6th regional and global competitions for projects and visions
“Winning this Holcim Awards prize...

...gives an impulse to continue my studies”
Javier Estebala Aláende, page 66

...conveys a strong message to reduce the environmental impact”
Dolathep Chetty, page 234

...is a vital step forward in my career as a researcher”
Priscilla Namawanje, page 184

...is a huge motivation to keep on researching”
Maria Rosario Ruiz Cabello, page 148

...is special because this competition looks ahead over several decades”
David Marshall, page 100

...confirms the need for a new form of collaboration”
Yufei He, page 70

...is a huge acknowledgement for what the client is aiming for”
Wolfgang Kessling, pages 47, 220 and 256

...enables us to dream big”
Diane van Buren Zachary, page 94

...is a recognition for keeping people and the planet at the core”
Jakob Dunkl, page 60

...is a stimulus to continue what we have been developing”
Leão Lopes, pages 46, 174 and 208

...recognizes that urban and social development should be deeply interlinked”
Pablo Goldin Marcovich, page 150

...could be a good beginning to pursue sustainable architecture”
Rionaldi Gunari, page 236

...is an exciting opportunity to transition from research to large scale applications”
Samuel Clovis, page 104

...motivates to innovate new design methodologies”
Shneel Malik, page 68

...appreciates sustainability without compromising aesthetics”
Divya Jyoti, page 238

...is an incredible honor and humbles me to be representing my country”
Noor Marji, page 190

...can hopefully push my idea to another dimension”
Annik Keoseyan, page 72

...enables us to dream big”
Diane van Buren Zachary, page 94

...recognizes that urban and social development should be deeply interlinked”
Pablo Goldin Marcovich, page 150

...could be a good beginning to pursue sustainable architecture”
Rionaldi Gunari, page 236

...is a great achievement for me and my project”
Lorenzo Fernandes, page 232

...could be a good beginning to pursue sustainable architecture”
Rionaldi Gunari, page 236

...is a recognition for keeping people and the planet at the core”
Jakob Dunkl, page 60

...acknowledges that our collaboration across borders promotes new standards”
Azra Aksamija, pages 46 and 176

...is a recognition for our ingenious builders”
Salma Samar Damluji, pages 172 and 200

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...is an incredible honor and humbles me to be representing my country”
Noor Marji, page 190

...promotes significant momentum to go ahead with this unique project”
Leticia Alfaro, page 144

...demonstrates the potential of designed ecosystems to address indoor air quality”
Phoebe Mankiewicz, page 106

...is a recognition for keeping people and the planet at the core”
Jakob Dunkl, page 60

...means an energy boost for our office”
Maria Reinoso Guerrero, page 138

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Sixth Holcim Awards
Regional and global Holcim Awards competitions for projects and visions in sustainable construction 2020/2021
Five posters each: Exhibition of the 33 Global Awards finalist projects in Zurich. Jury members who could not participate in person were taken on a virtual tour and could view the posters via an online platform (page 10).
Driving sustainability and circular economy
Target Issues for sustainable construction

Overview of all prize winning projects

Jury members and meeting
Award winning projects

<table>
<thead>
<tr>
<th>Prize Type</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold – Switzerland</td>
<td>12</td>
</tr>
<tr>
<td>Silver – Colombia</td>
<td>22</td>
</tr>
<tr>
<td>Bronze ex aequo – Morocco</td>
<td>30</td>
</tr>
<tr>
<td>Bronze ex aequo – Vietnam</td>
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<tr>
<td>Commended projects</td>
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Jury members and meetings
Prize winning Main and Next Generation category projects

<table>
<thead>
<tr>
<th>Region</th>
<th>Projects</th>
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<tbody>
<tr>
<td>Europe</td>
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<tr>
<td>North America</td>
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<tr>
<td>Latin America</td>
<td>132</td>
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<tr>
<td>Middle East Africa</td>
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<td>Asia Pacific</td>
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Credits 268
Driving sustainability and circular economy

Edward Schwarz, Holcim Foundation

The creation of the Holcim Foundation for Sustainable Construction in 2003 occurred at an auspicious time. The need for change was in the air, and there was a deep belief that the building sector must become a driver of sustainability. A pioneering spirit prevailed, setting a world-wide agenda to reorient environment-making practices for decades to come. A landmark white-paper was already on the table, the 1987 Brundtland Report that called for “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” Up for discussion as well was the 1992 Rio Agenda that charted a comprehensive action plan to reduce human impact on the environment, along with the 1997 Kyoto Protocol mandating significant reductions of global greenhouse gas emissions. So much was clear regarding the broad recommendations for achieving sustainability.

Bringing building practices into line with international frameworks

The need for change was in the air

Yet these general principles were somewhat abstract and not specific enough for a sector with a significant ecological footprint. The operational lifespan of buildings consumes just under half of all globally available water, material, and energy supplies, while also generating nearly half of the total carbon emissions and waste output. What was needed were more tangible guidelines that would bring building practices into line with international framework agreements but be more detailed in outlining specific commitments to sustainability within the construction sector, beyond just paying lip service to the cause. Sustainability for the Foundation, in other words, had to be literally constructed tenet by tenet, target by target, and technique by technique.

Amidst debates on which objectives for evaluating sustainable construction would be most effective, it was decided early on that the overwhelming lists of criteria from academic research and certification councils would need to be distilled to form a set of concise targets applicable at all scales of the building sector. Common to all of them was the threefold imperative that whatever is built has to perform sustainably on environmental, economic, and social registers.

Regional interpretation and adaptability

Accordingly, three issues were specifically identified that to this day have remained constant in the Foundation’s charter. Regarding the construction sector’s impact on the environment, what gets built must mitigate rather than contribute to carbon emissions. Regarding material and energy flows in the construction sector, what gets built must lead the transition from a linear to a circular economy of renewable resource use. Regarding the ramifications on people, what gets built must foster bonds and equity within society. As timely as these core targets are, to build sustainably is not a one-size-fits-all directive, insofar as each world locality faces its own challenges and has recourse to its own ways of dealing with...
them. Place-specific solutions that allow for regional interpretation and adaptability to contextual particularities were therefore taken into account as a key criterion of sustainable development as well.

For the sake of forging new pathways, the Foundation also places a premium on innovation from the very beginning over and above material- and energy-intensive building practices, insisting that breakthroughs in construction – including rediscovered traditional methods adapted to new circumstances – are at the forefront of making our collective habitats more sustainable.

All in all, these interrelated concerns formed the basis of a new operational contract for the building sector, one that is as much environmental and economic as it is social and contextual in its scope.

Keeping in mind that the Foundation’s sponsor is a materials enterprise with global reach, it was not enough to simply make bold statements. For the ambitious objectives – or Target Issues as they would be called – had to be taken up in the everyday practical matters of the company to set an example of best practice throughout the industry. The bottom line was that corporate aims would have to be aligned with those of the Foundation and vice versa. Through the synergies and dialog established, the company would eventually adopt an integrated sustainability agenda that even challenged its own modes of operation.

This agenda ultimately included progressive milestones for reducing carbon emissions, increasing waste recycling, and embracing measures to promote human rights in all facets of the construction sector. To this day, resource circularity, net-zero emissions, and compliance with the highest of ethical standards are at the core of the ongoing mission of both the Foundation and its sponsor.

Best practice throughout the industry

What is still on the table and up for discussion in boardrooms as well as on construction sites around the globe is whether the disruptive transition from business-as-usual practices to planet-compatible ways of environment-making will proceed in small or large steps. That is, will change be radical or incremental? Whatever the answer, systemic overhaul or tweaking the status quo, the mission of sustainability becomes more urgent day by day as a pledge that must be put into action.

New operational contract for the building sector

Evolution of the Holcim Awards trophy

The base of the main Awards prizes is made by Holcim Switzerland using EvopactZero – a climate-neutral concrete that includes recycled aggregate and a resource-saving cement. This innovative building material closes the material cycle by using both the fine and coarse elements of demolition waste. The fine materials are incorporated into the cement while the coarse materials serve as aggregates in the concrete mix. EvopactZero minimizes the use of resources, conserves landfill space and offsets net emissions through certified reforestation and wind power projects. Read more about the logo and the Awards trophies of the Holcim Foundation on page 264.
Target Issues for sustainable construction

Marc Angélil and Cary Siress

The Holcim Foundation for Sustainable Construction is committed to sustainability as an unconditional principle, asserting that environmentally conscious building practices require a mutually reinforcing interplay of responsible ecological, economic, and social objectives. In accordance with the Paris Climate Agreement\(^1\), the Foundation places a premium on the reduction of global greenhouse gas emissions in all construction-related activities to minimize further ecological deterioration. In keeping with the holistic cradle-to-cradle ethic, the Foundation also emphasizes the need for a circular economy of resource use at all scales, whereby what goes in and what goes out must be restorative and regenerative.

In alignment with the need to govern the places we inhabit as an equally accessible social commons, the Foundation promotes the democratization of all processes pertaining to the production and use of the built environment. Although there is growing awareness of the need for across-the-board decarbonization, circularity, and equity, construction processes must be further recalibrated in order to make the building sector a driver of innovation in sustainable development in all senses of the term.

To this end, the Foundation has identified five Target Issues as guidelines for sustaining the human-made habitat for current and future generations. These objectives provide an operational roadmap for all activities of the Foundation: evaluation of Holcim Awards submissions, expert roundtables, international conferences, research grants, next-generation laboratories, as well as best-practice publications. The five Target Issues for sustainable construction under the headings of Progress, People, Planet, Prosperity, and Place are critical to making the environments we build and inhabit truly future-viable for all terrestrial stakeholders.

