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Smart Technologies and Smart Opportunities: An Analysis of the Global, Unintended Tertiary  
Consequences of (Un) Sustainable Parochialism

A thesis submitted in partial satisfaction  
of the requirements for the degree Master of Science  
in Environment and Sustainability

by

Sean Edward Wilson

2020

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## ABSTRACT OF THE THESIS

Smart Technologies and Smart Opportunities: An Analysis of the Global, Unintended Tertiary  
Consequences of (Un) Sustainable Parochialism

by

Sean Edward Wilson

Master of Science in Environment and Sustainability

University of California, Los Angeles, 2020

Professor Edward Parson, Chair

Global climate change, the COVID-19 pandemic, the economic recession, and social and racial unrest have tested conventional thinking about environmental health, economies, governance, and socio-cultural relations in the State of New York. This thesis questions whether proposed and implemented responses are sustainable through a desk-review case study analysis of global, unintended tertiary consequences. The introduction foregrounds problems to consider as the state transitions to a new normal. It does so by problematizing the Executive Order, *New York Forward: A Guide to Reopening New York & Building Back Better*. From there, it proceeds to introduce the methodology behind anticipating and identifying global, unintended tertiary consequences, with a focus on the Congo Basin and the Democratic Republic of Congo as the situated region and nation of analysis. Thereafter is a description of the results, followed by a discussion about New York State Consolidated Law and sustainable business and consumer cultures. Last, a conclusion that summarizes the broader implications of the research. Overall,

this thesis advances the need to study and problematize *the application of epistemological framings* undergirding newer forms of state governance, social mobilization, and capitalism. For, theory and praxis do not always marry.

The thesis of Sean Edward Wilson is approved.

Alan Irwin Barreca

Peter Michael Kareiva

Allen Fraleigh Roberts

Edward Parson, Committee Chair

University of California, Los Angeles

2020

## **DEDICATION**

I dedicate this Master Thesis to my family and black and white American Pit Bull Terrier, Della: Long live Della. Belly rubs, “phone calls,” and solitude walks came in handy during times of great distress. Thank you.

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Banter notwithstanding—go Yankees—a special thanks goes to Dr. Peter M. Kareiva and Dr. Allen F. Roberts, without whom this thesis would not have been possible. Both Dr. Kareiva and Dr. Roberts represent disciplinary poles, mathematical ecology and social-cultural anthropology. Yet, when it came to “thinking,” their areas of expertise somehow married. That marriage of epistemologies resulted in the production of a Master Thesis.

Dr. Roberts and Dr. Kareiva always encouraged me to think beyond the discipline and what I considered knowable. They exposed a student of business management to scholarship on and stories about bushmeat, global conservation, green crime, natural resource conflicts, shape-shifting hippos, liminality, coyote tricksters, and the efficacy of “art.” Yes, there were times when aborting ship was a lucrative, if not the preferable option. But, they remained dedicated to my intellectual growth, development, and progress. Because so, I can only say thanks over and again.

# Chapter 1: Introduction

## 1.1. Frameworks to Overcome the Sustainability Challenges of the Early 21st Century

Global climate change, the COVID-19 pandemic, the economic recession, and social and racial unrest have tested conventional thinking about environmental health, economies, governance, and socio-cultural relations in the State of New York (New York). This problem superfecta has compelled many governments, communities, and individuals to propose and consider new demands, policies, strategies, regulations, practices, and laws that rise to an unprecedented generational challenge. The elusive question though is what happens hereon? To where does New York even venture after this historic moment? Is New York even prepared for what is ahead? Frankly, there are no straightforward answers. Are there *smart, sustainable ways to think through and about* the issues? Yes, as this thesis argues.

A potential answer lies in Federalism and the United States Constitution. The Tenth Amendment grants New York powers not reserved to the Federal Government, including regulating intrastate commerce, energy generation, and formal education (U.S. Const. amend. X). As such, elected officials and agencies can promulgate and issue laws and regulations by way of some rules, systems, processes, and procedures. Therefore, if required, the pathways taken to legislate and regulate can change to mirror developing contexts.

Another answer lies in private sector businesses. Companies operate in markets to meet customer demands. If demand changes, they respond, or else belly-up. In theory, demands for cleaner, less impactful products can, if necessary, operate as a sort of private sector environmental stopgap (Buck et al., 2020). That the private sector can function as a guardrail of some sort is why companies such as Cloud to Street, Green Toys, and Fairphone have emerged

as sustainable alternatives to Fortune 500 companies. Although true to a degree, it is paramount to opine that market mechanisms are imperfect. Humans are fallible and prone to occasional cognitive biases (Ariely, 2009; Kahneman, 2012; Mlodinow, 2012). Nevertheless, the market still is instrumental to the orchestration of sea changes in thinking about issues before New York.

Another potential solution is forming public-private partnerships to underwrite the design, testing, execution, and pivoting of community-based programs, products, and government services (Hodge & Greve, 2017; Ianniello et al., 2019; Jenkins et al., 2019). This relational, participatory, and democratic approach to governance has led to formidable alliances amongst redlined neighborhoods, school districts, academia, non-profit organizations, and state agencies (Groundwork Hudson Valley, n.d.; The Radix Ecological Sustainability Center, 2017). Questions still exist about the utility and politics of public-private partnerships.<sup>1</sup> Nevertheless, they are promising.

Penultimately, are social and cultural movements, as when Governor Andrew Cuomo and the state legislature signed a climate bill into law amidst an empowering, revolutionary movement (McKinley & Plumer, 2019). Or take George Floyd's tragic death, which launched a Neo-Police Reform Movement and sped up the passage of a much-needed police reform package (del Valle, 2020). Doing so was a step towards ending mass incarceration and cement-sealing the school-to-prison pipeline. In all, individual and collective expression and resistance speak for themselves. There is not much else to add to that conversation.

Lastly are social contracts and ordinary, affective parts of life, such as routinized consumption (D'Agostino et al., 2019; Freeman, 2012; Stewart, 1996, 2007). These everyday

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<sup>1</sup> Juggling conflicting values and aims are stumbling blocks to overcome if public private partnerships are to succeed and be impactful.

decisions can signal an individual's beliefs and values (Barber, 2015; Egan, 2016). Some eco-conscious shoppers buy produce from farmers' market vendors because of concerns about global climate change, energy sustainability, and a polluting globalized food system. Others install rooftop solar panels to reduce personal greenhouse gas emissions, increase property values, and reduce carbon footprints. Some people just want to save dolphins and great apes. The foodies, renewable energy converts, and animal-lovers *learn, accept, understand, believe, come to know,* and *defend* that engaging in X because of some set of reasons is more environmentally and economically efficacious than engaging in Y or Z because of a different set of reasons.

These five conceptual solution framings—of which there are many more—have informed decision-making regarding global climate change, COVID-19, recent protests, and the economic recession. They are learned, political, value-laden, interpreted, sometimes re-constructed and transformed, and writ large negotiated (Brameld, 1956; Dewey, 1997; Lepecki, 2013; Mouffe, 2016). But are they *epistemologically sustainable* enough to propel New York forward in the long term? That remains to be seen.

## **1.2. Let Us Talk About Smart Stuff: New York Forward and Smart Technology**

Regardless of the patchworked frameworks, what is certain is the need to adjust to what elected officials, scientists, and medical professionals time and again have conveyed as a post-COVID-19 new normal. News coverage and communiqués from official channels of expertise and authority have echoed this claim (Guardian News, 2020; Higgins-Dunn, 2020; Declaring a Disaster Emergency in the State of New York, 2020). No longer can the inveterate consumers of “stuff” frequent shopping centers and malls without a minimal degree of protection: Masks on everyone! No longer can colleges and universities sardine students into spaces that embody the

experience of attending some institutions of higher education. Until further notice—when a federally-authorized therapeutic or vaccine is readily available—schools will need to arrange for and offer a “hybrid” education, and students will need to adapt. People can no longer take for granted the security afforded by stable employment and a home. And, much to the chagrin of gregarious social butterflies, no longer can hundreds of patrons’ squeeze into well-trodden, poorly ventilated public spaces without acknowledging and accepting risks. Hibernating is out of the equation as well.

At present, *New York Forward: A Guide to Reopening New York & Building Back Better (New York Forward)* (2020) is the most detailed vision of that new normal (New York State Office of the Governor, 2020). The framing and structure of the document are analogous to a federal strategic plan (The United States Department of Defense, 2020). Delineated in the encompassing one hundred and fifty-six-page Executive Order are phased reopening metrics, statistics, and sparse information about an advisory board, a Blue-Ribbon commission, and an education council. Overall, the aim is to engender a more just and equitable life and governance system by modernizing local and regional ecosystems and infrastructures (Leviäkangas & Öörni, 2020). Focal to this *reconstructionist project* is a neoteric classification of smart technologies that have defined twenty-first-century politics, education, social relations, and economies (Brameld, 1956, 1977; Counts, 1978). That list includes smartphones, tablets, touch-screen desktop computers, wearable smart devices, and social media platforms.

### **1.3. What has Tech Got to Do With It?**

In hindsight, few residents can question the motivations behind reimagining New York after overcoming the 2020 COVID-19 pandemic. More so given the pandemic-induced economic recession, racial and social unrest, and the reality of global climate change. Nor can many



residents doubt the motivations behind equipping them and the state with the technical skills, tools, and infrastructures necessary to succeed and remain a beacon of economic progress long after the human-induced mess.

Nonetheless, critics are dubious of *New York Forward* because of the technocratic *logic*—or *illogic*—behind partnering with a twenty-first-century corporate villain, companies associated with the pejorative moniker Big Tech (Johnson, n.d.; Klein, 2020; Lehrer, n.d.). They vehemently oppose and detest the questionable corporate practices, corporate affronts to grassroots and participatory democracy, and the growing digital divide between the haves and have nots. For, why collaborate with organizations that collect, mine, commercialize, and profit from individual and group data, information, and narratives?<sup>2</sup> To some final consumers and non-profit organizations, doing so violates an individual and collective ethic, and it defies logic and reason.

An abundance of evidence underscores these sensible reservations. Twitter Inc., Alphabet Inc., and Facebook Inc. have obscured the limits of privacy, free-market capitalism, and freedom of speech (Taplin, 2017; The United States Congress Subcommittee on Antitrust, Commercial and Administrative Law of the Committee on the Judiciary, 2020). A great deal of super artificial intelligence research occurs behind a corporate veil of intellectual property shielded from public view and candid assessments (Kello, 2017). The 2016 and 2020 presidential elections have illuminated the clandestine ways international provocateurs can manipulate and propagandize data, information, and narratives to influence voters and sow doubt in elections (The United States Senate Select Committee on Intelligence, n.d.). And, disparities in access to smart

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<sup>2</sup> See Shiller (2019) for information on the economic value of narratives.

technologies have accentuated already harsh socio-economic divisions (Kumar & Anderson, 2019; Vick, 2017).

#### **1.4. Parochialism: Suppositions that have Conditioned Siloed Thinking**

Noticeably missing, however, are the beginnings of thicker descriptions about global, unintended tertiary consequences of *New York Forward*, coupled interventions, and by association, thinking and epistemologies (Butler & Harley, 2010; Geertz, 1973; Nelson, 2018; Woodhouse, 2013). This thesis attempts to fill that void. In doing so, it raises for critical dialogue various suppositions that have informed targets enumerated in convergent sustainable transition plans. That whatever is propositioned will not provoke another fatal pandemic or life-altering recession, accelerate global climate change, or heighten social and racial tensions.

