and John Kretzmann at Northwestern University, ABCD is a framework for identifying the resources and potential within communities.

Throughout the 1950s and 1960s, non-governmental organizations (NGOs) operating in Africa assumed a needs-based approach, which defines poverty as the absence or lack of the basic elements required for human survival.¹ Over time, the needs-based approach can become self-perpetuating, encouraging a reliance on outside experts and funding to “discover” and remedy problems in a given community.² Rather than focusing on the needs or deficiencies of a place, ABCD emphasizes that community assets are the key building blocks in effective, long-term development efforts. Community assets may include: “the skills of local residents; the power of local associations; the resources of public, private and non-profit institutions; the physical infrastructure and space in a community; the economic resources and potential of local places; and the local history and culture of a neighborhood.”³ As opposed to the top-down development model facilitated by outsiders, local residents design and implement solutions that leverage existing assets and build future assets. In many ways, ABCD reaffirms the “‘self-help’ processes by which communities in Sub-Saharan Africa have historically and culturally been their own first investors.”⁴

¹ Cormac Russell and Ted Smeaton, “From Needs to Assets: Charting a Sustainable Path Towards Development in Sub-Saharan African Countries” (presentation, Global Sustainable Development Conference, 2009).; Sebastian Mathews, “Asset-Based, Community-Driven Development (ABCD) in South Africa: Rebuilding Communities from the Inside Out” (presentation, University of Johannesburg Centre for Small Business Development Conference, 2013).

² Russell and Smeaton, “From Needs to Assets.”; Terry Bergdall, “Reflections on the Catalytic Role of an Outsider in Asset-Based Community Development,” *ABCD Institute*, 2012, Accessed January 3, <http://www.abcdinstitute.org/publications/downloadable/index.html>.

³ “Founders,” *Asset-Based Community Development (ABCD) Institute*, 2017, Accessed December 20, 2016, <http://www.abcdinstitute.org/about/founders/index.html>.

⁴ Russell and Smeaton, “From Needs to Assets.”



By exploring the context of development and water management in Kenya, it becomes clear that asset-based community development is an important model to help expand clean water access to underserved consumers.

Water Management Arrangements in Kenya

Kenyan government and civil society entities have long been committed to ensuring that water is available, accessible, adequate, safe, and affordable for all citizens. However, the country struggles with physical and economic water scarcity.⁵ Four-fifths of the country is arid or semi-arid and prone to drought, and many areas are unable to take advantage of water resources that could help improve livelihoods due to lacking investment.⁶ According to the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, an estimated 36.8 percent of the total population lives without access to an improved water source.⁷ In rural areas, access has increased steadily since 1990, reaching 56.8 percent of the population by 2015. On the other hand, access has been relatively higher but steadily decreasing since 1990 in urban areas, dropping to 81.6 percent of the population in 2015. In order to achieve higher efficiency, expanded access, and improved service quality, Kenya has joined many other countries in pursuing a form of water privatization through the commercialization of public water entities.

With the imposition of structural adjustment programs by the World Bank and

IMF in the 1980s in sub-Saharan Africa, privatization became a major policy tool intended to eliminate weak state enterprises and enhance free markets.⁸ The potential benefits of water privatization include expansion of services to more users, cost savings, enhanced quality and performance, incentives to conserve water, encouragement of private financing, and promotion of technology transfer.⁹ Though the level of private infrastructure investment generally failed to meet expectations in sub-Saharan Africa during the privatization wave, Kenya has pursued a liberalization scheme that has partially shifted water management to the private sector since 2002.¹⁰

The Ministry of Water Development, now called the Ministry of Water and Irrigation, was formed in 1963 to oversee water resources and develop water policy. It implemented water projects on a “self-help” basis in which local communities maintained control.¹¹ Community participation in water management expanded in the 1980s, spurred by the growth of self-help community organizations, especially in rural areas, and the *harambee* spirit of working together fostered by the government.¹² By 2000, approximately 30 percent of rural Kenyans gained access to

⁸ Kate Bayliss and Terry McKinley, "Providing Basic Utilities in Sub-Saharan Africa: Why Has Privatization Failed?" *Environment* 49, no. 3 (2007): 26.; Nyangena, "Privatization," 118.

⁹ R. Quentin Grafton, James Horne, and Sarah Ann Wheeler, "On the Marketisation of Water: Evidence from the Murray-Darling Basin, Australia," *Water Resources Management* 30, no. 3 (2015): 923-924.; Owiti A. K'Akumu, "Sustainability Prospects for Water Utilities Privatization in Kenya," *International Journal of Technology Management & Sustainable Development* 5, no. 3 (2006): 272-273.; Nyangena, "Privatization," 128.

¹⁰ Naren Prasad, "Privatisation Results: Private Sector Participation in Water Services After 15 Years," *Development Policy Review* 24, no. 6 (2006): 669-670.; Bayliss and McKinley, "Providing Basic Utilities," 26.
¹¹ Nyangena, "Privatization," 118.

¹² Calvince Onditi, "Community Water Supply Management Case Study: Nyasare Water Supply Association in Migori County" (B.S. dissertation, University of Nairobi, 2015), 2.

⁵ Tove A. Larsen et al., "Emerging Solutions to the Water Challenges of an Urbanizing World." *Science* 352, no. 6288 (2016): 930.

⁶ Kenneth O. Nyangena, "Privatization of Water and Sanitation Services in Kenya: Challenges and Prospects," *Africa Development* 33, no. 4 (2008): 121.

⁷ "Data," *World Bank*, 2016, <http://data.worldbank.org/indicator/SH.H2O.SAFE.ZS?locations=KE>.

safe, reliable water through the work of small, community-based water systems. National water policy was revised in 1999 to establish municipal water and sewerage departments (WSDs) that would be responsible for supporting localized water services.¹³ Although subject to major political interference and competing claims to management and authority, WSDs in municipal governments were, at least in theory, accountable to local people through elections.

Beginning with the Water Act of 2002 and the subsequent Transfer of Water Services Plan, the Kenyan government adopted a water privatization scheme that maintained public ownership but commercialized services through the adoption of private-sector business practices, such as market pricing.¹⁴ The Act developed the Water Resources Management Authority to generally oversee and regulate allocation of water resources. In this system, the Water Services Regulatory Board (WSRB) issues licenses to and sets pricing guidelines for Water Services Boards (WSBs), which are local and regional state institutions with ownership of water infrastructure. WSBs are handpicked by the local water Minister, allowing significant personal discretion. The WSBs in turn rely on Water Service Providers (WSPs) to operate water infrastructure as their agents.

Although this legal framework does not guarantee water as a basic right to all, it includes a statement recognizing water as a human right not to be subordinated to the dictates of economic principles.¹⁵ In order to ensure public welfare, the Water Services Trust Fund extends water services to those that are not financially or geographically favored. It does so by drawing upon public

and non-public funds, such as those from development partners. In addition, the Water Appeals Board adjudicates appeals of those aggrieved by the decisions of actors in the water economy. To ensure public participation, the Water Act calls for a National Water Services Strategy that enables underserved communities to express their needs; National Monitoring and Information Systems to manage and publicize information on water services; the formation of Catchments Area Advisory Committees; and public consultation on water-related decisions.¹⁶

Major Challenges for Water Management

To understand some of the major challenges to effective and equitable water distribution, it is necessary to examine the state of water governance, both formal and informal, in Kenya. There is a lack of coordination and data sharing between government bodies; inadequate monitoring and enforcement of water quality laws; insufficient technical capacity for water quality testing in rural areas; scarce financial resources; and inadequate administrative and technical management over water systems.¹⁷ Government appointments based on political connections rather than merits and competency can lead to corruption, manipulation, restricted autonomy, job insecurity, and uncertainty in water institutions.¹⁸ In Kenya, these challenges are compounded by rapid population growth, urbanization, political instability, unemployment, and ever-increasing water

¹³ K'Akumu, "Sustainability Prospects," 272.; Nyangena, "Privatization," 119.

¹⁴ K'Akumu, "Sustainability Prospects," 274.

¹⁵ Ibid.

¹⁶ Ibid 275.; Nyangena, "Privatization," 122-123.

¹⁷ Georgia L. Kayser et al., "Drinking Water Quality Governance: A Comparative Case Study of Brazil, Ecuador, and Malawi," *Environmental Science & Policy* 48 (2015): 186.; Larsen et al., "Emerging Solutions," 929-930.

¹⁸ Ernest Nti Acheampong, Mark Swilling, and Kevin Urama, "Sustainable Urban Water System Transitions through Management Reforms in Ghana," *Water Resources Management* 30, no. 5 (2016): 1835-1849.; Nyangena, "Privatization," 125-127.

demand across many sectors.¹⁹ Lastly, there is low awareness of water management law, little enthusiasm for partnering with civil society organizations, insufficient expertise to negotiate with private companies, and water loss from leakage and illegal diversion.²⁰ Public water utilities too often find themselves in a vicious cycle of deteriorating infrastructure, high system losses, high costs, low revenue, and low-quality services in recent decades.²¹

Governance can also fail at the household and individual level. The capability of poor households to connect to water can be undermined by fee policies, transaction costs, housing and residency status, insecure water supply, and perceptions of water quality.²² A culture of nonpayment for water services is prevalent in rural settings, as well as some urban areas and even among some government entities.²³ In the end, governance failures can create disincentives both “for the water supply utility to connect poor households and for poor households to choose to connect to the water supply system.”²⁴

Successful policy implementation depends on alignment of objectives of

stakeholders and the degree of trust between them. However, the failures of government efforts, the rise of privatization, and a systemic bias against the poor create a sense of fear, distrust, and resentment.²⁵ In a model of distributive justice, the water system should seek to provide the greatest benefit to the least advantaged, rather than hoping that benefits will eventually trickle down to the poor.²⁶ Instead, the decision-makers, influencers, primary beneficiaries, and corporate actors in water policy are mainly men, and further divergences occur relating to class, ethnicity, wealth, political voice, age, education, and location.²⁷ Women and children are the most vulnerable to unintended consequences, yet the most constrained to participate in the economy and policymaking.

Across sub-Saharan Africa, the rural water sector remains particularly underdeveloped. Rural areas typically have lower access to financial and technical resources and greater problems collecting data, coordinating with national actors, carrying out maintenance and treatment, and learning from peers.²⁸ Like the most disadvantaged urban areas, rural areas also struggle with monitoring and enforcement of water standards due to insufficient resources and training.²⁹ A clear bias for urban populations is evident in the separation of services, with more private sector participation in urban areas and government

¹⁹ Emmanuel Manzungu et al., "Bulk Water Suppliers in the City of Harare-An Endogenous Form of Privatisation of Urban Domestic Water Supply in Zimbabwe?" *Water Alternatives* 9, no. 1 (2016): 57.; Abu Shiraz Rahaman, Jeff Everett, and Dean Neu, "Trust, Morality, and the Privatization of Water Services in Developing Countries," *Business and Society Review* 118, no. 4 (2013): 561.; Larsen et al., "Emerging Solutions," 928.; Nyangena, "Privatization," 125.

²⁰ Nyangena, "Privatization," 125.

²¹ Bayliss and McKinley, "Providing Basic Utilities," 28-30.; Prasad, "Privatisation Results," 686-688.

²² Karen Bakker et al., "Governance Failure: Rethinking the Institutional Dimensions of Urban Water Supply to Poor Households," *World Development* 36, no. 10 (2008): 1891.; Maggie A. Montgomery, Jamie Bartram, and Menachem Elimelech, "Increasing Functional Sustainability of Water and Sanitation Supplies in Rural Sub-Saharan Africa," *Environmental Engineering Science* 26, no. 5 (2009): 1019-1020.; Larsen et al., "Emerging Solutions," 930.

²³ Kayser et al., "Drinking Water," 191-193.

²⁴ Bakker et al., "Governance Failure," 1893-1894.

²⁵ Rahaman, Everett, and Neu, "Trust, Morality," 568.; Nyangena, "Privatization," 126.

²⁶ Rahaman, Everett, and Neu, "Trust, Morality," 553.

²⁷ Ibid 564.; Lydia Osei et al., "The Paradox of Water Accessibility: Understanding the Temporal and Spatial Dimensions of Access to Improved Water Sources in Rwanda," *Journal of Water Sanitation and Hygiene for Development* 5, no. 4 (2015): 553-564.

²⁸ Kayser et al., "Drinking Water," 191.; Montgomery, Bartram, and Elimelech, "Increasing Functional Sustainability," 1018.; Osei et al., "The Paradox of Water," 553-564.

²⁹ Kayser et al., "Drinking Water," 191-192.

provision to rural areas.³⁰ To combat low rural water access, NGOs funded by international sources have multiplied and helped build water infrastructure.³¹ Unlike in cities, where informal actors fill gaps in service, government-by-NGO has become a growing trend in rural areas, sometimes pressuring local governments to mimic NGO approaches for local participation and accountability.³² Through their position of influence, NGOs have made governance of water service provision more complex and intertwined by blurring the lines between policymaking and implementation roles.

At times, there are mismatches between the priorities of county governments and the needs of the poor. A study of all county-level water policy choices revealed that the water budget consistently ranks fourth after health, transport, and education.³³ County water ministries believe the fair tariff for water in rural areas is 29 percent higher than in urban areas, while the fair level of provision is 12 liters lower per person per day (at just 31 L/person/day) than for urban dwellers. Most counties prefer to separate the responsibilities for water services, sanitation, and resource management, despite the interconnected nature of water problems. About 40 percent of counties believe consumers should pay the full cost of water provision, and 43 percent of those in favor of subsidies do not believe it is the county government's financial responsibility. About 30 percent of county water ministries favor

private sector involvement in water, and 70 percent do not consider community management to be appropriate for rural areas. In addition to this place-based variation in government views, the needs of communities can be subject to the whims of election cycles and their relative political influence within a county.

Performance of Privatized Water

Water privatization is often seen as a central area of debate regarding water solutions in developing countries. Thanks to a wealth of research beginning in the 2000s, scholars have come to agreement that privatization of water theoretically should but does not always lead to improved performance in terms of profitability, productivity, efficiency, and service quality.³⁴ In fact, private sector participation has been shown to negatively affect performance in some countries through raising the cost of capital, reducing long-term investment in infrastructure repair and replacement, and increasing corruption.³⁵ Partial privatization in Kenya has been accompanied by a lack of commitment to low-income consumers, inequity in the quality of service based on the ability to pay, and service cut-offs.³⁶

³⁰ Acheampong, Swilling, and Urama, "Sustainable Urban Water," 1849.; Rahaman, Everett, and Neu, "Trust, Morality," 558-561.

³¹ Jennifer N. Brass, "Blurring Boundaries: The Integration of NGOs into Governance in Kenya," *Governance* 25, no. 2 (2012): 209.

³² Kayser et al., "Drinking Water," 190.; Rahaman, Everett, and Neu, "Trust, Morality," 560.

³³ Johanna Koehler, "Water Policy Choices in Kenya's 47 Counties," *University of Oxford*, 2016, <http://www.smithschool.ox.ac.uk/research-programmes/water->

<http://www.smithschool.ox.ac.uk/research-programmes/water->

³⁴ Colin Kirkpatrick, David Parker, and Yin-Fang Zhang, "An Empirical Analysis of State and Private-Sector Provision of Water Services in Africa," *The World Bank Economic Review* 20, no. 1 (2006): 143-144.; Godwin K. Vondolia and Francis Mensah Asenso-Boadi, "Private Sector Participation in the Provision of Quality Drinking Water in Urban Areas of Ghana: What Do Households Want and Can Afford?" *South African Journal of Economics* 84, no. 2 (2015): 245-246.; Bakker et al., "Governance Failure," 1893.; Larsen et al., "Emerging Solutions," 932.; Prasad, "Privatisation Results," 672.

³⁵ Valentina Okaru-Bisant, "Promoting Private Water Investments and Preventing Corruption and Consumer Risks," *Sustainable Development Law Journal* 14, no. 1 (2011): 2-3.; Bakker et al., "Governance Failure," 1893.; Rahaman, Everett, and Neu, "Trust, Morality," 563.

