

Designing the 21st Century City Park

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Removed from a world in chaos, we take refuge in our gardens. When we place our hands into the earth we connect with the mysteries of the Universe. We ground ourselves in what really matters, with our very sustenance — with cycles of energy; the sun, wind, and water; and with the infinitely complex interrelationships between ecological systems — the nourishment that gives life to human culture.

By growing our food, maintaining our shelter, and tending to life in a garden, we enlist ourselves as Earth's stewards in a continuous struggle against entropy and disorder. As we steer through seasonal cycles, through decay and rebirth, we connect with an elusive simplicity — feelings of renewal and hope that we will try to remember when we are once again confronted with the chaos outside the garden walls.

The tradition of the German Schrebergarten or kleingarten (little garden) was born from the realization that a connection to nature is essential for residents living in a dense industrial city. The first kleingarten was opened in 1864 by Ernst Innozenz Hauschild and named for Moritz Schreber, an influential child psychologist who had died three years earlier.¹ Today, anyone living in Germany can apply to join a garden cooperative and rent a 400-square-meter plot of their own. There are more than a million well-managed allotment gardens in Germany, and similar private and public community garden and victory garden programs exist in cities around the world.

The culture of stewardship that gardening engenders is all about intention. In collaboration with the sun, water, and minerals, and through the focused direction of our work (caloric energy) into regenerative actions — the creative production of order and beauty, the growth of nourishment — we help bring a better world into being. It is incredibly rewarding to harvest the crops of one's own labor.

How can we learn from the act of gardening as we take collective action in the context of the climate crisis? As a species, we have a duty to tend our collective garden at the scale of Earth's biosphere. Our regenerative actions must scale up and extend far beyond our garden walls. We must begin to cultivate our clean energy future with intention. Perhaps renewable energy technologies can be designed to bring us closer to nature and to each other, to cultivate beauty as cultural landscapes of energy. What might that future look like?

The Context of the Bundesgartenschau

Every other year since 1951, one winning city in Germany has had the honor of hosting the Bundesgartenschau (BUGA) — the world's most impressive horticulture festival. Many of the millions of visitors come for information they can use in their own kleingarten. The City of Mannheim hosted the festival in 1975 and was chosen for a second time to host BUGA 23.

When visitors explored the BUGA 75 event a half century ago, the world was in the midst of economic pressures resulting from a crisis in energy supplies. BUGA 23 takes place during what may be an even more pivotal moment in world history, once again related to a crisis in energy. As European economies emerge from pandemic-induced inflation, the Russian invasion of Ukraine and the sudden scarcity of oil and gas has pushed the situation to extremes. This slows the pace of climate action in the short term while reinforcing the long-term need to transition the global economy away from volatile and unpredictable fossil fuel supplies. Similar and related economic pressures are threatening the stability of established democratic institutions worldwide. Long-standing norms — even our systems of value and exchange — are being questioned in the context of a slow but steady awakening to the fundamental discordance that exists between neoliberal free market capitalism and a habitable Earth. Slowly, but surely, we are coming to see that infinite models of economic growth on a finite planet, fed by incentives of consumption, pollution, and extraction are not compatible in the long term with the cultivation of resilient, biodiverse, and thriving ecosystems upon which we rely for our survival.

How are we as citizens to respond to these multifaceted existential crises — what the historian Adam Tooze has dubbed the “global polycrisis?” How do we confront such daunting and interconnected challenges without falling into despair?

Those fortunate enough to have the respite of their gardens will continue to seek refuge there. While the environment of the garden and our activities there can be emotionally healing, perhaps there are larger lessons to be learned from the natural symbiotic systems at play in our gardens that can be applied to thriving and sustainable cities.

As Jane Jacobs writes in *The Nature of Economies*, if we can learn to understand the flow of capital and resources in human economic systems as a reflection of the flow of energy and nutrients within complex adaptive ecological systems, we can

begin to design our human infrastructures to work in harmony with nature, even to regenerate nature.² Rather than seeing our human economy as a zero-sum competition, we can instead see it as a complex web of interactions and mutual dependencies between different subsystems where natural limits to infinite growth are an integral and beneficial feature. Through this lens, there is no disciplinary distinction to be made between economics and ecology. We can see the critical importance of our reliance on natural systems, that “biomimicry is a form of economic development,” and underpinning everything is solar energy and the efficient recycling of that energy through circular metabolic processes where there is no concept of waste.

