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Putting the Blue in the Green New Deal

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As the “Green New Deal (GND)” takes shape to decarbonize the economy, promote economic growth, and address environmental injustice, it is crucial to incorporate the key sectors of the blue economy into the plan as it develops. Forty-three percent of Americans live in shoreline-adjacent counties, which generate almost half (44 percent) of our Gross Domestic Product. These areas and the public seas they depend on, including the Atlantic and Pacific Oceans, the Gulf of Mexico, and the Great Lakes, are home to the nation’s most climate-vulnerable populations, whether it be the low-income communities of color in coastal Texas and Louisiana threatened by sea level rise, Native Alaskans currently losing their villages in northern Alaska, urban and underserved communities such as in Far Rockaway, New York City, which failed to receive the timely help needed in the wake of Super Storm Sandy, or the entire island of Puerto Rico, whose population is still suffering the effects of Hurricane Maria.

Given these and other threats, the GND must be built on opportunities centered around coastal adaptation, mitigation, and habitat protection. A focus on the blue economy can improve the quality of life for millions of Americans in coastal states and territories, while also providing powerful benefits in terms of jobs, environmental improvement, and social equity for the entire nation.

To ensure that the GND adequately addresses the needs and demands of the blue economy, this article will serve as the first step in a larger discussion, as this process requires the input of many additional stakeholders before a final agenda can be approved. Such an agenda will guide the crafting of legislation and implementation of policies to protect and restore the *blue* in our red, white and blue.

Following are suggested policy and investment priorities for building a prosperous and resilient nation and improving the quality of life for at-risk coastal communities that must be a part of the GND.

1. Reform of the FEMA National Flood Insurance Program (NFIP)

The NFIP is currently \$20 billion in debt, and the gap between the money that the program collects and the amount it pays out in insurance claims is projected to grow significantly larger in the coming decades, as the impacts of climate change accelerate. Not only is this situation fiscally unsustainable, the program creates incentives that leave American citizens in harm's way and makes effective climate change planning more difficult. The program requires major reforms that reduce the incentives for people to continue to build (and rebuild) in flood-prone areas, and instead promotes development and adaptation that is consistent with long-range climate models.

The NFIP was reformed in the Biggert-Waters Act of 2012 (a rare bipartisan effort of the past decade), but these reforms were poorly constructed and the immediate public outcry led to their reversal in the subsequent Congress. The lesson going forward is relatively simple: any flood insurance reform that will lead to higher premiums for homes in high risk areas needs to be phased in slowly, and paired with money to help people move to safer areas. The private insurance sector is also going to have to come back into the market, as the public program is unlikely to accomplish this on its own with over \$1 trillion of coastal property at risk.

Models that have worked also need to be studied, such as the FEMA buy-outs that allowed the town of Valmeyer, Illinois to relocate to higher ground after the Great Mississippi Flood of 1993, or the ongoing "Blue Acres" program in New Jersey implemented after Hurricane Sandy, which buys flood prone homes from willing buyers at pre-storm prices, tears them down, and creates parks and wetland buffers in their place. These federally supported local and state initiatives can be scaled up and integrated into a new FEMA system.

The FEMA 100-year flood plain maps also need to be redesigned based on the best-available science, and continually updated. The current maps are woefully inaccurate, both with respect to area extent and frequency of flooding, and these inaccuracies increase every year. In addition, politically motivated exemptions from the Coastal Barrier Resources Act have to be terminated and the program (that excludes undeveloped flood prone areas from federal subsidies) greatly expanded.

The basic principle should be to use federal (and private sector) insurance to help adaptation, not simply restoration. The idea of communities being able to pool their Community Rating System (CRS) savings to purchase adaptation measures they could not otherwise afford is one example of how this could work. Ideas like more widespread use of Catastrophe Bonds, particularly for infrastructure, are also worth considering. The "new deal" part of this should be to expand the pool of resources needed to build the essential infrastructure required to adapt to climate change. This will require public-private partnerships and widespread buy in from all sectors of society.

2. Coastal Infrastructure Investment

Proponents of the GND, along with many other policymakers estimate that the amount needed exceeds \$1 trillion over the next twenty years in new infrastructure investments to fund a host of public works projects. We believe that a substantial portion of these funds should be reserved for "natural coastal infrastructure" such as "living shorelines" programs now being implemented in coastal Louisiana and around the country that can help buffer the impacts of climate change, restore coastal biodiversity, and sequester carbon (i.e., blue carbon).

This fund should prioritize projects that protect major existing infrastructure, such as airports, wastewater treatment plants, power stations, and roads, and address more localized needs in small and medium-sized cities. Miami is investing \$400 million to raise streets and install water pumps and St. Petersburg investing \$360 million to adapt their wastewater treatment system to heavier rainstorms, flooding, and seawater intrusion. In South Carolina, mayors of smaller coastal towns and cities are being asked to assess the infrastructure costs they face in adapting to the coastal impacts of climate change. These smaller cities will need significant investment, and regional strategies need to be developed.