<table>
<thead>
<tr>
<th>Target Issue</th>
<th>Objective</th>
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<tbody>
<tr>
<td><strong>Progress</strong></td>
<td>Innovation and transferability</td>
</tr>
<tr>
<td><strong>People</strong></td>
<td>Ethical standards and social inclusion</td>
</tr>
<tr>
<td><strong>Planet</strong></td>
<td>Resources and environmental performance</td>
</tr>
<tr>
<td><strong>Prosperity</strong></td>
<td>Economic viability and compatibility</td>
</tr>
<tr>
<td><strong>Place</strong></td>
<td>Contextual and aesthetic impact</td>
</tr>
</tbody>
</table>

In light of the compound challenges facing the building sector, the Target Issues have been periodically adapted since the Foundation’s inception nearly two decades ago to reflect an evolving understanding of sustainability in construction. Accordingly, the Target Issues require ongoing review in the future.

\(^1\) Paris Agreement Under the United Nations Framework Convention on Climate Change, adopted in December 2015.
Progress
Innovation and transferability
Projects must demonstrate innovative approaches to sustainable development by pushing the envelope of practice and exploring new disciplinary frontiers. Breakthroughs and trend-setting discoveries must also be transferable to a range of other applications. Transferable innovations must comply with the principles of circularity and decarbonization, while demonstrating an awareness of the environmental impact of construction throughout a structure’s use-cycle.

People
Ethical standards and social inclusion
Projects must adhere to the highest ethical standards and promote social inclusion at all stages of the process, from planning and construction to use, servicing, renovation, and decommissioning. To ensure an enduring positive impact on communities, proposals must demonstrate how to enhance the collective realm and how affordable and socially inclusive habitats can be sustained, including the fair distribution and management of resources.

Planet
Resources and environmental performance
Projects must exhibit a sensible deployment and management of resources throughout their entire use-cycle. Long-term environmental concerns, especially in view of optimizing circular flows of material, water, and energy, should be an integral part of the design and construction approach to minimize greenhouse gas emissions, reduce waste, and promote the use of regenerative resources throughout the industry.

Prosperity
Economic viability and compatibility
Projects must be economically feasible and able to secure financing, whether from public, commercial, co-operative or concessional sources, while having a positive impact on the social and physical environment. An economy of means in construction must be pursued in order to avoid the wasteful consumption of materials and limit carbon emissions. The products used as well as construction processes deployed must adhere to the logic of circular economies.

Place
Contextual and aesthetic impact
Projects must convey a high standard of architectural quality in responding to the social and environmental urgencies of the present and those to come. With space, form, and aesthetic impact of utmost significance, the material manifestation of the design must make a positive and lasting contribution to the local context as a prevalent form of cultural expression.


Grand Parc, renovation of 530 dwelling units, Bordeaux, France, 2014-16. Lacaton & Vassal (Anne Lacaton, Jean-Philippe Vassal, Frédéric Druot & Christophe Hutin), Paris, France. Jean-Philippe Vassal and Anne Lacaton have been Holcim Awards jury members.

## 6th Holcim Awards winning projects

### Europe

- **Global Award Gold and regional Award Gold**
  - Winterthur, Switzerland
  - Pages 12 and 52

- **Regional Award Silver**
  - Prijedor, Bosnia and Herzegovina
  - Pages 54 and 74

- **Regional Award Bronze**
  - Skellefteå, Sweden
  - Pages 56 and 82

- **Regional Acknowledgement prize**
  - Hamburg, Germany
  - Page 58

- **Regional Acknowledgement prize**
  - Vienna, Austria
  - Page 60

- **Regional Acknowledgement prize**
  - Bordeaux, France
  - Page 62

- **Regional Next Generation prize ex aequo**
  - Cádiz, Spain
  - Page 66

- **Regional Next Generation prize ex aequo**
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- **Regional Next Generation prize ex aequo**
  - Zurich, Switzerland
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### North America

- **Regional Award Gold**
  - Chicago, USA
  - Pages 90 and 108

- **Regional Award Silver**
  - Yellowknife, Canada
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- **Regional Acknowledgement prize**
  - Tuscon, AZ, USA
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  - New York, USA
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- **Regional Next Generation 2nd prize**
  - Waterloo, Canada
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- **Regional Next Generation 3rd prize**
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- **Regional Next Generation 4th prize**
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Regional Next Generation 4th prize ex aequo
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Global jury meeting: “Remarkable progress since the regional phase”
A jury of nine experts selected the global prize winners in the 6th International Holcim Awards for Sustainable Construction in a two-day meeting on March 11/12, 2021. The 33 finalist projects from 25 countries were displayed as a poster exhibition in Zurich and were also made available via an online platform.

Head of the Academic Committee (AC) of the Holcim Foundation, Marilyne Andersen, provided a “virtual tour” of the exhibition for the jury members unable to travel to Zurich. She is also Professor of Sustainable Construction Technologies, EPFL Lausanne (Switzerland), a member of the Board of the Holcim Foundation, and represented the AC on all five regional Awards juries in 2020. “I’m very excited to be able to walk through this exhibition of 165 posters that bring outstanding examples of sustainable construction from around the world to life. It is remarkable to see the progress of many submissions since the regional phase of the competition,” she said.

The global jury of experts was led by Hashim Sarkis, Dean of the School of Architecture & Planning at the Massachusetts Institute of Technology (MIT) in Cambridge, MA, USA. He was previously a member of regional Holcim Awards juries in 2011 and 2018.

The jury included Angelo Bucci, Co-Founder, spbr arquitetos and Professor of Building Design, Universidade de São Paulo (Brazil); Bruce Gibbons, Managing Principal, Thornton Tomasetti (USA); Anne Lacaton, Principal, Lacaton & Vassal Architectes (France); and Mun Summ Wong, Co-Founder, WOHA (Singapore). In addition, Maria Atkinson AM, Founding CEO, Green Building Council of Australia; Meisa Batayneh Maani, Founder & Principal Architect, Maisam Architects & Engineers (Jordan); and Brinda Somaya, Principal Architect & Managing Director, Somaya & Kalappa Consultants (India) were members of the jury, representing the Board of the Holcim Foundation.

All projects nominated for a Main Category prize in the regional phase of the competition in 2020 were invited to provide an updated project submission for evaluation by the global jury. The authors were requested to include additional information on the carbon footprint and circularity of materials of their project. AC Coordinator Luisa Pastore led a team that examined responses by the project authors to the environmental impact, circularity and lifecycle performance of their global submissions.

The Holcim Awards is the world’s most significant competition for sustainable design. It offers a total of USD 2 million in prize money per cycle and foregrounds exemplary approaches to architecture, engineering, urban planning, materials science, construction technology, and related fields. Submissions are evaluated using the five Target Issues for sustainable construction of the Holcim Foundation (page 6). Under the headings of Progress, People, Planet, Prosperity, and Place the Target Issues outline the critical factors on making the environments we build and inhabit truly viable, as the building sector moves towards net-zero emissions and circular material flows.
New again and again
Extending the Cycle in Switzerland

Re-use is the order of the day in the face of climate change, increasing resource scarcity, and the gradual shift away from a throw-away mentality. In the Swiss city of Winterthur, an architecture firm shows how high-quality buildings can be constructed primarily using salvaged materials.
Unlimited growth is impossible on a finite planet, so there is no way around the efficient use of resources, at least not in the long run. These axioms were scientifically substantiated at the latest in 1972 with the report “The Limits to Growth.” Commissioned by the Club of Rome and prepared at the Massachusetts Institute of Technology, this report convincingly demonstrated that radical rethinking is essential. Above all, the depletion of raw materials must be stopped immediately, demanded the scientists – otherwise countless systems are in danger of collapse. “Entirely new approaches are required to redirect society toward goals of equilibrium rather than growth,” states the report. “Such a reorganization will involve a supreme effort of understanding, imagination, and political and moral resolve.” That statement is 50 years old, and still sounds as relevant as if it had been formulated today. “The Limits to Growth” sparked fierce debate around the globe when it was published and gave a huge boost to the then fledgling environmental movement.

Objectively considered, the necessary rethinking has not taken place, the “entirely new approaches” have not been implemented. According to the UN International Resource Panel, global resource consumption has since tripled to 90 billion tons per year. It is estimated that this figure will double by 2050. The biggest influence on these impressive figures is the construction industry, which accounts for around 60 percent of global material consumption and over half of global waste. Vast landfills are full of materials that are still valuable. In less developed countries, such wastefulness cannot be afforded. There, materials are not discarded but re-used again and again. The responsibility therefore lies primarily with the industrialized countries. Although the concept of sustainability is part of good practice in those countries, there are still far too few people who are doing something about the everyday mismanagement of materials and the throwaway mentality.

“Designing with salvaged building materials does not limit creativity” Barbara Buser

“One of the people taking the topic seriously is Barbara Buser. The Swiss architect, who graduated from the ETH Zurich, was involved for many years in technical collaboration projects in Sudan and Tanzania. “In Africa, I learned that what is waste for us in Switzerland is considered a valuable resource elsewhere,” she says. Back in her home
country, she founded the Verein Bauteilbörse Basel (Basel Building Component Exchange) in 1995, a nonprofit company that aims to return as many used but valuable building components as possible back into the service cycle. It is a trading post for finding and selling good building components that are salvaged when a building is demolished. Anyone who is constructing a building can find useful items at this marketplace.