The invitation from BUGA 23 to bring the eighth Land Art Generator Initiative international design competition to Mannheim offered the rare opportunity to imagine nearly sixty hectares of land near the heart of the city. This land became available through the closing of the Spinelli Barracks, a World War II era United States Army supply and logistics base that had been closed off to the public for seventy years while also leaving a significant impact on the cultural history of the city.

The LAGI 2022 site boundary reaches into the city, recognizing the park as a point of transit and a place of convening between surrounding neighborhoods. LAGI 2022 incorporates the masterplan for the new mixed-use development around the northern edges of the park and asks what a renewable energy landscape can aspire to be in such a prominent location — where it will be seen peeking through the morning fog by nearby residents as they sip their morning coffee on balconies too small to accommodate much more than a few potted plants, or by runners maintaining their morning exercise routines.

These are the same city dwellers who might maintain their own kleingarten nearby with a small shed, fruit trees, and plenty of space to grow fresh vegetables to eat and share. LAGI 2022 Mannheim is a catalog for these gardens — a glimpse into a future world where the hundreds of millions of square meters of well-tended gardens provide gigawatt hours of green electricity to help power our cities.

The LAGI 2022 Mannheim design site includes the old U-Halle building, the terminus of an old railroad line that is no longer in service. As you learn about the design proposals you will see how some of the designers have creatively incorporated the railroad

into their visions for the future of Spinelli Park, focusing their interventions at the central crossroads of the park through which the railroad line runs. With the exception of the U-Halle, the LAGI 2022 Mannheim design site is almost entirely open space, home to the protected wall lizard, brown hare, various other small mammals, many species of birds and insects, and a rich variety of wildflowers, grasses, and copses of trees.

Spinelli Park is an important component of Mannheim's North East Green Corridor Project, connecting 230 hectares of green areas forming a corridor stretching into the city center. The kilometers-long continuous stretch of green will create new places to walk, play, and relax, at the same time improving the city's air quality and climate.

Visitors to BUGA 23 will discover the complex interconnections between horticulture, land use, food security, ecosystem services, human health, climate change, renewable energy, biodiversity, and all 17 of the United Nations Sustainable Development Goals (SDGs). “Affordable and Clean Energy” is number seven on the list, but energy also has an important role to play in nearly every other SDG.

Just as energy can be found everywhere in a garden — from the photosynthesis in every leaf to the chemistry in the soil — energy's thread weaves through every aspect of human life and culture.³ And just as energy permeates all aspects of our lives, we might consider how deeply our human culture permeates all aspects of the energy transition.

Academic literature and policy journals are replete with information about the science of the climate crisis, about the industries and nations most responsible for historic and present-day emissions, about the technical breakthroughs that are making fossil fuels obsolete, and about the socio-technical pathways that we might follow to draw down our collective impact on the environment and avoid runaway feedback loops of carbon and methane cycles. It has been well established that the technologies that are already commercialized — including solar, wind, geothermal, hydro, wave, tidal, and energy storage — can revolutionize humanity's relationship to energy and material consumption.

All we need to do is deploy these technologies. And yet it is the details and mechanisms of this deployment — the “socio” part of the socio-technical transition — that seems to be the most serious barrier to progress. So many unanswered questions are tripping us up.

¹ J. Elke Ertle, *Walled-In: A West Berlin Girl's Journey to Freedom* (Mentobe Press, 2013).

² Jacobs, Jane, *The Nature of Economies* (Knopf Doubleday Publishing Group, 2002).

³ Pasqualetti, Martin J., *The Thread of Energy* (New York: Oxford Academic, 2022), <https://doi.org/10.1093/oso/9780199394807.001.0001>.

What communications strategies will build the strongest public support for rapid deployment? How do we maneuver around the political and media power advantages of the fossil fuel lobby? What happens to the workers in the small towns who rely on the extractive industries of the fossil fuel economy? How do we ethically extract the raw materials required for the green economy? Where exactly are these massive new solar and wind farms going to be located? Who will own them and profit from them? Do they compete with farmland or with cherished landscapes? Will they be centralized in gigawatt-scale installations, or will they be more decentralized on rooftops and parking lots? What exactly do they look like? Can we get transmission lines permitted? Do we cut down trees to install solar panels? What is the definition of a “just” transition?

Zukunftslosigkeit

As the world faces unprecedented energy challenges and with little more than a decade to act decisively on decarbonization, we seem woefully unprepared to answer the important social and cultural questions of the energy transition. We have spent so much time convincing ourselves of the science and not enough time thinking through the real-life consequences of taking the actions the science demands of us.