Therein, an error is not acknowledging, understanding, accepting, and embracing complexity, ambiguity, and a bit of chaos. Another mistake is to analyze and suggest new policies or regulations quantitatively, *only with* or heavily skewed by locally sourced, scientifically gleaned data and evidence. An agency or authority researcher will gather the data, then crunch numbers to anticipate outcomes, costs, winners and losers, and consequences. A team follows up with a tactful and incisive response. However, all too often, these evaluations fail to consider the politics of out-of-sight, out-of-mind interconnections (Belhabib et al., 2020; Nurse, 2017). For better or worse, that appears to reflect a growing new norm, *un-strategic parochialism*.

Not entertaining the effects of global, unintended tertiary consequences is understandable. Priorities are elsewhere for obvious reasons. People are flat-out COVID-fatigued. The throes of the indefatigable coronavirus still afflict cash-strapped, unemployed residents who live beneath or on the precipice of the poverty line. Cases of food insecurity have

skyrocketed (Hunger Free America, 2020). The continuation of federal unemployment insurance is not a foregone conclusion, thereby potentially forcing thousands of hapless apartment renters into homelessness and financial disrepair. Health practitioners and addiction service providers are trepidatious about potential spikes in opioid and alcohol abuse. Worse, many state residents still do not know whether they can afford to repay property owners' late rent once the economy restarts and springs back to life with optimism (Long, 2020).

Although true, that still does not preclude and obviate the need to step on the proverbial breaks, at least gently. The logic and reasoning are rather simple to follow. "Local" decisions affect global communities, many of whom suffer from the effects of endemic poverty and internal conflicts (Dehghan, 2019; Heacock et al., 2016; International Rights Advocates, n.d.). If not anticipated, identified, and attended to, these decisions may loop back to harm New York residents. Because so, decision-makers *should*, to make a normative claim, contemplate and delve into this idea of global, unintended tertiary consequences with an openness to surprises.

### **1.5. Follow the Evidence: Scientists are Sending Justified Flare Warnings**

To that end, the need to evaluate global, unintended tertiary consequences in earnest is perhaps more pressing and imperative than ever. An examination of them is necessary to avoid the same pitfalls that got us into this predicament; this examination also is crucial because lives and livelihoods depend on it. New York cannot just advocate for a sustainable new normal whilst flexing its necropolitical might, muscle, and stature elsewhere (Mbembe & Corcoran, 2019; Mbembe & Meintjes, 2003). Doing is an intoxicating recipe for disaster and failure.

As cliché as it may seem, place more—but not total—*trust* in the science, the experts, and the literature (Oreskes, 2019). A mounting body of research implies that it is essential to do just that. Resource extraction and haste, uncritical, renewable energy transitions present a risk to

achieving sustainability targets and protected areas worldwide (Bleicher & Pehlken, 2020; Sonter et al., 2017, 2020; Spillias et al., 2020). Articles and reports from conservation biologists, ecologists, and epidemiologists have revealed causal relations between human activities and zoonotic diseases (Broad, 2020; Karesh & Noble, 2009; Keusch et al., 2009; Wildlife Conservation Society Central Africa, 2020). This, in part, explains the global intrigue when the pangolin first featured in national news coverage, all because researchers presented evidence of a possible link between COVID-19 and the coveted scaly mammal (Cyranoski, 2020; Quammen, 2020). Others have probed the links between land conversion, development strategies and practices, and species loss (Nuwer, 2018; Wilkie et al., 2000). Which eerily suggests that the satiation of consumer *wants* might present a legitimate threat to human health and well-being. Yikes!

## **1.6. Reimagining Legislation a Voice and Epistemology at a Time: Promise and Perils**

Existing research and commentaries appear to make the case that it is time to head back to the decision-making drawing board. Signposts seem to communicate the need to step outside the box—if not multiple boxes—to search for omissions and imaginative horizons, new possibilities (Akerlof, 2020; Crapanzano, 2004). If so, maybe dialogue about the new normal needs to transcend *epistemic constraints* that have conditioned solution and problem framing (Chakrabarty, 2008). The world is, after all, complex and epistemologically diverse (A. F. Roberts et al., 1995; A. F. Roberts & Berns, 2018; M. N. Roberts, 2013).

Even if necessary, the prospect of doing so is rather haunting. It raises questions about what is knowable. It raises questions about the justification of actions given the available evidence. It even raises questions about the limits of science and solely evidence-based policy

recommendations. And, it exposes New Yorkers to practices perceived as pseudoscientific, antithetical to conventional American values, and contradictory to entrenched worldviews. Witchcraft and consumption of pangolins for medicinal purposes immediately come to mind, as does “Traditional” Chinese Medicine (Challender et al., 2020; Honan, 2009; Miguel, 2005; Nuwer, 2018; *Tanzania Arrests 65 “witchdoctors” over Killings*, 2019).

If so, who, in a globalized world, can vote for state legislation? Whose voices can contribute to the design of new state laws, economic strategies, and public-private partnerships? Can oppressed nations or “indigenous” groups de facto veto state legislation if projected outcomes knowingly burden, immiserate, and subject them to undue suffering? Will allowing them to do so decelerate and obstruct the pace of technological innovation and intrastate economic progress, maybe even climate action (Woodhouse, 2016)?

These are salient questions to mull over in an era where twenty-first-century challenges transect continental borders and where people and governments have shown increasing respect to what Dr. Boaventura De Sousa Santos (2012) calls Epistemologies of the Global South (de Sousa Santos, 2012, 2014). Which, according to him, means:

the retrieval of new processes of production and valorisation of valid knowledges, whether scientific or nonscientific, and of new relations among different types of knowledge on the basis of the practices of the classes and social groups that have suffered, in a systematic way, the oppression and discrimination caused by capitalism and colonialism. (de Sousa Santos, 2012, p. 51)

For those reasons, this thesis, in addition to its applied emphasis, set out to problematize unimpressible beliefs that have conditioned and informed decision-making (*Church Missionary Paper*, n.d.; Evans-Pritchard & Gillies, 1976). In so doing, it foregrounds a

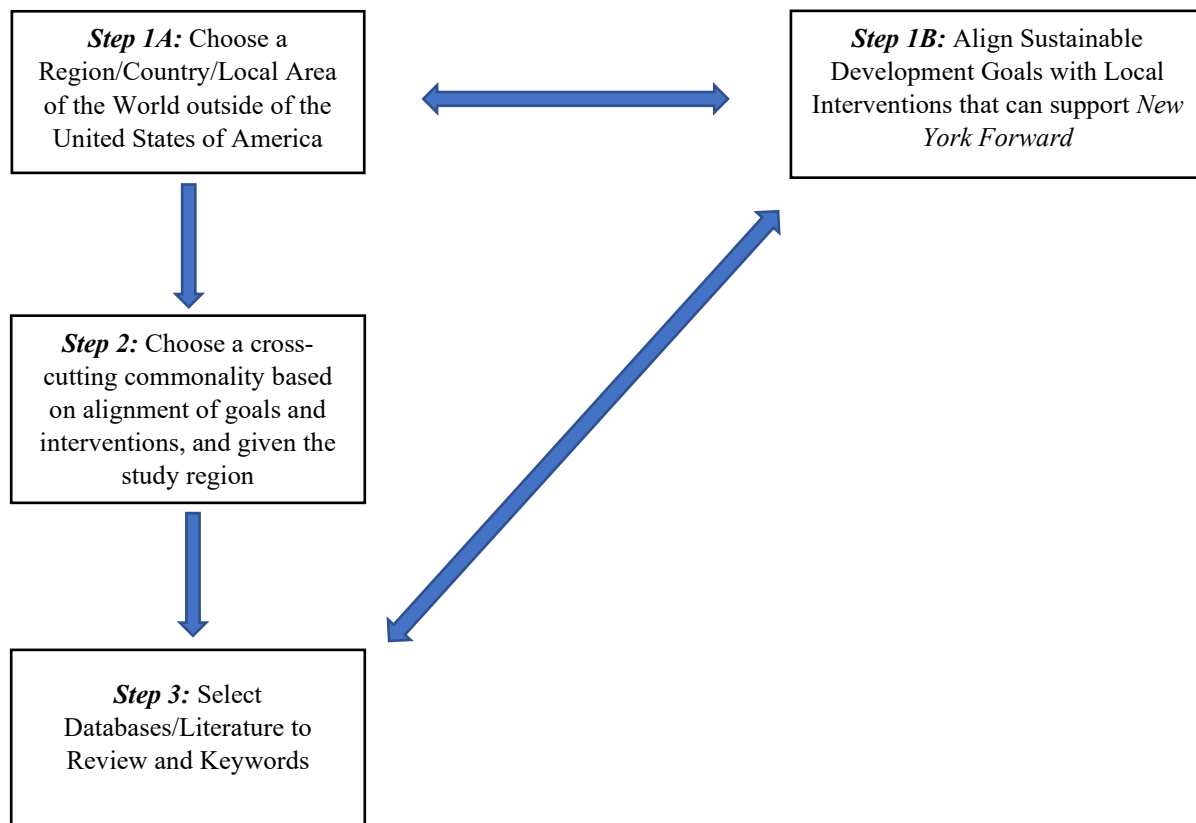
provocative question posed in a paper by Dr. Edward J. Woodhouses (2005), wherein he suggested that readers think a tad bit more about forgotten, marginalized voices (Woodhouse, 2005, p. 211). These are individuals elided from strategic, agenda-setting, financial conversations about technological innovation and research. In a New York context, that means farmers, warehouse stockers, truck drivers, the single parent living in Section 8 housing, and others left behind amidst the 4th Industrial Revolution (Schwab, 2016).

### **1.7. What to Expect in this Thesis: A Summation of the Text**

In closing, a question informed what follows hereafter: What are the global, unintended tertiary consequences of current thinking about the future of New York? The opening part examines the international, unintended tertiary implications of *New York Forward*. It then proceeds to explicate applicable New York State Consolidated Law and complementary plans. The thesis does so to ascertain whether anyone can more easily detect and minimize the deleterious effects of global, unintended tertiary consequences. The conclusion will present a bill, an amendment, or other incentivizing measures for state residents, the State of New York Senate and Assembly, the Executive Chamber, and Legislative Commissions and Councils to consider and debate in legislative chambers and public forums.

## Chapter 2: Developing “Best Practices for Anticipating Global Links and Global, Unintended Tertiary Consequences”

This section expounds upon a best practice to identify and anticipate global links and unintended tertiary consequences. The first part covers selecting a region of the world to study, followed by a section on aligning sustainable development goals with state interventions that may support *New York Forward*. Finally, a mention of cross-cutting commonalities, keywords, and literature databases. Below is the flowchart used to execute this section of the thesis.



### 2.1. Step 1A – The Congo Basin: Complexity in Central Africa

The world is a vast place—and home to approximately 7.5 billion people and manifold “ethnic” groups. No two places are carbon copies of each other. This thesis focused on the Congo Basin region along sustainability dimensions germane to geopolitics, environments,

cultures, economics, security, and human health and well-being. It did so to make concrete the task of anticipating and identifying global connections and unintended tertiary consequences.

