

# land art generator initiative

RENEWABLE ENERGY CAN BE BEAUTIFUL

## Powering Places (2016)

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We may look back on the year 2016 as a turning point for the climate and our cultural and social responses to it.

The effects of a very strong El Niño event gave us a glimpse into the new normal for twenty-first-century temperatures. Atmospheric scientist Ed Hawkins gave us the *Climate Spiral* visualization that shows the earth's average temperature spinning quickly out of control toward a 2°C average global shift,<sup>1</sup> highlighting how the COP 21 Paris aspirations of maintaining a 1.5-degree cap may be overly optimistic.

Attorneys General in twenty states launched climate fraud investigations against Exxon, accused of acting intentionally to confuse the public on the issue of climate change, after the Center for International Environmental Law and *InsideClimate News* uncovered internal Exxon documents proving that the company has understood the science of atmospheric CO<sub>2</sub> levels since the 1960s,<sup>2</sup> pointing then to the year 2000 as the point when catastrophic changes would begin to set in. The similarity between Big Oil's subsequent funding of climate denial campaigns and Big Tobacco's war on health science earlier in the century are becoming quickly apparent.

The year brought good news as well, with the International Renewable Energy Agency (IRENA) reporting that 2015 was another record year for added renewable energy infrastructure capacity, adding 152 gigawatts, or 8.3% more than the previous year, bringing the total online capacity to nearly 2,000 gigawatts globally. Renewable energy accounted for 68% of added United States power plant capacity added in 2015, putting the squeeze on natural gas (only 25% of new capacity in 2015), while the percentage of electricity generated from coal in the U.S. continues to decline year after year (14 gigawatts were shuttered in 2015).<sup>3</sup>

North America (United States, Canada, Mexico) jointly committed to 50% zero-carbon electricity by 2050. California has promised to meet that same goal 20 years earlier in 2030 (of course, Denmark shows us all what real goals are with their target of 100% carbon-free electricity by 2035).<sup>4</sup>

What all of this means is that everything is about to change. The tipping point has occurred, and the path to a postcarbon future is coming into focus. While it is important that we act quickly and decisively,<sup>5</sup> it is also important that we don't make mistakes along the way. We need the path to our postcarbon future to be an equitable one that empowers people everywhere to improve their lives on their own terms and in harmony with nature. We must be careful to not add to the cost of living regressively, or to introduce new externalities as we build the renewable energy economy by maintaining strict standards of economic justice, regenerative design,<sup>6</sup> and circular economies.<sup>7</sup> We must look to solutions outside of the synthetic industrial engineering paradigm of the twentieth century, and avoid the emergence of a

<sup>1</sup> E. Hawkins, IPCC AR5 Contributing Author (National Centre for Atmospheric Science, University of Reading, May 9, 2016), <http://www.climate-lab-book.ac.uk/2016/spiralling-global-temperatures>.

<sup>2</sup> Neela Banerjee, John H. Cushman Jr., David Hasemyer, and Lisa Song, "CO<sub>2</sub>'s Role in Global Warming Has Been on the Oil Industry's Radar Since the 1960s," *InsideClimate News*, April 13, 2016. See also online at <https://insideclimatenews.org/news/13042016/climate-change-global-warming-oil-industry-radar-1960s-exxon-api-co2-fossil-fuels>.

<sup>3</sup> <http://www.eia.gov>, accessed on July 15, 2016.

<sup>4</sup> These measures do not account for heat energy, transportation, and other energy uses, which Denmark includes in its 100% goal for 2050. These are unfortunately left out of some strategic plans, which focus only on electricity. Electricity accounted for 40% of energy used globally in 2012.

<sup>5</sup> NASA's Jet Propulsion Laboratory says we are already "locked into" one meter of additional sea level rise this century, and Robert M. DeConto and David Pollard writing in the journal *Nature* (10.1038/nature17145) offer evidence to support the fragility of the Antarctic ice sheet, which itself could add 15 meters to sea level by 2500 if emissions continue unabated this century.