Consequently, the public seems ill-equipped to imagine how these changes can improve their lives and how they can contribute to the transition. For many, it seems as if the energy transition is happening “to” them and without their consultation. Suddenly, the scenery is changing. Their way of life might be next.

This makes it all too easy for fossil fuel companies to tell alarming stories of life in a world without oil and gas. These narratives are designed to build up reactionary fervor against wind and solar projects and against climate legislation at a time when we simply cannot afford to delay action. Gloom and doom narratives of climate apocalypse, environmental campaigns that focus on assigning blame, and activism that relies on shock and destruction of property may even contribute to reactionary pushback, no matter how well intended.

What is missing is an effective counter narrative that tells an inspiring story of life in a world without oil and gas. That story is better rooted in facts and science, and it’s one that is yearning to be told.

What exactly is our path to a sustainable climate future? What will it be like during the journey and what will it be like when we arrive?

On the one hand, we hear of techno-utopian ideas of clean energy abundance, circular economies, and a universal decoupling of GDP from carbon emissions. We hear that “green growth” through ESG investment⁴ and innovation through markets will advance the energy transition. On the other hand, we hear that the world (at least the global north) will need to experience some measure of “degrowth” to bring human economic activity back in line with the carrying capacity of Earth⁵ — that we will all need to tighten our belts, especially the top one percent. Who are we to believe? What post-carbon future do we want to write? Will life in a photon culture be superior to life in a petroculture, or will it be a step backwards?

These existential questions are being asked within a polarizing political culture of alternative facts and amidst distractions of pandemics, historic inequality, neoliberal austerity, authoritarianism, culture wars, literal wars, migration and dislocation, climate disasters, and sectarian social tension. It’s no surprise that we are seeing a loss in our ability to imagine a better tomorrow. And with representatives across political parties easily corrupted by money and power, it is no wonder that people are losing faith in the democratic process and institutions.

A significant segment of popular culture has been fixated on dystopian science fiction. Climate despair is on the rise. Birth rates are down radically in industrialized nations. Some couples claim runaway climate change and species collapse as reasons to abstain from having children. For the first time in modern history, we are faced with the prospect of the next generation experiencing a decline in health and standard of living. It can be discouraging to say the least. How can we see a future through this fog?

The German word for this feeling is *Zukunftslosigkeit*, which loosely translated means futurelessness. The consequence of the social condition of futurelessness is a political deficit that threatens to stall the pace of change. When we cease to have hope — cease to believe in our collective ability to design and build a better world — we stop participating in social systems. We stop voting. We withdraw into the metaverse and away from our civic responsibility. We divest from state-backed money and from the social contract. We stop trusting institutions. We poison ourselves to numb the pain. Perhaps most dangerously, we open

ourselves up to the populist rhetoric of nostalgia that would seek to turn back the clock on social progress. Nostalgia is the persuasive influence that remains when we close our imaginations to what a new and better future might look like.

How do we fight back against Zukunftslosigkeit?

Perhaps we can find the answer back in our gardens. In the garden, we are reminded of our responsibility to nurture beauty, to work as stewards against entropy and decay. In the garden, we must imagine, design, prepare, and sow to realize tomorrow’s harvest and bounty. A garden is about natural beauty and our desire for it.

The best defense against futurelessness may be our desire for a better world. But how do we spark that desire in the public imagination? How do we convert apathy into determination?

This is where artists and designers can be superheroes in the fight against climate change. By enticingly illustrating the beauty and bounty of a world that has moved beyond combusting dirty fossil fuels, we can free the collective imagination of the world. By designing and modeling a better future through a systems approach that includes the rights of all people and the rights of nature, artists and creatives can change the conversation from one of blame, shame, doom, and gloom to a conversation about vision, aspiration, and achievement. When people see that better future — when they really see it — and when they can place themselves and their grandchildren in it through stories told about it, then we might come together and rally behind the actions necessary to turn that vision into reality. To tell those stories, we must begin by deeply thinking about what that better future looks like — running through the details and designing it — just like we do when planning a garden.

Winning Back the Future

What does it look like when solar power is for everyone? When renewable energy is all around us? What if we started by designing solar farms for people? Or better yet, designing them with people? What does it look like when investments in renewable energy landscapes can give back more than just kilowatt-hours and can provide other meaningful social co-benefits?

Take solar power. Solar is now the cheapest form of energy on the planet and its price continues to fall. The greatest thing about solar is that it can be installed almost anywhere and at almost any scale. It can also be made to look like almost anything. It can be flexible, semi-transparent, and all the colors of the rainbow. It can share land use with buildings, shade structures, reservoirs, parks, farms, and yes, gardens.