³⁶ Bayliss and McKinley, "Providing Basic Utilities," 29-30.; Montgomery, Bartram, and Elimelech, "Increasing

A survey of households in the city of Kisumu paint a vivid example of the limitations of Kenya's privatization solution thus far. As of 2010, the survey revealed that only 25 percent of households in Kisumu, Kenya's third largest city, access the World Bank's minimum recommended daily requirement, which is 50 liters per capita for drinking, cooking, and personal hygiene within a reasonable distance from the home.³⁷ Low- and middle-income households generally access less than 50 percent of the basic water requirement.³⁸ It has become clear that water pricing and privatization does not necessarily improve the poor's access to clean water in Kenya, unless it is accompanied with good governance, sufficient financing, equitable pricing and distribution policies, and participatory approaches. Despite the immense challenges to clean water access and the flaws of privatization, certain steps can be taken to improve access to clean water in Kenya, including the empowerment of community-based water management strategies for more rural areas.

Community-Based Management: A Path Forward

Asset-based community development is an evolution of community development thinking, which was first grounded in a rights-based approach. Generally, to build an enabling environment to promote and protect human rights, this approach to development explicitly pursues accountability, participation, non-discrimination, and attention to vulnerable

groups.³⁹ Participatory rural appraisal (PRA), an approach that took hold in the 1970s and 1980s, invites community members to co-design projects, but does not necessarily arise from or result in citizen-led initiatives. PRA can perpetuate the emphasis on needs and limitations and take place alongside "the subliminal belief that outside institutions exclusively hold the expertise, resources, and power to resolve issues."⁴⁰ The sustainable livelihoods approach (SLA) integrates PRA methodologies to ensure the relevance of economic development programs to communities. Introduced in early 1990s, SLA departs from PRA by inviting communities to identify their assets and allies. ABCD expands the conversation beyond economic activities to consider social capital, as well as networks that are inclusive for women and other marginalized groups. Overall, the conversation is moving from carrying out development *for* people or *with* people, to *by* the people themselves.

ABCD is oriented toward citizens and communities as the primary producers of internal development solutions. ABCD draws upon local residents' insights, skills, and resources, thereby increasing the effectiveness of outside support.⁴¹ Typically, ABCD involves participatory and inclusive mapping and planning exercises in which residents locate, connect, and build upon the assets of the community as a whole. Strong social capital results in a greater sense of responsibility towards others (including marginalized groups) and a better likelihood of reaching internal solutions to local problems. Government agencies, NGOs, community-based organizations, faith communities, and businesses can be strong partners in ABCD.

The ABCD approach can still suffer from some of the broader challenges to

Functional Sustainability," 1017-1019.; Nyangena, "Privatization," 117.

³⁷ George G. Wagah, George M. Onyango, and Jacob K. Kibwage, "Accessibility of Water Services in Kisumu Municipality, Kenya," *Journal of Geography and Regional Planning* 3, no. 5 (2010): 114.; Vondolia and Asenso-Boadi, "Private Sector Participation," 245.

³⁸ Wagah, Onyango, and Kibwage, "Accessibility," 118.

³⁹ Russell and Smeaton, "From Needs to Assets."

⁴⁰ Ibid.

⁴¹ Mathews, "Asset-Based, Community-Driven."

water management in rural Kenya and unique challenges to community-based approaches. One study of a community water project in Kisayani community in Kathyaka Location, Makueni County, for example, revealed challenges to sustainable water supply, regulatory policy, and local management after 10 years of operation.⁴² Changing rainfall patterns, increasing withdrawals, resistance to water sector reforms, reduced cohesion between community and management, and insufficient supportive external relationships are some of the limitations that this project may share with others like it. Another study of five community water projects in the upper Ewaso Ng'iro River basin of Mount Kenya also points out the pressures of hydroclimatic change and population growth, as well as water inequality and institutional homogeneity across the different water projects.⁴³

Just as the major challenges to water management in Kenya have created a vicious cycle, small adjustments in various areas of water governance can spur a feedback loop that builds effectiveness.⁴⁴ A greater degree of community participation, with the aspiration to reach ABCD, is one such adjustment. In order to build trust, the government and private-sector partners must encourage participatory approaches to better understand local preferences and facilitate knowledge-sharing opportunities between neighboring areas and communities with strong examples of ABCD. The Nyasare Water and Sanitation Company and Makutano Community Development

⁴² Harry Spaling, Geoffery Brouwer, and Jesse Njoka, "Factors Affecting the Sustainability of a Community Water Supply Project in Kenya," *Development in Practice* 24, no. 7 (2014): 797-799.

⁴³ Jampel Dell'Angelo et al., "Community Water Governance on Mount Kenya: An Assessment Based on Ostrom's Design Principles of Natural Resource Management," *Mountain Research and Development* 36, no. 1 (2016): 102.

⁴⁴ Kayser et al., "Drinking Water," 192.

Association are two such examples. While only a handful of publicly-available case studies are considered in this paper, they demonstrate multiple strategies for successful long-term community water projects taken to scale.

Case Study: Nyasare Water and Sanitation Company

Nyasare Water and Sanitation Company (NYAWASCO), formerly the Nyasare Water Supply Association (NWSA), offers a strong model of ABCD principles in action. The project was designed and is managed by residents of the rural Nyasare community, located along the Nyasare River Valley to the north and west of Migori Town in Migori County, Kenya.⁴⁵ The project was initiated in 1989 largely in response to the catalytic leadership of Reverend Peter Indalo of the local Oyani Christian Rural Service Church, who assisted in the creation of a self-help group to improve water access and safety.⁴⁶ Residents of Nyasare sought to increase their resilience to water shortages and waterborne diseases. NWSA began official operation in 1994, was designed to serve 10,000 people, and has since expanded to cover more than 30,000 people across rural areas and Migori Town. In response to reforms of the water sector in the new Kenyan Constitution of 2010, NWSA transformed into a water company (NYAWASCO) and is recognized as a community-managed WSP.

The organizational structure of NYAWASCO gives ultimate power to an Assembly of local residents. This Assembly is composed of approximately 1,200 registered community members that enjoy the benefits of the company.⁴⁷ The members can vote at annual meetings, submit

⁴⁵ Onditi, "Community Water," 3.

⁴⁶ Onditi, "Community Water," 25.

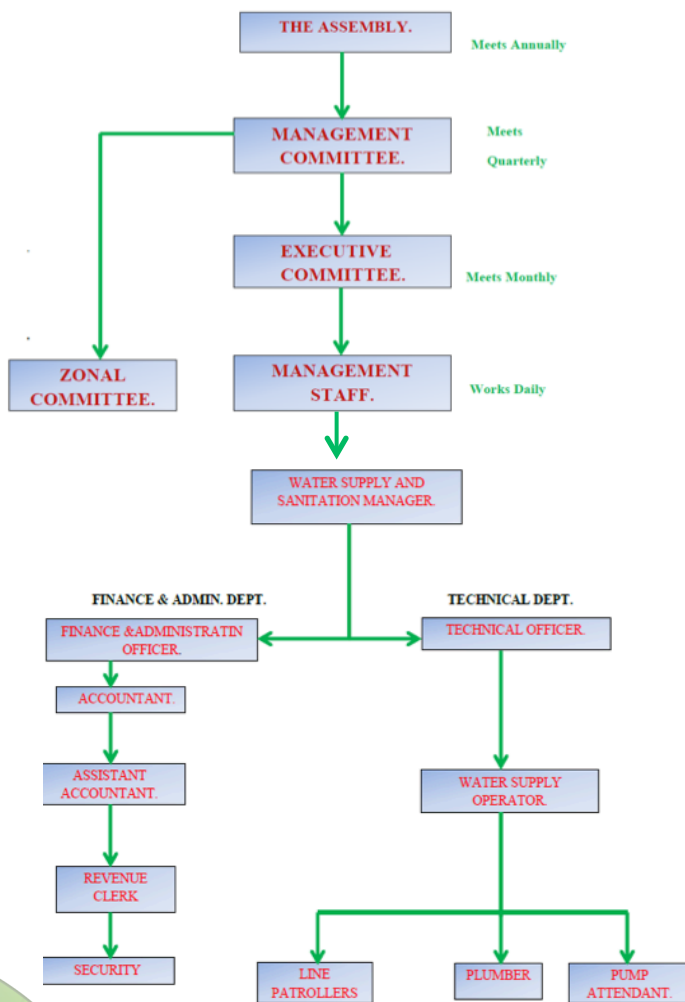
⁴⁷ Ibid 42.

proposals, and be appointed to leadership roles within the organization. Members participate in external events, fundraising activities, and direct outreach to the larger community. The Assembly elects members of the Executive Committee every three years, as well as approves all plans and activities of NYAWASCO. Such activities include outreach, tree planting, and participation at the Migori Agricultural Show. The Assembly approves all financial commitments, such as those relating to operations, maintenance, and salaries. Lastly, the Assembly can work with the Executive Committee to engage with the Water Services Trust Fund, the local WSB, and the WRMA to improve services.

Figure 1. NYAWASCO’s organizational chart reveals its accountability to the Assembly of community members.
Source: Adapted from Onditi, “Community Water,” 32-37.

The Management Committee convenes an Executive Committee, Zonal Committee, and Management Staff. The Executive Committee is composed of eight elected leaders, and the Zonal Committee brings together elected representatives from the six zones of the water supply area.⁴⁸ The Zonal Representatives support community mobilization, awareness, implementation, and relay the perspectives and concerns of residents to the Executive Committee. Also at the grassroots level, NYAWASCO established a Communal Water Committee that convenes a Catchment Protection Committee and a Water Outlets Committee. These committees take responsibility for the following activities: catchment area land purchase and fencing; monitoring and tree planting in catchment zones; training on sustainable farming practices; and outreach through local associations to raise awareness about catchment area management. To build awareness about catchment protection, NYAWASCO specifically engages with schools, assemblies of local chiefs and elders, and women’s groups. Water is distributed at communal drawing points (at a weekly rate), water kiosks (at a rate per cubic meter, half of which is paid to NYAWASCO), or through individual metered connections (at a tiered rate per cubic meter based on total volume). Ground-level management staff, called caretakers, are local residents that are trained and employed by NYAWASCO.

Community participation was a key component for making collective decisions about water sources and pricing. In addition to a borehole, NYAWASCO has developed springs and shallow wells in the community. After community meetings, eight



⁴⁸ Onditi, “Community Water,” 43-46.

community members voluntarily donated land to NYAWASCO in order to protect and develop springs in exchange for free water supply.⁴⁹ The community was also mobilized to discuss water provision at higher elevations not served by the gravity-based distribution system. NYAWASCO dug five shallow, hand-pumped wells to provide this water, after discussing appropriate solutions and locations with residents of these areas. The community allocated three wells to primary schools and one well to a health center. Community members came to agreement that this water would be free, but these institutions would contribute to maintenance, when needed, conducted by the shallow well committee.

NYAWASCO has major achievements in addition to upholding community governance. Although unprotected water sources are still available to residents, NYAWASCO has helped reduce the prevalence of waterborne diseases like cholera and typhoid, while making the distance to water sources far shorter.⁵⁰ During its operation for more than two decades, NYAWASCO has grappled with enormous challenges that range from water supply seasonality, catchment area degradation, infrastructural vandalisms, unpaid water bills, water quality issues, incapacity to expand water facilities to meet the growing demand, and lack of finances.⁵¹ Nonetheless, the Association has sustained reliable water supply since its inception, and the community has witnessed increased groundwater recharge, vegetation cover, and water table levels.

NYAWASCO has shifted away from an approach that relied heavily on outside assistance. Initially, Reverend Indalo catalyzed the community to leverage outside funding. Through religious ties with an

Austrian church, he forged an external link with the Austrian Development Co-operation, which provided funding during the early stages of the project.⁵² Up until 2007, NYAWASCO invited local and international consultants and implementing partners to provide technical and administrative assistance. However, NYAWASCO shifted to full self-management in the past decade, achieving financial stability and greater community participation.

Due to its ongoing success despite its obstacles, NYAWASCO has become a regional role model and collaborator, sharing best practices with a self-help group based nearby in Nyamira County. The group, called the Hopewell-Keroka Alliance, shared a similar path with NYAWASCO, including its founding through a prominent community member, a resident-led approach, and a partnership with a foreign funding partner, in this case a sister community in the United States. The Hopewell-Keroka Alliance is pursuing the creation of a local water company modeled after NYAWASCO.

Case Study: Makutano Community Development Association

The Makutano Community Development Association (MCDA), located in the Ikombe Division of Yatta District, offers a model of ABCD on a larger scale. Spurred by Raphael Masika, a local resident with experience in community-based development, a group of 60 people from neighboring villages met in 1995 to discuss community associations.⁵³ Already having

⁴⁹ Onditi, "Community Water," 28.

⁵⁰ Ibid 57.

⁵¹ Ibid 62-65.

⁵² Ibid 25.

⁵³ Halima Mahomed and Brianne Peters, "The Story Behind the Well: A Case Study of Successful Community Development in Makutano, Kenya," *Global Fund for Community Foundations and the Coady International Institute*, 2011, <http://www.coady.stfx.ca/tinroom/assets/file/StoryBehindTheWell.pdf>.

the precedent of community burial societies, the residents registered as a self-help group and then as a community-based organization (CBO) the following year. Also in 1996, the first indigenous philanthropic institution in the country, the Kenya Community Development Foundation (KCDF), began operation. Both MCDA and KCDF committed early on to ABCD principles, working to harness local assets and build the capacity of local people to guide their own development. By 1998, MCDA approached KCDF for a grant to establish an office, hire staff, and conduct training, as well as initiate an in-depth planning process. Over three years, more than 20 villages elected liaisons to work with local consultants and host open meetings with immediate community members. The result was a collective action plan to address various priorities, which has served as the compass of MCDA for more than a decade.

At the foundation of MCDA's structure are local CBOs, village development committees, and general community members. MCDA's membership grew from 10 informal associations to 84 independent CBOs and 210 villages representing more than 77,000 people.⁵⁴ Trained volunteer community mobilizers liaise between communities and MCDA's two staff members, unpaid elected board members, and a volunteer patron.⁵⁵ Each affiliated CBO runs independently, with its own elections and finances, and may initiate or respond to broader MCDA initiatives. The MCDA provides CBOs with technical, coordination-related, or financial assistance. A strong theme in MCDA's work is tapping into local resources. MCDA may distribute larger grants among CBOs, but the CBOs

typically provide their own local monetary contributions, labor, expertise, and materials. When outside experts are required, MCDA ensures that local residents receive a comprehensive training on the relevant topic. Moreover, MCDA's operating expenses are funded by membership fees for individual residents, which enables members to vote for their representatives and enjoy preferential pricing for some programs. Rather than pursuing NGO status, MCDA chose to remain a CBO in order to uphold the ownership, engagement, and contributions of members.



Figure 2. MCDA's organizational chart reveals its accountability to its affiliated CBOs, VDCs, and members.

Source: Adapted from Mahomed and Peters, "The Story Behind the Well."

The unanimous top priority identified by residents in the 1998 baseline survey was water. During the planning process, MCDA created a map of 26 future water points.⁵⁶ Since then, MCDA has constructed 9 community-managed dams and 17 sub-service wells, as well as supported supplementary household-level water harvesting. Each of these 26 water points is overseen by a water management committee that is elected by local users and operates as an independent CBO. MCDA assists with

⁵⁴ Ibid.; Mary Nthambi Kisingu, "Factors Influencing Community Based Organizations' Performance in Yatta District, Machakos County, Kenya: A Case of Makutano Community Development Association" (B.A. dissertation, University of Nairobi, 2012), 35.

⁵⁵ Mahomed and Peters, "The Story Behind the Well."

⁵⁶ Mahomed and Peters, "The Story Behind the Well."

management and accounting training, as well as ensures gender equity in committee membership. Similar to MCDA, each CBO covers maintenance costs through an annual or daily user fee. Where communal land is not available, members of the water point negotiate for donated land from the group and volunteer to clear the land. MCDA works with the local authorities to conduct an Environmental Impact Assessment and helps pair CBOs with partners for management and accounting training, planning, design, and funding. In the case of the water points, AusAid and the Irish government through Concern Universal were major donors. Once constructed, water point members rotate in supervising the wells, hire a permanent dam caretaker, and follow their own maintenance plan. MCDA assists with water testing in Nairobi on an annual basis. Most households in the area, whether MCDA members or not, now belong to a water point.

To support this work and MCDA's other projects, KCDF, in alignment with its own practice of matching external funds with local sources, began offering community-level endowment funds. In 2006, MCDA established a community fund that is invested and matched 1:1 by KCDF.⁵⁷ MCDA's members contributed approximately \$6,500, which grew to more than \$23,000 by 2010. Once the fund doubles to \$56,000, a committee of elected members will begin drawing on the proceeds for MCDA initiatives.