In 1998 Barbara Buser founded the architecture firm baubüro Mitte together with Eric Honegger. This gave rise to baubüro in situ, which today employs around 60 people in Basel and Zurich. The firm’s particular strength lies in adaptive re-use and transformation projects. One such project is located in Winterthur, a city of 100,000 near Zurich that was once a bustling industrial hub. With the decline of the secondary sector in Switzerland, vast factory sites became available in Winterthur. Many of the old industrial buildings were converted into cinemas, shopping centers, high-end loft apartments, spacious offices, and so forth. The roughly 50,000-square-meter storage yard directly behind the main train station was abandoned and made available for new uses after machine production stopped there in the 1980s. Initially, interim tenants moved into the various industrial buildings. Then in 2009 the Abendrot Foundation bought the entire site. This pension fund is strongly committed to sustainability. Among other things, it invests the money it manages in real estate that is built and managed with as few pollutants and as little environmental impact as possible.

Due to the size and complexity of the site, the Abendrot Foundation appointed a project management team for the development of the former storage yard. Barbara Buser and Eric Honegger and Klara Kläusler are the members of this team. The objective from the beginning was to preserve all the buildings on the site – and when Barbara Buser is involved in a project, one can always
Global Holcim Awards Gold 2021

Marc Angst (MA): It takes a lot of ideas, so teamwork is essential. Whenever someone gets stuck, someone else comes up with a promising idea. This kind of work is extremely exciting.

Kerstin Müller (KM): For me, one of the big challenges is to properly evaluate the materials, not only their condition but also in terms of sustainability and embodied energy. No one had any experience with this, there is no real precedent project, and technically it’s all quite demanding. Once we have selected a component, we have to collect a lot of information about it so that we can use it appropriately. Unlike with new products, this data is usually not readily available.

Barbara Buser (BB): Another challenge is the cost. The foundation fully supported our vision but also demanded that the recycled building cost no more than a new building. Designing and constructing a recycled building assumes that wastefulness will stop and old things will be put to new use. Nothing on the site was completely built anew. The sensitive treatment of the old building fabric has paid off, the conversion of the site is a success story. Space in the buildings is in demand, the tenant mix is balanced, the outdoor spaces are lively. The great care with which the overall project was conducted can be felt everywhere. The buildings have lost none of their industrial charm, yet are fully equipped for contemporary uses. The phrase “tradition plus innovation” is quite apt here: The old walls are home to future-oriented companies and many startups and creative thinkers.

Most of the construction work at the storage yard has been completed. One of the later subprojects is the conversion of an old warehouse, Building K.118, including the addition of three floors. The project team pursued a particularly ambitious vision for this building: They wanted to use only materials salvaged from demolished buildings. A recycled building – entirely in the spirit of the Bauteilbörse! Numerous experienced employees of in situ were involved in this project.

What is different about constructing a building out of salvaged materials?

Pascal Hentschel (PH): The planning process is reversed. Normally, first you do your design and then you specify the materials to build it. But in this case, you first look at what materials are available and put together a material catalog. Using that, your design takes form and develops constantly as the search for components progresses. You have to constantly analyze how to use what’s available.

Marc Angst (MA): What is waste for us is considered a valuable resource elsewhere.

“Data is usually not readily available” Kerstin Müller

“The kind of work is extremely exciting” Marc Angst

“What is waste for us is considered a valuable resource elsewhere” Barbara Buser
ing, however, requires a great deal of labor, which is very costly in our case. The decisive factor is the ratio of material to labor cost. That's why there is much less waste in Africa, where material is simply much more expensive than labor. In the long term, however, it’s a matter of preserving values. There are also material or workmanship values. I find it disrespectful to simply throw away a window or a door after a depreciation cycle of ten years. And there are also energetic values; the components bind a lot of carbon. Cultural values also matter – and some of them are closely connected to the site.

Are you seen as an eccentric if you recycle building components in Switzerland?

BB: No. I feel that in Switzerland there is a sense of unease about throwing things away. That probably has to do with the fact that we’re a country without raw materials. We’ve always had to make do with what was there. That’s why quality and innovation are so important in this country. There were hardly any resources, the winter evenings were long – so people did things like tinkering with a new function for a watch, which required little material.

Constructing a building from used parts first of all requires research. What is available in the first place? Where are windows, doors, flooring, or structural elements that could be used? In a country like Switzerland, where there is a lot of demolition and reconstruction, used material should theoretically be abundant. But you have to find it and get it. Kerstin Müller says they are “component hunters” who seek value in “urban mines.” If they see that a building is being demolished, they pick up the phone to salvage something, if possible. Because the Swiss apparently do not like to throw away material, it often happens that contractors will seek a component hunter of their own accord to offer material. Ideally, building components are deconstructed and immediately re-used on a different site close by. That would be the ideal solution. “It never works out!” sighs Barbara Buser. It would be different if there was a huge market for used components and the materials could be turned over quickly. Now, however, there is still a danger that one simply fills a warehouse with good things that one can never use – and that just generates costs. Broad rethinking and “entirely new approaches” are needed in order to establish the recycling of salvaged building components on a large scale.

“We pushed ourselves to the limit” Pascal Hentschel

“The components stimulate creativity immensely” Benjamin Poignon

“We pushed ourselves to the limit” Pascal Hentschel

“The components stimulate creativity immensely” Benjamin Poignon

“We pushed ourselves to the limit” Pascal Hentschel
PH: In residential buildings, materials are often fastened invisibly, whereas commercial buildings are usually constructed in such a way that the elements can be separated more easily.

BB: The big drama is composite materials. There have been phases in recent construction history when people simply didn’t think about the entire life cycle of a building. But I believe that sooner or later it will become the norm to make not only a pollutant concept for a building but also a recycling concept. It must become standard practice to assemble buildings in such a way that they can be taken apart again.

Back to H118: The component hunters made a particularly important find on the Lysbüchel site in Basel, where a large retail company was rebuilding its distribution center. The salvaged steel beams of the distribution center became the structure of the H118 expansion. The four floors are accessed by an exterior steel staircase salvaged in Zurich. It was previously part of the Orion office building, as were the granite facade panels that were converted into balcony pavers. Radiators could be brought in from the surrounding area. Aluminum insulated windows and red siding panels from Winterthur and Zurich serve as cladding. Roof elements come from Aarau, solid wood doors from Uster - all nearby places. All in all, around 50 groups of salvaged components were used, including the photovoltaic system installed on the roof. It’s ideal when you can take as much as possible from a single demolition site,” says Marc Angst, “then you don’t have to negotiate as much.”

A striking amount of material comes from industrial buildings. Aren’t residential buildings suitable sources for salvaged materials as well?
And that means, for example, screwing instead of gluing. Buildings like H118, designed to be taken apart again, can only become standard practice in the long term if the entire industry rethinks material life cycles. But even in the best-case scenario, it may never be possible to construct a building entirely from recycled parts.

logistically feasible. At some point, however, it simply no longer makes sense to insist on using salvaged materials because of the cost. For example, if you tried to salvage all the kilometers of cable needed in this building from demolition sites, you would find that the undertaking is simply unaffordable. Even if it would be possible to create a completely recycled building, this doesn’t seem necessary to me.

H118 was not a pure learning exercise, it was about showing what can be done with expertise – without breaking the budget or finishing behind schedule. Incidentally, in situ always looked for the lowest-impact

“"The big drama is composite materials” Barbara Buser

What percentage of your recycled building actually consists of salvaged materials? PH: At the beginning, we were aiming for 100 percent – but now we don’t even know how to measure that exactly. In terms of visible surfaces, we are certainly close to 100 percent, but in terms of mass tonnage, we may achieve only 50 percent because the new components, like most of the concrete decks, are very heavy. According to our calculations, the carbon savings are about 60 percent. I would say we have certainly saved 500 tons of carbon emissions through our approach. We pushed ourselves to the limit, we tried to realize everything that was
solutions, even with new materials. Natural materials such as wood, straw, and clay were used as the primary new building materials.

You said that the design process is reversed in a project like this: The architects don’t develop an idea and then specify the materials but rather select from the available materials and develop the idea based on that. Doesn’t that restrict your creativity?

Benjamin Poignon: Not at all. The components stimulate creativity immensely. You simply let yourself be inspired by what you have available.

BB: In a university course we once presented a material library to 20 students and gave them the task of designing a project based on that. The result was 20 totally different and exciting projects. No, designing with salvaged building materials does not limit creativity.

Nevertheless, there must be limits: If you want to have a façade with 200 identical windows, this may not be feasible.

BB: Granted, you probably won’t be able to find 200 identical windows, but you don’t need to! We will not be able to save the world if we continue to build on the same scale as before. It cannot be the goal to realize such monotonous superstructures.