A net-zero world will require a tripling of existing electrical generation infrastructure to meet the needs of space heating, transportation, and industry that currently relies on oil and gas. A thriving world beyond carbon may include 80 billion commercial solar modules globally — ten large PV modules for every person on the planet — a 50-fold increase over the number already installed today.

Where do they all go? We are already seeing pressures on land use. Energy developers are struggling to find new large-scale sites. Environmental laws are being weaponized against renewable energy projects. The permitting challenges faced by large-scale solar and wind farms are surpassed only by the permitting challenges facing the power transmission and distribution lines required to bring all of that power to cities. Solar energy landscapes are increasingly competing with other land use interests, such as agriculture, recreation, visual resources stewardship, land conservation, forest preservation, and biodiversity.

It is getting more difficult to get approval for renewable energy developments, with more than four out of five proposed solar projects never reaching commercial operation.⁶ The reasons for withdrawal of grid interconnection requests are varied, but local objections and land use conflicts often play a role. In 2021, what was to be the United States’ largest solar farm, the one-billion-dollar 850-megawatt Battle Born Solar Project, was scrapped, in part, because it would have destroyed the visual context for Michael Heizer’s epic work of Land Art, *Double Negative*.⁷ All across the world there are conflicts raging between farmers and solar developers that threaten to keep gigawatts of already financed projects from being deployed.

With so much pushback and local objection, it is essential that new solar installations be designed with intention, mindful of their relationship to nature, place, and people. To avoid unnecessary disruptions to deployment, we may consider “rethinking energy policy as socio-energy systems design,”⁸

⁴ Environmental, Social, and Governance framework for investors. What qualifies as an ESG investment has been the subject of much debate and there is no universal standard. Companies with poor track records on environmental stewardship can often be found on ESG lists and the system has been criticized as a green washing of finance. A 2021 study of ESG funds found that many contain investments in oil, coal, gambling, alcohol, and tobacco. See: Emma Goring, “Sustainable Finance is Rife with Greenwash,” *The Economist*, June 2021.

⁵ See the manifesto of the *Degrowth Journal* at <https://degrowthjournal.org> (Timothée Parrique, founding editor).

⁶ Joseph Rand, Mark Bolinger, Ryan H. Wiser, Seongeun Jeong, Bentham Paulos, “Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection As of the End of 2020,” *Energy Technologies Area, Berkeley Lab*, June 2021, <https://eta.lbl.gov/publications/queued-characteristics-power-plants>.

⁷ Gabriella Angeletti, “Plans scrapped for solar project that would disrupt Michael Heizer’s Double Negative,” *The Art Newspaper*, July 26, 2021, <https://www.theartnewspaper.com/2021/07/26/plans-scrapped-for-solar-project-that-would-disrupt-michael-heizers-double-negative>.

⁸ Clark A. Miller, Jennifer Richter, Jason O’Leary, “Socio-energy systems design: A policy framework for energy transitions,” *Energy Research & Social Science*, Volume 6 (2015): 29–40, <https://www.sciencedirect.com/science/article/abs/pii/S2214629614001236>.

recognizing that technology does not live in a vacuum. The application of technology must be designed to appeal to the desires of people if it is to be deployed at scale.

The more solar generation we can bring into our cities, the more we can ease the burden on rural landscapes. According to the United States National Renewable Energy Laboratory (NREL), “The total national technical potential of rooftop PV is 1,118 GW of installed capacity.”⁹ To that, add the potential for photovoltaic canopies over surface parking, which covers 10,000 km² of the United States (another 1,000 GW).¹⁰ Utilizing just half of that area would exceed the entire electrical generation capacity of the United States in 2023. In other words, the available area in cities is powerful.

This book—and the designs it illustrates from hundreds of creatives around the world—supports this kind of radical decentralization of our energy landscapes. It proposes that we imagine going even further to bring renewable energy into the spaces between buildings and begin to energize the public realm.

Designing and Owning Together

As we work to decarbonize the world over the next two decades, we will be faced with many challenges when it comes to the acceptance of new solar and wind projects.

Early and consistent community engagement throughout the design process will become increasingly important, especially for installations within or near to population centers. Answering the questions of where we should install renewable energy, who will be impacted by the installations, and who will benefit from them are fundamental to the success of the energy transition. No one today can guess the eventual mix of urban versus rural energy generation, but we know that the more we can decentralize through distributed energy resources, the more reliable and affordable our clean energy future will be.