Bullet points pose risks and situations concerning a dimension:

***Geopolitics:*** States and nations both operate and perform in a geopolitical theatre. New York epitomizes this fact. In 2019, some 90 million national and international travelers transited two New York City destination hubs, La Guardia International Airport and John F. Kennedy International Airport (The Port Authority of New York and New Jersey, 2019). That notwithstanding the economic allure of Lower Manhattan's Financial District. Given New York's role as a global hub, there also is a need to consider:

- The adoption and implementation of *New York Forward* coincide with *Agenda 2063: The Africa We Want (Agenda 2063)* and China's *Belt and Road Initiative*. *Agenda 2063* is a long-term modernization strategy that the African Union passed in January of 2015, whereas the Belt and Road Initiative is a transformative infrastructure, trade, and economic growth and development strategy (Chatzky & McBride, 2020; The African Union Commission, 2015).
- African Union appropriated projects include retrofitting a rail, road, and telecommunications network (The African Union, n.d.; The African Union Commission, n.d.). Chinese firms have aided a contingent of African nations with synchronizing these projects, but not without controversy. Companies have left an indelible footprint on people and ecosystems; they have indiscriminately extracted natural resources, converting copious land in the process (Kazeem, 2019; Mayers et al., 2019).



- Russia and the Central African Republic recently entered into an arms agreement (Dukhan, 2020; Schmitt & Gibbons-Neff, 2020). Even though Russia is a minor player in the region, it still has pursued deals that constitute a geopolitical security threat, both to the United States of America and its global allies (Kalika, 2019; Troianovski, 2019). The peril of burgeoning Russian interests in Africa only will intensify if the relationship results in sustained telecommunications, science and technology, and physical infrastructure deals and strategic partnerships.

***Environments:*** Because the Congo Basin is the focus region, this thesis could not escape the environment and conservation of it by whatever proposed means. Some conversations are unavoidable, no ifs, and, or buts. As to the Congo Basin, stakeholders need to question the unintended tertiary consequences of sustainable transitions on this underexploited ecosystem:

- Parts of the Congo Basin are a United Nations Educational, Scientific, and Cultural Organization World Heritage Site (Harrison et al., 2016; *Natural World Heritage in the Congo Basin*, n.d.).
- Four major global conservation organizations, the International Union for the Conservation of Nature, the Worldwide Fund for Nature, the Wildlife Conservation Society, and The Nature Conservancy, each engage with countries and stakeholders in the region.
- Some of the world's most iconic, charismatic megafaunas such as the Grauer Gorilla, the Forest Elephant, the Okapi, the Eastern Chimpanzee, and the Bonobo roam the region.

- The Congo Basin, too, is a location where ecologists and conservation biologists have sought to protect the most globally trafficked animals, species of pangolin, from an unsuspected date with extinction (Gagné-Acoulon, 2020).

**Cultural:** The Congo Basin is a “melting pot” of some sort. However, what makes the Congo Basin beautiful also presents challenges. In the Democratic Republic of Congo, a preponderant cause of recent internal displacement was the government’s insistence on not recognizing someone as a customary leader (Mercy Corps, 2019; The International Refugee Rights Initiative, 2018). This incident soon spiraled out of control, displacing around a million people. Going forward, as stakeholders advance conversations about *New York Forward*, there will exist a need to process cultural unintended tertiary consequences:

- Rapid deforestation imperils groups of people “indigenous” to the area. For example, some Baka communities partially depend on the forest for invaluable, life-saving resources, yet are victims of encroachment (Lueong, 2016; Pemunta, 2019).
- Others have paid increased attention to the rapidly urbanizing youth African population (Fleischman, 2019; United Nations Office of the Special Adviser on Africa, 2017). Younger rural residents have migrated to cities to escape poverty pangs. What comes with new socio-economic dynamics are modifications to urban cultural dynamics.
- With rural to urban migration comes the potential for ethnic exploitation and conflict. Accretions in the flow of people between rural and urban areas across

time may trigger illicit activities, but also the entrapment and enslavement of groups rendered inferior.

**Economics:** All continents are natural resource wellsprings—and yes, even Antarctica. In all likelihood, the total value of the Congo Basin is worth well over a trillion United States Dollars. (Debroux et al., 2007; Michigan State University, n.d.; UN-REDD Programme, 2015). The issue is whether the nations can curb the illicit flow of forest products given increased demands for minerals, considering how porous borders are.

- Nations of the Congo Basin, livelihoods, and formal and informal economies depend on natural resources such as wood charcoal, cobalt, forest duiker, and bloodwood (Ndoye & Tieguhong, 2004; Tyukavina et al., 2018).
- In some cases, forest products are direct or indirect sources of income. Bloodwood is a coveted item because of its financial worth on the global furniture market (Olukya, 2017). Cobalt and coltan are the presumable blood diamonds of Silicon Valley in the Big Tech era (Bleicher & Pehlken, 2020; Sutherland, 2011).
- In other cases, forest products are essential to well-being. Roughly 2.5 billion people, including many Congo Basin residents, use wood charcoal to generate electricity (Bergen, 2017; The International Energy Agency, n.d.). Wood charcoal is the preferred combustible material because of its ease of access and transportability (Yale School of the Environment, n.d.). However, the practice is not sustainable at scale.
- Bushmeat—e.g., great apes, forest elephants, small ungulates—often is the dominant source of protein in rural areas; it also is a source of income (Batumike et al.,

2020; Cawthorn & Hoffman, 2015; Drouet-Hoguet et al., 2017; Lee et al., 2020; Peterson & Ammann, 2004; Stiles, 2011).

- Economic and infrastructure development will further stress biodiversity (Dargie et al., 2019; Kleinschroth et al., 2019; Wilkie et al., 2000).

**Security:** Although sensationalized for ticket sales and mature viewing audiences, the blockbuster hit *Blood Diamond* is a glimpse into the underbelly of the informal market (Zwick, 2006). The informal market is an interchangeable name for illicit or black-market economies. Criminals who operate in this furtive, technology-mediated, informal economic system traffic drugs, humans, arms, and forest products, for instance (Shelley, 2018). Geopolitical maneuvering by international actants and economic posturing for political resource hegemony heightens security risks, as does infrastructure development because its additive economic utility may increase access to this illegal value exchange.

- Much of the conflict today is the progeny of colonization, conflicts between neighboring countries—the Democratic Republic of the Congo and Rwanda or Cameroon and Nigeria—and militias, government malfeasance, perceived neglect, rightful indignation, and unshakable beliefs about the perceived lowliness of another group (Eichstaedt, 2011; Harms, 2019; Hochschild, 1999; Turner, 2007).
- Crimes against innocent bystanders committed by bellicose and licentious militia members are pervasive, and rebel groups have terrorized communities, sometimes into willful submission (Cumming-Bruce, 2019; Schukencht, 2019; The Overseas Security Advisory Council, 2019)

- The area still is healing from decades of political volatility and civil wars that even drew the ire and condemnation of the United States Congress because of the 3Ts, Tin, Tungsten, and Tantalum (GovTrack.us, 2020)

***Health and Well-being:*** The images are too familiar, so much that they even normalize dehumanizing forms of suffering: malnourished children with a protruding abdomen, a telltale symptom of kwashiorkor, or an emaciated child supine in the arms of a parent who cannot help but wonder if the lifeless soul will surrender to an untimely death. As sad as it may seem, abject poverty and health disparities are a way of life for many in the Congo Basin—and unacceptable.

- In the Central African Republic and the Democratic Republic of the Congo, the poverty rate hovers above a surreal 60 percent, which is absurd considering the financial value of the Congo Basin. (*Central African Republic Country Profile*, n.d.; The World Bank Group, 2019, 2020)
- A recent Ebola and measles outbreak has sicked thousands of people (Duff-Brown, 2020; The European Centre for Disease Prevention and Control, n.d.; The World Health Organization, 2020).
- Poverty does not occur in isolation, nor is it the only metric of health and well-being. Years of war have traumatized entire generations of individuals. As is well documented, war is a neurological scrambler; Post-Traumatic Stress Disorder can rewire the brain (Finley, 2011; Krasner, 2017).
- Other indicators of poor health and well-being are dilapidated medical infrastructures and HIV/AIDS rates (UNAIDS, n.d.).

## **2.2. Step 1B – United Nations Sustainable Development Goals: A Sustainable Rallying Call**

The United Nations is an internationally recognized intergovernmental body that formed in response to World War II. Since its inception on the 24th of October 1945 in San Francisco, California, the United Nations has led efforts to eradicate poverty, cleanse water of impurities, and build sustainable communities. Employees, contractors, and countless other affiliated sponsors have transported solar-powered fridges to areas in need of medical care because of dilapidated roads, built a school in war-ravaged Sudanese territories, and sought to clamp down on an unsustainable illicit wildlife trade (Crittler, 2018; Fricker & Zahir, 2018; Nellemann et al., 2013).

Central to the portfolio of interventions to end forms of suffering are the Seventeen Sustainable Development Goals. They are, as quoted from the official United Nations website: ...a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere. The 17 Goals were adopted by all UN Member States in 2015, as part of the *2030 Agenda for Sustainable Development* which set out a 15-year plan to achieve the Goals. (*The Sustainable Development Agenda*, n.d.)

This thesis used parts of the Seventeen Sustainable Development Goals to anticipate and identify global, unintended tertiary consequences. It did so for three reasons. First, because implicit in several interventions, policies, regulations, and laws adopted by New York is an acceptance and appreciation of the development goals (New York State, 2016; The City of New York, 2019). Second, they are at face value sensible, reasonable, and guided by a humanistic moral canon. A handful of people can refute proposals to eliminate poverty and build sustainable communities democratically. Third, the Paris Climate Accord interlaces with the Sustainable Development Goals, uniting even more with New York's proposed strategic future.

Of course, a thesis cannot accommodate analyses of all goals. Time and space are immovable constraints. Therefore, only three made the so-called final cut:

- Quality Education (Goal 4)
- Industry, Innovation, and Infrastructure (Goal 9)
- Sustainable Cities and Communities (Goal 11)

Each signifies trends in climate and environmental justice movements, distance learning, technological literacy, and smart city innovation (Empire State Development, n.d.; The New York State Climate Leadership and Community Protection Act, 2019; The New York State Education Department, 2015). Table 1 below, titled *Aligning of Sustainable Development Goals with New York Forward and Interventions*, details the affinities and poses a few questions.

**Table 1: Aligning of Sustainable Development Goals with New York Forward and Interventions**

<i>Identified Sustainable Development Goal</i>	<i>Stated Sustainable Development Goals</i> <sup>3</sup>	<i>The Applicable Part of Building Back Better, Part V of New York Forward</i>	<i>Questions</i>	<i>Specific Question</i>	<i>Specific Intervention</i>
<b>Goal 4: Quality Education</b>	4.A Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, nonviolent, inclusive and effective learning environments for all	The plan for reopening school; Better Education System	What is the Post-COVID-19 future of education?	What roles will technology play in the education system’s new normal?	New York State Department of Education Commissioners Regulation 100.4
<b>Goal 9: Industry, Innovation, and Infrastructure</b>	9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Better transportation network; better integration of technology in state systems	What is the Post-COVID-19 future of the state digital infrastructure?	How and in what ways will the state and private partners develop the new normal state infrastructure?	New York Smart Cities Innovation Partnership

<sup>3</sup> For more information on Sustainable Development goals, visit the United Nations website on Sustainable Development Goals (*THE 17 GOALS | Sustainable Development*, n.d.). The interactive page is useful and engaging.