At the latest when you enter one of the 12 rental units in H118, you sense what Barbara Buser’s last statement means. The spacious rooms on the four floors are bathed with light and have modern lines – the material palette exudes something venerable. There is history in every visible part. And each part continues this history into the future. You sense the great appreciation of the materials utilized in the building. In situ applied an extraordinary amount of understanding, imagination, and political and moral resolve in this project – as was called for 50 years ago!
Quality towards which the building industry should aim

The Global Holcim Awards jury highly commended this project for the disruptive construction methodology it proposes to achieve carbon neutral buildings and enable circular economy models in the field of design and construction. Energy savings here are achieved on three levels: demolition is minimized in favor of adding new elements to refurbish an existing fabric; construction material mainly consist of re-used components; when new materials are needed, the project opts for low carbon or carbon negative ones. In contexts like Switzerland where demolition is still a rather frequent practice that precedes new construction, this project shows how much potential exists – and is lost – in buildings that are torn down, to the point that dismantled elements are re-used as brand-new components for new construction. The ability of the building to be easily assembled and disassembled to allow for future modifications and re-use was also highly commended by the jury and recognized as a quality towards which the building industry should increasingly aim.

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Back to nature

Wetland Vitality in Colombia
Wetlands are among the most important ecosystems in the world – but they are endangered in many places. In the Colombian capital Bogotá, a team of architects is showing how damaged wetlands can be repaired and protected for the future.
A further environmental problem is water pollution. There are over 200 bodies of water in the Bogotá metropolitan region. Particularly significant is the Bogotá River, which flows through the west of the city. It is considered one of the most polluted rivers in South America, as it receives the trash and sewage from millions of residents as well as industrial waste from southern Bogotá. The mechanical sewage treatment plant is completely overwhelmed. Various sections of the river are classified as dead, without any oxygen.

The catchment area of the river includes various wetlands. These have strongly shaped the area and play an important role for the entire region north of the Andes. Wetlands are also important for the planet as a whole. They probably bind about ten percent of all carbon deposits. Wetlands regulate water cycles, prevent flooding, retain sediments and nutrients, and act as water reservoirs.
They improve air quality, act as dust retainers, regulate temperatures, and produce oxygen. Another function concerns flora and fauna, as wetlands provide habitat for countless endemic and migratory species.

In a densely developed city like Bogotá, the social importance of such open spaces is also not to be underestimated. Wetlands serve as recreational areas and create territorial and cultural identity.

Bogotá’s population growth has led to the development and destruction of most of these ecologically and culturally significant resources. It is estimated that of the 150,000 hectares of wetlands that existed in and around the city in 1940, only 1,500 hectares remain today – just one percent. They are spread over 15 different sites. The 152 hectare Jaboque wetland in the west of the city has been preserved to some extent. It is located near El Dorado airport and borders on the polluted Bogotá River. The vegetation of the ecosystem is impoverished.

Parts of the wetland were illegally settled by displaced people. The tree population was reduced to a few acacia and eucalyptus trees. Since the 1980s at the latest, this wetland has also been used as a garbage dump, and sewage from surrounding districts has flowed into Jaboque. UNESCO’s Ramsar Convention lists the world’s most important wetlands, currently around 2,400 in 171 countries. Jaboque has been on the list since 2018. Incidentally, the name of the territory is derived from the Muisca language and means “land of plenty.”

This wetland, which has been so badly damaged, is currently being transformed into a huge nature park of 5.5 kilometers in length. The Medellín-based architecture firm Connatural is in charge of the project. The firm was founded in 2011 by the architects Edgar Mazo and Sebastián Mejía. In all its projects, the firm strives to achieve a dialog between art, architecture, and landscape.

Edgar Mazo is a graduate of the National University of Colombia. He is an intern professor at the Pontifical Catholic University of Chile and guest professor at Escola da Cidade in São Paulo. He gave lectures at the Harvard Graduate School of Design, Arizona State University, and other universities. Sebastián Mejía is also a graduate of the National University of Colombia. He was a professor...
at the Pontifical Bolivarian University and a guest professor at the Harvard Graduate School of Design, Torcuatto di tela in Argentina and the Pontifical Catholic University of Chile. He was also a lecturer at Querétaro Congreso de Arquitectura Natural 3.

Most of Bogotá’s wetlands are gone – why has Jaboque survived?

Sebastián Mejía (SM): Although urban growth has been enormous, there were so many wetlands here that not everything was immediately destroyed. Jaboque was the epicenter of the Muiscas, part of the Chibcha language family. The Muiscas, who lived here from 500 to 1500, excelled in goldsmithing and the engineering of irrigation systems. They are a part of our history that we are proud of. Remnants of their culture remain in the wetlands, which probably helped protect Jaboque.

Does the airport, located near the wetlands, also play a role?

Edgar Mazo (EM): The wetlands were partly drained for the airport, which caused damage. On the other hand, tall buildings cannot be erected near the airport, so no heavy development could take place here.

How has the area been used so far?

EM: It was fenced off for a long time and closed to the public. Entering Jaboque was dangerous because the area is so large that the police could not guarantee safety there. But people lived beyond the fence – low-income people and victims of the armed conflict. Trash and sewage, illegal construction, modifications of the riparian buffer zone and other interventions acutely threatened the ecosystem of the wetland.

SM: But people began to recognize the value of the wetlands – and to protect the land. Around Jaboque, there are numerous neighborhoods that lack open space. A strong citizen’s movement emerged there to preserve the wetland. Various NGOs and government agencies are also involved, as are those who have settled in the wetland; for them, Jaboque is their habitat, which they want to preserve.
How did the current project come about?

EM: The municipal government saw that something had to be done to save the wetland over the long term. In 2016, Jaboque became part of Bogotá’s development plan “Bogotá Mejor Para Todos.” The idea was to design a large park there. The city invited a specific group of professionals to submit a portfolio. We were awarded the commission because we do constant research related to water bodies and hydraulic basins as well as projects related to landscape and ecological restoration. One of our key references is a large project to rehabilitate the Medellin River.

SM: We are architects, but we have experience with landscape projects with an environmental approach and a strong network of specialized professionals. On this project we are working with two landscape architects, two biologists, and a civil engineer who specializes in bio-construction.

At first, Connatural and the authorities had differing ideas about what the future park should look like. The city wanted to build numerous pedestrian and bicycle paths and a lot of other general infrastructure, but that would have ruined the ecosystem. The architects spoke to the officials and also solicited public input. The tenor was clear: The people wanted a park that was as natural as possible and including as little construction as possible.

How was the participation of residents of the surrounding neighborhoods?

EM: At first it was really difficult to connect with them because a lot of people don’t trust the government – and we were hired by the government. That’s why we began collaborating with a social worker, an anthropologist, and we approached various community leaders. This contact allowed us to visit schools and other institutions and explain our project to the people. We passed on their feedback to the authorities.

Did the people offer any new ideas?

SM: Yes. Some of them were in tune with our ideas, others were at variance with them. One wish, for example, was to have community gardens for traditional plants. Our master plan takes some of these ideas into account, including the community gardens for residents of the nearby neighborhoods. All in all, the design of the park was a very organic process.

The project is comprehensive and complex. If you look at the usual before-and-after pictures of the project, you will understand why it took so long for someone to take action here: The condition of the polluted vast wetland was so bad that people immediately
capitulated rather than even starting to roll up their sleeves. The first goal is to restore the original ecosystem through conservation, recovery, and strengthening. Architects and experts analyzed together which plants are endemic, which are non-endemic, which are good or bad for the ecosystem, and above all, which plants are missing. Today, plants that were once native here and have disappeared are being returned to the wetland. Invasive plants that are harmful to the ecosystem are being removed. It’s a very lengthy process, and the Bogotá Botanical Garden is helping with it. Every day, people are working to return the ecosystem to a healthy state. Ultimately, 121,000 square meters are to be replanted. Among the other measures, the links between the water bodies are being restored to allow water exchange, destroyed riparian areas are being repaired, and trash is being removed. Archaeological artifacts from the Muisca era will be identified and presented.

Another key element of the project involves development. Firstly, inappropriate structures, such as those built illegally on the banks of the water bodies, are being removed. And secondly, various trails made of permeable concrete are being built, mainly along the edge of the wetland. The trails are narrow in order to limit capacity and thereby ensure that the wetlands will not be overused. “Amphibious trails” include bridges over the water and are particularly attractive. Permanent recreation zones and “environmental classrooms” are also being set up because education in nature topics is an important part of the project. Finally, the architects also had to design a few buildings, such as entrance buildings, restrooms, and observation decks for bird watchers.

It is extremely impressive to see the number of levels on which interventions are taking place, how many detailed measures have been worked out, and how sensitively Jaboque is being handled. It is obvious that Connatural’s team has made every effort to achieve the optimum.

Out of the entire program, what do you consider to be the most important measures?
EM: There are so many issues that are important. The measures to reconstruct and revitalize the ecosystem, the protection and strengthening of what is there, and our collaboration with the locals are three of the main ones.
SM: It was certainly crucial that we eliminated all systems that discharged wastewater into the wetlands. It was also important that we moved ground back so that water levels could recuperate, even if the authorities complained that this was costly. This provided flood control and it benefits biodiversity.

What were the greatest challenges?
SM: The greatest challenge was to establish a balanced relationship between the communities related to the Jaboque wetland and the different technical teams, this strengthened the project decisions. It’s a project about giving something back – back to the wetlands and back to the people who live around them.

What is the status of the project?
EM: Some sections of the park are already open, others are still under construction. About 75% of the construction work had been completed by 2021. But it will take another five to ten years before the park is in the condition we are aiming for. Nature just takes time. It’s nice that we receive so much positive feedback. People are enthusiastic!