MCDA embodies ABCD in multiple regards, including its structure, holistic approach, and vision. MCDA's structure and processes are unique in how they promote distributed decision-making, accountability, and transparency, which further builds community cohesion, trust, mutual-help behaviors, collective action, and pooling of resources. In addition to its water projects,

MCDA is committed to sustainable development across sectors. Among numerous other programs, MCDA has built 162 pit latrines, a 23-kilometer road, a secondary school, and an extensive food security and preservation initiative.⁵⁸ The shared vision for MCDA developed by its members in 1998 set in motion a community effort that has leveraged and nurtured significant social capital.

A study of MCDA and the factors influencing its performance reveals the key role of the operational style and mission developed by community members. Surveys of MCDA and its 84 affiliated CBOs revealed that the mission, organizational competency, political capital, and funding resources all play a major role, accounting for 63.2 percent of the variation in CBO performance.⁵⁹ Performance is considered a CBO's contribution to building residents' access to financial, physical, and human resources, as well as economic opportunities and political power. In particular, organizational mission had the strongest positive relationship with performance. Respondents noted the importance of a clear, specific, and tangible mission statement that reflects clients' needs and is tied to a participatory strategic decision-making process. Organizational competency, which includes staff experience, stable and active leadership, and mutual trust, had the next strongest effect on building an environment that improves CBO performance.

Role of Outside Actors

The ABCD approach does not disregard the importance of outside assistance, but calls for outside partners to play a support role to citizen-led community

⁵⁸ Mahomed and Peters, "The Story Behind the Well."

⁵⁹ Kisingu, "Factors Influencing Community," 46.

development.⁶⁰ Often, ABCD does not occur spontaneously within a community. A helpful approach is for outside actors to regard themselves and their work as catalysts for community development. This external stimulus can and should be minimal, to avoid any sense of dependence. Catalysts such as NGOs can help facilitate a process of mapping assets and eventually leveraging external resources, rather than directly implementing solutions.⁶¹ Outsiders can also promote inclusion by helping convene a more representative group of residents, instead of summoning a small number of leaders.⁶² Critically, outside organizations seek to build trust and understanding:

*Catalysts are accountable to local communities. They are there, in some form or another, only at the invitation of the community. But as outsiders, they are upfront about their role and intentions so everyone in can see their purpose and understand their motives. In doing so, a creative sense of 'obedience' to the community is established. Catalysts are consistent: they do what they say they are going to do. They are transparent: they are forth-coming about their actions and are open to being questioned about them.*⁶³

Until the financial capacity of local organizations and governments are sufficient to take over, international funding for water projects will remain critical. Nonetheless, NGOs and external donors can shift their goals toward community-building and local ownership of development projects. In this way, outside partners can assist with funding and technical expertise, while also

increasing trust, communication, and mutual respect.⁶⁴ Outsiders might also have the unique opportunity to attract government attention. In a win-win situation, outside funding for a community could encourage elected officials to also dedicate or match funding and technical assistance to local projects. Therefore, there is higher accountability, a greater diversity of funding sources, and political empowerment of residents.

Meanwhile, the Kenyan government and private water suppliers can also play an important role in catalyzing ABCD. For example, they can set benchmarks for equity and report regularly on them, in order to increase the attention paid to the most vulnerable consumers. In addition to sharing more information overall, the government and private sector can promote shared motives with stakeholders and create room for communities to engage in decision-making.⁶⁵ Instead of applying a uniform pricing system across the country, Kenya could increase flexibility and transparency in matching tariffs and subsidies to the specific economic characteristics of communities.⁶⁶ The government and outside partners can help train local leaders about community water and sanitation governance, as well as offer ongoing support in the areas of monitoring, planning, capacity-building, and specialized technical assistance. Lastly, the government can help communities leverage outside funding, especially through

⁶⁰ Russell and Smeaton, "From Needs to Assets.;" Mathews, "Asset-Based, Community-Driven."

⁶¹ Russell and Smeaton, "From Needs to Assets.;" Bergdall, "Reflections."

⁶² Bergdall, "Reflections."

⁶³ Ibid.

⁶⁴ Peter A. Harvey and Robert A. Reed, "Community-Managed Water Supplies in Africa: Sustainable or Dispensable?" *Community Development Journal* 42, no. 3 (2007): 365-378.; Brass, "Blurring Boundaries," 228.

⁶⁵ Bakker et al., "Governance Failure," 1893-1894.; Nyangena, "Privatization," 128-129.; Okaru-Bisant, "Promoting Private," 11-12.; Rahaman, Everett, and Neu, "Trust, Morality," 552-553.

⁶⁶ Peter A. Harvey, "Cost Determination and Sustainable Financing for Rural Water Services in Sub-Saharan Africa," *Water Policy* 9, no. 4 (2007): 373-391.; Bayliss and McKinley, "Providing Basic Utilities," 31-32.

the Kenyan diaspora and innovative international crowdfunding mechanisms.

Conclusion

Given a strong level of engagement, capacity-building, and political will, Kenya can leverage its semi-privatized water system and tradition of community-based projects to make water available, accessible, adequate, safe, and affordable for more underserved communities. NYAWASCO and MCDA provide strong models of ABCD approaches for water management in rural Kenya. By empowering local organizations in other communities, the country can continue to diversify approaches to sustain healthy communities and work to effectively channel limited resources, combat corruption, leverage outside funding, and achieve equitable water systems.

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OUR ENVIRONMENT: A HEALTH CRISIS AND WHAT WE MUST DO TO HEAL IT

JUSTIN MCCARTNEY

Abstract

As efforts across the globe to curb the future destruction of climate change continue to evolve, it is important to recognize that we are already seeing the dangerous effects of a damaged environment. Our health and mental well-being are being threatened as we continue to release harmful chemicals into our atmosphere. Studies have suggested that millions more people across the world are in danger of environmental-related health crises in the coming decades unless there is dramatic and meaningful change in the way we approach protecting our environment. Policy endeavors are being made at the international level, as seen with the Paris Agreement and recent UN Environmental Assembly negotiations, as well as at the Congressional and state legislature level here in the United States and elsewhere; however, the continued struggle against a powerful lobby has yet to yield the type of drastic resolutions that have been proposed in order to successfully combat the threat of climate change and rapid environmental degradation. This article will more deeply examine exactly how the pollution of our air and negligence in valuing green spaces is harming human health; and what needs to be done to stop these processes and save lives.

Introduction

Our environment has no shortage of enthusiastic defenders. Propositions for oil pipelines arouse thousands of demonstrators; an ad to save the polar bears will always strike at hearts; the appointment of a science-denier to a federal Cabinet position can bring out the full force of activists and non-profit advertising campaigns. Yet, this still is not enough if we are to actualize the large-scale change we so fervently advocate for in regards to mediating environmental change. The most basic reason, in simplest terms, is that we need everyone. We need every single person to care as passionately about saving our planet as the most inspired activist. This, of course, is impractical; at least under the current framing of this environmental crisis we care so much about. This is essentially because we frame the issue of climate change and environmental degradation as just that: an issue area. It is one of many to be tacked on to the political speeches of progressive candidates, or a specialization area for a legislative aide. It is limited in such a framework. This article will not go deep into the social aspects of how or why this is so; however, I hope to offer one perspective on why framing the crisis we face in such a manner is, literally, deadly.

Our neglect for our natural environment, manifested through increasing effects of climate change and the destruction of our ecosystems and atmosphere, has led to an unimaginable degree of both explicit and implicit health problems on human populations around the globe. While the connection between climate change and our health is often overlooked and not fully

understood, the impacts are widespread and pose dangerous omens for our future. An unhealthy environment can mean anything from increased likelihood for Lyme's disease to skin cancer to depression. Nearly 23% of all deaths globally can be attributed to some kind of environmental factor.¹ This fact itself should inspire nothing less than an urgent call to action against the harmful effects of climate change and environmental destruction. The remainder of this article will examine a wide variety of health effects due to the environment, as well as offer a look at some ways in which we can reframe the crisis into successful action towards a sustainable future.

Section One: Health Effects of Climate Change and Environmental Degradation

In building the argument for radical action to combat climate change, one has to commit to getting creative in constructing narratives which will spur such action. That is precisely why former EPA Administrator, Gina McCarthy, made it a special priority to emphasize the health implications of climate change and environmental degradation during her time in the Agency. She visited health schools, encouraging medical students to consider joining the EPA rather than pursue a traditional medical career.² The goal was to transform the image of the Agency, and, effectively, the movement itself to be more than a "tree-hugger" cause and into an intersectional profession of social justice and medical necessity.² In her own words, "I've always thought of myself as a public health person, I still do".² McCarthy believed that this mission of public health was in fact central to the Agency and was infused into every bit of its work, even if that tended to be lost on the general public. After all, the work of environmentalism, just as in public health, is to build up the quality of life for

communities across the world. The intersections of health and environmental change support this proposed inherent link, and our work to promote protection of the environment should internalize this critical connection. The following sections describe just how our environment influences various aspects of our health.

Disease

One of the major fields of impact on health from environmental change is that of proliferating various diseases. Per the World Health Organization, the attributable fraction of a risk factor is the percentage decline in disease or injury due to changing conditions for the risk.¹ So, for example, the attributable fraction of the environment on malaria is 42%; meaning that 42% of cases of malaria could be prevented if the environmental conditions were changed in a way that reduced the risk.¹ The sheer degree to which the environment can statistically be shown to influence diseases such as malaria serves as a poignant snapshot into just how much overlap there is between the environment and infection; and these effects are, in fact, discriminatory: more developing countries, specifically in sub-Saharan Africa, are disproportionately affected due to environment-related disease.¹

Water-Related Diseases

The climate influences growth, expansion, survival, transmission, and virulence of various water-borne pathogens which lead to diseases such as diarrhea.³ As temperatures become increasingly fluctuating, precipitation rates change, water salinity is altered from runoff, the disease's spatial and temporal range are affected; this means the possibility for increased exposure rates. Some other diseases that can be

amplified by these factors are diarrhea, schistosomiasis, cholera, and salmonella.^{3,4}

The disease most profoundly affected by environmental factors is diarrhea. Approximately 94% of the global disease burden of diarrhea is attributable to the environment.¹ Diarrhea is a water-related illness, and therefore is sensitive to changes in water quality and sanitation.⁴ This explains the degree of burden associated with environmental factors for this particular disease, as environmental destruction often affects the quality of water for the surrounding region. Additionally, rising temperatures and increased humidity, as well as invariability of rainfall contribute to the spread of diarrheal disease; these factors alone have been estimated to cause a possible 8-11% spike in cases globally.⁴ A prime case study of this phenomenon can be seen in the Ganges River region, where hundreds of cities upriver are dumping raw sewage into a source of drinking water for over 400 million people farther down the river, endangering the drinkability of the water and greatly risking infection.⁴

Schistosomiasis affects hundreds of millions of people a year, and leads to malnutrition, stunting of growth, and subsequent loss of productivity in the workplace or at school.⁴ It can also lead to the spread of HIV/AIDS. This disease is influenced by factors like the increase in freshwater snails resulting from river fragmentation and biodiversity loss, as well as eutrophication and overfishing, all resulting from human-induced changes to the environment.⁴ The examples of both diarrhea and schistosomiasis speak to the multiplicity of ways that environmental change, whether it be from lack of safe drinking water or damage to biodiversity, can have substantial negative effects on health in quite potent ways. Another situation of disease from water-related climate change effects stems from harmful

algal blooms. Algal blooms are formed by an increase in algae or cyanobacteria in bodies of water, which often lead to a depletion of oxygen and decline in life in those bodies. They also pose a threat to human health. The cyanobacteria present from algal blooms can release toxins which cause liver, neurological, digestive, and skin disease.⁴ Additionally, diatoms, a type of algae which contribute to this depletion of oxygen in marine environments, produce domoic acid, a potent neurotoxin which can bioaccumulate in shellfish and finfish, and later impact human health as these organisms are consumed.³ Algal blooms have been an acute effect of environmental degradation, as increasing temperatures and pollution have disturbed the equilibrium in many marine ecosystems across the world.

Vector-Borne Diseases

Another pathway for a changing environment to influence the spread of disease is through vector-borne disease. Vector-borne diseases are primarily transmitted by “blood-sucking arthropods,” also known as mosquitoes and ticks.³ Diseases transmitted in this fashion include malaria, ebola, dengue fever, and Chikungunya fever.³ The risk for this type of disease is affected when the conditions for the vectors become more favorable, or interaction between human populations and vector populations are forced into closer proximity. This occurs with forest loss and loss of plant diversity, along with changes in temperature, humidity, and rainfall.³ For example, outbreaks of ebola have been suggested to be linked to intense deforestation in Africa, which has destroyed the habitat for bats, the natural hosts of the disease. Because of this habitat destruction, the bats were forced to alter their migration patterns which put them in closer proximity with human populations, and increased

likelihood of outbreaks.⁴ Separately, mosquito populations can increase in areas which experience a period of drought followed by a period of rewetting; this affects the water table, vegetation, and aquatic predators. Therefore, the highest risk area for infection is where human population is high, there is ongoing ecological disruption such as changes in land use or agricultural practices, and where the human and mosquito populations overlap.⁴ As the climate changes, different areas will become more suitable for these vectors; for example, tick populations will likely be able to expand northward in North America.⁴ The Intergovernmental Panel on Climate Change projects that 200 million more people will at risk for exposure to malaria with current expectations under climate change.⁴

As rainfall increases in various areas of the globe, and hotter and drier conditions afflict others, the potential for these types of diseases to spread and infect new populations from Chicago to Botswana increases in dangerous ways.³ One of the chief actions which should be taken in the effort to prevent such a catastrophe would be to learn more about the relations between these diseases and effects of climate change or environmental destruction. Many of the studies currently suggest what are oftentimes nonlinear and only “likely” influences. A degree of this speaks to the complex ways in which environmental factors impact disease agents, but other reasons include a simple lack of research into the subject. The gap speaks to the absence of overlap between environment and health professional fields; research continues to be siloed. A better understanding of the causes would allow us to more intelligently combat their effects.

Pollution

Our human health can also be affected by pollution, whether it be directly from air pollution or indirectly from consequences of chemical pollutants. Pollution historically has been a major human-induced threat to environmental health; now, we are finding that not only has it been a detriment to our natural ecosystems, but it persists as a potent threat to human health in a variety of ways as well.

Air Pollution

Air pollution is an increasingly significant direct agent of danger to human health as we continue our pollutive habits and fall short in cleaning up our atmosphere. Pollution of our atmosphere damages both human and environmental health. Concerning human health, it can manifest itself in a few different ways. The first way is through indoor air pollution. This comes about as a result of incomplete combustion of solid fuels, most prominently in developing nations where coal, wood, and charcoal make up a greater percentage of energy sources.⁴ The specific health effects resulting from indoor air pollution include respiratory infections, chronic obstructive pulmonary disorder, stroke, and heart disease.⁴ Between 2.6 and 4.4 million people die per year from indoor air pollution, most of whom are women and children.⁴ Over 2.8 billion are exposed. As a relatively under-appreciated subset of pollution effects, indoor air pollution continues to have dramatic impacts on human health. Once again, lack of understanding and connection between inefficient energy sourcing and regular causes of death or illness have proven an obstacle to confronting this issue.

Air pollution is also a danger when it is in the open atmosphere. Ground level ozone is one example: methane emissions can cause the photochemical reactions which produce ozone to occur in the

troposphere, the lowest dimension of Earth's atmosphere.³ This leads to cardiopulmonary mortality, along with crop reduction and decreased forest growth which can further affect health.^{3,4} It is suggested that nearly half of the deaths from the historic 2003 heatwave in Europe could actually have been caused by ozone exposure, intensified by the increased temperature and sunlight, rather than directly heat-related causes.³ Aeroallergens are another cause of human health effects under the umbrella of air pollution, specifically affecting individuals with asthma and exacerbating those conditions. These allergens, like fungal spores or plant pollen, increase with warmer weather and earlier flowering of some grasses.³ Droughts in particular can exacerbate allergen effects by spreading dust and pollen or spores. This specifically can expand the reach of these allergens, as winds carry the agents to new populations.