<i>Goal 11: Sustainable Cities and Communities</i>	11.A Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning	Greater Social Equity	What is the Post-COVID-19 future of the state economy and equity?	How will the State of New York reduce inequalities and develop a sustainable, inclusive economy?	The New York climate leadership and protection act
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### 2.3. Step 2 – Justification for Focusing on Mineral Extraction: A Problematical Cross-Cutting Commonality

As mentioned earlier, *New York Forward* proposes retrofitting public infrastructures and services such as education and healthcare with all the latest bells and whistles, a sort of smart technologies extravaganza. A subsection of Part 5, “Better Integration of Technology in State Systems,” makes explicit the goal of the post-COVID-19 technological retrofit:

Many opportunities that New York has to build back better depend on widespread and equitable access to new technologies and broadband internet. To reimagine our state, we have to integrate our practices and systems with the best advanced technology tools.

(New York State Office of the Governor, 2020, p. 92)

Because this a common *belief*, at a minimum, elected officials, state residents, and government agencies must ask and reflect on the below questions:

- If executed, what are the possible short, medium, and long-term effects on mineral demand, some of which are conflict sourced?
- From where, and how, does a company that works alongside New York acquire its supply of minerals?
- Does New York need to stitch together the fabric of a New York Forward Climate Smart Mining Policy, keeping in mind the Congo Basin at all phases of the design process (The World Bank Group, n.d.)?



Research on renewable energy geopolitics is an entrée point into the potential resource intensiveness and politics of the recommended new normal (de Ridder, 2013; Vakulchuk et al., 2020). Although conceivably counterintuitive or paradoxical—or not—the pace at which cities, states, and nations remodel energy systems and infrastructures will strain natural resources. For, as a recent World Bank Group press release notes:

production of minerals such as graphite, lithium and cobalt, could increase by 500% by 2050, to meet the growing demand for clean energy technologies. It estimates that over 3 billion tons of materials and metals will be needed to deploy wind, solar and geothermal power, as well as energy storage, required for achieving a below 2°C future. (The World Bank Group, n.d.)

Forecasted increases in the demand for minerals to support the transition to renewable energy translates to smart technologies. The logic translates to smart technologies because:

- 1.) The Apple iPhone, the Microsoft Tablet, the Microsoft Cloud require copious minerals to even function and be operable.
- 2.) Both energy and telecommunications infrastructures are part of an integrated ecosystem of innovations that will smoothen the transition to a new normal. Neither can operate or function efficiently and as designed absent its other—or humans. The relations between them are symbiotic. Smart technologies gather real-time data, and renewable energy technologies feed these innovations data. Any person who has owned, used, or seen or a solar panel monitor knows this indubitable fact.

That these technologies abound with minerals and have converged is not a contemporary phenomenon, an enigma, or the stuff of green screens, IMAX theatres, and Hollywood imaginations (Borés et al., 2003; Duysters & Hagedoorn, 1998; Song et al., 2017). Nor *should* it

come as a total packaged surprise if history is a sneak-peak into the future. Natural resources are inputs to companies who manufacture and sell countless products and services on which many of us depend. And, technologies in years past have converged, at which point a new system, process, idea, or discipline emerged. An engineered and patented horseshoe-making machine, an iron-work facility, and a water wheel merged in Troy, New York (Albany Institute of History and Art, n.d.). A mercurial Steve Jobs converged technologies, hardware, and software into a communication-technology ecosystem (Montgomerie & Roscoe, 2013; Wakabayashi, 2014). Many vehicles have connected to the internet, launching an evolution in personal travel.

Opening statements by the Alaska United States Senator Lisa Murkowski and the Washington United States Senator Maria Cantwell before a February 8, 2018 hearing on the transformation of the energy system, and what the nation learned from that transformation, best capture this symbiosis. Lisa Murkowski opined:

Layered on top of the infrastructure revolution is the digital revolution. The increased digitalization of our nation's energy delivery system provides numerous benefits. Real-time monitoring can allow for system optimization and identify issues in the earliest stages. Better data assists consumers in making more informed choices about their energy usage. (*Evolution of Energy Infrastructure in the United States and How Lessons Learned from the Past Can Inform Future Opportunities: Hearing Before the Committee on Energy and Natural Resources*, 2018, p. 2)

Maria Cantwell only reiterated Senator Murkowski's plainspoken observation, but with a bit more enthusiasm and zeal for the promise of the smart technologies-energy-system nexus. Therein, she stated:

Three decades ago, the average U.S. home used electricity to power a television and a couple large appliances and a few small appliances. Americans now are connected to the Internet and using multiple televisions and appliances and charging computers and tablets and cell phones. And now, even, charging electric cars and generation their own power with solar panels.

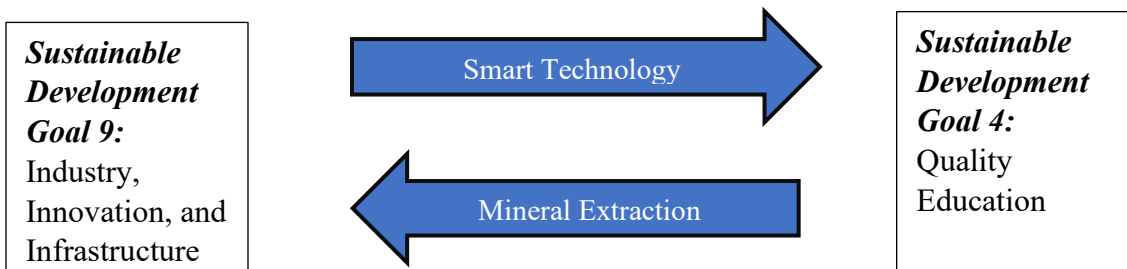
Consumers and businesses are demanding new services and new technologies, and our electricity grid needs to keep pace with that, and also the growing threat of cybersecurity attacks.

We need to invest in modernizing our infrastructure to meet demands, help lower consumer's bills and provide security. And we know that is a good return on investment.

We learned from the Recovery Act that when \$1 billion was invested in smart grid technologies it created nearly \$7 billion in economic output. The investment created nearly 50,000 jobs and more than \$1 billion in tax revenues back to the government.

*(Evolution of Energy Infrastructure in the United States and How Lessons Learned from the Past Can Inform Future Opportunities: Hearing Before the Committee on Energy and Natural Resources, 2018, p. 3)*

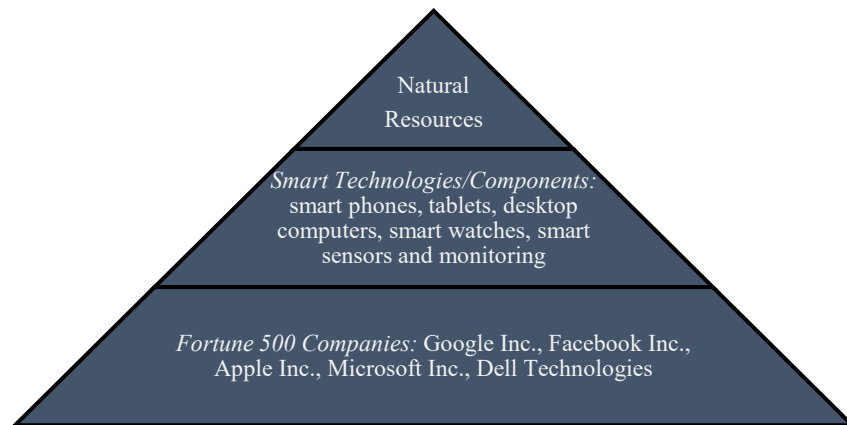
### Model 1: Identified Cross-Cutting Commonalities



Note: Commonalities Identified for the Analysis based on Sustainable Development Goals.

Smart technology and mineral extraction were considered cross-cutting commonalities whose functionality was salient to the analysis because they are, in essence, axes around which Sustainable Development Goals pivot. A cross-cutting commonality is any idea, practice, activity, policy, law, or technology connecting parts of a project, team, department, government agency, or organization (see Hund et al., 2020). It is possible to scaffold these by the degree of granularity and public exposure—with the top of the pyramid representing a dearth of public exposure.

**Model 2: Scaffolded Commonalities Based on Degree of Granularity and Public Exposure**



Note: Scaffolding commonalities are based on the degree of exposure and granularity.

Smartphones and the internet are the most conspicuous types of cross-cutting commonalities, whereas others are less conspicuous or inconspicuous (Schlossberg, 2019; Starosielski, 2012). Inconspicuous commonalities include fiber-optic cables, natural resources, satellites, epistemologies, and ontologies. As Model 2 above shows, a researcher can categorize commonalities.

**2.4. Step 3 – It is all in the Data and Literature: The Selection of Literature**

Because of COVID-19 and the inability to conduct a thick ethnography on the epistemologies informing the contemporary legislative process, the thesis only conducted a desk

review of open access literature. What follows is a justification and description of the data/literature sources and keywords.<sup>4</sup>

### ***Open Access Sources: Tear Down that Financial Paywall***

Too much research is behind expensive financial paywalls. Many people lack the discretionary income to pay for expensive journal subscriptions or enough articles to author scholarship that remotely qualifies for acceptance in any reputable publication. Even then, an individual's residual income still may go towards unexpected expenses such as a flat tire, repairing a bumper after a fender bender, or a reconstructive ankle surgery. Hence the intrinsic value of open access research paid for by millions of state residents—aka taxpayer dollars. On those grounds, this thesis sought to only review publicly available literature. Excluded, then, was anything available for sale unless needed to complement results. Open access means open access.

### ***Data and Databases***

Below are explanations of the database sources. The two broad categories are the Federal Government and the United Nations. Both fund, publish, and archive reputable, scientific, and insightful studies.

- ***United Nations Funds, Programmes, and other Affiliated Organizations:*** The United Nations is a wearer of many hats. Its organizational matrix consists of cross-pollinating funds, programs, and autonomous agencies with united missions, values, principles, and visions. Recognizable programs include the United Nations International Children's Fund (UNICEF) and the United Nations Development Fund (UNDP); recognizable agencies

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<sup>4</sup> Since the text is for a public audience, extra emphasis was placed on accessible sources.

who have guided anxious and timorous people through the pandemic, the economic recession, conflict, and global climate change include the World Health Organization (WHO), the World Bank Group, and the United Nations Security Council. Its employees also are subject matter experts, many of whom can conduct research not possible outside the organization. Evaluated in this thesis, then, were publications produced by agencies, offices, funds, and programs whose mission and vision are compatible with Sustainable Development Goals Three, Nine, and Eleven (see Supplemental Material Database).

- ***Federal Government Publications and Agencies Databases:*** The United States Congress appropriates funding to agencies to preserve and archive materials such as reports, congressional testimony, and speeches. Databases used in this thesis included the Science.Gov, USAID Database, Congressional Research Service, and the Homeland Security Digital Library. All are recognized databases that store federally published documents for more than three hundred and sixty million residents.

The inclusion criteria were:

- A chapter, report, article, grey literature/white paper, book, or briefs;
- Published on or after 2007;
- The chapter, report, article, grey literature/white paper, book, or brief is about or at least mentions the Congo Basin or a country contained within the Congo Basin;
- If the chapter, report, article, grey literature, book, or brief is about Sub-Saharan Africa or Africa as a whole, it must include a specific section or reference to the Congo Basin or country contained within.
- If the chapter, report, article, grey literature, book, or brief contains a list of case studies, at least one section must be about a country within the Congo Basin.