What are the social and cultural ramifications that follow from prioritizing a decentralized grid? How can cities and towns take advantage of the opportunity to deploy solar energy inside their own boundaries in ways that enhance not only urban sustainability but also urban livability, resilience, beauty, food security, racial and economic justice, and economic development? These co-benefits make the prospect of the energy transition an exciting and potentially transformational investment for

municipalities, electric utilities, foundations, and others looking for ways to leverage social innovation and socially responsible investment to create better futures.

How can coordinated city-wide solar projects enhance local culture, enliven public spaces, and provide other extensive co-benefits? Can urban solar innovation benefit economically disadvantaged communities or help reverse historical patterns of urban racial and economic injustice? Are there ways of aggregating rooftops, public spaces, empty lots, brownfield sites, parking lots, and other viable sites within the city to create large-scale urban projects for procurement, taking advantage of similar economies of scale as large rural projects? What kinds of financing mechanisms could be developed to expand the pool of investors and beneficiaries? Can the universal resource of solar energy be managed in such a way as to accrue benefits universally to all people? How will these new infrastructures be culturally and aesthetically integrated into urban visualsapes and enhance the public commons?

Providing carbon-free energy in the fight against climate change is the most obvious benefit of solar power. What may be overlooked are the benefits of distributed solar for local economies and as a mechanism to increase social equity and quality of life. Properly planned and implemented, city-integrated solar infrastructure can provide a wide array of co-benefits.

Energy developers can learn from best practices for community-centered design within the fields of architecture, landscape architecture, and urban design. By co-designing energy landscapes with the people who live in proximity to them, we can increase urban solar integration, preserve remote landscapes, and help to accelerate a transition to an energy system that works in harmony with the environment.

Participatory design practice for energy development can also ensure a more just and equitable clean energy future by leveraging the many co-benefits of solar power infrastructure when it shares land uses with parks, gardens, canals, riverfronts, and streetscapes. The wealth of proven technologies for aesthetic solar photovoltaic integration within architecture and landscape architecture offers a path to implementation for a far more ambitious deployment of distributed energy within cities than is ordinarily considered by urban planners, real estate developers, and energy developers.

The application of solar infrastructure can increase the energy independence of municipalities. Cities are already taking advantage of long-term power purchase agreements for clean energy to establish pricing stability. By bringing solar installations into urban neighborhoods, cities can accomplish the same goal while also contributing to resilience and efficiency by limiting reliance on monopoly utilities and eliminating maintenance costs for remote distribution infrastructures. Localized supply chains can emerge to provide good paying jobs while decreasing the embodied environmental footprint of solar modules.

The Solar Energy Commons

The energy of the sun is a universal natural resource. Throughout history there are examples of a “universal property” approach to the distribution of natural resource benefits. The most often cited example is the Alaska Permanent Fund. Writing in *Scientific American*, James Boyce summarizes the program:

*In 1976, as oil production commenced on Alaska’s North Slope, the state amended its constitution to create a new entity called the Alaska Permanent Fund. The idea was the brainchild of Republican governor Jay Hammond, who believed that Alaska’s oil wealth belonged to all its residents, and that all should receive equal annual dividends from its extraction.*¹¹

The idea extends to the principle of the “solar energy commons,” a recognition that the sun’s energy belongs to all of us if it belongs to any of us. Much like the social benefits that can be found from community gardens that share the dividends of solar energy across arable landscapes, community solar projects can be a way to invest in shared prosperity. Especially when installed on public land or community land trusts, solar power offers an opportunity for an equitable distribution of a solar dividend—a policy mechanism that can be a powerful tool to combat the cycles of poverty experienced by so many the world over. The sale of solar electricity from public projects could pay out a universal dividend¹² and provide new opportunities for private wealth generation through distributed energy ownership, a democratization of what is today almost entirely monopoly ownership.

Technologies, such as virtual net metering, make it possible for individuals to become energy “prosumers” selling kilowatt-hours directly peer-to-peer (P2P). As privatization of solar infrastructure becomes more widespread, it will be important to make sure

that the financial benefits of these new capital investment opportunities are not limited to the upper class, but intentionally provide diversity of ownership as a means to close the wealth gap.

As we look to a future of greater distributed solar energy deployment, we can think of “renewable cities” as those that have installed within the city limits at least one solar module per city resident, that source all of their energy from renewable sources, and that support the option of thriving, car-free lifestyles. Renewable cities will have major competitive advantages over non-renewable ones. They will tend to be more livable, equitable, innovative, and resilient—qualities that make for strong economic development. Replacing fossil fuel infrastructure in cities improves air quality and quality of life, among the myriad of co-benefits of installing a significant number of solar panels within the city.