China provides a useful, if tragic, example when examining health effects of air pollution. According to a study from the University of California-Berkeley, air pollution kills around four thousand people a day in China, in the form of heart, lung, stroke, or other complications.⁵ One in six premature deaths in the country are due to air pollution, and approximately 38% of the population lives in conditions where the air is considered "unhealthy" by U.S. EPA standards.⁵ The smog is visible and very evident for people concerned with China's pollution problem; the degree of the underlying health effects it is having on the Chinese people is much less obvious and much more critical to understand if urgency is going to be stressed in addressing the country's polluting problem.

When translating the disability-adjusted life years due to particle air pollution, this epidemic costs approximately \$1.9 trillion a year, or 2.7% of the global economy.³ It would make sense that the

world should be willing to pay at least that, to prevent economic losses; however, we are still facing a growing threat from air pollution, one which has far-reaching effects on health across the globe.

Toxic Chemicals

Pollution does not just equate solely to air pollution, however. Exposure to toxic chemicals is another important health issue. This can become a problem through either inhaling, eating, or drinking polluted substances, especially as chemicals become bioaccumulated along a food chain.⁴ Chemicals such as pesticides from agricultural runoff, heavy metals used in cement, electronics recycling, pharmaceutical pollution, mercury and heavy metals in coal and oil combustion, and more all factor into a global crisis of exposure to dangerously unhealthy toxins as a result of careless waste.⁴ What this looks like across the world includes lead poisoning, especially in low-income countries, illness from pesticides due to exposure during agricultural work, and mercury poisoning from aquatic food sources.⁴ Some of the effects of these pollutants range from endocrine disruption to cancer risk, to neurobehavioral disorders.⁴ Another component to this issue is, once again, the absence of certifiable information. Of 300 chemicals which are currently produced in high quantities, only about half have sufficient info on toxicity and health impacts.⁴ With this dire information lack, we cannot even know the full extent to which dangerous chemicals that have been carelessly disposed of in our natural environment are affecting our health. If we are to properly address the root cause of these health impacts, it is critical to have a deeper awareness of precisely what the most effective actions will be in future policy.

Food Security and Nutrition

Threats to adequate food access have been exacerbated under climate change. With land degradation and development for agriculture and soil erosion, we are left with a loss of pollinators and increased exposure to pesticides.⁴ Soil itself is becoming unsuitable for crop growing as it is overused and the nutrients are depleted; this affects not only food production but increases likelihood of flooding, destroys biodiversity, and eliminates a critical carbon sink to offset emissions of greenhouse gases.⁴ Crop yields are vulnerable to changing temperatures, especially temperature variability which we are seeing increasing cases of in various parts of the world.⁴ The shift in rainfall patterns as a result of climate change has affected crop yield and changed in what regions certain crops can grow as well. This leads not only to overall scarcity from decreased yield but also to nutrient deficiencies as a result of lost crops. With this critical threat to crop yield and nutrition, human populations are facing a barrage of health effects. Lack of overall food availability implicates a range of further health consequences, as does lack of proper nutrient intake.

Diminishing freshwater availability is another factor to be considered. A combination of overdrawing from underground aquifers and climate change has led to massive losses in crops.⁴ Persistent droughts have played a large role in this loss. Water usage is also highly dependent on which type of food source is being produced. For example, beef requires eleven times the irrigation water per calorie than does poultry, eggs, or pork.⁴ Water scarcity in itself is a dire threat to communities as well; like food insecurity, it can mean subsequent health complications in addition to the threat from lack of water itself.

Besides crop yield, another issue surrounding food security is the threat to fisheries. Overfishing, warming waters, and acidification negatively affect marine life. Ocean acidification, which has risen substantially since the Industrial Revolution, causes shellfish like mussels and clams, and corals, to grow softer shells and skeletons which have greatly impacted their ability to survive.⁴ This means less food, especially for the growing number of people who are living near coastlines and derive much of their food stock from the oceans.

A particular issue with negative environmental effects on food availability is the fact that demand is, in fact, increasing. Roughly 40% of the global population is projected to be living in river basin regions which are under severe stress.⁴ Agriculture and the raising of livestock intensify this pressure, which can not only lead to food shortages but a lack in basic water availability and economic impacts as well. The situation now, therefore, is an intensifying threat from climate change and environmental destruction coupled with a growing stress on the global food stock in historically unprecedented levels.⁴

Climate Change and Weather - Direct Effects

Direct effects of climate change on human health include heat related effects, extreme weather events, and exposure to increased radiation. These impacts are unique because they can be felt as a direct result of a changing climate, even if they are often not attributed to such a cause. Many direct effects are not simple to attribute specifically to climate change. However, trends and changes in normal expectations help us to monitor approximately the degree of the effect that climate change is wreaking on human health.

First, there is the issue of heat related incidences. A study in Australia showed the ratio of summer to winter deaths in the country has steadily risen between 1968 and 2010.³ This figure certainly does not prove any type of causality, but it does begin to hint at a trend. Climate change can affect health through heat exhaustion (where the body temperature rises above 38°C) which can cause physical and cognitive impairment, or heat stroke (where the body temperature rises above 40.6°C) which can result in organ damage, unconsciousness, and even death.³ Another factor in this is the vulnerability of certain populations. First of all, with milder winters, there is a general higher likelihood of being impacted by heat, as seen during the 2003 European heat wave, which was preceded by a markedly mild winter.³ Urban populations are also under increased threat to heat-related incidences, as cities experience enhanced temperature rises. Finally, age, gender, and physical activity are also all characteristics which may exacerbate a heat wave's effects on health.

Another direct impact of climate change on human health comes in the form of natural disasters. For every one person killed in a natural disaster, an estimated additional one thousand are negatively affected.⁴ Floods are the most common and deadly natural disaster, and are increasing in frequency due to the effects of climate change on our planet.³ Floods cause not only drowning, but hypothermia and are often spread infectious diseases. These sorts of events not only impact immediate health and wellness, but can lead to long-term change. For example, floods often lead to contaminated drinking water due to overflowing sewage, fostering an environment for vector-borne diseases, and loss of livelihood and assets causing mental distress.³

As the ozone layer of our atmosphere is threatened by our growing emissions, direct effects from sun exposure have been found to increase. Radiation caused by this deterioration contributes to more cases of skin cancer and cataracts.³ In a US study, cases of squamous cell carcinoma rose 5.5% for 1°C of average temperature rise.³ What this equates to is essentially an additional 2% dose of UV radiation for every single degree Celsius in average temperature rise.³ Going outdoors in summertime has become more of a threat than in previous times as heat threats increase and the strength of UV radiation creates increasingly greater risks to health.

Mental Health

Mental health may be a particularly overlooked and underappreciated result of increasing climate change impacts, but this perception is certainly not for lack of tangible effect. One of the most significant relations of environmental change and mental health is displacement and destruction of one's home. Leaving one's home and familiar surroundings, loss of possessions, breaking social ties, absence of mental health services, and the difficulty of resettlement are all additional factors which could negatively impact mental health for peoples displaced or otherwise affected by environmental disaster.⁴ While the total degree of displacement due to climate change and related causes is unknown, the adverse mental health effects are more clear. Depression and post-traumatic stress disorder are common results of natural disaster and conflict related to environmental factors. Sexual violence is another tragic effect of conflict and disaster which can be attributed to climate in certain situations.

The distress associated with environmental impacts, from displacement to losing one's home, has been studied a bit further: solastalgia means specifically the distress resulting from environmental change.⁴ It includes aspects like the loss of familiar environment as natural disasters destroy homes and people are forced to abandon their homes due to unlivable conditions. At the core of solastalgia is an undercurrent of powerlessness and lack of control frequently present in contemplation when considering the future for our world under the threat of climate change. This commonly results in increased cases of depression, anxiety, and even suicide.⁴ Another aspect to this scenario is the question of empowerment to affect some degree of change. Engaging local communities in efforts to combat climate change and respond to natural disaster is one possibility in alleviating the negative mental health impacts of those changes.

Section Two: Building Resilience, Protection, and Adaptation with a Special Concern for Safeguarding Human Health

Understanding just how a changing environment impacts human health is a necessary first step if we are to combat the causes of those changes. Drawing on these understandings, we now may begin to explore a few possible theories for solutions.

First, there are some outstanding contradictions which must be reconciled. For instance, between the growing demand for food and the increasing threat to food security and environmental limits to production: it is crucial that we seek out sustainable intensification practices, such as drip-irrigation or genetically-modified organisms (GMOs).⁴ Achieving adequate global food production for an increasing population will take advanced scientific application. In China, for example, an

enhanced approach to soil-crop system management has been adopted which draws on knowledge of individual crop ecophysiology and soil biogeochemistry to maximize yields of rice, wheat, and maize, improving overall efficiency.⁴ It is going to take creative solutions such as aquaponics, growing plants in a soil-free fashion; this practice utilizes aquariums of fish to supply plants with nutrients, which in return filter the water and keep the fish healthy.² To combat overfishing we must examine sustainable aquaculture options, where fish can be bred and “harvested” for the sole purpose of being supplied as a food source. Human lifestyles will also need to change as we socially internalize the dangerous health effects that a changing environment can have. This includes dramatically reducing food waste, and altering our diets to one that is lower-impact.⁴ We must harmonize our health and environmental policies at all levels, and resist the urge to compartmentalize each of them into separate issue areas.

Throughout this next section of the article, we will examine some case studies and further detailed examples of options we have for transforming our lifestyles, our policies, and our relationship with the environment in a way that minimizes our contributions to destruction of the natural environment and, in turn, protects our collective human health from the dangerous effects of anthropogenic changes in our environment.

Regulation

One of the more popular attempts to combat climate change in the hope of minimizing its effects is through legislative regulation. Regulation can have positive impacts, but is often accompanied by dissension at the idea of government infiltration into private business practices.

Nonetheless, it has historically played a significant role, and continues to do so today. To highlight this, we can look at an example of a proposed (but ultimately unsuccessful) piece of U.S. legislation aimed at reigning in pollutive practices and protecting the American people from harmful effects of climate change

The Super Pollutants Act of 2015 was aimed at reducing short-lived climate pollutants, including black carbon, methane, and hydrofluorocarbons, all of which are significant contributors to both climate change and other more direct effects on human health; in fact, the reduction of these pollutants could result in an estimated prevention of two million premature deaths, according to the UN Environmental Program.⁶ The Act sought to effectively accomplish this mission through a variety of integrated measures. It called on a combination of federal agencies and global partnerships from the Arctic Council, to USAID, to the EPA, to the US Export and Import Bank to initiate practices and implement policies which were tailored to each agency's portfolio and touched on the wide reaching roots of the pollution problem.⁶ Through a multi-pronged approach which ranged from recommendations on conditional financing of sustainable energy projects to prioritizing international development projects which included provisions for black carbon mitigation, this bill had the potential to spur action across the necessary spectrum of factors which have a hand in contributing to the super pollutant emissions.

Sustainable Cities

Cities are often extra-vulnerable to environment related health effects. They also play a complex role in relation to climate change and pollution. On one hand, they offer opportunities for travel methods

which are more eco-friendly than single person cars; however, they also concentrate significant amounts of pollutants into one area and are warmer on average than suburban or rural areas which exacerbates heat-related events; both of the latter scenarios often lead to many health problems.⁴ Despite these complicated realities, there is a high degree of potential for cities to become beacons of sustainable living. By incorporating green spaces into city life, air pollution and carbon emissions can be reduced and rising temperatures can be regulated.⁴ Not only does this assist in alleviating threats of heat or pollution related health ailments, but it contributes to improved mental health as well.⁴ Overall, as population trends point to increasing populations in urban areas, cities small and large are going to be pressed to transform into sustainability centers. Thankfully, we have some existing models to build off of for inspiration.

The city of Burlington, capital of the state of Vermont, was the first U.S. city to transform its energy intake to 100% renewable energy.⁷ The city of 42,000 has been pointed to as a sustainability success story, mainly for its transition from a logging port on Lake Champlain to an international model for sustainable policy and livelihood. The city generates its energy from a combination of locally (and sustainably) harvested wood, a hydroelectric plant, a few wind turbines on a nearby hill, and an array of solar panels at its small airport.⁷ On top of this, they have not had to raise energy prices in nearly eight years; a feat accomplished in large part due to the investment in state-of-the-art scrubber technology which was implemented at the Burlington Electric station, allowing the city to earn the state's highest energy credits by selling their emission rights out of state.⁷ The city, though, offers a full picture of what a sustainable urban area can look like:

in addition to Burlington's impressive energy generation statistics, the city gets its food from a non-profit owned plot of 300 acre reclaimed floodplain land. The non-profit got its startup funds from the municipal government as part of an effort to support local entrepreneurship under the mayorship of a certain contemporary name in sustainability policy, Bernie Sanders, in his earliest days of public service. The food is now harvested and sold as part of a member-owned cooperative market located in the downtown.⁷

Although Burlington offers a glorious example of sustainable living, other efforts can easily fall short in ways that have detrimental effects on the natural environment. For example, a new development in southwest Florida is aiming to be the world's first solar-powered town.⁸ Those designing the town traveled across the globe in search of the best practices to shape their vision of what a futuristic municipality should look like in a world increasingly affected by climate change. Despite their successes in designing an impressive solar grid, integrated green space, and a locally sourced food system, the simple overlook of their local ecosystem could throw an ugly stain on the acclaimed development. The city's location threatens to cut off transit of one of the last remaining panther populations in the state.⁸ While the development itself poses no direct threats to the critically endangered species according to Fish and Wildlife Services, the proximity can cause enough damage on its own. The increased traffic, possibility of illegal hunting, and pollution all factor into the well-being of the panther population. The development is also in a possible projected area of expansion for the panther population.⁸ This example demonstrates the crucial necessity of careful, integrated planning methods when designing sustainable cities; and the importance of a

comprehensive solution where all aspects of the issue are solved in the most appropriate and efficient of manners.

Integrated Landscape Management

Solutions which include integrated land use techniques oftentimes can be optimal platforms for implementing policies and practices which will interrupt the causes of climate change and mediate its effects. Integrated landscape management (ILM) is more of a philosophy to approaching this broader issue than a specific policy platform. The idea behind it is to achieve multiple targets in sustainability in the most efficient, eco-friendly, and human-friendly way. Through the harmonization of planning, implementation, and monitoring, integrated landscape management offers an alternative to the siloed approach which plagues many of our national and international efforts in the fields of health, development, and sustainability. In an oversimplified word, it is all about "synergy."⁹ For example, it can look as simple as accomplishing the reduction of cases of Lyme's disease by reducing transmitter agents through protecting habitats by residential zones.⁴ In protecting these ecosystems, we also prevent biodiversity loss and maintain a critical carbon sink, all while keeping to the original goal of reducing cases of Lyme's disease. This is a prime example of how the health and environmental field of policy can and should be integrated, in order to maximize effectiveness of proposed solutions.

A particularly useful framework for illustrating this integration of the two fields can be found in the United Nations' Sustainable Development Goals (SDGs), which were adopted in 2015 as part of the 2030 Agenda.¹⁰ These seventeen goals are broken down further into 169 specific targets. The philosophy behind these goals and targets was to design them in such a

way so as to implicitly promote collaboration and integration of solutions. For instance, the Lyme's disease example given above can easily be considered to incorporate aspects of Goal 3, "Good Health and Well-Being," Goal 13, "Climate Action," and Goal 17, "Life on Land."¹⁰ The very design of these types of projects gives hope and vision for what future approaches to a wide variety of global challenges can look like. ILM empowers local communities, promotes transboundary cooperation between industries, and reduces costs by making solutions efficient.⁹

To provide a real-world case study example, we will look to the Imarisha Naivasha Board in the Lake Naivasha Basin of Kenya. This Basin includes national parks, bird sanctuaries, is home to over 700,000 people, and is the epicenter of the country's lucrative flower export industry.⁹ However, due to poor agricultural practices, over extraction of water, and uncoordinated resource management, the local environment became heavily strained. Not only were the natural ecosystems in the region under duress, but the floriculture, agriculture, and ecotourism industries were also placed in a direct line of threat by the environmental damage.⁹ The solution to this environmental crisis incorporated the philosophy of integrated landscape management to gather the multiple stakeholders together and organize a unified plan to save the region's natural environment. In establishing the Imarisha Naivasha Board, a combination of local government, NGOs, small-scale farmers, community groups, commercial flower growers, and others developed the "Lake Naivasha Integrated Management Plan" to properly address the variety of threats to their environment, local economy, and ways of life.⁹

When the UN first came out with its seventeen new SDGs, many were frustrated at the evident vague language and ambitious

breadth of the targets. Critics pointed to the SDGs as being too aloof, lacking in the tangible community-level actionables which would ultimately need to come about if these grandiose Goals were to be anything close to accomplished. What ILM offers is landscape-scale solutions to a global agenda.⁹ Although the Goals can be applied to varying degrees of unique issues facing communities in all corners of the globe, ILM dissects these Goals into meaningful actions to be undertaken at the most grassroots level all across the globe.