The exclusion criteria were:

- Any blog post, opinion piece/political commentary, images, resolutions, marketing information, theses, dissertations, infographics, brochure and factsheets, creative works, biographies.
- Published before 2007;
- That is not about or does not reference the Congo Basin or any nation within the Congo Basin

### ***Keyword Searches***

Listed here are the keyword phrases that informed the literature search. An initial search returned thousands, sometimes millions, of responses—the reason being the sole use of abstract nouns and noun phrases such as mining and conflict mining. Henceforth, the use of the conditional phrase Congo Basin. The conditional added an extra layer of specificity to returned results. A comprehensive preliminary evaluation of research on contemporary smart technologies, conflict mining, the Congo Basin, and sustainable development in the region informed keyword choices.

- Conflict Minerals
- Conflict Mining
- Conflict and Mining
- Conflict and Minerals
- Conflict and Minerals Congo Basin
- Conflict and Mining and Congo Basin
- Conflict and Mining and Environment and Congo Basin
- Conflict and Mining and Technology and Congo Basin

- Conflict and Mining and Development and Congo Basin
- Resource Extraction and Congo Basin

A final keyword search only included six countries that make up the Congo Basin and the Congo Basin standalone. The purpose of a second keyword search was to locate articles that do not appear in the first round of searches.

- The Democratic Republic of the Congo
- Cameroon
- Gabon
- The Central African Republic
- Republic of the Congo
- Equatorial Guinea
- Congo Basin



## Chapter 3: Results of the Congo Basin Case Study

Part 3 communicates the results of the Congo Basin case study. First, it summarizes the findings, then presents a conceptual framework, a mapping, to make sense of interconnections. After that, it suggests unintended consequences to discuss before acting. Last, it situates the narrative Analysis in the context of the Democratic Republic of Congo.<sup>5</sup>

### 3.1. A Summary of the Literature: A Narrative Emerges

In total, the search yielded (125+) results, each varying in scope, length, and detail. United Nations Security Council Letters on the situation in the Democratic Republic of Congo and the Central African Republic offered harrowing accounts of extreme poverty, the control of natural resources, and forced displacement (United Nations Security Council, 2016, 2017, 2018b, 2019a). The appendix even included images of evidence. Whereas the United Nations Environment Programme report, *The Last Stand of the Gorilla: Environmental Crime and Conflict in the Congo*, is broader in scope and more situated in an ecological context (Nellemann et al., 2010). Therein, researchers warned of threats to charismatic megafauna: Western Gorilla and Eastern Gorilla. Acute risks included mining, timber extraction, bushmeat hunting, civil conflict, and agricultural land conversion (Nellemann et al., 2010).

Science.Gov literature was a bit more expert oriented, though still accessible. In particular, two articles were of great interest to this thesis because they dove into the analog between conflict minerals and technology (Greenemeier, 2014; Jameson et al., 2016). Much research from both the Department of Homeland Security Database, the United States Agency for International Development Agency, and the Congressional Research Service overlapped. They provided

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<sup>5</sup> See Haraway (1988) for an understanding of meaning of how situated used in this thesis.

overviews of the situation in the Congo Basin, with a skew towards the Democratic Republic of Congo, in part because of the 2008 consumer backlash against conflict mining (Arieff, 2019a, 2019b; Arieff & Coen, 2013; Warren, 2011). Aside from that, a fascinating report spoke about the ecological impacts of battery electric vehicles. The information contained within that report somewhat reiterated the views articulated in *Minerals for Climate Action* (Hund et al., 2020; Lattanzio et al., 2020). Also of great interest to this thesis was the literature on conflict materials strategy and conflict minerals because a mass technological retrofit requires a stable materials supply (Bauer et al., 2010; Congressional Research Service, 2012). United States Agency for International Development best showcased the efficacy of community-based management. Central Africa Regional Program for the Environment projects have contributed to an increase in western-lowland gorillas and have promoted and aided sustainable conservation land management (Jolley et al., 2018). Security scholarship prioritized risks to military personnel and civilian life, such as securing a sufficient stock of strategic and critical minerals to defend against irregular warfare (Hartman et al., 2012). Government Accountability Office reports stressed continued federal involvement in sanitizing the supply chain of conflict minerals, even if implied (Government Accountability Office, 2015, 2019).

### **3.2. A Conceptualization of Unintended Consequences: At the Intersections of Displacement, Natural Resource Extraction, and Education**

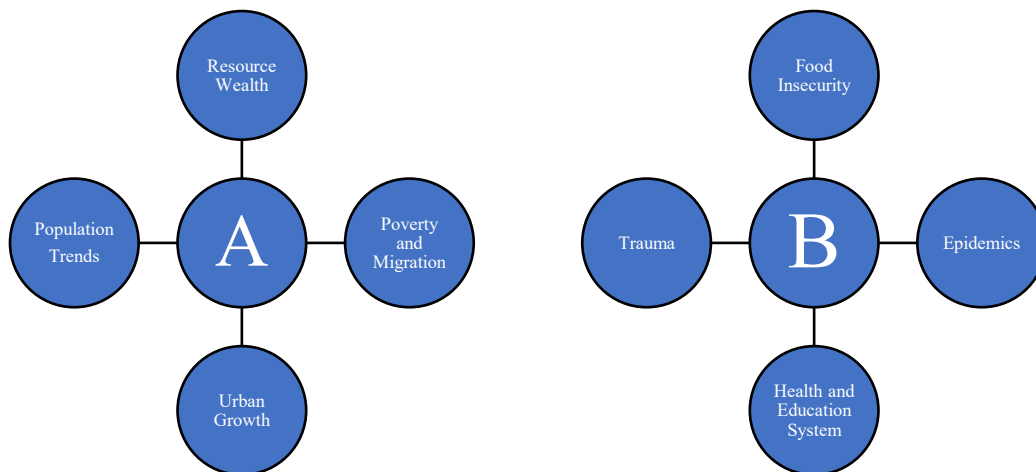
More critical to the thesis than the literature itself was the abstract mapping of interconnections. As is argued, a way to conceptualize the results is to create a web of relationships. The web need not include much information, only general framings to anticipate, identify, understand, and construct potential pathways. It resembles a simple social network analysis or Futures Wheel (Ferro, 2020; Schiffer & Hauck, 2010; Scott, 1988). Nodes or

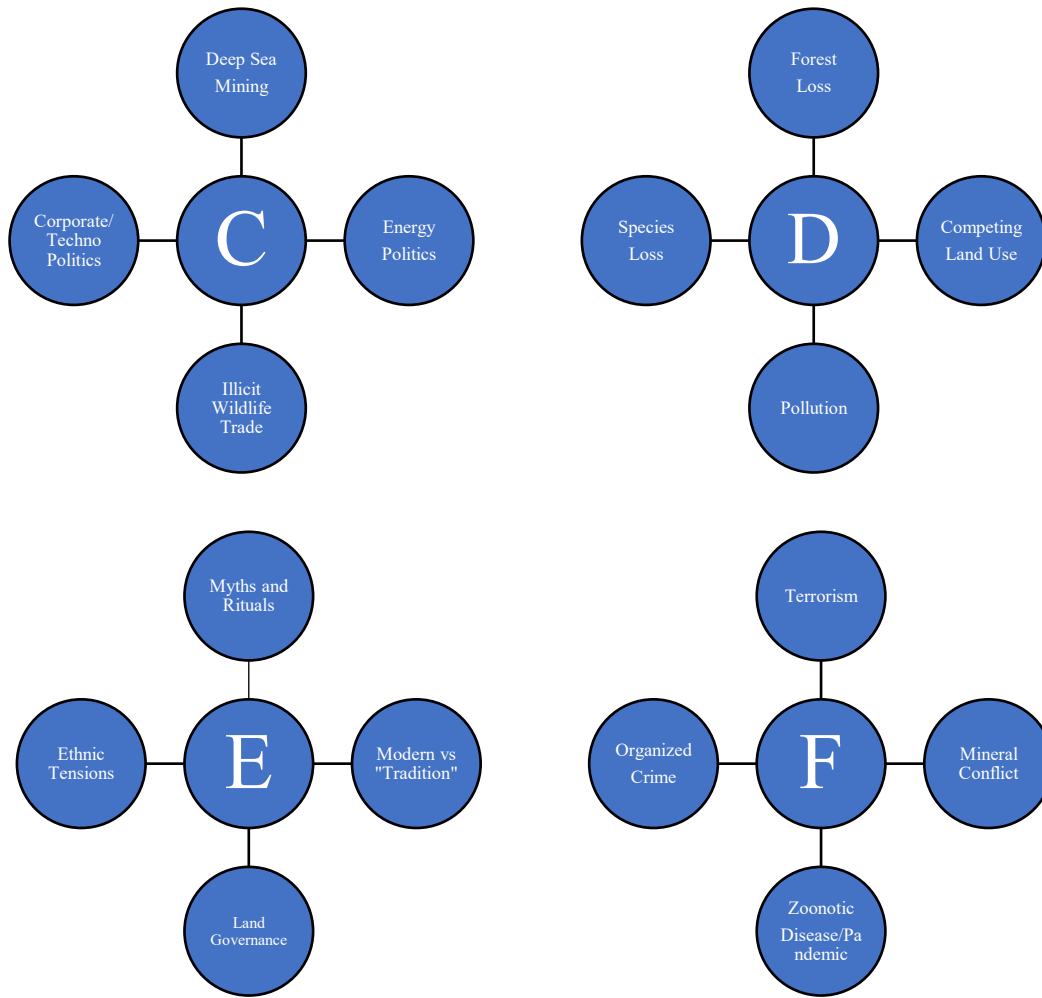
connectors are problem dimensions. Connectors serve as environments within which subtopics operate:

- economics (*A*)
- health and well-being (*B*)
- geopolitics (*C*)
- environment-ecology (*D*)
- socio-cultural (*E*)
- security (*F*)

Subtopics also can branch. For instance, pollution can branch into digital litter or air pollution that chokes and enshrouds cities such as Los Angeles, Houston, and New York Cities (Benton, 2019). As can terrorism to include domestic, international, White Supremacist, and so on. The network hereafter is a snapshot of its actual density. Its actual density far surpasses what a human can map without the assistance of super artificial intelligence.

### **Model 3: A Dimensional Network Mapping: The Subset of Underlying Issues**





Note: A network of multi-causal relations that links subtopics and problem ecosystems/environments.

Surrounding each problem environment or ecosystem are subtopics from a review of the literature. Subtopics either were made explicit or inferred. The purpose is to express the ways subtopics and ecosystems intersect to form issues that beset the Congo Basin and, by extension, New York.<sup>6</sup> It also allows an individual or organization to fashion together future narratives about global, unintended tertiary consequences.

<sup>6</sup> Green crime, cultural shifts in health and wellness, and the avocado and vanilla industry are examples of interconnections amongst dimensional problems (Dehghan, 2019; Oreilly, 2018; Steavenson, 2019).

### **3.3. Displacement and Education in the Democratic Republic of the Congo: A Thicker, Intersectional Analysis**

The following is a situated case study on the Democratic Republic of Congo. Below are available countrywide economic, health, demographic, and population statistics on the Democratic Republic of the Congo from the Central Intelligence Agency World Factbook page on the Democratic Republic of Congo (The Central Intelligence Agency, n.d.).