“Establish a balanced relationship between communities” Sebastián Mejía
A mature, feasible and transferable intervention

This project integrates a wise, sustainable, pluralistic and participatory logic, aiming to repair a long-lost relationship between humans and nature through wetland restoration. The Global Holcim Awards jury was impressed by the holistic approach of the project that includes actions of environmental, social, spatial and cultural order. The level of detail of the landscape design as well as the quantity of information underpinning it demonstrates the maturity and quality of the proposal while supporting the feasibility of the intervention. The jury recognized the high potential for transferability of the project that will be able to serve as a “knowledge bank” for future intervention of this kind. The educational purpose embedded in the interventions, aimed at the promotion of more ethical and socially inclusive practices, was also considered exemplary.
Slow architecture
Cultural Interlude in Morocco
Joudour Sahara Cultural Center in the oasis town of M’hamid El Ghizlane in southern Morocco combines indigenous knowledge with progressive ideas. The aim of the new facility is to preserve local culture and to combat desertification – and thereby stop the exodus of locals and the associated irreversible loss of construction, agricultural, and cultural practices.
Running some 1,100 kilometers, the Drâa is Morocco’s longest river. It meanders through the desert and six oases, which it supplies with precious water. The river valley, part of a UNESCO Biosphere Reserve, ends at M’hamid El Ghizlane. Known colloquially as M’hamid, this community comprises several villages in the oasis. Because the river volume has been declining year after year, the oasis suffers from water shortage. What’s more, the desert is relentlessly encroaching, local ecosystems are in collapse, and farming is now possible only on a few remaining fields. Many residents are abandoning the oasis. In 2014 there were some 7,500 people living here, by 2020 there were 500 fewer.

Halim Sbai, who runs a small café and gives ecotourism tours, is worried about the desert’s incessant advance. Over ten years ago, he joined forces on a project with Aziza Chaouni, founder of Aziza Chaouni Projects, her project manager Dana Salama, Wanda Hebly from the Sahara Roots Foundation, who is responsible for landscape design and overall support, and Thomas Duncan, a Peace Corps volunteer who runs youth cultural workshops in the region of M’hamid. The team devised strategies to control desertification, revive the economy, and preserve local heritage – especially the musical heritage which is unique to M’hamid, as it mingles sub-Saharan, Arabic, and Berber influences. The brainchild of their planning is the Joudour Sahara Cultural Center. This much needed community facility will focus on music teaching for the local youth. The center’s community outreach and programming have already begun.

Moroccan architect Aziza Chaouni is an associate professor at the John H. Daniels Faculty of Architecture, Landscape and Design in Toronto. She also leads Designing Ecological Tourism, a collaborative research platform that explores the challenges of ecotourism in developing countries. Aziza Chaouni holds a postgraduate degree from the Harvard Graduate School of Design and a Bachelor of Science in Civil Engineering from Columbia University.

Why is music at the center of your project?
**Aziza Chaouni (AC):** For centuries the oasis was an important stop on the salt and gold caravan routes. Nomadic groups from Senegal, Niger, Mali, Mauritania, Algeria, and from even further east passed through M’hamid on their way to Marrakesh. Some ended up settling here because a good livelihood was offered by the fertile soil, the river-based resources, and the date palms, which were still plentiful at that time. The various peoples brought along their cultural practices, in particular their music, and over time the mix resulted in a unique local style. Lyrics are in multiple languages, including Arabic, Amazigh, and Hassani. Music is omnipresent in M’hamid, always heard at religious celebrations, weddings, on national holidays, and even beneath the harvest moon – often accompanied with dance.

M’hamid is home to twelve tribal music styles, all of which are taught at the music school – although “music school” is a misnomer. For lack of a better venue, lessons are momentarily being taught in Halim Sbai’s café. The new cultural center is conceived to house a music school for children and young people as well as a recording studio and cultural exhibition spaces. Halim Sbai...
expounds: “But music alone is not enough. When we started working with Wanda Heby, we realized we needed a big event to raise awareness of all the aspects of our regional problems.” Thus, in 2009, he and his brother created the Taragalte music festival. In planning the new cultural center, the team met over a long period of time with the locals to learn their needs, and this input was incorporated into the building program.

What insights have you gained from working with the locals?

AC: We visited M’hamid many times over the years; it has almost become our second home. In developing the project, we encountered many difficulties related to politics and infrastructure. But we always showed the people that we would not give up. Our devotion and belief in the project never dwindled. We believed in the importance of the project in setting a precedent for the region, for giving hope to local youth that positive change can occur, and for these reasons we needed to make it happen, against all odds. We knew that our work would have much greater impact if everyone was on board. Of course, everyone has different ideas and desires, and reconciling the diversity of concerns was our biggest challenge. For example, children want a place to play, because there are no playgrounds or sports fields in M’hamid, and the only youth center is closed. Young people want a job so they will not be forced to move away. And women want to become emancipated and develop their full potential instead of always remaining at home. Elders resisted any change to the existing social order and were against girls attending a music school and women working outside the home. Impromptu town halls and discussions helped us to gradually shift mentalities and adjust the project program and design, thereby developing a concept that enjoys broad support.

In the small village next to the project site, we interviewed everyone to find out who had what talents and abilities. This was virtually a survey of the socio-economic state of the community. It helped us draft a plan of action for the project, centered around social equity. We gave every single family opportunities to contribute to the project in one way or another.

At the main entrance is a playground, which was designed together with the children. From there, a walkway, passing through a small, shady square, leads to the large central courtyard at the heart of the cultural center. It is flanked by an auditorium recessed halfway into the ground, the underground recording studio, classrooms, a restaurant, Halim Sbai’s café, exhibition spaces, and an area for music lessons. The room program is completed by shaded courtyards with seat-

“Discussions helped us gradually shift mentalities” Aziza Chaouni
**AC:** Industrial-component roofs, which are often used these days in M’hamid, are simply not practical in this desert climate. This is an important problem because 40 percent of the average heat gain is through the roof at this latitude. The traditional roof design we have chosen will be better at preventing overheating in our buildings.

But cleverly designed walls and roof alone are not enough to beat the heat. Other parts of the buildings must also contribute. For instance, windows are placed across from each other and on axis with the prevailing winds to maximize cross ventilation. They are no wider than 30 centimeters and are fitted with wooden shutters and air vents that can be adjusted to the season and time of day. A dual passive cooling system is implemented in the classrooms. It consists of solar chimneys and Canadian wells. When the solar chimneys warm up, an updraft is created that extracts the warmer air from the rooms below. In Canadian wells, or air wells, outdoor air is drawn into pipes buried two meters underground, where the temperature remains at a constant 15 degrees Celsius. This cools the air, which is then drawn into the building.

**AC:** With an average yearly temperature of 32 °C, 24 °C is realistic. In this region that’s considered quite pleasant. To deal with the heat, people in desert regions have also adopted a habit called nomadic occupation: As the day progresses, they migrate to the coolest room of the building. In our project, for example, the eco-lodges are designed to accommodate this practice.

Traditional building methods are also used for the roofs. For example, the typical roof construction comprises safflower- and poplar-stem rafters, woven reed matting, and a surface layer of clay and hay, with the whole roof perimeter terminated by a stone and clay parapet.

Water supply is vital in desert regions. The cultural center complex is largely self-sufficient in this regard. The only external water connection is a seguia, an indigenous water canal that runs through the site to the newly built reservoir. The project team improved the canal by lining it with stones and covering it with woven palm leaf mats to reduce evaporation.

"Music alone is not enough“ Aziza Chaouni

"We also have to use the water intelligently“ Halim Sbai
How do you ensure there is a water supply when the seguia runs dry?

Halim Sbai (HS): We have to collect rainwater in the new reservoir – and I mean every drop that falls from the sky. It does rain here, but only sporadically. And when it rains, it usually pours. But that’s not enough – we also have to use the water intelligently. We’ve created diagrams to show people how to reduce their daily water use. There’s no reason to waste fresh rainwater for watering or cleaning; treated graywater is sufficient.

The building roofs are slightly sloped to aid rainwater collection. The kitchen and bathroom sinks are connected to a 20-liter tank that is refilled weekly or as needed. Also, throughout the facility, only natural cleaning products are used so that the collected graywater remains useable.

The cultural center will also be self-sufficient in terms of electricity.

AC: We had to study energy needs carefully since the site is off the grid. For example, we know that if you wash dishes with a dishwasher instead of by hand, you use three times less water. But the dishwasher needs energy. So we had to weigh which programs had the higher priority versus others. Energy generation is not a problem in M’hamid – there is more than enough sun, but our budget was limited and we could only purchase a certain number of solar panels. Hence we tried to keep energy consumption to a minimum. Lights, for example, are installed only where really necessary. In the desert at night, the moon and stars give enough light outdoors. We make use of that as much as we could by designing spaces for outdoor activities like dining that could take place at night.

Dana Salama (DS): It’s also important to consider maintenance. We need systems that can be easily maintained in the desert. You can’t implement high-tech solutions if there is no way to maintain and repair them.

Landscape design is a key part of the holistic character of the project. It’s intended to prevent or at least slow down the desertification and thus also the population migration.
“We were able to impart knowledge” Dana Salama

A combination of systems is being used to achieve this. Freestanding L-shaped walls – as well as the building walls – are integrated into the terrain and oriented to block prevailing winds and thus the intrusion of sand dunes. Sapling tamarisk and acacia trees are planted behind them, their roots stabilizing the sandy soil. Although these tree species are known to survive with little water, in this region 60 to 70 percent typically die before they reach maturity. To improve the survival rate, palm-leaf-covered grids and the so-called “Growasis Waterboxx” are being used in the project. Special palm-leaf grids are installed around the saplings to control sand intrusion. Batches of 100 trees are planted in each waterbox. The boxes are filled with water, a small amount of which is released every day. The biodegradable box is then set in the ground. It remains in place until the trees develop roots to survive on their own. This process takes one to three years.