Solar panels installed over community gardens and urban farms can collect rainwater for irrigation and increase crop yields, radically conserving water by strategically shading crops while contributing to food security. This type of land use sharing between energy and food production has come to be known delightfully as “agrivoltaics.”

Solar panels installed over canals and reservoirs can radically improve water conservation by decreasing evaporation. The water, in turn, helps to keep the solar modules cool and operating efficiently. This type of solar installation is often referred to as “floatovoltaics.”

Solar panels installed as shading devices in public spaces can help reduce heat island effects, creating cool microclimates and lowering the risk of heat stroke in summer. Solar can help define walking and biking paths, rights-of-way, and waterfronts while protecting people from the elements. Community solar can be used as a placemaking tool, adding value to civic parks. We can call this type of solar installation “communivoltaics,” which can be seen as an extension of rooftop solar into the public realm and the commons.

Perhaps most powerfully, when creative community members get involved in the design process, solar power plants can become works of art in public space. In this way, some element of our clean energy infrastructure can help turn our urban and suburban landscapes into energy sculpture parks. Such multifaceted investment in a post-carbon future supports culture and makes our cities more livable as they become more sustainable, equitable, and resilient.

⁹ Pieter Gagnon, Robert Margolis, Caleb Phillips, “Rooftop Photovoltaic Technical Potential in the United States,” *U.S. Department of Energy Office of Scientific and Technical Information*, November 5, 2019, <https://www.osti.gov/biblio/1575064>.

¹⁰ Daniel Herriges, “Parking Dominates Our Cities. But Do We Really See It?,” *Strong Towns*, November 27, 2019, <https://www.strongtowns.org/journal/2019/11/27/parking-dominates-our-cities-but-do-we-really-see-it>.

¹¹ James K. Boyce, “The Case for Universal Property,” *Scientific American*, November 28, 2020, <https://www.scientificamerican.com/article/the-case-for-universal-property>.

¹² Robert Stayton, *Solar Dividends—How Solar Energy can Generate a Basic Income for Everyone on Earth*, (Santa Cruz: Sandstone, 2019).

Sowing the Seeds of Desire

If we truly want the massive change we know must be achieved in the face of climate risks, we can take lessons from Madison Avenue and focus communication strategies on desire and human ambition. Oil companies and automakers do it. They convince people of how great life is in a petroculture. They illustrate the freedom of the open road. ~~They don't scare people into driving internal combustion engine cars or shame them into buying disposable plastic stuff. They tempt them. Likewise, climate action must be at least as tempting.~~

It is true that we live in a time of crisis. Yet the future is full of promise. Designers and artists have the ability to manifest that promise by inspiring collective action through their imaginations and the stories they tell about the greatness of our future.

As you peruse the concepts and technologies incorporated into the artwork proposals on the pages of this book, try to look past the climate change arguments of the past three decades. Put aside



As the educational component of LAGI 2022 Mannheim, we designed and produced a new game called *Kleingarten*. Our second collaboration with Tunnel Monster Collective, this new roll-and-write game is a fun way

to learn about the interconnected systems at work within a 400 square meter allotment garden. Players build features and share harvest with neighbors on their way to becoming a master grower.

your despair about a bleak future and toss off your thoughts of doom and gloom. Instead, imagine yourself walking through these artful energy landscapes, enjoying a day in the park in a world that has long since moved beyond burning fossil fuels for energy. It's a world with more bird song drifting in the fresh, clean air—a world in which cities mostly power themselves locally with some help from remote wind turbines and solar farms. In this world, a circular economy means the end of waste streams and no more extraction of non-renewable raw materials. Energy dividends of solar power increase the quality of life for everyone and support a rich and diverse economy.

Imagine yourself in Spinelli Park a few years from now, walking through *Energy Circus*—a kind of living history museum of the future demonstrating agrivoltaic gardens and a circular economy. Or imagine yourself resting beneath the soft shade of *Plane of Water* as wildflowers blossom around you, lush from the water the artwork provides. What would it be like to take in a performance at *Kaleidoscopic Dunes* one evening, knowing that the pavilion generated 250 kWh of electricity that day?

A sense of desire for a better world like the one these artworks point to is the motivation that will successfully drive the massive change we need. The artists and designers featured in this book hold the keys to unlock that desire.

The LAGI 2022 artworks open our eyes to the possibility of an end to scarcity and a future of shared prosperity maintained within the carrying capacity of Earth. They remind us that with today's technology we could live in a 100% renewable energy-powered circular economy. Through art, we are allowed to inhabit the future. We can see ourselves there. We can see our children there.