Conclusion

The changing environment we are experiencing today poses an unprecedented breadth of threats to our livelihoods, most poignantly to our human health. While causality between environmental causes and health effects is often difficult to prove because of lack of information and the fact that this is very much a new phenomenon, with conditions changing every day and throughout seasons, there is a substantial degree of studies which show wide-ranging areas of correlation which has meant travesty for the health of whole populations in every corner of the globe. We as inhabitants of this unique planet have failed to conscientiously self-regulate our waste, our emissions, and our destruction on the natural environment. For too many in our societies today, the insight into the crisis nature of this issue is dulled, or intentionally overlooked in favor of profit, the status quo, or fear of what acknowledging this intimidating reality means.

Ignoring the realities of climate change today must be understood to equate to risking hundreds of thousands of lives which have been shown to be at the mercy of a changing environment and its harmful effects. Anything less than this dims the brutality of the crisis and lulls us into apathy

and inaction. It is dangerous, deadly, and unacceptable. Our response, therefore, must be bold and it must be comprehensive. As I have demonstrated above, when solutions are designed in an integrated fashion, incorporating a variety of stakeholders, and not overlooking any component of the broader environmental situation, we have seen success and hope for a sustainable future. It is through initiatives under this philosophy, and only in this resolute and meticulously premeditated fashion can we hope to alleviate the health burden of our human-induced environmental change.

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THE IMPACT (OR LACK THEREOF) OF RECENT ENVIRONMENTAL NEGOTIATIONS ON CLIMATE INDUCED DISPLACEMENT

AARON SILBERMAN

Abstract

As the effects of climate change on the human condition become increasingly apparent, a growing body of literature has been authored concerning climate induced displacement. While desertification, sea level rise, extreme weather events, and other climatic factors have increased the number of climate displaced persons (CDPs), political and legal frameworks have been slow to respond to the burgeoning crisis. Despite its unprecedented nature and significant accomplishments, the 2015 Paris Agreement includes little mention of displacement, migration, or refugees; the same is true of the resolutions adopted at the second session of the United Nations Environment Assembly and the 22nd Conference of the Parties. This paper offers an analysis of the COP21, UNEA II, and COP22 environmental negotiations and specifically focuses on how the language of the aforementioned gatherings have, or have not, affected the nexus of climate change and displacement. This evaluation yields the following: that COP21, UNEA II, and

COP22 have not yet had significant impact on the status of current and potential CDPs, and that vulnerable communities require additional legal and political frameworks to ensure dignified migration.

Introduction

On October 17th, 2016, Anote Tong, the former President of the Republic of Kiribati (“Kiribati”), delivered a set of remarks at Georgetown University in Washington, D.C. During his speech, President Tong focused on climate induced displacement, one of the manifestations of climate change that is increasingly under the international microscope:

Weather and climate are without a doubt the most popular ice-breakers between unfamiliar people trying to establish some kind of a connection. And today, climate change has also become the hottest topic of discussion in the international arena. But what do climate change and recent international negotiations on this issue mean for countries in different parts of the world, especially for those most vulnerable, like Kiribati? The brutal reality is that, for those of us living on low-lying atoll islands, our future survival as a people and a culture is very much in question. The scenarios projected by the Intergovernmental Panel on Climate Change (IPCC) indicate that, even if the pledges on emissions made in Paris are fully delivered, my homeland will still be underwater well within the century.¹

¹ Tong, Anote. 2016. *The global challenge of climate-induced migration*. Georgetown University, Washington, D.C.: <https://globalfutures.georgetown.edu/responses/the-global-challenge-of-climate-induced-migration>.

President Tong's remarks at Georgetown University, much like the speeches he has made throughout a lengthy career in public service, were an attempt to analyze the phenomenon of people being displaced from their homes and/or countries by various manifestations of climate change (e.g., rising sea levels, desertification, extreme weather patterns). This article seeks to provide context for the urgency behind many of President Tong's claims and delve into the impacts that recent, international environmental negotiations have had on climate induced displacement. Specifically, this article will examine the results of the following international environmental negotiations: the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21); the Second United Nations Environment Assembly (UNEA II); and the 22nd Conference of the Parties to the United Nations Framework Convention on Climate Change (COP22). In order to properly evaluate the aforementioned Conferences and Assembly, this article will provide an overview of the history of international environmental negotiations as well as a review of legal code and political convention insofar as they pertain to climate induced displacement

The issue of climate induced displacement is increasingly germane at such negotiations given recent studies that have been published and contain estimates of the number of people who may be potentially forced from their homes by climate change. According to one such study conducted by the International Organization for Migration, between 50 million and 350 million people could be displaced by climate change by 2050.² The scope of this issue extends throughout the world: communities

² Laczko, Frank, and Christine Aghazarm. 2009. *Migration, environment and climate change: Assessing the evidence*. Switzerland: International Organization for Migration.

that can legitimately lay claim to being displaced by climate change range exist in Kiribati,³ the People's Republic of Bangladesh,⁴ the State of Alaska,⁵ and many more countries.

It is worth briefly noting that, throughout this article, those who are or will be displaced by climate change will be referred to as climate displaced persons ("CDPs"). This terminology captures both those who are displaced by climate change and remain within their country of origin and those who are forced to cross national borders. This article is not unique in utilizing such terminology, as is demonstrated by the work of Rosemary Lyster and others.⁶ However, by making use of the term CDPs, this article seeks to avoid entering into any discussion regarding the merits of such phrases as "climate refugees" or "climate migrants." While some, such as François Gemenne, argue that it is vital for CDPs to be referred to as "climate refugees" in order to acknowledge the fact that many displaced persons will come from developing countries that have historically contributed fewer greenhouse gas emissions ("GHG emissions") than developed countries,⁷ the Nansen Conference on

³ Farbotko, Carol. 2010. Wishful sinking: Disappearing islands, climate refugees and cosmopolitan experimentation. *Asia Pacific Viewpoint* (51): 47.

⁴ Chaturvedi, Sanjay. 2010. Geopolitics of fear and the emergence of 'climate refugees': Imaginative geographies of climate change and displacements in Bangladesh. *Journal of the Indian Ocean Region* 6 (2): 206.

⁵ Marino, Elizabeth. 2012. The long history of environmental migration: Assessing vulnerability construction and obstacles to successful relocation in shishmaref, Alaska. *Global Environmental Change* 22 (2): 374.

⁶ Lyster, Rosemary. 2015. Protecting the human rights of climate displaced persons: The promise and limits of the United Nations Framework Convention on Climate Change. In *Research handbook on human rights and the environment*, eds. A. Grear, L. Kotze. UK: Edward Elgar Publishing.

⁷ Haley-Benjamin, Vanessa, Carl Bruch, François Gemenne, Michael B. Gerrard, W. Chris King, and Benjamin Schachter. 2016. The debate: Can the world community handle environmental refugees? *The Environmental Forum* Nov./December 2016 : 52.

Climate Change and Displacement in the 21st Century acknowledged that no terminology referring to persons displaced by climate change has yet been universally acknowledged or adopted.⁸ Given this ambiguity vis-à-vis the propriety and commonness of certain terms, this article will attempt to steer clear of vocabularic debate as best as is possible by exclusively utilizing the CDP designation.

Relevant History

A Review of the History of the COP

The COP, which occurs on an annual basis and rotates between different party nations within the Conference, is the decision making body of the United Nations Framework Convention on Climate Change (“UNFCCC”). According to the website of the UNFCCC, “All States that are Parties to the Convention are represented at the COP, at which they review the implementation of the Convention and any other legal instruments that the COP adopts and take decisions necessary to promote the effective implementation of the Convention, including institutional and administrative arrangements.”⁹ The COP works to develop policies that further the mission of the UNFCCC, per Article 2 of the Convention, to stabilize greenhouse gas emissions in order to avoid harmful, anthropogenic effects within the climate system.¹⁰ Since it began in 1995, the COP has met 22 times,

with the most recent edition having been held in Marrakech, Morocco. Different committees have been created over the history of the COP (e.g., an Adaptation Committee), and leadership of the COP is coordinated by the Secretariat of the UNFCCC and a rotating chair of the COP that is selected from the membership of the Conference.¹¹ As Ramakrishna described in the late 1990s, one of the main functions of the UNFCCC is to coalesce and support efforts to aid developing countries that have contributed fewer GHG emissions to climate change than developed countries; have access to fewer resources than developed countries; and are often geographically disadvantaged insofar as they are more likely to suffer the consequences of climate change earlier than developed countries.¹²

A Review of the History of the UNEA

The UNEA first occurred in June 2014 in Nairobi, Kenya, the headquarters of the United Nations Environment Programme (“UNEP”).¹³ The UNEA is part-governing council, part-forum: it is attended by all United Nations member states (either by governmental representatives and/or members of respective countries’ civil societies) and assists in the contemplation and drafting of policy pertaining to the global environment. The UNEA was mandated into existence at the 2012 Rio+20 United Nations Conference on Sustainable Development in order to augment the

⁸ Hantscher, Sinja. 2016. The united nations high commissioner for refugees’ discourse on environmentally displaced persons: A double-edged sword? In *Organizational perspectives on environmental migration.*, eds. Kerstin Rosenow-Williams, François Gemenne. 1st ed., 93. New York: Routledge.

⁹ Conference of the parties (COP). 2014. Accessed: 2017. Available from <http://unfccc.int/bodies/body/6383.php>.

¹⁰ Egenhofer, Christian, ed. 2008. *Beyond Bali: Strategic issues for the post-2012 climate change regime*. Brussels: Centre for European Policy Studies.

¹¹ Consolidated historical membership charts. 2016. Accessed: 2017. Available from http://unfccc.int/files/bodies/election_and_membership/application/pdf/consolidated_historical_membership_charts.pdf.

¹² Kilaparti, Ramakrishna. 2000. The UNFCCC - history and evolution of the climate change negotiations. In *Climate change and development.*, ed. L. Gómez Echeverri, 47. New Haven: Yale School of Forestry and Environmental Studies.

¹³ First united nations environment assembly. 2014. Accessed: 2017. Available from <http://www.unep.org/unea1/en/>.

operational efficiency of the UNEP and its Governing Council, which had been meeting regularly since 1973.¹⁴ The first UNEA had a thematic focus on the Sustainable Development Goals (“SDGs”), whereas UNEA II’s main theme was “Delivering on the Environmental Dimension of the 2030 Agenda for Sustainable Development.”¹⁶ According to official UNEA documentation and the website of the UNEA, 17 resolutions were adopted at the first UNEA,¹⁷ and 25 resolutions were adopted at UNEA II.¹⁸

Relevant History and Context of Climate Induced Displacement

For much of the 20th and 21st centuries, the predominant term used in debates regarding climate induced displacement was “environmental refugees.” The earliest deployment of that term is most correctly credited to Lester Brown, the founder of the World Watch Institute, in writings published in the early 1970s.¹⁹ However, “environmental refugees” did not enter into common parlance until the mid-to-late 1980s with a UNEP report written by Essam El-Hinnawi.²⁰ As James Morrissey,

in one of the definitive accounts of climate induced displacement’s history, puts it:

[El-Hinnawi’s paper’s] effectiveness in raising the profile of the 'environmental refugee' was that El-Hinnawi provided the first formal definition of the term ["environmental refugee"]. This was important for operationalizing it, which in turn allowed for a blossoming of work that focused on both documenting the existence of migration forced by environmental crises, and on formulating numerical projections of future 'environmental refugees'.²¹

Following the 1985 UNEP report, the pace of research being conducted on climate induced displacement and the potential number of CDPs increased throughout the 1990s and early 2000s. One of the most influential authors of this era, Norman Myers, was particularly known for his claims that enormous numbers of CDPs did exist and would grow at an exponential rate in the early to mid-2000s: in one of his most recent publically-available works, Myers asserts that “As far back as 1995 ... environmental refugees totaled at least 25 million people,” and that as many as 200 million CDPs could exist in an unspecified near future.²² While Myers’ work is laudable, insofar as it has likely increased the amount of attention that policy and lawmakers have paid to climate induced displacement, his estimates are often outliers relative to other studies, and his predictions have been

¹⁴ Sahba, Naysán. 2014. *Our Planet*. Nairobi, Kenya: United Nations Environment Programme.

¹⁵ United Nations Environment Programme. 1973. Paper presented at Report of the Governing Council on the work of its first session, New York.

¹⁶ United Nations Environment Programme. About UNEA. 2016. Accessed: 2017. Available from <http://web.unep.org/unea/about-unea>.

¹⁷ United Nations Environment Programme. 2014. *Resolutions and decisions adopted by the united nations environment assembly of the united nations environment programme at its first session on 27 june 2014*. Nairobi, Kenya.

¹⁸ United Nations Environment Programme. List of resolutions adopted at UNEA-2. 2016. Accessed: 2017. Available from <http://web.unep.org/unea/list-resolutions-adopted-unea-2>.

¹⁹ Saunders, P. 2000. Environmental refugees: The origins of a construct. In *Political ecology: Science, myth and power.*, 218. London: Oxford University Press.

²⁰ Morrissey, James. 2012. Rethinking the 'debate on environmental refugees': From 'maximalists and

minimalists' to 'proponents and critics'. *Journal of Political Ecology* 19 : 36.

²¹ Ibid.

²² Myers, Norman. 2005. Contribution by prof. norman myers, green college, oxford university, U.K., "environmental refugees: An emergent security issue". Paper presented at 13th Economic Forum, Organization for Security and Co-operation in Europe (OSCE), Prague, Czech Republic.

publicly questioned by peers and media outlets.²³

Though there is consensus among experts working in both climate change and migration studies that the number of displaced persons will be substantial, estimates range from 50 million to 1 billion in the coming decades.²⁴ Given such a wide range, this article will seek to avoid predicating itself on more specific estimates that may prove to be inordinately inaccurate in the near future. An example of a guiding document for this article would be a recent discussion paper published by the Office of Conflict Management and Mitigation that acknowledges the likelihood of some tens of millions of CDPs while also opening the door for a larger number that can be clarified at a later date.²⁵

Policymakers, military leaders, and legal experts have been interpreting and responding to the work of climate induced displacement researchers for close to three decades. Often, it is common for policymakers in both national (e.g., the U.S. Army) and international organizations (e.g., the United Nations) to frame climate induced displacement in security terms and depict CDPs at potentially destabilizing factors. As Nash deftly examines, even the United Nations High Commissioner for Refugees (“UNHCR”), the arm of the UN that is most centered around quantifying and supporting refugees and migrants, has demonstrated a predilection for ‘securitizing’

CDPs.²⁶ Securitizing rhetoric, or ‘problematizing rhetoric,’ is best understood as being any language that is applied to an issue or group of people (in this case, climate induced displacement and CDPs) and typically classifies said issue or group as being likely threats and/or threat-augmenting factors. The reason that such language might be employed is to shock governmental officials, large financial donors, or others into taking action on an issue that might otherwise be perceived as being relatively slow moving.²⁷ Additional examples of the securitization of CDPs abound and include, but are not limited to, a 2015 Department of Defense Report that evoked and focused on the likelihood that, unchecked, climate induced displacement would augment pre-existing security threats and exacerbate the development of new security threats.²⁸

Before effectively analyzing the impacts of COP21, UNEA II, and COP22, one must briefly examine the United Nations Convention Relating to the Status of Refugees (“1951 Refugees Convention”). The 1951 Refugees Convention is the fundamental, international legal underpinning of what countries should do, individually and collectively, in response to refugees. Ratified by 145 nations, the 1951 Refugees Convention provides for a definition of refugees, describes the obligations of states to care for said refugees, and attempts to quell any potential discontent with said obligations that could emerge and weaken the ties that bind states

²³ Barnes, Hannah. 2013. How many climate migrants will there be? *BBC*, 3 September 2013. Accessed 2016.