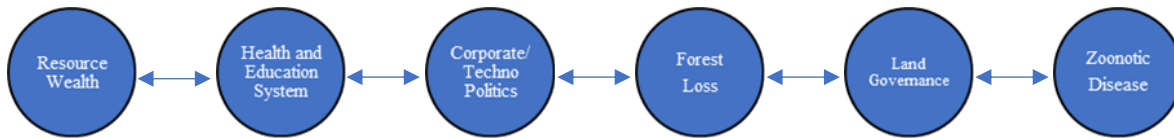
- Total Population: 100,780,263
- Life expectancy at birth for males for the year 2016: 59.3 years old
- Average life expectancy for females for the year 2016: 62.8 years old
- HIV/Aids Deaths: 15,000
- Infant Mortality Rate: 64.5 Deaths/1000 Live Births
- Percent of children under the age of 5 years who are underweight: 23.4
- Population without Electricity: 69 million
- Internet Users: 8,231,257

#### ***A Narrative Account of the Democratic Republic of Congo: Mapping Global, Unintended Tertiary Consequences***

To form a narrative account of global, unintended tertiary consequences, begin by organizing and linking dimensions and subtopics. Doing so threads together relations. In the chain hereunder, expected forest loss can be a function of the projected value of potential resource wealth and the absence of viable, sustainable substitute resources. It also can be a function of inadequate land management systems, corporate resource over-exploration, dysfunctional government, and an unequal education and healthcare system. Here, the point is not to quantify relations, only to *visualize* them. Model 4 is a more simplistic way to do just that.

However, it is too simple because of its two-dimensionality. The world is not linear or straightforward, not in the least bit (Barker & Iantaffi, 2019)

#### Model 4: A Mapping of Multi-Causal Relations



Note: A Chain of Multi-causal Relations that bridges relations between subtopics and problem ecosystems.

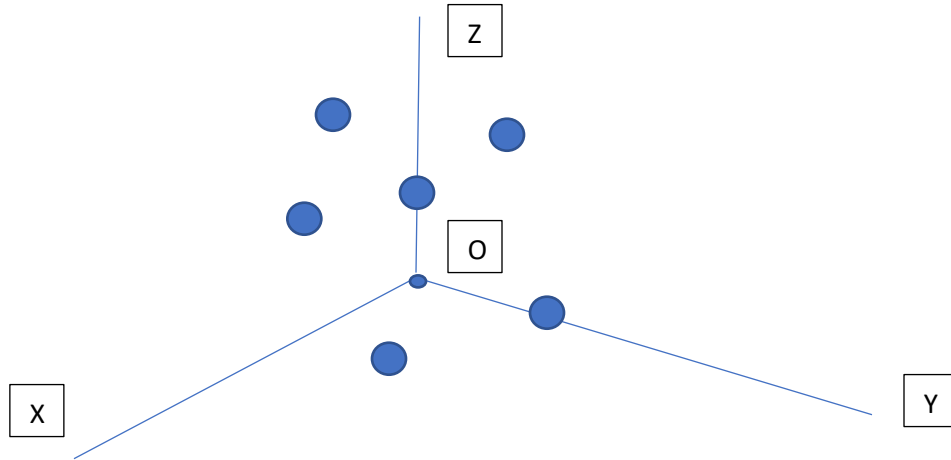
Another way to visualize relations is with a three-dimensional model. Although too limited in its capacity to capture the complexity of issues, a three-dimensional model can account for it better than a two-dimensional model. With the three-dimensional, Model 5:

- let  $x$  equal pressure
- let  $y$  equal stability
- let  $z$  equal entropy or the *appearance of order or chaos*
- and origin,  $O$ , equals time.

Within that space are subtopics which occupy *positions*—instead of a position—along a fluid pathway starting from  $O$ . These positions fluctuate with time, *the pace* of changes to ecosystems, and relations and relationship. What is valuable to know and understand is:

- By and large, these do not follow a determined path, nor are they pre-determined.
- That unknowns can generate stress, having somewhat of a destabilizing effect.
- That human action can bring into order a destabilized sub-topic.
- That these subtopics can converge, giving rise to new ecosystems and, therefore, challenges.

## Model 5: A Three-Dimensional Model of Multi-Causality



Note: Three-Dimensional Model of Multi-Causality showing relations between problem ecosystems and the spaces within which they operate

Take twenty-first-century techno-politics, perhaps the most pressure-inducing stressor on social ecosystems in the past two decades because of its pernicious effect on human social development (Orlowski, 2020; Turkle, 2015). Let O equate to the year 2007 because it is the year Apple Inc. released its first-generation iPhone, which to an extent, revolutionized capitalism and politics, re-wrote what it means to be social, and altered relationships with environments.<sup>7</sup>

New business models and technologies came into existence, as did new services such as ridesharing and cloud computing. Digital ecosystem formed, birthing the likes of Amazon Inc., Google Inc., and Facebook Inc, all of whom have amassed vast resource wealth and immeasurable power (Eavis & Lohr, 2020). The mass accumulation of wealth and power has shifted the balance of corporate power towards these new “charismatic” companies. Even the likes of NIKE Inc., Adidas AG, the Coca-Cola Company, PepsiCo Inc., Subaru Corporation, Ford Motor Company, and many more Fortune 500 companies pivoted strategies, adapting to the new digital revolution.

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<sup>7</sup> A New Yorker could watch a video on climate change on the subway without needing a laptop or tablet, all the while chowing down a greasy slice of New York pizza.

Big Tech’s ecosystem dominance also has stressed formal education, political institutions, resource extraction. Politicians today are racing to subdue what seems like an untamable beast, though the recent anti-trust lawsuit against Facebook Inc. may very well change the competitive landscape (Kang & Isaac, 2020). Social media technologies have contributed to the bifurcation and polarization of most voters into irreconcilable political tribes (Bail et al., 2018). As to resource wealth, “developing” economies are joining the digital economy, potentially stressing ecosystem health. Likewise, the digital economy gave rise to new subaltern counter cultures, new consumers, and people wielding power with nothing but a smartphone and social media account (Fraser, 1990).

### ***Tipping Points and Convergence: Unintended Tertiary Consequences in the Democratic Republic of Congo***

A global unintended tertiary consequence may arise when a tipping point is reached or approached, thereby moving from a more ordered to a more chaotic state (Gladwell, 2002). Perhaps a company can degrade natural resources so long as bribes line the pockets of corrupt officials. The tipping point is irreparable environmental damage due to continuous kickback payments, government corruption, consumer culture changes, and more. Perhaps irreversible forest loss renders species locally extinct, or worse, threatens an entire species such as African pangolins smuggled to burgeoning South East Asian markets (Challender et al., 2020).

Five foreseeable global, unintended tertiary consequences may confront the people of the Democratic Republic of the Congo and New York, given the plan set out in *New York Forward*:

- the spread of zoonotic diseases/pandemic
- chronic forced internal displacement/homelessness
- the interruption of formal education/climate delays



- deforestation and forest conversion
- future debates about resource extraction in fragile ecosystems/ecological-existential-politics

Of grave concern are the ways unintended consequences can *collide* or *converge* (Song et al., 2017). The convergence of global climate change (environment-ecology), the economic recession (economic), the novel coronavirus (health and well-being), and social, political, and racial (cultural) unrest is a case of issues/environments colliding. Next are further explanations of identified unintended tertiary consequences:

***Zoonotic Diseases:*** The unsustainable extraction of natural resources such as cobalt, coltan, tin, and gold exposes New York to another pandemic threat (United Nations Environment Programme, 2016, p. 50). With *Agenda 2063* set in motion, continental Africa is on the verge of an economic resurgence because of population growth, improved road access to natural resources, and a flood of international development aid. In many respects, a wealth boom in the Democratic Republic of the Congo and Congo Basin, more generally, can lift millions of people out of poverty. With an urbanizing and younger population, new critical infrastructure, and developmental aid, however, also comes potential exposure to globalized economies and cultures. Consequently, greater exposure to globalized economies and cultures may stress competition for resources as more individuals and families acquire wealth. This stress will, in part, reflect lifestyle changes and concomitant consumer demands. People will purchase and demand new items: smartphones, desktops, electric vehicles, tablets, smartwatches. People also will embrace whatever economic system affords them a comfortable lifestyle. If new consumption patterns constrain resources, it can increase the likelihood of another

pandemic because of the global flow of people and goods in and out of Central Africa and closer contact with animal vectors. The most likely trigger of a tipping point is unsustainable bushmeat consumption and the illicit wildlife trade, its origins in, near, or within a determined mile radius from mining and other extraction encampments.

***Chronic Forced Internal Displacement:*** The natural resource wealth of the Democratic Republic of the Congo is a proximate cause of forced internal displacement (United Nations Security Council, 2014, 2018a, 2019b). United Nations Security Council letters highlighted this sobering, melancholic fact. What investigators have unearthed is evidence of armed groups who have capitalized on the natural resources trade. They have mined, taxed, smuggled gold, tantalum (coltan), tin, and tungsten into neighboring countries and international markets. In so doing, anti-government antagonists have enslaved, tortured, and kidnapped women and children and burnt schools, villages, and communities. Those people affected by unspeakable violence who remain within the nation are internally displaced. Because of this information, a suggested global, unintended tertiary consequence of executing *New York Forward* and considered interventions, absent considerable sustainable oversight, is continued forced internal displacement. The effects on New York are not as overt as the spread of zoonoses. This thesis suggests that internal displacement may give rise to more nationalist, populist, and anti-immigrant sentiments, *if and only if* displacement spills over into mass migration.

***Disruption to Education:*** At this moment, the United Nations Commissioner for Refugees, also known as the UN Refugee Agency, lists the number of internally displaced people in the Democratic Republic of the Congo between the years 2017 and 2019 at an astounding 5,014,025 (*DR Congo Emergency*, n.d.). Of that five or so million,

a great many are children, many of whom have missed school because of violent clashes (United Nations International Children's Fund, 2018, 2019). Because of this disheartening fact, a global, unintended tertiary consequence with which to reckon is a proliferation in disruptions to childhood, youth, and young adult education.<sup>8</sup>

***Deforestation:*** The reality is, the Democratic Republic of the Congo's natural resource wealth is untapped and underutilized: that is not an exhortation to extract resources wantonly and indiscriminately. Nevertheless, deforestation still is a concern. At the moment, land conversion, the bushmeat trade, and the demand for woodfuel and wood charcoal are primary drivers of deforestation (Megevand et al., 2013; *State of Conservation of the Properties Inscribed on the List of World Heritage in Danger*, 2018; *State of Conservation of the Properties Inscribed on the List of World Heritage in Danger*, 2019). Mining and mineral demands also are drivers of deforestation, but not as impactful, yet (Megevand et al., 2013). Depending on the outlook, the underutilization of ecosystems itself is a threat to deforestation: there is more for the taking. If so, a global, unintended tertiary consequence to consider is an acceleration in deforestation because of urbanization, economic growth, and wealth generation. However, what tags along might be equally troubling, particularly the potential rise of wildlife crime, a more hostile United States climate politics, and geopolitical backlash if Russia can links to deforestation and westernized consumption.