How satisfied are you with the combined effect of L-shaped walls, the palm-leaf grids, and the Growasis system?

Wanda Hebly: We were able to increase the survival rate of the trees to 70 or 80 percent. We want to share the technique with as many desert dwellers as possible so that they can use it themselves.

Looking back, how important was it to have the local population on board right from the start?

AC: Very important. Everyone who wanted to could contribute – and very many wanted to. This shows us that people consider the cultural center as a part of their community and they are willing to take care of it in the future. We used Halim’s music festival to organize design workshops and break the ice.

DS: It was also a good opportunity to teach people indigenous but forgotten practices and construction methods. We were able to impart knowledge, for example, how to plant trees without too many of them dying, how the water table works, and so on. But we were also able to use existing knowledge.

AC: You could call our approach “slow architecture,” analogous to slow food or slow fashion. The project is the result of the activism of friends from different backgrounds who share common values. It has grown organically over time and matured, like good wine.
Significant cultural and social relevance

The Global Holcim Awards jury highly praised this design proposal for the way in which it engages with sustainability under many different aspects. The complex’s objective is to retain Joudour’s cultural heritage by deploying a series of architectural solutions and environmental strategies that will reinvigorate local community life and prevent further cultural erosion. The jury recognized the laudable intention to address the issue of tribal community displacement due to the threat of climate change by suggesting a design solution that enables people to remain rooted in their place and traditions. This endows the project with significant cultural and social relevance. At the same time, the project combines vernacular knowledge and energy strategies that outline a distinct sensitivity towards the environment while effectively facing the risks of desertification and water scarcity. The jury appreciated the level of clarity of this high-quality submission and its potential for transferability in similar contexts.
Giving nature a boost
Propagated Sanctuary in Vietnam
Sustainable construction has many facets and manifestations. A prime example of this is a project in Hanoi that aims to establish a complete ecosystem – and thereby sensitize the city’s inhabitants to nature and environmental issues.
Cities consume around two-thirds of the world’s total energy production and they account for over 70 percent of total greenhouse gas emissions. Hanoi, the capital of Vietnam, is no exception in this respect. Driven by strong economic growth, its population increased by five million to around eight million between 1989 and 2019. This has led to increasingly dense living conditions, diminishing green spaces, ever-increasing mobility demands, and, as a result, poorer air quality. In the world capital city ranking of the 2020 World Air Quality Report, Hanoi ranks twelfth, making it one of the dozen capitals struggling with the worst air pollution. Marek Obtulovic and Nguyen Duc Trung believe that the world’s cities must play a key role in all sustainability discussions. With their project, they aim to contribute to the improvement of Hanoi.

“This is an ideological project”
Marek Obtulovic

Marek Obtulovic was born in the Czech Republic. He studied architecture at the BUT Faculty of Architecture in Brno and at the University of Strathclyde in Glasgow, UK. He gained his professional experience by working for architects in his home country, Belgium, and Vietnam, among other countries. In 2016 he started his own practice, ODDO architects, in Hanoi.

Nguyen Duc Trung studied architecture at the Hanoi University of Architecture. He worked on different types of projects in Vietnam as well as abroad before becoming a senior architect and a construction manager, particularly involved in projects incorporating local sustainable materials such as bamboo, thatch, stone, and earth. In 2019, he joined the ODDO architects as a director and the third co-founder.

Your project was initiated by Green Lungs Hanoi. Who is that?
Marek Obtulovic (MO): That’s actually us and all the volunteers involved in this project. ODDO architects launched the project in 2019. Over time, we brought specialists and institutions on board. As the project became more concrete, we also contacted local and government stakeholders. For us, this is not a commercial project but an ideological
Nguyen Duc Trung (NDT): Why we work pro bono is quite simple. It’s because Hanoi needs this project. Financial interests must not be in the foreground.

The development of the city shows that plants and greenery have great significance in the lives of local people. Especially in the hot and humid climate of the city, trees play an important role as shade givers. When a tree is cut down, people react with regret. And of course, intact nature is also romanticized in Hanoi. In contrast, there is a constant focus on economic interests and a rapidly changing culture of life. “Actually, Vietnamese love nature,” says Nguyen Duc Trung, “but it’s often forgotten in the cities.”

The project Propagated Sanctuary aims to help create a new awareness of nature.

Propagated Sanctuary is to be built on a 26-hectare area at the southern tip of Banana Island, which lies in the middle of the Red River as it flows through Hanoi. The island measures over 300 hectares and takes its name from the extensive banana plantations in its center. The island consists largely of alluvial land, where permanent structures are not permitted. Thanks to the various dikes that have been built, the extent of the Red River’s flooding has been contained, with the result that small informal settlements have arisen on Banana Island. The island dwellers use the surrounding land for agriculture. Much of the island is overgrown with weeds and plants that can survive in the wet soil, but large parts of the southern tip lie fallow. Efforts are being made to develop building activities on the island, but local conditions make any construction activities very difficult.

Why did you choose Banana Island as your project site?

NDT: First, it’s an ideal location. Banana Island is right in the middle of the Red River...
and can be reached quickly and easily from anywhere in the city. The island is also already being used as a recreational area – especially in these pandemic times – because it’s one of the few less densely built areas in Hanoi. Banana Island is also now known among tourists. However, there is no actual tourist infrastructure there, only paths for walking and cycling.

MO: We also found out that Banana Island is an important nesting site for birds – or at least it was before the natural habitat on the island gradually disappeared and people took over more and more with agriculture and also hunting. In the last ten years alone, the number of bird species native to Hanoi dropped from 214 to 25 as nesting sites and habitats disappeared. This is an enormous loss of biodiversity, which we aim to counteract with our large-scale project.

It sounds as if you want to build a park or botanical garden on the island.

MO: Not by any means! We want to restore part of the island to the condition it used to be in. It’s about renaturation, not about creating flower beds and green lawns. We don’t have any park rangers or plants that require special care. Instead, we want to create a natural ecosystem with endemic plants that can easily survive and flourish in the island’s alluvial soil. We aim to give nature a boost, after which it will be able to develop and regulate itself over the years. The alluvial forest will then become a natural habitat for native fauna, which will strengthen and expand Hanoi’s biodiversity.

In the first step, the project site will be divided into units of 20 by 20 meters. These will be planted with native trees and other plants in a controlled manner. In all, over one million tree seedlings will be planted on the entire project area. The plant material required comes from local nurseries and the surrounding area of Hanoi. “By thinking in units, we can proceed step-by-step depending on the availability of seedlings, and we don’t have to try to plant the whole area at once – that would be impossible,” says Marek Obtulovic, “especially since it’s important to plant the seedlings at the right spacing so that a stable ecosystem can develop above and below ground with the help of the ecological succession.” The architects expect that the newly planted forest will require intensive care during the first five years. After that, the system should stabilize and become self-sustaining through natural processes.

Who will provide the initial care?

NDT: In the long term, our project should also help the people who live in the northern part of the island. They have a lot of farming experience, which we can incorporate into the project, for example, by training people as informal stakeholders to become forest
“Hanoi needs this project” Nguyen Duc Trung

rangers. They can then monitor and protect the growth of the plants and thereby earn a regular income.

Knowledge of complex ecological relationships and the correct handling of fauna and flora is not part of an architect’s basic training. That is why the architects sought the support of national and international specialists from various disciplines. Central to the architects’ networking was Ad Spijkers, former FAO (U.N. Food and Agriculture Organization) representative and retired senior advisor to the FAO director general. “He established our contact with various specialized agencies in Hanoi and served as our advisor,” says Marek Obtulovic. Ornithologists, entomologists, the Urban Planning Institute, and specialists from other disciplines also contributed their expertise. “But this research is far from complete,” Obtulovic says.

The project is not only about nature, but also about people. The inhabitants of Hanoi are to be educated by the project and develop a new awareness for nature and its processes. The architects are particularly targeting children and young people, who stand to enjoy greater quality of life in the future with a greener environment.

“And we hope that the young people will then influence their parents to rethink and pay more attention to nature again,” says Nguyen Duc Trung. Teachers and research organizations shall also be active in the Propagated Sanctuary. And last but not least, the project should also be interesting for tourists and thus contribute to Hanoi’s economy. Bike trails, pedestrian bridges, skywalks, activity trails, and observation towers will contribute to making the Propagated Sanctuary a piece...
of nature that can be experienced. To facilitate access to the biotope, a new pedestrian bridge is planned to connect the western riverbank with the southern tip of the island.

But if you plan to attract people to the island, then don’t you also have to provide them with certain amenities?

MO: We will install toilet facilities. We have developed a sustainable system for their operation. For flushing and hand washing we collect rainwater. The resulting black and gray water will be treated in septic tanks with filters and afterwards in a natural way in a reed bed system. There will be no restaurants, entertainment facilities, or other amenities on the island. This may seem naive from an economic point of view, but after all, we are creating a forest, not a park.

What are the next steps?

MO: The project requires official approval by the government. This will lead to better collaboration with schools and institutes that have so far been reluctant to take part. At the moment, no activities are allowed on the island due to the current masterplan. This needs to be changed before we can proceed further with the project. We are now lobbying for this and trying to anchor the project in the city’s development plan.