²⁴ Ferris, Elizabeth. 2015. Climate change, migration and the incredibly complicated task of influencing policy: Conference on ‘Human Migration and the Environment: Futures, Politics, Invention.’ Durham University, Durham, UK

²⁵ Null, Schuyler, and Lauren Herzer Risi. 2016. *Navigating complexity: Climate, migration, and Conflict in a changing world*. Washington, D.C.: Office of Conflict Management and Mitigation; United States Agency for International Development; Woodrow Wilson International Center for Scholars.

²⁶ Nash, Sarah. 2016. Towards an ‘environmental migration management’ discourse: a discursive turn in environmental migration advocacy? In *Organizational Perspectives on Environmental Migration*, eds. Kerstin Rosenow-Williams, François Gemenne. 1st ed., 198. New York: Routledge.

²⁷ Ibid.

²⁸ Department of Defense. 2015. *National security implications of climate-related risks and a changing climate*. Department of Defense, 8-6475571.

to each other and their duties.²⁹ For the purposes of this article, it is worth carefully highlighting the Convention's parameters for who may, and may not, constitute a refugee:

[The term "refugee" shall apply to those who,] owing to well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.³⁰

This foundational, internationally-agreed upon document does not include reference to environmental or climatic factors that might justify benefits being allotted to those who are displaced by phenomena unrelated to race, religion, nationality, and other such factors. Therefore, the majority of CDPs, unless other factors complicate their displacement, do not currently receive any international protection via the 1951 Refugee Convention. This fact has bedeviled advocates and the lawyers of CDPs for years, and all recent international environmental negotiations that have attempted to contend with the issue of climate induced displacement have been forced to address, in one way or another, the limitations imposed by the 1951 Refugees Convention.

Effects of the Paris Agreement and post-Paris Negotiations

²⁹ *Convention and Protocol Relating to the Status of Refugees*, (2010): Convention Relating to the Status of Refugees, <http://www.unhcr.org/en-us/3b66c2aa10>.

³⁰ Ibid.

Given that the COP21, UNEA II, and COP22 negotiations have all occurred in the recent past, as well as the fact that it is difficult to accurately extrapolate the longitudinal impacts that said negotiations will have on climate induced displacement politics and law, this article exclusively analyzes the three negotiations based on the formal and informal language that they adopted vis-à-vis CDPs. Whereas the typical COP and UNEA produce numerous resolutions that pertain to various, disparate subjects, COP21 was unique because of its almost singular focus on an all-encompassing goal: the finalization of the so-called Paris Agreement. Therefore, with the Paris Agreement dominating the results of COP21 to a near-exclusive degree, analysis of the impacts of COP21 on climate induced displacement necessarily focuses on the Agreement.

Given this, a simplistic search mechanism was applied to the Paris Agreement in order to ascertain whether it addressed climate induced displacement and/or CDPs. For searches of the Paris Agreement, as well as other documentation produced during COP21, UNEA II, and COP22, pertinent synonyms for the term "displacement" were searched for in order to ensure that no mention of the subject would go overlooked. Such terms included "refugee(s)," "migrant(s)," "migration," "movement," "resettle," and other, similar variations. Applying these search parameters to the Paris Agreement yielded only one result, found in the Preamble (emphasis added):

Acknowledging that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous

peoples, local communities, *migrants*, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity...³¹

This allusion to climate induced displacement in the Paris Agreement was significant for several reasons. The first was the historic nature of the Agreement itself: following on the years of civil society calls for an overarching, international treaty on climate change, the final text of the Paris Agreement was greeted in some corners with joy and others with something closer to despair.³² As Jacquet and Jamieson describe it, the Paris Agreement, by virtue of its largely-voluntary and non-binding set of principles, relies on civil society more than previous international agreements for its own effective implementation.³³ Given this, the Agreement's official acknowledgement of climate induced displacement, and more specifically the rights that CDPs should be accorded, functions as a clarion call for advocates and policymakers to push their national governments in order to proactively address the thorny issue.

The second, more disquieting reason is the fact that the language included in the final documentation was altered from earlier draft language that was much more forceful. As Savaresi notes, a climate induced displacement "coordination facility" was acknowledged in early drafts of the Agreement: by the time COP21 concluded, that concrete language had been erased in favor of a more nebulous affirmation of the

existence and rights of CDPs.³⁴ However, in an accompanying document that was agreed upon in order to facilitate the adoption of the Paris Agreement, more specificity was given to the climate induced displacement issue. In the document, the COP calls for the development of a task force that would be entrusted with the creation of recommendations for how the international community can best "avert, minimize and address" climate induced displacement.³⁵ Inasmuch as a relatively short amount of time has passed since the conclusion of COP21, it is difficult to objectively and conclusively determine which of the two aforementioned documents has had a more significant impact on the state of affairs regarding climate induced displacement. However, given the more concrete nature of the Adoption of the Paris Agreement versus the Paris Agreement itself, the former has, and will likely have, a greater effect on CDPs and their affairs. With that being said, it is clear that COP21 was focused on international and national emissions targets to the extent that it was unable to devote a significant portion of time to climate induced displacement, thus handicapping its ability to include impactful reference to CDPs in its final texts.³⁶

Following the December, 2015 conclusion of COP21 in Paris, France, UNEA II occurred in Nairobi, Kenya, in May 2016. According to the official website of the UNEA, a total of 25 resolutions were formally adopted by the Assembly's end.³⁷

³¹ United Nations. *Paris Agreement* (12/12/2015).

³² Jacquet, Jennifer, and Dale Jamieson. 2016. Soft but significant power in the paris agreement. *Nature Climate Change* 6 : 643.

³³ Ibid.

³⁴ Savaresi, Annalisa. 2016. The paris agreement: A new beginning? *Journal of Energy & Natural Resources Law* 34 (1):16.

³⁵ *Adoption of the Paris Agreement*, (2015): , <http://unfccc.int/resource/docs/2015/cop21/eng/109.pdf>.

³⁶ Warren, Phillip. 2016. Evaluating the 'climate change displacement coordination facility': How the UNFCCC can address forced migration after paris COP21. *Columbia Law Review* Forthcoming.

³⁷ List of resolutions adopted at UNEA-2. 2016. Accessed: 2017. Available from <http://web.unep.org/unea/list-resolutions-adopted-unea-2>.

In order to ensure the analysis of these resolutions was uniform with the review conducted on COP21's documents, the same search terms and parameters were utilized in both cases.

Upon application of the aforementioned search parameters to the official resolutions adopted at UNEA II, it was found that only two contained any language that pertained to climate induced displacement. The first resolution, *Protection of the Environment in Areas Affected by Armed Conflict* ("2/15"), predominantly focused on the intersection between environmental degradation and armed conflict; specifically, the resolution sought to reaffirm pre-existing initiatives that pertained to environmental peacebuilding and support the development of new endeavors that might be able to address needs that are not presently being met by the international community.³⁸ 2/15 acknowledged the causal links between environmental degradation (e.g., as might be caused by armed conflict) and displacement; additionally, 2/15 recommended that the Executive Director of the UNEP provide additional assistance to those countries that may be affected by armed conflict, displacement, and environmental degradation.³⁹ However, neither 2/15's acknowledgement nor its recommendation explicitly addressed climate induced displacement outside of the lenses of environmental degradation and environmental peacebuilding.

The other UNEA II resolution that referred to climate induced displacement, *Combating Desertification, Land Degradation and Drought and Promoting Sustainable Pastoralism and Rangelands*

("2/24"), included language that posited that sustainable, proactive land management practices could help ameliorate the likelihood of displacement occurring; with that being said, 2/24, much like 2/15, did not explicate or investigate the plight of CDPs in its own terms; rather, it did so in the contexts of desertification and land degradation.⁴⁰ Beyond 2/15 and 2/24, no other official UNEP or UN documentation that originated during UNEA II could be found that related to climate induced displacement.

The final, recent international environmental negotiation that this article evaluates is COP22, which concluded in December 2016 in Marrakech, Morocco. Perhaps the most well-known document to have been generated at COP22 is the Marrakech Action Proclamation For Our Climate And Sustainable Development ("Marrakech Proclamation"), which organizations and media outlets in some corners interpreted as a rebuttal to the then-President Elect Donald Trump's having cast aspersions on the science and policy endeavors of the UN.⁴¹⁴²⁴³ However, in applying the same search parameters that were applied to COP21 and UNEA II to the Marrakech Proclamation, it is revealed that the document contains no mention of migration, displacement, refugees, the movement of people, or CDPs.⁴⁴ Though the

⁴⁰ United Nations Environment Programme. 2/24. *Combating Desertification, Land Degradation and Drought and Promoting Sustainable Pastoralism and Rangelands*(05/23-27/2016, 2016).

⁴¹ King, Ed. 2016. Marrakech call decoded: UN sends trumpf its climate demands. *Climate Home*, 15/11/2016, 2016.

⁴² Editorial. 2016. Marrakech: Climate conference in grim political weather. *Katoikos.eu*, 11/22/2016, 2016.

⁴³ Venkat, Vidya. 2016. Marrakech action proclamation sends out a strong signal on climate. *The Hindu*, 18/11/2016, 2016.

⁴⁴ Marrakech Action Proclamation for our Climate and Sustainable Development (2016). https://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/marrakech_action_proclamation.pdf

³⁸ United Nations Environment Programme. 2/15. *Protection of the Environment in Areas Affected by Armed Conflict*(5/23-27/2016, 2016).

³⁹ Ibid.

document is short and broad, it does mention several facets of climate change and goals with specificity (e.g., a goal of \$100 billion for developing countries' mobilization and sustainable development); given the fact that the document was signed by all attendees at COP22, it is fair to surmise that climate induced displacement did not draw the same level of consensus that renewable energy deployment, sustainable development, and other topics did.⁴⁵

At COP22, 35 official 'Decisions' were adopted by the COP and two other, related governing bodies.⁴⁶ The preponderance of these decisions, upon review, does not contain language or allusion to climate induced displacement and/or CDPs. Only one Decision, entitled *Warsaw International Mechanism for Loss and Damage associated with Climate Change* ("Warsaw International Mechanism Decision"), pertained to climate induced displacement; however, unlike the two resolutions discussed above that were adopted at UNEA II, the Warsaw International Mechanism Decision's language regarding CDPs indicates both precision and an apprehension of the remarkable challenge that is climate induced displacement.^{47,48} That is to say, the Warsaw

International Mechanism Decision is a Decision, adopted by all UN member states, that clearly evinces the challenge that CDPs face and seeks to provide specific research and assistance into climate induced displacement without such research and assistance being interpreted through a secondary (e.g., environmental peacebuilding, sustainable development) lense.

One additional, distinct but interrelated document presented at COP22 is worth noting: the *Report of the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts* ("Report of the Executive Committee of the Warsaw Mechanism"). The Executive Committee of the aforementioned International Mechanism presented this report to UNFCCC member states during COP22's proceedings. In the Report, both migration and climate induced displacement are specifically mentioned over two dozen times.⁴⁹ The Report of the Executive Committee of the Warsaw Mechanism is predominantly a review of the work of the Warsaw International Mechanism in the 12 months following COP21; therefore, it does not contain much new information, research, or pledges to action. However, there is one exception to that rule:

⁴⁵ Ibid.

⁴⁶ United Nations Framework Convention on Climate Change. Decisions adopted by COP 22 and CMP 12 and CMA 1. 2017. Accessed: 2017. Available from <http://unfccc.int/2860.php#auv>.

⁴⁷ *Warsaw International Mechanism for Loss and Damage Associated with Climate Change*, (2016): , http://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/auv_cop22_i7_wiml.pdf.

⁴⁸ In order to avoid confusion, it is worth clarifying that this decision is named after an organization called the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts ("Loss and Damage Mechanism"). The Loss and Damage Mechanism was established at COP19 in Warsaw, Poland, and is dedicated to investigating and promoting methodologies by which loss and damage caused by climate change can be properly accounted for by the international community. The Loss and Damage Mechanism has, until this point, proved to be one of the main channels that the UN and its member states have utilized in order to officially appraise the nature of

climate induced displacement and other manifestations of climate change that explicitly involve damages incurred on both developed and developing countries. Reference: United Nations Framework Convention on Climate Change. Warsaw international mechanism for loss and damage associated with climate change impacts. 2016[2017]. Available from http://unfccc.int/adaptation/workstreams/loss_and_damage/items/8134.php.

⁴⁹ Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts. 2016. *Report of the executive committee of the warsaw international mechanism for loss and damage associated with climate change impacts*. UNFCCC, GE.16-17845(E).

The task force [on climate induced displacement underneath the Warsaw International Mechanism] is to deliver its recommendations [viz. climate induced displacement] no later than at COP 24 and it may assist the Executive Committee in guiding the implementation of the Warsaw International Mechanism, in an advisory role, specifically on activities related to enhancing the understanding of and expertise on how the impacts of climate change are affecting patterns of migration, displacement and human mobility, and the application of such understanding and expertise.⁵⁰

The significance of this section of the Report of the Executive Committee of the Warsaw Mechanism is that it attaches a hard deadline to international recommendations regarding climate induced displacement. Insofar as can be stated after review of the body of work created during COP21, UNEA II, and COP22, this Report breaks new ground by establishing an end date for the first phase of the process by which recommendations on how to respond to CDPs would be created and subsequently implemented. It could be argued that the most significant outcome of COP22 vis-à-vis climate induced displacement was the presentation of this Report and its assurances that, by COP24, recommendations for how nations should respond to CDPs will be up for public consideration. This presentation will likely take place in the Polish city of Katowice, where the Republic of Poland and the UNFCCC announced COP24 will take place. Efforts to bring COP24 to Poland were spearheaded by Polish Environment Minister Jan Szysko, who will likely help to oversee the conference, and the presentation

on climate induced displacement, when it occurs in 2018.⁵¹

Conclusion

In conclusion, this article's objective was to analyze the impacts that COP21, UNEA II, and COP22 have had on the state of global, climate induced displacement by reviewing all official documentation generated during those negotiations. Despite numerous positive developments within the official, UN-sponsored environmental negotiations sphere (e.g., the Paris Agreement's acknowledgement of the rights of CDPs, UNEA II's two resolutions and their allusions to climate induced displacement, the COP22 announcement of a deadline for international recommendations on climate induced displacement), it is fair to assert that an insufficient amount of work has been accomplished in these recent conferences and assembly in order to bridge the gap created by a lack of political and legal protection for CDPs. The efforts of participants of COP21, UNEA II, and COP22 are likely to be viewed as important by future historians who themselves will be looking over the history of climate displacement policy. However, by COP22's conclusion, CDPs were in approximately the same standing as they were at the opening gavel of COP21.

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⁵¹ United Nations Framework Convention on Climate Change. Katowice Announced as Host Venue of UN Climate Change Conference COP 24 in 2018. Accessed: 2017.

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ENGAGING NARRATIVES: ENVIRONMENTAL ESSENTIALISM AND INTERSECTIONAL JUSTICE

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Introduction

When we consider environmental challenges, especially in a policy-oriented context, there is an understandable predisposition to be analytical and strategic in the pursuit of viable political and economic solutions. There is a basic recognition at work in most quarters that the mounting crises in our midst—from toxification and degradation to resource conflicts and climate destabilization—are monumental in scope, and that they require coordinated, multilayered efforts in order to be remediated. Governmental representatives, private sector entrepreneurs, civil society organizations, and on-the-ground practitioners generally converge around the core idea that environmental issues are escalating, and a confluence of political, economic, technological, and informational mechanisms are required in order to address them meaningfully. As such, the scope of environmental engagement largely resides in the technical and political realm, yielding a policy-driven framework defined mainly by diplomatic negotiations and bilateral agreements.

Indeed, these are all potent mechanisms for addressing such complex problems, yet they only tell part of the story. Beyond considerations of political economy, governance, data, and technology, there are the narratives, perspectives, and livelihoods of multitudes of people around the world who experience these issues and challenges in direct and concrete ways. Exploring and validating the interior and emotive domains of coping with profound environmental challenges—including motivations, deprivations, reflections, accommodations, and resistances—can inform the policymaking sphere in critical ways. The adaptation of these narratives could itself reproduce, rather than challenge, the power dynamics that underlie the causes of environmental injustices if applied uncritically. The native voices could be coopted in ways that cast these people and places as symbolically valorized *others* or powerless victims that are in need of protection by *us*. However, by recentering these narratives, a critical stance is being cultivated in helping to unpack the potential pitfalls of an increasing tendency to highlight personal stories as a means of asserting greater technical control. In some cases, these patterns go so far as to affirm historical identity constructions that raise fundamental issues of justice.¹ This article critically explores these issues, striving to investigate the narrative terrains of environmental engagement as a means of cultivating more robust policies, in the belief that durable solutions to profound crises must address issues at the political and personal levels alike.