A number of studies have found that protecting and restoring tidal marshes, mangroves, seagrass beds, kelp forests, and other algal seaweeds reduces erosion, secures the foreshore, and sequesters carbon (far more effectively than even tropical rainforests), while providing other vital ecosystem services. One aim of the GND should be to invest in programs that will see these habitats increased by at least 20 percent over 2019 levels by 2030.

These living shoreline systems can also be used to replace “hard” infrastructure or be built in conjunction with established infrastructure to create hybrid systems, but the key is getting as much ecological restoration into the shoreline systems as possible, while still providing protection and resilience for coastal communities.

With a decentralized approach based on “the right tool in the right place at the right time,” we can meet or even surpass the U.S. National Climate Assessment’s 2018 estimate that 50 percent of coastal damage from climate change can be mitigated with smart infrastructure approaches. These adaptation measures should be at the least carbon neutral, and hopefully net positive for carbon reduction.

3. National Guidelines for Offshore Renewable Energy Development

Offshore wind and tidal energy can play a major role in decarbonizing the U.S. economy. Because the coastal environment is not zoned the same way that the terrestrial environment is, there is a large degree of regulatory uncertainty on where to site new offshore renewable energy projects. New federal guidelines, based on a comprehensive system of Regional Ocean Planning will help to responsibly expand the industry and provide added incentives for the development of major new offshore power projects.

One of the most effective ways to boost offshore renewable energy is to deal with onshore transmission issues. Currently, connecting large-scale offshore wind to the grid on a cost effective basis is a bigger barrier to development in the United States than marine spatial conflicts. The European Union has already created the power transmission cable systems and onshore grid agreements needed to move forward, which is why at the end of 2018 the EU was generating 18,499 MW of commercial offshore wind power while the U.S. was generating a paltry 30 MW.

Rather than recreate the water wheel, we can learn and adapt from the European experience to date. With over \$400 million recently bid for offshore wind development rights in federal waters off Massachusetts, interest in safe, renewable U.S. energy is clearly on the rise. From a labor equity point of view the transition from offshore oil drilling jobs to similar jobs in the offshore wind industry such as turbine technician and line handler is already underway.

Other marine energy systems, including hydrokinetic systems (wave and tidal) and Ocean Thermal Energy Conversion (OTEC) need stronger R&D funding and regulatory support from the Department of Energy, FERC, and other federal agencies to accelerate their potential in the shortest timeframe possible.

4. Aquaculture Research & Development

The U.S. lags behind most of the world in the relative size of its aquaculture industry. Sea vegetable aquaculture and expanded shellfish farming can provide sustainable integrated food products, fertilizers, fuels, industrial chemicals, and bio-plastics while also providing a new source (algae) for large-scale carbon sequestration, year-round employment (in contrast to seasonal work in many fisheries), and new incentives to maintain working waterfronts in the face of hotel and housing development pressure. Federal funding for increased research, along with guidelines to ensure that new aquaculture facilities don't negatively impact coastal ecosystems, can help grow the industry, both for smaller artisanal operations as well as large-scale commercial applications. This should include a major expansion of NOAA's National Sea Grant College Program, which is the existing vehicle to address a lot of the innovation issues associated with aquaculture, fishing, and sea farming.

5. Assistance for Local Fishing Communities

In many parts of the country, especially along the Gulf Coast, in Florida and in parts of the Great Lakes, high levels of agricultural run-off severely degrade coastal ecosystems, in the worst cases creating "dead zones" or harmful algal blooms (HABs) that can cover thousands of square miles, kill fish and wildlife, and pose a serious health threat to humans. Federal limits on these levels of run-off are essential to ensure that the economies of coastal communities, often in rural and low-income sections of our coastline, are adequately protected. Reductions in this run-off would require more efficient farming operations, and encourage a shift in methods and operations to restore healthy soils that sequester rather than emit carbon dioxide. Doing so would also have significant impact on downstream fishing both commercial, recreational and treaty based.

There should also be a significant program to help people in fishing communities directly adapt to climate change. This could include development of new energy efficient technologies; there is also a lot of interest in shifting from mono-hulls to multi-hulls for fishing boats and a need to develop hybrid and electric propulsion systems for all vessels. The GND should designate funds and programs to help people involved in community-based fishing, indigenous treaty-based fishing, and other parts of the fishing industry to transition economically as fish stocks decline or shift location as a result of climate change. Employment of displaced workers from the fishing industry should also be a mandated priority for aquaculture and sea farming companies seeking permits to operate on our public seas.

6. New standards for Ports and Shipping

The Greening Ports movement that emerged out of California's LA/Long Beach complex just over a decade ago demonstrates that major reductions in port-based pollution, including greenhouse gas (GHG) reductions of 70 percent and more, can be achieved in a relatively short time while expanding port activity. The GND should include ways to decarbonize ports with an achievable requirement of an 80 percent reduction of GHG emissions by 2030. The path to achieve these

goals would include electrification of port power for all forms of transportation, as well as new air quality standards for vessels entering ports.