It's time to tell a new and inspiring climate story—a narrative that moves beyond the doom and gloom of what will happen if we don't act. We can instead paint a detailed picture of the life-affirming, equitable, and thriving world we will create through our collective action. This story is about the quality of life and the experiences of those who will live their lives in this better world.

LAGI 2022 Mannheim offered an opportunity to tell this story. The artists, designers, and writers in this collection answered the call. Now it is your turn to tell the story to others. Together, let's design our clean energy infrastructures to be reflections of our greatest selves—to be places that make our lives meaningful and wonderful.



Energy Circus
Chai Yi Yang
See page 50



Plane of Water
Zsuzsa Péter
See page 68



Kaleidoscopic Dune
Muny-Roth Chev, Jason Daniel,
Vatsapol Nanta
See page 56

LAGI 2022 MANNHEIM DESIGN GUIDELINES

Projects must

Create a three dimensional outdoor human space using one or more renewable energy technologies as the predominant sculptural media;

Be considered from a perspective of modularity and/or scalability in order to address both civic and residential scales as;

Be safe for people by housing power electronics and energy storage systems away from easy access;

Seek to inspire people about the beauty of renewable energy and bring a positive message about life in a post-carbon future;

Help to advance one or more of the 17 UN Sustainable Development Goals;

Fit within the design site boundary area, illustrating beautiful energy generation capacity for both private garden and civic park;

Provide social co-benefits through the design including but not limited to urban farming, gardening, recreation, education, public engagement, interactivity, play, energy security, and economic opportunities;

Not generate greenhouse gas emissions or other forms of environmental pollution;

Each entry must provide a brief (approximately 300 words) environmental assessment as a part of the written description in order to determine the effects of the project on natural ecosystems and to outline a strategy to mitigate any foreseeable issues;

Be informed by an understanding of the history and surrounding context of the design site;

Support the objectives of the Climate Corridor (Klimopass), a component of the Baden-Württemberg climate adaptation plan;

The Climate Corridor is intended to allow fresh air to flow unobstructed into the city. Therefore your proposal should not create an impediment to the flow of air; and

Be pragmatic and constructible, employing technology that can be scalable and tested. There is no limit on the type of technology or the proprietary nature of the technology that is specified.

The LAGI 2022 Mannheim design site boundary invited creatives to imagine a renewable energy design across multiple scales.

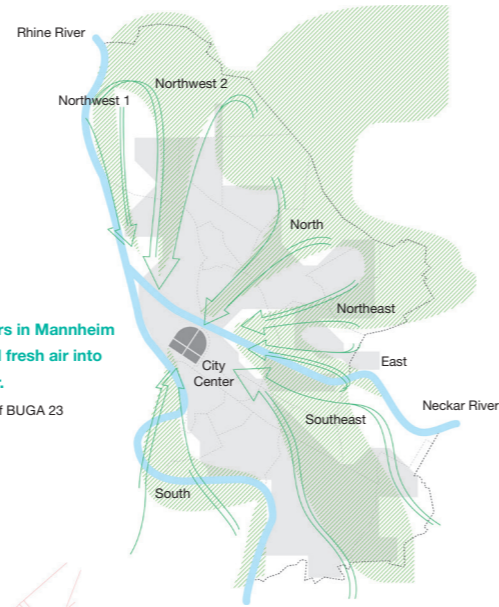
At the civic park scale is the vast landscape recently made available in the City of Mannheim following the closing of the U.S. military's Spinelli Barracks. The land has been remediated and the space will open to the public during BUGA 23. Following the Bundesgartenschau, the site will become primarily a public park – a gateway to the Rhine-Neckar Climate Corridor – and may incorporate a productive energy landscape that can significantly contribute to Mannheim's renewable energy generation capacity. Creatives were invited to design an energy landscape as a public park.

On the other end of the scale spectrum we asked that some element of the design proposal fit beautifully to power a private garden. The German Schrebergarten is a small plot of land that provides opportunity for urban dwellers to engage with nature and grow ornamental or edible gardens.