In this work, we are guided by the realization that the political and personal spheres are inherently interconnected, and

¹ Dickinson, Elizabeth. 2012. Addressing Environmental Racism Through Storytelling: Toward an Environmental Justice Narrative Framework. *Communication, Culture & Critique* 5 (1): 57-74.

are continually being shaped by each other; it is precisely this dialectical relationship that leads us to an inquiry into how narratives reflect our understanding of both realms. As such, narratives of empowerment can be coopted by the larger political forces that created conditions of exploitation in the first place, necessitating a critical re-reading of both the narratives and the power dynamics involved in creating and communicating them. In mapping this terrain, we draw upon materials from policy and academic spheres, as well as publications from advocacy and entrepreneurial sectors, with a specific focus on how gender shapes or gets shaped in these narratives. In particular, the identification of “stakeholders” in environmental governance forums at the global scale often devolves upon a top-down model in which decisions are taken by state or corporate actors, leaving individuals and communities in bystander (or even demonstrator) role. The implications for women in this dynamic are especially problematic, since “a sensitive approach to addressing gender-specific vulnerability and resilience ... is still lacking in policy on the environment and conflict.”²

Here, we seek to encourage a more participatory process by straightforwardly bringing voices that are often excluded to the fore, through a critical discourse analysis of current policymaking and marketing trends within environmental efforts. Critical discourse analysis examines “social inequality as it is expressed, constituted, legitimized, and so on, by language use,”³

² Reid, Alex. 2017. Understanding Gender, Conflict, and the Environment. *Toxic Remnants of War Project* (June 5). Accessed 2017. Available from <http://www.trwn.org/understanding-gender-conflict-and-the-environment/>

³ Weiss, Gilbert, and Ruth Wodak, eds. 2003, 15. *Critical Discourse Analysis: Theory and Interdisciplinarity*. London, UK: Palgrave Macmillan.

and explores how power and social relationships manifest in written or spoken language. Using this approach, we examine terms such as “victims” or “heroes” not simply as a description of someone’s inherent status, but as an embodiment of who has the power to ascribe status to others. Our intention is to frame these issues of power, representation, and legitimation for further exploration, highlighting examples of how personal narratives of potential environmental empowerment can be utilized by powerful actors for divergent purposes, and how these forces mirror patterns found vis-à-vis the role of women in many developing regions of the world. In order to do so, we draw upon examples of texts and publications gleaned from the field, and interrogate their linguistic choices and the power dynamics within their presentation. We conclude by connecting these issues to larger struggles in the environmental justice milieu.

Interior and Emotive Terrains of Environmentalism

Environmental issues can be expressed through technical, scientific, and data-driven means, but they can also be thought of in more humanistic and even emotional terms. One can clinically analyze the loss of biodiversity or the poisoning of waterways in a manner that creates distance between ourselves and the living things (including people) impacted by these precipitous transformations; such interventions resonate impressively on Powerpoint slides and in legislative drafting sessions, yet they omit equally critical factors of compassion, interconnection, empowerment, trauma, loss, and more. In short, it might be said that the analytical approach oftentimes prioritizes the workings of the mind as against those of the heart. This is perhaps understandable in managing parliamentary-type proceedings,

but there may be unintended consequences including the further separation of humans from the biotic systems of the planet.

This is a complex subject to broach, because (among other things) it plays into stereotypes of environmentalists as “tree huggers” and threatens to cloud sober judgment with sentimentalism. Public displays of emotion can create an impression of vulnerability and weaken one’s position at the bargaining table. By keeping the discussion at the analytical level—for instance, in representing lost habitats, species, or even human casualties as data points on a graph, or by discussing human rights issues such as refugeeism or negative health consequences in purely quantitative terms—one can perhaps enhance the impact and strength of their argument while at the same time losing an important part of its texture. When the presentation of critical issues remains at the strictly technical or political level, it can serve to obscure the actual people and ecosystems being impacted. In this sense, the magnitude of concern over environmental issues can at times be displayed without showing as much concern for those directly impacted.

It is this context that we are oftentimes presented with information about people being uprooted *en masse* by desertification and climate disruption, about the imminent submersion of island nations, about the severe long-term health impacts of post-conflict environmental contamination, or even about the myriad frontline environmental defenders who have paid with their lives to confront patterns of degradation and despoliation. Clinical assessments and data-driven presentations are important, yet there is a concomitant need to hear from impacted communities directly. Interestingly, some stakeholders grasp this integrative dynamic, even as the method used to address it may serve to further exacerbate the problem. Thus,

numerous presentations and publications (which we analyze in more detail below) will include an invocation of someone’s “story” (often a woman from the developing world) as a means to highlight the efficacy of their innovative technology or the utility of their policy platform. Needless to say, those whose stories are featured in this way rarely, if ever, attend the forums to convey these narratives themselves.

“The story of . . .” is thus a popular entry point for highlighting an array of technological innovations (e.g., solar lights; clean stoves) and policy proposals (e.g., microfinance; mediation). The virtues of flexibility, mobility, on-demand and sharing economies, and sociopolitical empowerment may be touted through these “stories” but they are likely to be told *about* rather than *by* those featured in them. In fact, some of these innovations are premised on a pay-as-you-go business model that provides access to them with little or no upfront costs—but with the caveat that they can also be removed promptly for nonpayment. The empowerment of women (generally women of color) may be invoked as a selling point, as may be the benefits for students and, of course, the overall greening of the environment. However, if these technologies are positioned to empower women, open up educational opportunities for children, and mitigate environmental harm, then turning them off for nonpayment might be more heartless than not providing them in the first place. What is needed are effective solutions that integrate minds and hearts equally, as we move from centralized models to more collaborative ones, and ultimately as human beings attempting to cope with the urgent responsibility of transforming our environmental relations.

In this spirit, environmental discourse at times does include the direct (and even heartfelt) stories of people struggling to mitigate and adapt to a rapidly changing

world. Thus, the former president of Kiribati, Anote Tong, poignantly describes the imminent submersion of his island nation by rising ocean levels without rancor or recrimination, imploring people everywhere to embrace a spirit of ethical engagement and common humanity.⁴ Human rights advocates communicate the compelling stories of ordinary people who become activists by necessity and work to transform conditions in their communities as well as our understanding of how change works—sometimes paying with their lives for these efforts, as with the case of Honduran activist Berta Cáceres.⁵ Engaging these narratives in a meaningful manner, without further “otherizing” or exploiting their progenitors, is a fundamental challenge for environmental movements and policymakers. A critical analysis of the role that gender in particular plays in these processes can help inform the wider discussion of these core issues.

Gendered Lenses and Environmental Essentialism

In the annals of environmentalism, the role of gender is central yet often underexplored. While there have been many investigations of the differential impacts of ecological challenges on women, as well as the intersections of these patterns through lenses such as *ecofeminism*,⁶ less considered in the analysis is the nascent view of women as “sustainability saviors” and the

implications of such constructions. In essence, the argument is that due to their close connection to the material bases of life in many locales—including procuring food, fuel, water, and other essentials—women have a unique perspective and capacity to address environmental challenges in important ways. While this can be empowering, it also potentially reifies historical associations of gender and nature that are problematic, as well as running up against a core tenet of *environmental justice* stating that people who contribute the least to crises are often impacted the most by them—and further that it should not then fall upon them to be primarily responsible for remediating those crises. We engage these matters without resorting to either victimization or valorization by cultivating pathways toward collaborative ecological engagement, emphasizing policy frameworks and lived experiences equally in seeking tenable and durable solutions.

In order to do so, we need to unpack some of the strands that have brought us here. From a historical perspective, there is the sensibility expressed by Sir Francis Bacon advocating the “torture of nature for her secrets.” While this precise quote is likely apocryphal, Carolyn Merchant observes that its intent is wholly consistent with the rationalist/scientific paradigm, for which “the rack exemplified the constraint of nature in a closed, controlled system, responding to questions posed by an inquisitor before witnesses—the very core of experimentation itself.”⁷ This paradigm is reflective of an impetus to correlate gender and nature, which is operationalized, as Greta Gaard contends, in “the ways that the feminized status of women, animals, nature, and feminized others ... have been conceived of as separate and inferior in order to legitimate their subordination under

⁴ Tong, Anote. 2016. The Global Challenge of Climate-Induced Migration. *Global Future(s) Initiative*, Georgetown University (November 11). Accessed 2017. Available from

<https://globalfutures.georgetown.edu/responses/the-global-challenge-of-climate-induced-migration>

⁵ Watts, Jonathan. 2016. Berta Cáceres, Honduran Human Rights and Environment Activist, Murdered. *The Guardian* (March 4). Accessed 2017. Available from

<https://www.theguardian.com/world/2016/mar/03/honduras-berta-caceres-murder-environment-activist-human-rights>

⁶ Mies, Maria, and Vandana Shiva, eds. 1993. *Ecofeminism*. Zed Books.

⁷ Merchant, Carolyn. 2006. The Scientific Revolution and *The Death of Nature*. *Isis* 97 (3): 513.

an elite and often violent and militarized male-dominant social order.”⁸ Bringing this analysis into contemporary issues, Gaard offers this historical backdrop as a basis for reconsidering the mounting challenges in our midst: “The global crises of climate justice, food security, energy justice, vanishing wildlife, maldevelopment, habitat loss, industrial animal food production, and more have simultaneously social and ecological dimensions that require both ecological and feminist analyses.”⁹

Today, however, this lens often looks more like depicting women as either victims or saviors in the environmental policy discourse. Thus it is stated that “women’s knowledge, agency and collective action has huge potential to improve resource productivity, enhance ecosystem conservation and sustainable use of natural resources, and to create more sustainable, low-carbon food, energy, water and health systems. Failure to capitalize on this would be a missed opportunity. Women should not be viewed as victims, but as central actors in moving towards sustainability.”¹⁰ As we elaborate below, there are numerous ways in which this discourse is framed and promoted, with myriad examples that seek to cast women—due to their “special” roles and skills in many developing societies—as nascent environmental heroines. Constructions of empowerment are often invoked, linking “the causes and underlying drivers of unsustainability and gender inequality,” advocating for giving women “greater voice and participation” as a means to generate more sustainable outcomes, and setting a premium on “women’s knowledge,

agency and action” as a tool of sustainability (passages noted below).

While this isn’t inherently problematic, the larger context of the discourse is illustrative of the potential pitfalls and how historical patterns of gender essentialism can be replicated, even with ostensibly positive intentions—as the following linked passages illustrate (emphases added):

“This is a project intended to celebrate the role of women in science, technology, sailing. *Not only does it break down gender stereotypes, but it also harnesses the power of them.*”¹¹

“Women are not merely passive victims of climate change and environmental degradation. . . . *Women are a driving force for the new, more equitable and more sustainable model of growth.*”¹² “[Women’s] knowledge, innovation, action and agency is central to finding, demonstrating and building more economically, socially and ecologically sustainable ways to manage local ecologies, adapt to climate change, produce and access food and secure sustainable and appropriate water, sanitation and energy services.”¹³ “*Energy prosperity has a female face. . . .* There is a strong case for what women can do to expand clean energy access and to fight on the front lines against climate change.”¹⁴

Even within this same body of literature there is a recognition of the potential problems with these constructions, including how they potentially reify historical patterns. The self-reflective nature of these claims

⁸ Gaard, Greta. 2011. Ecofeminism Revisited: Rejecting Essentialism and Re-Placing Species in a Material Feminist Environmentalism. *Feminist Formations* 23 (2): 26.

⁹ Ibid.

¹⁰ UN Women. 2014. 7. *World Survey on the Role of Women in Development: Gender Equality and Sustainable Development*. New York: United Nations (report).

¹¹ UNEP. 2014, 36. *Gender Heroes: From Grassroots to Global Action*. United Nations Environment Programme (booklet).

¹² UNEP. 2015, 5-6. *Gender Equality and the Environment*. United Nations Environment Programme (report).

¹³ UN Women. 2014, 16. *World Survey on the Role of Women in Development: Gender Equality and Sustainable Development*. New York: United Nations (report).

¹⁴ UN. 2015. Sustainable Energy for All: Empowering Women. *UN Chronicle* 52 (3), December.

and critiques is worth presenting in some detail (emphases added):

“Policy responses that view women as ‘sustainability saviors’ draw upon and **reinforce stereotypes** regarding women’s roles in relation to the family, the community and the environment. Such responses often *add to women’s already heavy unpaid work burdens* without conferring rights, resources and benefits.... [P]erspectives that view women narrowly as ‘sustainability saviors’ are evident in many areas, from the conservation of biodiversity, water and soils to building socially and environmentally sustainable services. Yet viewing women as sustainability saviors carries dangers.... Policies that are based on *stereotypical assumptions regarding women’s caring role* in the family, community and environment treat women as a homogeneous category. [I]ntensifying women’s workloads to benefit the community and the environment can *entrench and worsen gender inequalities*.... Responses to climate change that address gender issues tend to *view women as victims* of climate impacts, or *entrench stereotypes and roles of women as natural carers* keeping their communities resilient or adopting low-carbon options.”¹⁵

A particular passage is worth quoting more fully in assessing the discursive impacts of this approach to policymaking, which we will analyze more closely in the following section (emphasis added):

“[T]he view that *women should be harnessed as sustainability saviors* [is] based on the assumption that women

are especially close to nature. Women-environment connections, especially in domestic and subsistence activities such as collecting fuelwood, hauling water and cultivating food, were often presented as if they were natural and universal, rather than as the product of particular social and cultural norms and expectations. Ensuing projects and policies often mobilized and instrumentalized women’s labor, skills and knowledge, thereby *adding to their unpaid work without addressing whether they had the rights, voice and power to control project benefits*. A number of useful lessons emerge from this history for policymaking. First, policymakers should avoid making broad and stereotypical assumptions about women’s and men’s relationships with the environment. Rather, policies should respond to the specific social context and gender power relations. For instance, women’s close involvement in gathering wild foods and other forest products might reflect labor and land tenure relations and their lack of access to income with which to purchase food, rather than reflecting their closeness to nature.”¹⁶

Intersections of (In)justice

Against this backdrop, then, we observe a perverse tendency to look to those with ostensibly less power for signs of innovation and resilience. A clear example of this is the aforementioned view of women as “sustainability saviors” or “gender heroes” and the implications thereof. At root, the argument is that due to their closer connection to the material bases of life in many locales—including procuring food, fuel, water, and other basic goods—women

¹⁵ UN Women. 2014, 13, 24, 29. *World Survey on the Role of Women in Development: Gender Equality and Sustainable Development*. New York: United Nations (report).

¹⁶ Ibid. 28-29.

have a unique capacity to address larger environmental challenges. While perhaps this can be empowering on some level, as noted, it also potentially reifies historical associations of gender and nature that are problematic, as well as essentializing the “caregiver” roles of women as being inherent, inevitable, and freely chosen. These constructions often overlook the more structural realms of political economy, decision-making power, cultural norms, and relative autonomy. By casting women as “saviors” or “heroes” for their ostensible environmental innovativeness and resilience, it can further reinforce these roles and increase the burdens on women to perform them. Further, these tendencies within environmentalism raise questions about the power dynamics between those in the role of “empowering” the communities at risk and those “being empowered.” In the context of where this analysis began, similar patterns therefore emerge in which the authentic narratives of those most directly impacted are being coopted by other actors. Whether or not the top-down narratives of women as “saviors” and “heroes” fundamentally challenge the intersectionality of their marginalization in the local and global contexts must be scrutinized to fully contemplate the potential and the limit of the “environmental justice frame.”¹⁷

The question, then, is how to engage these pressing environmental issues without resorting to either victimization or valorization. One starting point is to acknowledge the differential impacts of environmental issues more deeply and resist the tendency to universalize the capacity and/or responsibility for remediating them to those most acutely impacted. Affording people the space to define their own terms of engagement with environmental issues is

critical, and whatever sense of empowerment that may flow from these choices can be self-selected rather than imposed. Thus, notions of “harnessing the power” of women (as referenced in the aforementioned 2014 UN publication on *Gender Heroes*) as paragons of sustainability raise implications that can only be harmonized with the tenets of justice if that power is freely given and contextualized within the unique experiences of individuals—rather than being categorically attributed by others: “Policies that are based on stereotypical assumptions regarding women’s caring role in the family, community and environment . . . ignore the vital intersections with other inequalities that shape women’s interests, knowledge, values, opportunities and capabilities. Power imbalances in gender relations, in the exercise of rights, access to and control of resources, or participation in decision-making, determine whether women’s actions and work translate into enhanced rights and capabilities, dignity and bodily integrity.”¹⁸

Despite some conceptual and pragmatic gains around these issues in recent years, the role played by factors including race and gender remains relatively undertheorized in the annals of environmentalism. The legacy of environmental racism persists, evident not only through an analysis of dramatic events such as Hurricane Katrina but likewise in the accrued impacts of structural violence on economic outcomes, educational opportunities, policing and incarceration, and other critical issues. Ongoing effects of the colonization of indigenous communities can be seen in patterns of toxification, desertification, and displacement as registered in rates of impoverishment and

¹⁷ Čapek, Stella M. 1993. “The ‘Environmental Justice’ Frame: A Conceptual Discussion and Application.” *Social Problems* 40 (1): 5-24.