***Future debates about resource extraction***<sup>9</sup>: Again, the World Bank Group report on climate action could not emphasize the point enough (Hund et al., 2020). Whatever

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<sup>8</sup> This section is short for a reason. Writing about the effects on children is a difficult subject to cover, mainly because of the abuse they endure. As the adage goes, "put yourself in their shoes."

<sup>9</sup> This section is implied from the literature. Literature was taken from reputable open access resources.

pathway(s) a nation or state chooses to address inequalities and climate change will require copious natural resources. Where extractors and explorers acquire and search for natural resources is a subject of intense and impassioned pleas and debates because of the geopolitical and geospatial complexities. Environmental activists advocate for not mining parts of the United States of America because of concerns about land degradation and injustices, which are valid reasons to object to a project (Baker, 2020). But, if companies cannot extract and explore resources domestically, they must extract and search for resources elsewhere. The Democratic Republic of the Congo is that elsewhere. Another curveball further complicates the situation. Mining may generate perfect conditions for another pandemic, deforestation, forced internal displacement, and disruptions to learning and education. Where else, then, can corporations' access natural resources? Look up and walk to the beach: space and the ocean (Miller et al., 2018; Pandya, 2019; Xu, 2020). As science-fictionary as it might appear, deep-sea mining and space mining are options for the future. However, deep-sea mining—and space mining—is not worth the investment risk, yet; nor is it environmentally efficacious and practical enough, yet (Levin et al., 2020). There is an inadvertent risk that perhaps is counterintuitive. That bans on mining in the United States of America will push nations to tap ocean and space ecosystems. So...pick your poisons, and if space is the go-to option after exhausting pathways, pick your conspiracy theories out of the bunch.<sup>10</sup>

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<sup>10</sup> The debate about space mining has to do with limits and conditions. When does a governing body say enough is enough? Does an interstellar pandemic need to occur before regulators and the United States Congress temper investor enthusiasm? And, what conditions need to be in place before upscaling exploitation? This thesis urges all environmental activists to take seriously the trade-offs between mining parts of the United States of America prudently and mining deep sea ocean beds and space.

## **Chapter 4: Discussion and Recommendation #1 Global Minds and New York State Consolidated Laws**

Section 4 is about New York State Consolidated Law and a critical analysis of it. The short-term aim was to determine whether New York State Consolidated Environmental Conservation, Education, and Economic Development Law can allow someone to anticipate and suppress global, unintended tertiary consequences.

### **4.1. The New York Way of Change: Consolidated Law and its Makers**

New York lacks a proposition, ballot measure, system like the State of California. The result is that laws must meander through the legislature before arriving at the current governor's current desk for her or him to sign into law or veto (The State of New York Senate, 2009). Before bills disembark for the governor's mansion in Albany to become Consolidated Law, the legislature and publics vet the bill. They provide comments on the language, outcomes, effects, and more. In return, the legislature may amend the text to marry responses and suggestions.

Under the microscope were New York State Consolidated Environmental Conservation, Economic Development, and Education Law because they align with the information in Table 1. Moreover, Consolidated Laws also dictate policy, value statements, and value propositions. In so doing, they provide guidance; they are gateways into the future.

### **4.2. Methodology: A Step at A Time**

The first step in the legal analysis was to review each section of the law in its entirety. A second follow-up review focused on a combination of articles, titles, and sections to assess yet again. Exclusion criteria helped reduce the final total to a manageable number. In this thesis, they were:

- The article, section, or title only states the name of the law
- The article, section, or title is specific to a region
- The article, section, or title is specific to a resource or landscape
- Not germane to the interventions in *Table 1*

A spreadsheet contains identifying information on each article, section, and title (see Supplemental Material Database). Upon thorough readings, the analysis established whether each article, section, or title can identify global, unintended tertiary consequences or opportunities to address them. Evidence or conditions included:

- Requiring an external review of laws, policies, strategies, state plans, or regulations by international stakeholders along the following dimensions of diversity:
  - Geography
  - Ethnic/Culture/Epistemology/Ontology
  - Political
  - Professional
  - Gender
  - Race
  - Disability/Vulnerability
  - Economic/Class
- Binding measures about, or a summary section that mentions, the intersectionality of global, unintended tertiary consequences (Cho et al., 2013; Crenshaw, 1989, 1991).
- Policies or laws that underscore, value, encourage, embrace, and facilitate global worldviews or international collaboration in sustainable research and development, business/economics/innovation, education, governance, and poverty elimination.

### 4.3. Results of the Analysis

Table 2 summarizes the legal analysis results, Table 3, the distribution of amendments, bills, and other interventions. The skew towards Environmental Conservation Laws in Table 2 does not imply any causal relation. Neither does it mean that there are more opportunities for changes in an environmental context. It just means more sections met inclusion criteria.

**Table 2: Frequency Distribution of Laws by Section of New York State Consolidated Laws**

<i>New York State Consolidated Law</i>	<i>New York State Consolidated Law Total</i>
1.) Environmental Conservation Law	31
2.) Economic Development Law	7
3.) Education Law	3
<b>Total: 41</b>	

**Table 3: Frequency and Percent Distribution of Bills, Amendments, and Other Interventions**

<i>Classification (Bill, Amendment, or Other)</i>	<i>Distribution of Bills, Amendments, and Other</i>	<i>Percentage of Bills, Amendments, or Other</i>
1.) Amendment	30	73%
2.) Bill	2	5%
3.) Other	9	22%
<b>Total: 41</b>		<b>100%</b>

### ***Time to Get Creative: Proposing an Amendment or Bill or Both***

New York residents can propose a bill to elected officials and committees long as the idea is not so farfetched as to border economic absurdity. In other cases, a minor amendment is needed. All that matters is a simple fact: New York allows for open, deliberative, participatory democracy (Arnstein, 1969; Bherer et al., 2016; Landemore, 2017). People are power in the Empire State. Proposing and hopefully passing an amendment or bill is a high, medium, or low priority given a combination of subjective factors.

***Table 4: Frequency and Percent Distribution of Bills, Amendments, or Other Interventions Given Priority Level***

<b><i>High, Medium, or Low Priority Intervention</i></b>	<b><i>Distribution of High, Medium, or Low Priority Interventions</i></b>	<b><i>Percentage of High, Medium, and Low Priorities</i></b>
1.) High Priority	10	24%
2.) Medium Priority	11	27%
3.) Low Priority	12	29%
4.) Constants	8	20%
<b>Total:</b>	<b>41</b>	<b>100%</b>

For example, this thesis classified policy amendments as a high priority because it is tantamount to a corporate mission and vision statement. Agencies design regulations and programs based on policy dictates. Here, the priority factors were:

- Low Political Divisiveness, as evident by:
  - Interdisciplinarity
    - Legislative pathways
    - Economic potential
- Public-Private Partnership Potential as evident by:



- Cost minimization and value maximization
  - Ecosystems partnerships
  - Asset Sharing

#### **4.4. Using the Law to Ensure There is No Neglect of Global Unintended Tertiary Consequences**

So, can New York State Consolidated Environmental Conservation, Economic Development, and Education Law allow someone to identify global, unintended tertiary consequences? Drum roll, please: Yes and no. Yes, if the right elected officials are in office. No, in that the language is too ambiguous for stakeholders to identify them consistently

##### ***Conserving and Protecting the Environment: But...Whose Environment?***

The law does not put forth a *creative*, strategic policy that will help stakeholders manage and conserve the environment and natural resources now and in *the future*. Article 1, Title 1, Section (§§) 1-0101 of New York State Consolidated Environmental Conservation Law, declares the state policy. As is, the policy reads:

1. The quality of our environment is fundamental to our concern for the quality of life. It is hereby declared to be the policy of the State of New York to conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.
2. It shall further be the policy of the state to improve and coordinate the environmental plans, functions, powers and programs of the state, in cooperation with the federal government, regions, local governments, other public and private organizations and the concerned individual, and to develop and manage the basic resources of water, land, and

air to the end that the state may fulfill its responsibility as trustee of the environment for the present and future generations.

3. It shall further be the policy of the state to foster, promote, create and maintain conditions under which man and nature can thrive in harmony with each other, and achieve social, economic and technological progress for present and future generations by:

- a. Assuring surroundings which are healthful and aesthetically pleasing;
- b. Guaranteeing that the widest range of beneficial uses of the environment is attained without risk to health or safety, unnecessary degradation or other undesirable or unintended consequences;
- c. Promoting patterns of development and technology which minimize adverse impact on the environment;
- d. Preserving the unique qualities of special resources such as the Adirondack and Catskill forest preserves;
- e. Providing that care is taken for the air, water and other resources that are shared with the other states of the United States and with Canada in the manner of a good neighbor. (Declaration of Policy, n.d.)

In the first paragraph, the reader and legislature are left to decode and interpret the meaning of “our environment.” Does “our environment” imply the environment of New York or the global environment? If the latter, then the bill can address intrastate, unintended tertiary consequences. If the former is the case, then the answer is that once again, global, unintended tertiary consequences will be neglected, as is evident from the preceding discussion of the Democratic Republic of Congo.

A minor detail of that kind is not inconsequential. Remember, these policies chart pathways forward. It is a difference between protecting just New York's environment at the expense of the Democratic Republic of the Congo or both New York *and* the Democratic Republic of the Congo.

An amendment to this section of New York State Consolidated Environmental Law can clear up a great deal of uncertainty if it broadens the lens through which to view environments. Otherwise, interpretations of the law are left to the whims of whomever constituents' vote into office. As such, the thesis proposes an amendment to expand the meaning of the environment.

***Proposed Environmental Conservation Amendment: Towards a Global Environmental Outlook***

*Title:* An amendment to the State of New York Environmental Conservation Policy concerning the definition of the environment.

*Purpose:* Amends Title 1, Article 17, Section (§§) 1-0101 of New York State Consolidated Environmental Conservation Law to redefine the meaning of the environment.

*Summary of Provisions:* Strikes and amends the first sentence in the first paragraph of Article 1, Title 1, Section (§§) 1-0101 of New York State Consolidated Environmental Conservation Law to read, "The quality of global, state, and local environments are fundamental to our concern for the quality of life."