With 90,000 large commercial vessels now operating on the ocean, most burning highly-polluting bunker fuel, the GND should push beyond the U.N.'s IMO (International Maritime Organization) plans and standards for converting propulsion systems, with an immediate U.S. requirement that cleaner low-sulfur fuels be used in U.S. waters, ship speeds be reduced in near-shore coastal waters (which will also reduce whale strikes), and that all new ships built in the U.S. or entering U.S. waters (by mid-century) have propulsion systems based on liquefied natural gas, hydrogen fuel systems, or clean-burning hybrid systems. For example, the U.S. Navy's Makin Island, a 40,000-ton amphibious warship, now burns one-third the fuel of other warships in its class thanks to its hybrid propulsion system. Under the GND the U.S. Coast Guard, U.S. Navy, Department of Energy, and others should engage with the shipbuilding industry and other partners to advance the next generation of ship design, propulsion, and performance.

The greening of ports and shipping will also have additional community benefits for predominantly low-income port city populations and communities of color, such as San Pedro, Long Beach and Wilmington California; following implementation of the Los Angeles/Long Beach Clean Air Action Plan dramatic reductions occurred in childhood asthma and adult cancer rates, which previously had been among the highest in the state of California. The GND can build upon this success and ensure that communities living near ports don't suffer disproportionate negative health impacts.

7. A Network of Marine Protected Areas

The United States has been a leader in the establishment of Marine Protected Areas (MPAs) that act as nature reserves for the ocean, much like our National Parks do on land. These areas include National Monuments, Marine Sanctuaries, Wildlife Refuges and National Seashores, which provide essential habitat for ocean and coastal wildlife, areas for scientific study and education, tremendous opportunities for recreation and a sustainable recreation-based economy as well as resilience in the face of climate impacts such as ocean acidification. Among the largest in the world is Northwest Hawaii's Papahānaumokuākea, established by President George W. Bush and expanded by President Barack Obama, which contains 70 percent of U.S. coral reefs along with rare and endangered species such as the Hawaiian monk seal (*Monachus schauinslandi*). MPAs help to restore depleted populations of ecologically and economically valuable fish and habitat. The protection of habitat also acts to protect water quality and buffer coastal communities from storms, sea level rise, and coastal erosion.

The GND could help to create a national framework in the design, regulation and management of new MPAs specifically created to mitigate and adapt to climate change and act as blue carbon depositories. Strong U.S. leadership at home and abroad could also bolster global efforts to establish new MPAs in places such as Antarctica's Ross Sea or the Arctic Ocean where many nations' jurisdictions overlap. U.S. State Department leadership could also be valuable in the developing United Nations Treaty on the High Seas, which is in the process of considering the protection of two thirds of the ocean beyond any nations' jurisdiction.

8. A Revised National Disaster Response System

Even with adequate greenhouse gas mitigation efforts, climate change is going to accelerate for the remainder of this century and the resulting natural disasters are going to get worse, particularly as they impact our blue economy. As demonstrated by the federal response to Hurricane Katrina in 2005 and Maria in 2017, the government is ill-equipped to handle storms of these magnitudes, even as their frequency and intensity are set to increase. Therefore, the GND should recognize that first responder systems in federal, state and municipal jurisdictions are already at their limits, as the annual number of multi-billion-dollar extreme weather events grows.

The GND needs to consider a range of new approaches in disaster response such as the creation of an 11th unified combatant command in the Pentagon designated as the Disaster Response Command, with the necessary budget and resources to carry out coordinated rapid multi-front responses. Directed by the DOD's National Guard Bureau it could also tap into the capabilities of the U.S. Coast Guard (USCG), the only military service (presently located within the Department of Homeland Security) that has a real depth of experience in disaster response, search and rescue (SAR), and migrant interdiction, all issues that will increase in scale and complexity with climate change. The USCG also needs to be expanded in size and capability including a new fleet of icebreakers to operate in the U.S. Arctic, as the loss of sea ice from climate change has opened up this region in new and challenging ways both military and commercial.

At the same time, a multi-agency system for post-disaster response has to be established to assure that in the wake of a major climate-linked disaster, restoration strategies create the most resilient, equitable, and responsive long term job-generating outcomes. The failure in the wake of 2017's Hurricane Maria not to transition Puerto Rico's energy grid into a decentralized solar based system that would be impervious to future climate shocks, but rather to rebuild the fossil fuel-heavy status quo, is a telling example of our present climate planning failure and an example of what the Green New Deal can transcend provided it incorporates the blue economy into its legislative and policy plans.

This paper is but a first draft of an achievable plan that we believe can help turn the tide for our ocean, climate, blue economy and ocean dependent communities, both human and wild, from sea to shining sea.

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