¹⁸ UN Women. 2014, 24. *World Survey on the Role of Women in Development: Gender Equality and Sustainable Development*. New York: United Nations (report).

negative health consequences. In much of the developing world women are challenged by environmental degradation, which can heighten the burdens of providing essential resources for their families and also serve to increase their exposure to violence. Historically, issues ranging from resource exploitation to the closure of the commons still reverberate for many peoples and communities around the globe.¹⁹ The list of such examples is very long, indicating the centrality of environmental issues to the search for justice.

Indeed, the confirmation of one of the core tenets of *environmental justice*—namely that those who contribute the least to crises are often impacted the most by them, skewed along preexisting lines of power and privilege—looms prominently in the context of contemporary ecological problems.²⁰ The extant cases of differential impacts appear in considerations of food deserts, post-disaster contexts, pipeline constructions, siting of toxic facilities, substandard living conditions, refugee encampments, and more. Unsurprisingly, environmental issues—from the lack of access to healthy food and clean water to resource conflicts and climate change—can intensify deeply rooted patterns of inequality and injustice that render vulnerable and/or marginalized communities even more so as existing challenges mount.²¹ The decades since the advent of environmental justice have borne this out across myriad geographies, fostering an emerging cognizance of how these issues

are deeply and unavoidably interconnected across both time and space.²²

Still, while the substantive aspects of such matters may be more widely understood as intersecting, less attention has been afforded to the patterns of interlocking injustice that illuminate the disparate lived experiences of environmental crises. In other words, a growing consciousness of issue-oriented integration does not necessarily equate with a more nuanced understanding of how this actually plays out in the lives of individuals and their communities: “The task now is to create movements that reflect not just the complexity of issues, but of people’s lives.”²³ The emerging paradigm of *intersectionality*, especially as it applies in the context of environmental justice, holds promise as a tool to further unpack both the impacts of and possibilities for meaningful engagement with socioecological challenges.²⁴ In brief, intersectionality inquires more deeply into how various factors of identity formation and attribution work together to yield differential frames of experience in a manner that exceeds the sum of its parts.²⁵ This is so at the macro and micro scales, whereby people who are collectively exposed to an environmental crisis will bear the impacts distinctively vis-à-vis other communities, and differentially within their society based on factors such as

¹⁹ Ammons, Elizabeth, and Modhumita Roy, eds. 2015. *Sharing the Earth: An International Environmental Justice Reader*. Athens, GA: The University of Georgia Press.

²⁰ Pellow, David Naguib, and Robert J. Brulle, eds. 2005. *Power, Justice, and the Environment: A Critical Appraisal of the Environmental Justice Movement*. Cambridge, MA: MIT Press.

²¹ Bullard, Robert D. *The Quest for Environmental Justice: Human Rights and the Politics of Pollution*. Berkeley, CA: Counterpoint Press.

²² Schlosberg, David. 2013. Theorizing Environmental Justice: The Expanding Sphere of Discourse. *Environmental Politics* 22 (1): 37-55.

²³ Moe, Kristin. Get Intersectional! (or, Why Your Movement Can’t Go It Alone). *YES! Magazine* (April 4). Accessed 2017. Available from <http://www.yesmagazine.org/planet/getintersectionalwhyyourmovementcantgoitalone>.

²⁴ Rodriguez, Majandra. 2015. Facing Climate Change Through Justice and Intersectionality. *350.org* (September 3). Accessed 2017. Available from <https://350.org/facingclimatechangethroughjusticeandintersectionality/>.

²⁵ Belalia, Henia. 2014. Intersectionality Isn’t Just a Win-Win: It’s the Only Way Out. *Waging Nonviolence* (May 27). Accessed: 2017. Available from <http://wagingnonviolence.org/feature/intersectionality-isnt-just-win-win-way/>

access to resources, power, education, and status.²⁶

The core of this intersectional perspective is twofold, involving a more sophisticated integration of substantive issues, as well as a more nuanced understanding of differential perspectives and experiences in navigating those issues. Likewise, the pursuit of *justice* as a robust concept in social and environmental realms alike necessitates more direct contributions from those most impacted in order to realign baseline operations of power and participation. A potent mechanism for undertaking these efforts is the cultivation of pathways for engagement with pressing issues that highlight the substantive complexities and grounded voices of people situated in place. Rendering those stories and viewpoints more fully is beyond the scope of this piece, but the following frameworks may provide points of departure for further explorations.

Reclaiming the Narrative

As we consider ways to confront environmental crises consistent with this expansive vision of justice—and that do not perpetuate the imbalances of power and untenable dualisms that have fomented the crises in the first place—we are cognizant of the insights gleaned from others who have raised similar queries. As Phoebe Godfrey and Denise Torres have observed, “we can no longer continue to destructively enact Western ‘white’ patriarchal capitalist society’s . . . conceptualization of a clear boundary between the ideological and the material, the social and the environmental, the human and the non-human, the observer

and the observed, the word and the flesh.”²⁷ Thus, from a policymaking perspective, a critical question that has not been addressed adequately is whether “progress” as a function of development is possible without destroying the environment(s) upon which we are dependent and to which we are connected. In other words, is “sustainable development” feasible at this juncture, or is it an atavistic concept that has already been coopted by essentialism and commercialization? “To break out of these cycles,” writes Toban Black, “it is crucial to support those who live on the frontlines [and] to tap into their proactive motivations, as well as their concrete experiences with higher risk conditions where environmental impacts may be the most apparent.”²⁸

Time may tell the full story about whether this will be sufficient to stem the tide of destabilization, but unfortunately the window of time is rapidly closing. What might be said at this juncture is that there are models of more participatory governance and development emerging that hold promise to empower people to address concrete issues in their particular communities—ones that are centered on the narratives of those most directly impacted by environmental crises, and that are reflective of trends embracing an intersectional view of justice, power, and ecology. As Alex Reid has observed in the context of disparate impacts from the environmental impacts of conflict: “The pervasiveness of women’s responsibility for environmental management hinges on a gendered division of labor, in which women are often disproportionately responsible for providing ‘subsistence’ products such as

²⁶ Kaijser, Anna, and Annica Kronsell. 2014. Climate Change through the Lens of Intersectionality. *Environmental Politics* 23 (3): 417-33.

²⁷ Godfrey, Phoebe, and Denise Torres. 2016, 1. *Systemic Crises of Global Climate Change: Intersections of Race, Class and Gender*. New York: Routledge.

²⁸ Black, Toban. 2016, 181. Race, Gender, and Climate Injustice: Dimensions of Social and Environmental Inequality. In *Systemic Crises of Global Climate Change*. New York: Routledge.

food, water and fuel.... Where women are identified as the primary managers of local resources, effective management and reform will remain incomplete and ineffective if a gendered lens is not considered.... [B]oth gender and the environment are cross-cutting issues that need more than fine words and inadequate resources.”²⁹ As we consider ways to move discursive overtures toward tangible outcomes, the following spheres may serve as points of engagement with this emerging perspective:

Desegregating Nature: We cannot separate environmental issues from the lived experiences of people. “To face the increasingly urgent challenges of global climate change, fresh-water shortages, persistent fossil-fuel dependence, cascading extinctions, and inequities behind the spread of poverty and food insecurity will require the best of human imagination and responsibility because, at end, they are moral crises.... My intent is not to paint a simplistic scene of victims and aggressors, with single proximate factors of cause and effect, but to recognize that the complexities and ambiguities of this nation’s multicultural past and present, and the ways in which American culture has used or impacted the Earth, cannot be separated from underlying values that have fed racism and systemic inequality.”³⁰ Numerous community-based environmental entities are cognizant of these realities, sometimes framing their work specifically with regard to the historical and contemporary landscapes in which these efforts occur. To take one such example, Soilful City (www.soilfulcity.com) in Washington, DC,

²⁹ Reid, Alex. 2017. Understanding Gender, Conflict, and the Environment. *Toxic Remnants of War Project* (June 5). Accessed 2017. Available from <http://www.trwn.org/understanding-gender-conflict-and-the-environment/>

³⁰ Savoy, Lauret. 2011. Desegregating Nature. *Terrain.org: A Journal of the Built and Natural* 27. Accessed 2017. Available from <http://www.terrain.org/columns/27/savoy.htm>.

emphasizes its urban gardening work as part of an emerging “Afro-ecology” that is informed by the realities of “African Diasporic culture” and that strives to reconnect “people and the land.”

Situated knowledge: Such interventions require understanding the context in which the production of knowledge and resources alike are connected to structures of power and politics. “From an intersectional understanding, how individuals relate to climate change depends on their positions in context-specific power structures based on social categorizations [that] should not be regarded as fixed; they always need to be understood in their specific historical and spatial context and as embedded in power patterns.... [A]n intersectional framework must go beyond naming categories to an analysis of how they are related to broader power relations, to politics and institutional practices and to norms and symbolic representations.”³¹ Thus, we can discern compelling examples of how this looks in practice: “Whether it is indigenous women in the Amazon fighting corporate polluters and climate change or undocumented Latina domestic workers advocating for worker rights and dignity in California, women’s groups and networks are making links between unbridled capitalism, violence, and the erosion of human rights and destruction of the Earth.”³²

Planting Seeds: A potent illustration—which brought its founder a Nobel Peace Prize—demonstrates how these factors can be leveraged by people toward self-empowerment: “The Green Belt Movement (GBM) is an environmental organization

³¹ Kaijser, Anna, and Annica Kronsell. 2014. Climate Change through the Lens of Intersectionality. *Environmental Politics* 23 (3): 421-23.

³² Chitnis, Rucha. 2016. “How Women-Led Movements Are Redefining Power, from California to Nepal.” *YES! Magazine* (March 8). Accessed 2017. Available from <http://www.yesmagazine.org/peoplepower/howwomenledmovementsareredefiningpowerfromcaliforniatonepal20160308>.

that empowers communities, particularly women, to conserve the environment and improve livelihoods. GBM was founded by Professor Wangari Maathai in 1977 under the auspices of the National Council of Women of Kenya (NCWK) to respond to the needs of rural Kenyan women who reported that their streams were drying up, their food supply was less secure, and they had to walk further and further to get firewood for fuel and fencing. GBM encouraged the women to work together to grow seedlings and plant trees to bind the soil, store rainwater, provide food and firewood, and receive a small monetary token for their work” (www.greenbeltmovement.org). “Then came the revolution. The women decided to do away with the professional approach to forestry and instead use their common sense! ... Twenty years down the road, the women have gained many skills and ... have become self-reliant in tree planting.”³³ The work of the GBM has taken place against backdrop of colonialism and political conflict, striving from the outset “to integrate and advance the causes of environmental, women’s, and human rights,”³⁴ through synthesized approaches that recognized the intersectional nature of these issues. Indeed, as our analysis here indicates, the inherently intertwined nature of these spheres counsels that work must be done in all of them simultaneously if true gains are to be made in any of them.

Conclusion

The employment of engaged narratives in environmental movement work avoids the pitfalls of the simplistic competing

³³ Maathai, Wangari. 2004, 27-28. *The Green Belt Movement: Sharing the Approach and the Experience*. New York: Lantern.

³⁴ Nixon, Rob. 2011, 138. *Slow Violence and the Environmentalism of the Poor*. Cambridge, MA: Harvard University Press.

narratives of the marginalized population as heroes or victims of climate change and environmental degradation. By intentionally and consciously activating local voices, especially those whose heightened risks of environmental hazards stem from structural injustices, the “engaging narratives” approach acknowledges that addressing environmental issues must simultaneously tackle the inherent intersectionality and systemic dimensions of the challenges, including pervasive gender, economic, and ethnic disparities that exist at all scales.³⁵ The deployment of these narratives thus becomes a way of amplifying the existing forces of resistance and struggle, without casting the people and places at the center of these issues as agency-less victims waiting to be empowered.³⁶ Such forms of “environmental justice storytelling,” as Donna Houston observes, can carry “diverse ideas along together to produce different environmental imaginaries (both good and bad) in and of a damaged world,” by valuing storytelling as much as the stories themselves.³⁷ Rather than reinforcing the storytellers’ innovation or resilience against environmental injustices as the manifestation of their exotic otherness, the critically engaged narratives would illuminate the sense of a shared humanity across diverse experiences, and therefore emphasize the collective stake involved in tackling global environmental challenges.

The engaged narrative approach also serves as a reminder to broader

³⁵ Reynolds, Kristin, and Nevin Cohen. 2016. *Beyond the Kale: Urban Agriculture and Social Justice Activism in New York City*. Athens, GA: The University of Georgia Press.

³⁶ Dickinson, Elizabeth. 2012. Addressing Environmental Racism Through Storytelling: Toward an Environmental Justice Narrative Framework. *Communication, Culture & Critique* 5 (1): 57.

³⁷ Houston, Donna. 2012. Environmental Justice Storytelling: Angels and Isotopes at Yucca Mountain, Nevada. *Antipode* 45 (2): 433.

environmental movements about the inherent privileges of the North in addressing global environmental issues, and offers a reflexive moment to acknowledge the power dynamics that pervade current dominant environmental movements across the globe. Similarly, we posit that exploring engaged narratives addresses the broader gender-environment intersections in the existing movement narratives that tend to situate both as powerless recipients of violence and exploitation. “The importance of gender in our understanding of the environment and conflict is often camouflaged,” as Reid argues, and “failing to include gender in [policymaking] is a flawed approach from both an environmental and a human rights perspective.”³⁸ Identifying and deploying narratives that counter this tendency can become a form of genuine empowerment in which notions of femininity and women’s roles are fundamentally challenged while addressing the overarching environmental concerns.

The exemplars cited here are more than merely discursive in nature: they are about people situated in place struggling to sustain a viable foothold in this world, and likewise to point a way forward for all of us at the same time. It is a monumental task, spanning the particular and the universal, but it is, indeed, *essential* for the future of our species on this world. In this sense, “our demand is not for a return to a pristine past, real or imagined, or for a perfected utopia here and now. We seek the dismantling of unhealthy, oppressive, destructive technologies in favor of new technologies that foster autonomy and exist at the appropriate scale. . . . We seek a world premised on the mutuality of ‘human dignity

³⁸ Reid, Alex. 2017. Understanding Gender, Conflict, and the Environment. *Toxic Remnants of War Project* (June 5). Accessed 2017. Available from <http://www.trwn.org/understanding-gender-conflict-and-the-environment/>

and nature’s wholeness’, recognizing that we cannot attain one without the other.”³⁹

As scholar-activist Naomi Klein observes: “Either we fight for a future in which everyone belongs, starting with those being most battered by injustice and exclusion today, or we will keep losing. And there is no time for that. Moreover, when we make these connections among issues—climate, capitalism, colonialism, slavery—there is a kind of relief. Because it actually is all connected, all part of the same story.”⁴⁰ Connecting these issues, struggles, and stories in a non-superficial, non-exploitative manner offers a potential pathway toward addressing today’s critical challenges of environmental justice.

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³⁹ Amster, Randall. 2015, 189. *Peace Ecology*. New York: Routledge.

⁴⁰ Klein, Naomi. 2016. We Are Hitting the Wall of Maximum Grabbing. *The Nation* (December 16). Accessed 2017. Available from <https://www.thenation.com/article/intersectionality-is-the-only-path-forward-for-the-climate-movement/>

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