<sup>6</sup> The Product-Life Institute in Geneva was founded in 1982 by Walter R. Stahel and Orio Giarini, <http://www.product-life.org/>. See also: John Lyle, *Regenerative Design for Sustainable Development and Design for Human Ecosystems* (New York: Wiley, 1994).

<sup>7</sup> David W. Pearce and R. Kerry Turner, *Economics of Natural Resources and the Environment* (Baltimore: Johns Hopkins University Press, 1989).

Ellen MacArthur Foundation, "Towards the Circular Economy: An Economic and Business Rationale for an Accelerated Transition" (2012), PDF publication online at <https://www.ellenmacarthurfoundation.org>.

<sup>8</sup> Kanyinke Sena, “Renewable Energy Projects and the Rights of Marginalised/Indigenous Communities in Kenya” (International Work Group for Indigenous Affairs, 2015), PDF publication online at [http://www.iwgia.org/iwgia\\_files\\_publications\\_files/0725\\_REPORT21.pdf](http://www.iwgia.org/iwgia_files_publications_files/0725_REPORT21.pdf).

<sup>9</sup> Maya Lin, September 17, 2009, Lecture at the California Academy of Sciences, San Francisco, CA, <http://www.sfartscommission.org/pubartcollection/pubart-press-releases/2009/09/17/press-kit-maya-lin-debuts-final-memorial-at-california-academy-of-sciences>.

<sup>10</sup> Naomi Klein, *This Changes Everything* (New York: Simon & Schuster, 2014).

<sup>11</sup> (1) LAGI Glasgow (supported by Glasgow City Council and igloo Regeneration, and in collaboration with ecoartscotland, Scottish Canals, and BIGG Regeneration): LAGI managed an invited competition for an urban regeneration site along the Scottish Canals with an emphasis on an ecological place-making approach to community-building. The winning design, *Wind Forest*, will be installed as an integrated component, giving back to the surrounding neighborhoods with a public park that provides clean electricity to 300 of the homes in the new development. See <http://landartgenerator.org/glasgow>.

(2) Art+Energy=Camp (supported by Google Community Grants, the Heinz Endowments, Three Rivers Community Foundation, and in collaboration with Homewood Renaissance Association and Conservation Consultants Inc.): In 2015 LAGI held our first summer camp for renewable energy public art design and construction. The Camp gave 20 kids from Pittsburgh’s historically underserved Homewood neighborhood a summer of activities and learning on energy science, conservation, and public art, and led them through their own design process to conceive of and help to construct a 4.2 kWp solar sculpture that helps to power a local community center. See <http://artenergycamp.org>.

(3) Maasai Solar is a LAGI collaboration with Tereneh Mosely, the founder of Idia’Dega, who has been working with the Ologresailie Maasai Women Artisans (OMWA), a group of 30 women in the South Rift Valley. The partnership is bringing aesthetically and culturally relevant renewable energy infrastructure to the Maasai community in Ologresailie, Kenya, and expanding Idia’Dega + OMWA’s sustainable economic model. Sales on the global market of solar accessories crafted by OMWA with Maasai beadwork will be reinvested by OMWA in community projects, and the prototypes will stay in Ologresailie to provide much needed electrification. See <http://maasaisolar.org>.

(4) The Solar Tapestry (the first project is planned in partnership with Yakima Neighborhood Health Services): This participatory design project for community energy is bringing people together to tell a story through mural making. Instead of using paint, the composition uses solar panels of custom colors and dimensions to translate the image into a performative south-facing solar wall.