Spinelli Park
The LAGI 2022 Mannheim
design site boundary
53 hectares

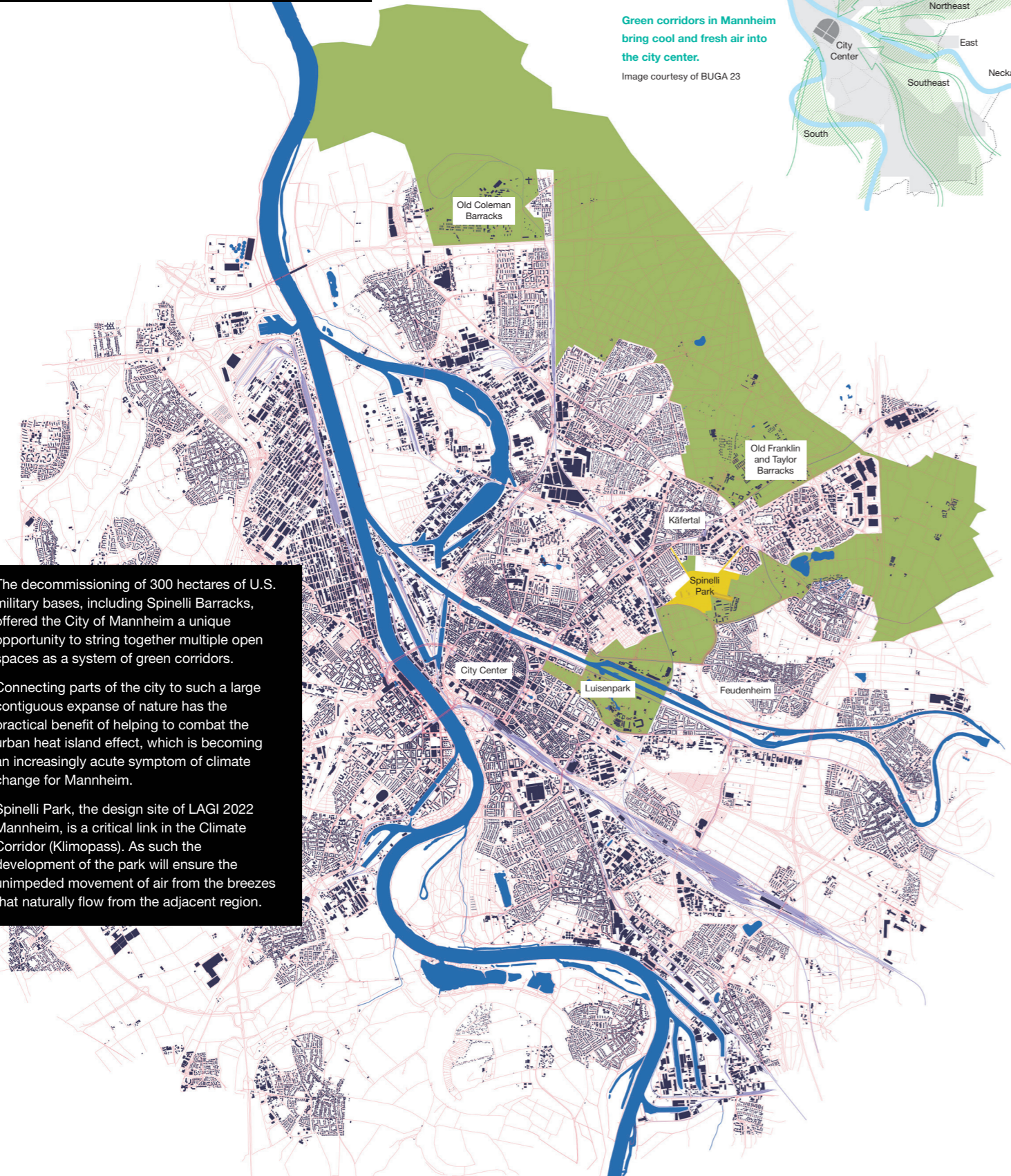
0 300 600 1,000 meters

RHINE-NECKAR CLIMATE CORRIDOR



Green corridors in Mannheim bring cool and fresh air into the city center.

Image courtesy of BUGA 23



The decommissioning of 300 hectares of U.S. military bases, including Spinelli Barracks, offered the City of Mannheim a unique opportunity to string together multiple open spaces as a system of green corridors.

Connecting parts of the city to such a large contiguous expanse of nature has the practical benefit of helping to combat the urban heat island effect, which is becoming an increasingly acute symptom of climate change for Mannheim.

Spinelli Park, the design site of LAGI 2022 Mannheim, is a critical link in the Climate Corridor (Klimopass). As such the development of the park will ensure the unimpeded movement of air from the breezes that naturally flow from the adjacent region.



Above: Former train access to the Spinelli site. Below: Water basin on the Spinelli site.

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View of the Spinelli site

Photographs © BUGA 23/Daniel Lukac

View of the Spinelli site
Photograph © BUGA 23/Daniel Lukac