Actually, our political challenge is greater than the ecological one. That’s why winning this Holcim Awards prize is so important – it gives recognition and visibility to the project and should help us to get it realized.

“We aim to give nature a boost” Marek Obtulovic
Call for urgent attention to recognize green infrastructure

In Hanoi, where human action and urban densification have taken a heavy toll on the natural habitat, this proposal stands out as a bold act of awareness that shines an urgent spotlight on the recognition of green infrastructure in Vietnam. The jury commended the very clear regenerative approach that, through the gradual restoration of secondary subtropical forests in the vicinity of the urban area, aims to produce a series of positive environmental benefits while acting as a social and economic catalyst for the city. The jury also applauded the great public engagement and pedagogical purpose of the intervention that becomes the bearer of a clear message: cities and their inhabitants can play a key role in improving quality of life, environmental protection and biodiversity conservation.
A demonstrative action of resilience and hope

Rebuilding Erupts in Cabo Verde. Pages 174 and 208

The Global Holcim Awards jury was particularly moved by the almost poetic story behind this project: an educational complex that rises from and by means of its own ashes. Reconstructing the community of Chã das Caldeiras starting from a pedagogical infrastructure through a participatory process was considered a brave, demonstrative action of resilience and hope. The jury perceived the choice of construction materials to be very appropriate and the design was particularly appreciated for the balanced relationships between internal and external spaces. This all reveals a beauty that goes beyond the aesthetic.

Injecting new life into refugee camps

Connective Threads in Jordan. Page 176

The proposal draws attention to the issue of refugee displacement by showing the difference that human-centered design interventions can make on the life of people who are forced to spend years in harsh, often dehumanizing camps. In this sense, the re-use of textile waste was considered as a true act of resilience, self-expression and self-determination. The colorful pieces of tapestry inject new life in refugee camps and at the same time revive the culture and the tradition of displaced communities. The Global Holcim Awards jury found this project a “cultural technology” able to bring a creative and positive sustainable message that can be potentially extended to the building sector at large.
A message of sustainability and innovation

High-Performance Tower in Australia. Pages 220 and 256

The high-performance tower designed for the City of Sydney showcases a very innovative typological and structural concept that fascinated the Global Holcim Awards jury. Environmental concerns here are solved not only in the choice of construction materials but also in the efficient architectural solutions deployed to achieve naturally ventilated spaces and reduce energy consumption for building operation. The jury also commended the holistic vision underpinning the design that generates an unusual yet compelling building program and aesthetic. All in all, the project conveys a message of sustainability and innovation for the city’s urban economic engine.

Highly transferable model to be replicated

Empowering the Homeless in the Philippines. Page 222

The Global Holcim Awards jury was particularly impressed by the way the project address homelessness, by introducing a new business model that provides housing and sources of livelihood to low-income people. This self-financing system will enable vulnerable families to have a trajectory out of poverty in one single generation and help them achieve lower-middle income standards. The solution as a twofold aim: to contain a social problem and to generate significant quantities of clean energy, which was considered as a great sustainable opportunity for vulnerable people to achieve financial independence and contribute to climate change mitigation. The jury perceived this initiative to be a highly transferable project model that can be replicated in other developing countries and beyond.

One of four Global Holcim Awards Commendations: Energy-efficient urban tower in Australia.

One of four Global Holcim Awards Commendations: Self-financing residential complex in the Philippines.

A revolutionary tower building in Sydney achieves an outstanding environmental performance while providing new programmatic elements.

A self-financing residential complex for vulnerable people in Minalin pays for housing supply by means of solar electricity production.
Virtual regional jury meetings: “Personal appearance took a back seat”

For the first time, the five jury meetings for the Holcim Awards were held virtually via video conference. “Virtual business meetings, which many of us have become accustomed to in recent times, cannot be compared to a jury meeting lasting several days, which is strongly focused on personal exchange and characterized by hours of technical discussions in a large group,” explained Benno Hossbach, Co-founder of [phase1] in Berlin, Germany, the company supporting the Holcim Awards and administrating the jury meetings.

The Foundation set up a central office for all jury meetings – at the plant of Holcim in Ecclépons, Switzerland, where members from the surrounding area could participate in person. It was not a coincidence that this cement manufacturing facility was chosen to host the meetings: The plant sets international benchmarks with regard to sustainability.
A big challenge was that the jury members were located in many different time zones. The situation was most extreme for the jury for Asia Pacific, where the time difference was up to twelve hours. The meetings took place across consecutive weeks in mid-2020, each of which lasted two to three days. The nine jury members – independent and renowned representatives of society, business and science, including experts from the Holcim Innovation Center in France – discussed a selection of projects in small groups. They then presented the best entries to the plenary, which judged the projects’ qualification for the next round.

The last half-day of each meeting was dedicated to intensive discussions on who would win the main prizes, who deserves an Acknowledgment prize – and how the best entries would be ranked in the Next Generation category. The discussions were extremely lively, but also as disciplined as required by the special form of the virtual meeting.

In total, the five juries dealt with nearly 2,000 projects that met all formal entry criteria – although there were considerable differences in numbers between the regions. Added up, the jury meetings lasted over 100 hours.

Marilyne Andersen, Professor of Sustainable Construction Technologies at EPFL Lausanne, in her role as head of the Academic Committee of the Holcim Foundation, was a member of all five regional Awards juries. She found the differences between the juries substantial – and important.

**What are the advantages of virtual jury meetings – besides the fact that there is no need to travel?**

**Marilyne Andersen:** I believe a virtual meeting creates more equity between the jury members. Professionally, everyone was very strong, but of course the presence and appearance were very different. Body language, for example, also plays an important role in face-to-face meetings, and besides the actual discussions, informal chats during coffee breaks can also have an influence on jury’s decisions. In a virtual meeting, the importance of personal appearance takes a back seat; people with a strong personality cannot prevail so easily, the technical argument gains weight compared to the convincing demeanour.

So are virtual meetings the future?

**MA:** I hope not! What I dearly missed were the informal discussions. They are important in understanding the attitudes of other members. I would have liked to know more about the backgrounds of the others.

**Were there any innovations due to the special format that you would keep for next jury meetings?**

**MA:** The jury members received project submissions early on. In previous meetings, the documents were ready for jury members in their hotel room when they arrived for the meeting. This time the jurors had time to deal with the projects beforehand. This reduced the importance of beautiful visualizations that impress on the surface and increased that of the content.

The discussions therefore started on a different level. Previously, when we nominated the potential winners, we openly distributed points to the projects. If three jury members voted for a project, this already influenced the attitude of the others. In the virtual meetings, the administrator collected the votes, and at first nobody knew how the others had voted. On the one hand, that was very exciting, and on the other, I am convinced that this objectified the voting.

In the future we should rely more on such approaches to voting.
## Regional Juries

### Europe
1. Jeanette Kuo, Switzerland (Head of the jury)
2. Kristiaan Borret, Belgium
3. Nuno Brandão Costa, Portugal
4. Dirk Hebel, Germany
5. Hélène Lombois-Burger, France
6. Eva Pfannes, Netherlands
7. Sergei Tchoban, Russia/Germany
8. Alexandre Theriot, Switzerland/France
9. Marilyne Andersen, Switzerland

### North America
1. Reed Kroloff, USA (Head of the jury)
2. Sarah Burch, Canada
3. Sarah Graham, USA
4. Mitchell Joachim, USA
5. Sharon Johnston, USA
6. Jesse LeCavalier, Canada
7. Christophe Levy, France
8. Sarah Whiting, USA
9. Marilyne Andersen, Switzerland

### Latin America
1. Loreta Castro Reguera, Mexico (Head of the jury)
2. Sandra Barclay, Peru
3. Edelio Bermejo, France
4. Luis Callejas, Colombia/Norway
5. Fernando Diez, Argentina
6. Maria Betânia de Oliveira, Brazil
7. Harry Gugger, Switzerland
8. Cecilia Puga, Chile
9. Marilyne Andersen, Switzerland

### Middle East Africa
1. Mariam Kamara, Niger (Head of the jury)
2. Zegeye Cherenet, Ethiopia
3. Linna Choi, Morocco
4. Joana Dabaj, Lebanon
5. Mohsen Ech, France
6. Guillaume Habert, Switzerland
7. Elli Mosayebi, Switzerland
8. Heinrich Wolff, South Africa
9. Marilyne Andersen, Switzerland

### Asia Pacific
1. Nirmal Kishnani, Singapore (Head of the jury)
2. Philippe Block, Switzerland
3. Sandra Boivin, France
4. Chanasit Cholasuek, Thailand
5. Nondita Correa Mehrotra, India
6. Richard Hasseli, Singapore
7. Christopher Lee, Singapore/Beijing
8. Erwin Viray, Singapore
9. Marilyne Andersen, Switzerland

As Head of the Academic Committee of the Holcim Foundation, Marilyne Andersen was a member of all five regional Awards juries.
The project describes a building extension in which the added floors are designed to utilize the demolition waste from other construction sites. An industrial building in Winterthur, Switzerland will be repurposed to create a series of twelve units/studios. The design process starts with the collection and classification of building elements sourced from dismantling and demolition operations, and the identification of their potential for recycling. An external steel staircase, aluminium windows, metal corrugated sheets, roof insulation and photovoltaic modules are all salvaged from previous construction and given a second life. Steel beams are re-used for the new structure, old façade stone cladding is redeployed as floor tiles. Wherever it was not possible to re-use old building elements, the architects opted for natural materials including wood for structural components, straw for the wall insulation, and clay for the interior plaster. The recycling operation and adoption of low-impact materials reduces the embedded carbon footprint by about 60%.
Paradigm shift in sustainable construction

The problem of construction is also a problem of demolition when space is cleared for new buildings. The project team redefines the starting point of the design process: and turns demolition waste into a construction opportunity. The Holcim Awards jury Europe considered the project to exemplify a paradigm shift in sustainable construction for its systematic technique that enables the direct re-use of building elements, thereby showing how to dramatically diminish the environmental impact of the construction sector taken as a whole. The revolutionary approach to design is cleverly reconfigured: it starts with a very rational analysis of recyclable materials available locally and then builds the project from it, while still being able to produce a very original and unexpected architecture. In this sense, the jury admired the way the project shifts our understanding of aesthetic impact and beauty. The project supports the notion of a circular construction industry, providing a thoughtful sustainable solution also for the post-use phase of the building.