“renewable energy resource curse” for those who live in regions rich in solar, wind, geothermal, and water resources.<sup>8</sup>

In her final memorial project, *What Is Missing*, which is dedicated to expanding awareness of species and habitat loss within the context of climate change, Maya Lin points out the fact that deforestation accounts for 10–20% of global carbon emissions and that new forest biomass can contribute to carbon sequestration. By protecting forests through reforestation projects we can save species habitats while also slowing the rate of carbon dioxide increase in the atmosphere. As Maya Lin puts it so wonderfully, we can “save two birds with one tree.”<sup>9</sup>

We love the inherent optimism of the phrase and the notion that the climate challenge, while the most complex and intractable of problems that humanity has ever had to face, also presents opportunities for collective action and public policy changes that can have positive effects within many aspects of our lives that may seem less obviously related to climate.

This is a sentiment that is also echoed in Naomi Klein’s 2014 book.<sup>10</sup> The “two birds” that are saved in the context of *This Changes Everything* are: (1) environmental systems are allowed to heal following aggressive climate action; and (2) social systems are also allowed to heal as a consequence of effective climate action that necessarily involves an expansion of communitarian and egalitarian public policy.

The realization that the most direct path to climate change mitigation is paved with regulations and policies that will empower people, communities, and civic institutions is increasingly informing Land Art Generator Initiative projects. In 2015–2016 we launched four new projects, all with a focus on community-oriented approaches to both public art and renewable energy.<sup>11</sup>

Social and cultural benefits of climate action have been a part of LAGI’s mission since its founding in 2008. Specifically we have been advocating for the design of renewable energy infrastructure that communities can embrace. The world that we would like to see emerge in the next decade is one in which the mass proliferation of clean energy systems will also lead to some of the twenty-first century’s greatest works of art and social projects.

The two (or three) birds that we wish to save, so to speak, are the natural environment (climate), our visual environment (the aesthetics of public space and the design of cities), and access to clean energy without externalities (energy justice).

Naomi Klein points to another way in which climate action can have positive effects beyond the most obvious one in which generations hence get to live on a planet that is still habitable. The steps that we must take to reduce carbon emissions are the same steps that we must take if we are serious about alleviating social and economic inequity. Addressing the issue of global equity is indispensably a part of closing the climate policy gap.<sup>12</sup> Acting together in our most pressing common interest requires a new sense of communitarianism and empathy, and a turning away from the seductions of rugged individualism and mindless consumerism.

We typically refer to a global development divide by speaking in terms of the “developed world” and the “developing world.” While this is a welcome improvement on “first world” and “third world” we would like to propose a new frame: “high-carbon world” and “low-carbon world.” The reason is that it flips the

value set inherent in the language that we use, and it reminds inhabitants of the high-carbon world (we count ourselves in that number) that the responsibility lies with us to move toward the low-carbon world—those who have already succeeded in maintaining a more balanced relationship with nature with regard to the resources that are used on a daily basis to support average lifestyles. Let’s celebrate those who maintain that balance, rather than disparage sustainable cultures as somehow in need of “development.”

This new framing also questions the assumption that “development” as it is defined by the United Nations Development Program and the World Bank (a classification of nations determined by per capita gross national income) is necessarily something that will lead to better outcomes for human well-being, happiness, and the environment.<sup>13</sup> By honestly including natural capital<sup>14</sup> on the balance sheets of planetary profit and loss we can change the metrics by which we measure success, and shift incentive structures toward favoring regeneration rather than exploitation. The high-carbon world has much to learn about how localized agriculture, energy-efficient vernacular architecture, holistic medicine, and steady-state economies can help to pull us back from the brink of global environmental catastrophe. Until we can accept with humility that the predominant value set of the twentieth century—a view of nature as a thing to manage and of people as consumers—is counterproductive to climate solutions, we have a frustrating road ahead in the twenty-first century.

The global free market has shown that it isn’t capable on its own of quickly providing the incentive structures that can make it a mechanism for achieving harmony with nature. Given the limited time that we have to get things right, we could take a lesson from the triumphs of large-scale public-sector investment and policies that led to the midcentury golden era for the middle class.