*Justification:*

Whereas the State of New York recognizes and accepts the convergent threat of global climate change, pandemics, social, class, and racial tensions, and economic recessions;

Whereas the State of New York recognizes and accepts the intersections between local economies, politics, environments, and decisions and global economics, politics, environments, and decisions;

Whereas the State of New York, in recognition of this fact, promulgates prudent climate adaptation and mitigation strategies to address global climate change, pandemics, social, class, and racial tensions, and economic recessions;

And whereas the World Bank Group posits that demand for Earth minerals such as cobalt, lithium, and graphite may “increase by nearly 500% by 2050”<sup>11</sup> to meet the demand for low impact clean and renewable energy;

The State of New York shall expand the meaning of environment, moving beyond state and regional boundaries, to a global, holistic framing

*Fiscal Implications:* None

***Education, Learning, and the Meaning of Student in a Digitally Mediated, Smart Technology Centric, Interconnected World: Global or National or State Citizen or All?***

Because global climate change, the economic recession, racial and social, and the COVID-19 pandemic are global phenomena, the State of New York needs to massage its curriculum to better prepare students for the globalized twenty-first-century (Akkari & Maleq, 2020; Birdie, 2020; Nussbaum, 2002). Although tacit, the students of today will lead the future. Batons will reach the hands of digital natives and millennials at some point. In so doing, today's students will eventually decide the fate of technological innovation, technology culture, socio-cultural relations, climate action, and the economy. The ways school districts, schools, teachers,

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<sup>11</sup> See (Hund et al., 2020; The World Bank Group, n.d.)

and the New York State Education Department prepare students will influence that fate. A way to do that is by designing and implementing a globally focused curriculum.<sup>12</sup>

Title 1, Article 17, Sections (§§) 801-816 lists certain subjects that schools must teach or offer to their student body (Instruction in Certain Subjects, n.d.). Of interest to this thesis were Sections (§§) 801 and 801-A because minor amendments to them can empower students to become acquainted with and adept at discovering global, unintended tertiary consequences. 801 covers instruction in “patriotism and citizenship and in certain historic documents,” whereas 801-A covers “civility, citizenship, and character education” (Instruction in Certain Subjects, n.d.). Given the language, it appears that the education elected officials, teachers, and administrators have put together does train students for a chaotic, enigmatic world. But there still is room for change, for ends are fluid as opposed to static.<sup>13</sup>

Where then to look for answers? The United Nations Educational, Scientific, and Cultural Organization has espoused to educators and educative institutions the value of Global Citizenship Education. Global Citizenship Education “aims to empower learners of all ages to assume active roles, both local and globally, in building more peaceful, tolerant, inclusive, and secure societies” (United Nations Educational, Scientific and Cultural Organization, 2018). In practice, educators may instruct students about the perils of electronic and pre-consumer waste or conflict mining in the Democratic Republic of Congo. As of this moment, neither is mandated by law—nor is there any mention of Global Citizenship Education. Hence the amendment below.

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<sup>12</sup> It is important to point out that the curriculum and education are political—much like humans (Apple, 1991, 2019; Freire, 1985, 2000). Elected officials and educators need to understand the fine line between ideology and indoctrination, and education and learning. There comes a point where indoctrination supplants education. Therefore, educators must do everything possible to erase from the curriculum any semblance of indoctrinating material. If that is an improbable ask, then there becomes a need to understand the meaning of political that is not antagonistic and conflictual (Mouffe, 2005).

<sup>13</sup> To say that an end is fixed is to imply an end state.

***Proposed Education Law Amendment: Clarifying the Meaning of Citizenship***

*Title:* An amendment to New York State Education Law, concerning instruction in certain subjects

*Purpose:* Amends Title 1, Article 17, Sections (§§) 801 of New York State Consolidated Education Law

*Summary Provisions:* Strikes and amends the first paragraph of Title 1, Article 17, Sections (§§) 801 of New York State Consolidated Education Law to read, “In order to promote a spirit of global collectivism, civic service, and obligation, and in order to foster in the children of New York the moral and intellectual qualities necessary to meet the obligations of global citizenship in peace or war, the regents of The University of the State of New York shall prescribe courses of instruction in patriotism, strategic decision-making, sustainability, epistemologies and ontologies, global citizenship, and global civic education and values; our shared global histories of cultural, racial, ontological, and epistemological diversity, the role of religious, ontological, epistemic tolerance in this country; and, human rights issues, with particular attention to the study of the inhumanity of genocide, natural resource conflicts, forms of slavery (including the freedom trail, underground railroad, conflict mining, and cocoa harvesting), the Holocaust, the War in Darfur, the First and Second Congolese Wars, and the mass starvation in Ireland from 1845 to 1850, to be maintained and followed in all the schools of the state.”

*Justification:*

Whereas the State of New York recognizes and accepts the global dimensionalities of local economies, politics, environments, and decisions;

And, whereas the State of New York aims to prepare its students for a globalized, sustainable, digitalized economy;

The New York State Education Department must redefine its curriculum to educate sustainable thinkers who understand, accept, and embrace Global Citizenship values.

*Fiscal Implications:* None

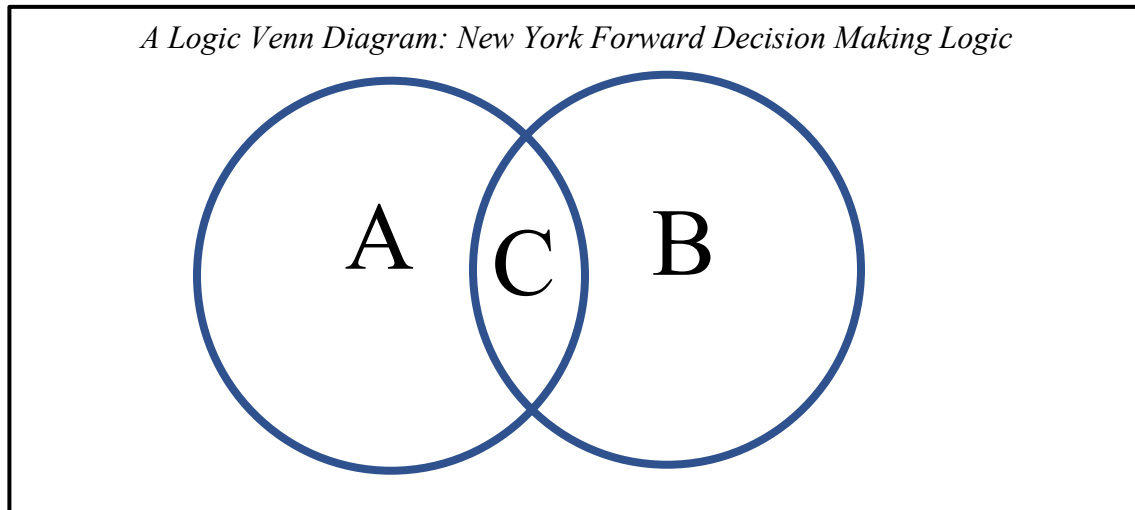
## Chapter 5: Discussion and Recommendation #2 About New Social Impact Business and Consumer Cultures

### 5.1. The Logic of New Capitalisms

To begin this section, how about a brief trip down memory lane? Below is a diagram that reflects the binarity of how many people *express* thoughts, ideas, and existential decisions, such as whether to support a *Green New Deal* or *New York Forward*. Let A equate to unequivocal approbation of smart technologies and digitalizing public goods and services. Stated differently, Let A equal unwavering approval of *New York Forward* or the *Green New Deal*. Let B amount to a trenchant repudiation of smart technologies, the digitalization of public goods and services, and the espousal of *New York Forward*. Conditionals further contextualize who A and B are: Given option A, person 1 identifies with sport a, school b, race c, hobby d, and so on, and so forth.

A and B's union is C. C is the middle ground, compromise in government relations parlance. It is a mixture—the intersection—of A and B. Someone who occupies that space may propose appropriating capital to projects whose forecasted return on investment is above 15% in less than or equal to 2.5 years to 3.5 years, or whose net profit margin is at least 10% after 3.0 years. They may further add a safety provision to revoke funds, say if a project results in increased unemployment. There are, however, empty spaces.





Empty spaces are complements to A and B's union or all that lies outside of a simple yes or no: a grey, fuzzy area. The grey area uncovered from the research was sustainable business culture formation, both profit and not-for-profit.

Capitalism and corporations have a much-maligned reputation in the twenty-first-century because of the correlations between corporate activities and Global Climate Change, job loss and the workforce's technologization, and environmental injustices (James Manyika et al., 2013; Leonard, 2018; Manyika, 2017; Riley, 2017). Despite the critiques against capitalism and corporations, there still is an *opportunity* to salvage that image by forming a new smart, sustainable business and consumer culture.

The locus of this new smart, sustainable business and consumer culture is a *Center of Excellence for International Collaborations in Sustainable Ecosystems Development*. Centers of Excellence fall under the Empire State Development Corporation's Division of Science, Technology, and Innovation portfolio. According to the official agency website:

NYSTAR funds 13 Centers of Excellence to foster collaboration between the academic community and the business sector to develop and commercialize new products and technologies, to promote critical private sector investment in emerging high-technology

fields in New York State, and to create and expand technology-related businesses and employment. (Empire State Development, 2017)

For all Centers of Excellence are worth, a search of the website noticed a gap that can enable New York to become a social impact, business hub, and influential innovation ecosystem if filled. That gap is the absence of a Center of Excellence that bridges connections between businesses and academics who work on local, sustainable economic development projects in conservation hotspots and world heritage sites.

Research on global unintended tertiary consequences and New York State Consolidated Law made apparent the opportunity to form a new transcontinental public-private partnership ecosystem. To make funding expectations clear, an advisory team of business leaders, faith-based leaders, professors, government agency representatives, and students can classify areas of strategic and critical importance. Given the prevailing problem landscape, the following are strategic areas to consider: Disaster Preparedness, One Health<sup>14</sup>, Global Citizenship, and Sustainability Education, Energy Consumption, Conservation, and Humanitarian. From there, public and private stakeholders can negotiate a formal working relationship. Stipulations to consider include:

- Transparent capital/asset sharing.
- Resident/student input by way of some democratic processes and neighborhood constitutions, all the while remaining committed to diversity in its various forms.
- Restructuring undergraduate and graduate education to prioritize problem clusters as opposed to disciplinary subjects. Problem clusters can be the abovementioned strategic areas.

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<sup>14</sup> For more information on One Health visit the World Health Organization home page (The World Health Organization, n.d.).

The hope is that the Center of Excellence will plant the seeds of a new smart, sustainable business and consumer culture in New York grounded in a pluralist epistemology and decision-making framework. What is more, the Center will prepare students to navigate the future.

## Chapter 6: Conclusion

Global climate change, the COVID-19 pandemic, the economic recession, and social and racial unrest have upended established approaches to thinking about the world. From the outset, given the panoply of persuasive evidence, it appeared as if New York needed to re-consider taken-for-granted frameworks that have allowed residents to overcome disasters such as Hurricane Sandy and 9/11 stronger and more resilient than ever. *New York Forward* was that call for a new normal and supporting framework. But as this thesis attempted to prove, New York cannot assume that proposed transition plans are sustainable, let alone democratic, safe, and secure from perturbations and risks to the state economy and human well-being. As was found, unintended tertiary consequences may very well threaten the sustainability of proposed transitions. Therefore, it is the case that New York must at least entertain reimagining its approaches to thinking about this ostensible new normal.

To that point, there is much to *learn* from this thesis and the idea of global unintended tertiary consequences more generally. First, that there is something that always lies outside of what individuals and groups know to be the case. Knowing that must *humble* sustainability scientists, artists, humanists, and others who value sustainability as a positional framing to understand a passion-profession. Second is the need to *appreciate* and *express* how stupidly complex the world is in an accessible way. Last is the need to actively seek conflicting research, thereby moving away from defensive and hostile responses towards a more *dialogic*, *empathetic*, and *caring* response (Freire, 2000; Noddings, 2013, 2002).

In practice, an understanding and acceptance of the expanding boundaries of individual and collective knowledge can lead to a more *impactful* and *purposeful* sustainability science if explored with utmost caution—to avoid cultural relativism. It may result in more poetic writing,

as opposed to turgid prose; it may result in new collaborations and disciplines; it may push academia to revisit its educational model. As time progresses, follow-up ethnographic research will need to probe the thinking and decision-making processes behind responses to the pandemic, global climate change, the economic recession, and divisive social and racial relations. In closing, this means *new sustainable epistemologies* are perhaps necessary to brace for uncertain and complex futures.

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