If every “high-carbon world” country implemented a new Sustainable Works Progress Administration (SWPA) we could mobilize collective action with the force of a planetary patriotic duty. Within decades we could build our new energy infrastructure, establish regenerative economic policies, and give our cities the long-term resiliency they need to prosper. The United States has made this kind of public-sector investment many times before. It’s just that it is usually mobilized for destructive rather than constructive ends. This time we need a war on climate change.

Similar to the WPA in the 1930s United States,<sup>15</sup> an SWPA project offers the opportunity to realize the potential for infrastructure projects to provide an outlet for creative expression and contribute to our culture in meaningful ways. Imagine the majestic beauty of the massive infrastructures that will power our prosperity for the next hundred years, regeneratively designed with input from creatives, that will allow the planet to heal.

In every sense, design is the key driver of positive change and climate action: design of infrastructure, design of buildings and cities, design of regional planning systems, design of closed-loop industrial systems, design of waste management, design of cradle-to-cradle consumer goods, and the design of good public policy and regulations.

<sup>12</sup> Elizabeth A. Stanton, Frank Ackerman and Ramón Bueno, “Reason, Empathy, and Fair Play: The Climate Policy Gap” (United Nations Department of Social and Economic Affairs, Working Paper No. 113, 2012), PDF publication online at [http://www.un.org/esa/desa/papers/2012/wp113\\_2012.pdf](http://www.un.org/esa/desa/papers/2012/wp113_2012.pdf).

<sup>13</sup> These measures are evolving as a part of the 2015 implementation of the UN Sustainable Development Goals (SDGs), although there is still a focus on “growth” over steady-state, regenerative economics; see <http://www.un.org/sustainabledevelopment>.

Lyng Nielsen, “Classifications of Countries Based on Their Level of Development: How it is Done and How it Could be Done” (IMF Working Paper, 2011), PDF publication online at <https://www.imf.org/external/pubs/ft/wp/2011/wp1131.pdf>.

<sup>14</sup> Ellen MacArthur Foundation, “The Circular Economy, Schools of Thought.” <https://www.ellenmacarthurfoundation.org/circular-economy/schools-of-thought/regenerative-design>, accessed on July 15, 2016.

<sup>15</sup> The WPA was in operation for nearly a decade. In its initial year 1935, the WPA was appropriated nearly \$5 billion (1935 dollars not adjusted for inflation), or 6.7% of GDP. A 6.7% of GDP investment in 2016 would equate to over one trillion dollars. Robert D. Leighninger Jr., *Long-Range Public Investment: The Forgotten Legacy of the New Deal* (Columbia: University of South Carolina Press, 2007).

<sup>16</sup> “The Department of Water Resources Report on Reducing Dependency on Fossil Fuels and Changes to the Power Contracts Portfolio” (California Department of Water Resources, 2013), PDF publication online at <http://www.water.ca.gov/legislation/docs/2013-FossilFuelReport.pdf>.

<sup>17</sup> Ken Murray, “How Los Angeles Can Become Water-Independent,” *Time*, October 10, 2013, <http://ideas.time.com/2013/10/11/how-los-angeles-can-become-water-independent>. (cited by Christopher Sjöberg and Ryo Saito, designers of *RegattaH2O* in their narrative statement for LAGI 2016).

<sup>18</sup> Diana Bauer, Mark Philbrick, and Bob Vallario, “The Water-Energy Nexus: Challenges and Opportunities” (US Department of Energy, 2014). Image courtesy of the U.S. Department of Energy, <https://commons.wikimedia.org/w/index.php?curid=47882040>.

<sup>19</sup> Jane Jacobs, *The Nature of Economies* (New York: Random House, 2000).

Cities that recognize the value of arts and culture have long benefited from percent for art programs. It has become expected (and in many cases required) for large-scale development projects to invest at least 1% in the arts, especially when there is public funding involved, either by bringing an artist onto the project team to produce an on-site work, or by investing in a fund that is pooled for larger projects throughout the city.

As we increase our focus on large-scale environmental and climate design solutions—resilient infrastructures, environmental remediation, regenerative water and energy projects—it is high time that a similar percent for art requirement be placed on these projects as well. This simple policy standard could bring great benefit to communities that otherwise find themselves left out of the process. Even when their net benefit to the environment is clear, if these projects have not been considered from a cultural perspective, they risk being ignored at best. And at worst they risk alienating the public and sparking pushback against similar future projects.

Involving artists in the process can instead deliver a more holistic approach to sustainability that addresses social equity, environmental justice, aesthetics, local needs, and other important cultural considerations. As we have said from the founding of LAGI, “Sustainability is not only about resources, but it is also about social harmony.”

One percent for the arts for energy applied to a trillion dollars’ worth of infrastructure will yield a cultural legacy that will mark this important time in human history. These monuments to future generations will let them know that we understood the impact of the industrial revolution on the planet and that we at least tried to make things right. These will be places where tourists of the future will go to be inspired—like visitors to the Hoover Dam today—not only because of the infrastructural aspects, but because of the beautiful artistry and design aesthetic of the place.

Art always reflects society—whether past, present, or future—and serves a function by showing us ourselves as we are (and as who we might become). It is never purely art for art’s sake. It is always art for human’s sake. Today the stakes are higher than ever for art to help us become something better.

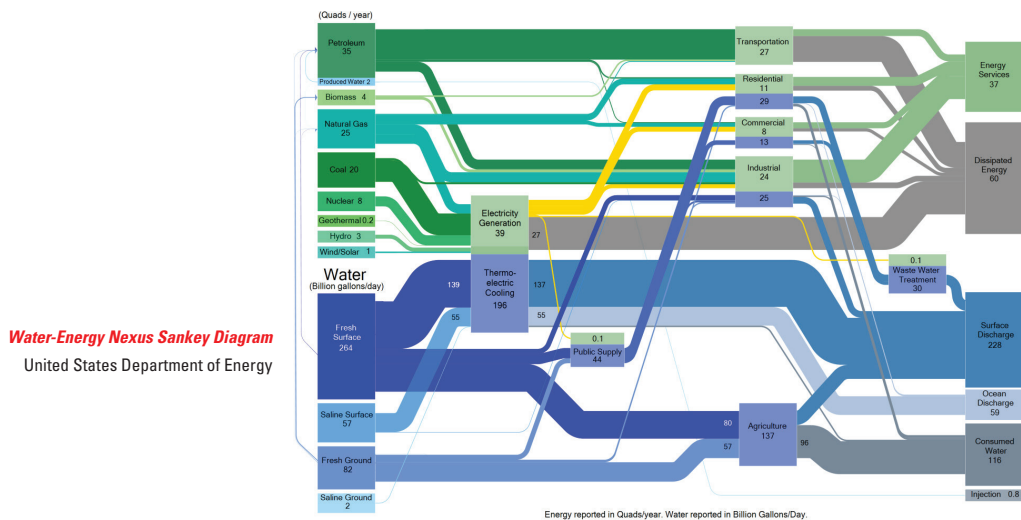
Embracing the fact that the great energy transition will have a resounding influence on the design of public space in the coming decades, the time is now to proactively address the influence of these new machines on city planning, urban design, zoning ordinances, and building codes. The entries to the 2016 Land Art Generator Initiative design competition give us a glimpse of a future in which the aesthetic influence of clean energy technologies becomes a welcome and positive contribution to well-planned cities.

It’s a future in which we provide the water needs of cities in ways that do not have externalized environmental impacts, and that celebrate the sustainable technologies that make it possible through contemplative and playful installations in public space. LAGI 2016 recognizes the fact that there can be no distinction between energy and water in regions like Southern California where so much electricity is used to pump and move water. The massive Edmonston Pumping Plant that brings water to the south over the Tehachapi Mountains along with the other pumping plants in the State Water Project together use eight billion kilowatt-hours of electricity each year,<sup>16</sup> enough to power over one million homes.

As Christopher Sjoberg and Ryo Saito, the winning team of this year’s LAGI design competition, wrote in their narrative statement:

Many say the new sustainability ethos is “water is the new energy.” California has recently experienced one of the most prolonged droughts in its modern history, almost certainly made worse by climate change, putting strain on water resources depended upon by industry and residents alike. Los Angeles, which obtains a mere 13% of its water from local ground well sources,<sup>17</sup> depends on a vast and energy-intensive network of water transport infrastructure to move water from distant reservoirs into the city.

The Sankey diagram included in a 2014 report by the United States Department of Energy highlights the entanglements between water and energy. The yellow lines represent all of the electricity produced and where it is consumed.<sup>18</sup> Notice the high levels of “surface discharge” and “dissipated energy” on the right-hand side. These are opportunities for designers.



Jane Jacobs writes in *The Nature of Economies* about how a complex forest makes the most efficient use of energy through cycles of recombination and recycling, driven by and reinforcing a diversity of species.<sup>19</sup> Our cities should aspire to function in this same way, with a complex and diverse ecosystem of energy and water infrastructures that allows nothing to go to waste. Every new building and public park can be designed as a clean energy power and water plant for the benefit of the surrounding city.

As we wrote about in *New Energies*, the LAGI 2014 publication, energy cooperatives can point the way to equitable community-oriented climate solutions when supported by a framework of laws that encourage such citizen-led efforts. We are inspired by the progress that is being made, and hopeful that artists will be more frequently invited to be a part of local and regional infrastructure projects.

When asked by Rebecca Ehemann (Founder of Green Public Art) to bring LAGI to Southern California in 2016, we knew immediately that it would be the ideal site for a competition. Renewable energy is a top priority in California, and the state is leading the conversation on the global stage. At the forefront are cities such as Santa Monica, where policy and planning are setting an example for sustainable development and social well-being.

The ongoing water crisis also presented the opportunity to expand our design brief to include drinking water harvesting technologies (in addition to renewable energy technologies) as media for public artwork proposals responding to a site adjacent to the historic Santa Monica Pier.

This coastal site offered the platform to utilize new energy technologies, including tidal power and wave energy conversion. In the pages of this book you will find interesting visual expressions of wave power buoys, from translucent jellyfish to honking swans!

The Santa Monica Pier provided a picturesque and playful backdrop. The pier already boasts a solar-powered Ferris wheel and is in the process of major water conservation planning efforts. What if a new public artwork could provide all of the pier's power and water needs, while also enhancing the delicate balance between beauty and spectacle that defines this place?

The vibrancy of the pier informed the title of this edition. "Powering Places" reminds us that our infrastructure does not exist alone in a vacuum. The distant power plant out of sight and out of mind is no longer relevant in the era of renewable energy technologies. These objects can coexist with us, and the closer they are to the places we live and work the more efficient and resilient they become. Because they require access to natural energies such as the sun and the wind, their workings can be an active part of our visual landscape. They can add to our experience, making our favorite and most cherished places more colorful, more fun, more interesting, and more enlightening.

LAGI 2016 was perhaps our most complicated design brief yet. Not only were we asking for conceptually rich public art that generates clean electricity at a utility scale, but we also added considerations for water harvesting. We provided a site boundary completely within the ecologically sensitive waters of Santa Monica Bay and adjacent to one of California's most cherished cultural landmarks. The site encompassed the old breakwater, which is already in need of some attention after more than 80 years of neglect.

The rich history of the Santa Monica Pier, brought yet another layer of consideration to the brief. The Santa Monica Pier and breakwater have been reimagined in many different iterations, beginning with the railroad wharfs of the late nineteenth century, and continuing through the grandiose plans of the 1970s to build a new island (abandoned in the face of public opposition).

LAGI 2016 offers the City of Santa Monica and its people the chance to dream yet again about the potential for their pier to be something even greater, while in keeping with the core values of the city to protect the environment and set the highest standard in sustainable design.

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