“Thinking about architecture, construction and participation will have to change”

Barbara Buser
The project originates from a collaboration between the architects and the “Most Mira” (Bridge of Peace) charity, that has operated in Bosnia & Herzegovina for more than a decade to help divided communities reconnect while respecting cultural differences. The site of the intervention lies between two divided villages: Petrov Gaj (Bosnian Serbs) and Kevljani (Bosniaks) near the former Omarska concentration camp that operated in 1992. The proposal’s objective is to give Most Mira a permanent physical location by salvaging and transforming a war-ruined house into a vibrant public facil-
Bridging ethnic diversity

The Holcim Awards jury Europe highly commended the ethical premises at the core of the proposal which is the result of a remarkable participatory design process conducted over many years with the local communities. The ambition of the project to bridge ethnic diversities in favor of a respectful coexistence has a high social value. On the one hand, the building provides new stimulating cultural spaces to support the young generations living in the region, on the other hand its construction becomes a learning and educational experience for the locals to whom new social and working skills are transferred. All in all, the project represents a remarkable example of sustainable social, environmental and economic practices.

Main authors: Vernes Causevic, Project V Architecture, London, UK; and Kemal Pervanic, Most Mira, Kevljani, Bosnia and Herzegovina.

Further author: Martin Rauch, Lehm Ton Erde, Schlins, Austria.

“Ity for cultural and reconciliation activities. The building consists of an art studio, a versatile theatre, and a craft workshop on the ground floor; as well as housing for up to 14 people on the first floor. The building is principally made of rammed earth, a material linked to local construction traditions. The rammed earth mixture uses recycled waste material, including material derived from demolition of the ruins, as well as loam and clay from local quarries and an iron ore mine nearby. Rammed earth holds a very low embodied energy, provides good thermal performance, and is a low-carbon and low-cost material. The environmental design strategies also include rainwater collection and re-use.

“Engaging people from all ethnic backgrounds to participate hands-on in the making” Vernes Causevic
Located just below the Arctic Circle, the Sara Culture Centre is a new mixed-use building in Skellefteå, Sweden that includes hotel and cultural facilities for the city while showcasing sustainable timber construction practices. Characterized by a 20-storey-high tower that rises amongst other lower rectangular volumes, the building includes six theater stages, the city library, two art galleries, a hotel and conference.
A powerful claim

The Holcim Awards jury Europe was particularly fascinated by the innovative timber construction techniques deployed to achieve this beautiful and sustainable architectural project, which showcases the potential that resides in working exclusively with timber. Making the material choice a question of both engineering and spatial quality was considered a powerful claim. The fact that all the building structural elements are entirely made of wood, including the structural core and elevator shaft, makes this tower quite unique in its genre. The jury applauded the refined expression of the building, the elegance of the massing and the showcasing of the timber structure through a delicate curtain wall.

Main authors: Robert Schmitz and Oskar Norelius, White arkitekter AB, Stockholm, Sweden.

Further authors: Florian Kosche, DIFK A/S, Oslo, Norway; Greger Lindgren, TK Botnia, Trondheim, Norway; and Christoffer Haag, Incoord, Stockholm, Sweden.

“Reducing the carbon footprint drastically” Oskar Norelius
The proposal shows a new Airbus factory building design which combines technical manufacturing constraints with environmental, functional and economic aspects. Supported by a data-driven approach, the project adopts a generative design process that enables the evaluation of trade-offs between a wide range of design possibilities, with the objective of optimizing environmental sustainability, working conditions and the well-being of occupants and financial resources. Out of the generated design scenarios, the architects ultimately opted for a V-shaped building where windows and skylights are strategically placed to enhance indoor comfort.
for the employees while reducing energy consumption. The structure and internal layout are designed on the basis of current manufacturing needs but are further developed to increase the flexibility of the spaces, thus enabling the building to grow and adapt to future configurations and industrial requirements. The use of engineered timber trusses ensures a three-fold carbon emission reduction compared to traditional steel structures. The walls, mezzanine and roof are made of wood engineered timber panels assembled without nails or metal fasteners, which increases their potential for future re-use. The choice of materials also includes low-carbon concrete for the foundations, photovoltaics, advanced energy systems, and passive heating and cooling.

Main author: David Benjamin, The Living, New York, USA.

Further authors: Damon Lau, John Locke, Jim Stoddart, Lorenzo Villaggi, Ray Wang, and Lindsey Wikstrom, The Living, New York, USA; and Bastian Schaefer, Airbus, Hamburg, Germany.

“Combining the best of human creativity and the best of machine computation” David Benjamin

Convincing scientific methodology

The Holcim Awards jury Europe commended the thorough and unconventional design approach that is central to the project, supported by a convincing scientific methodology which takes into account several technical and operational aspects ultimately leading to a well-functioning and aesthetically compelling architecture. The design evolves according to progressive evaluations made to optimize the environmental sustainability of the construction, its financial viability, and employee safety and comfort. The jury was particularly taken by this latter aspect, as production halls often fail to provide generous enough amounts of daylight and natural ventilation for workers.
The project brings retailer IKEA to the center of Vienna, rethinking the big box (megastore) typology. In stark contrast to other retail centers of this kind that are usually located on the outskirts of urban centers, this project is the first full-size IKEA store to open in the heart of a city, rethinking urban planning practices and reducing the proliferation of suburban strip malls. Typologically, the building is conceived as flexible infrastructure, easily adaptable for future changes and for other tenants. The steel structure is also an easily demountable and recyclable system. In addition, the building intends to go beyond displaying merchandise by offering additional areas to the public: a plaza at the entrance level, balconies, a rooftop and cafeteria accessible to everyone, so as to create a continuity with the urban pedestrian zone. Served by an efficient public-transport infrastructure, the building does not include car parking areas.
Durability beyond current use

“Someday, all department stores will become museums, and all museums will become department stores”. With these words Andy Warhol seems to have prophesized how the boundaries between commercial and public architecture are increasingly blurred. The Holcim Awards jury Europe was fascinated by the project’s exemplification of this paradigm shift: a retail center that seeks to recreate a dialog with the city, benefiting from its density and giving back to it through curated public space and proximity. As such, the project extends the visitor’s – rather than customer’s – experience to a different level. The jury also commended the flexibility and adaptability enabled by the organizational structure, giving the project long-term durability beyond its current use. If considered as a paradigm shift of the big box, the impact of such practices could change not only our relationship to retail, but also our patterns of urbanization.

Main authors: Carmen Hottinger (4th from left) and Jakob Dunkl (7th from left), querkraft architekten, Vienna, Austria.

Further authors: Bernhard Scharf, Green4cities; Joachim Kräftner, Kräftner Landschaftsarchitektur; and Florian Kraus, Greenpass; all Vienna, Austria.

thereby promoting eco-friendly mobility. The environmental concept also accounts for the integration of vertical gardens for the enhancement of outdoor air quality and improved comfort, as the plants act as shading devices.

“Producing something that is poetic – and loved for many decades” Jakob Dunkl
The project proposes a large urban infrastructure intervention that aims to turn an environmental criticality into a resource for the city of Bordeaux. To overcome the problem of urban waste, a recycling park is created around the Vallée de Jalles, a vast natural area located northwest of the metropolis, on the left side of the Garonne River. Taking advantage of the natural resources of the area, the project moves beyond finding a technical answer to waste management – and proposes a landscape design that reconfigures the territory and integrates low-tech and high-tech facilities, thereby giving birth to a visionary, attractive city of the future. A wetland system is restored to offer new agricultural opportunities and plots of land are converted into recreational areas, while building units, designed as an aggregation of permeable multi-functional volumes, populate the park. Besides high-tech structures destined for waste treatment and renewable energy production, the project covers a wide...
Main authors: Chamss Oulkadi, Khalid Ait El Madani, and Ghazal Banan, BOM architecture; Jean Rémi Dostes, Paul Jaquet and Nicolas Beyret, HAME; Daniel Garcia and Jérome Balas, FUSO; all Paris, France.

Further authors: Carine Dunogier, Ingerop; Lina Singer, LS landscape; and Olivier Papin, Ecic; all Bordeaux, France.

Revealing the circular process

The Holcim Awards jury Europe was impressed by the multi-faceted approach of the design, going from territorial to infrastructural and architectural scales as an independent system. In particular, the jury commended the project’s use of the natural landscape and its dynamic shifts as well as the restoration of the ancient hydrology to reveal the circular process. Lightweight structures are deployed to favor good environmental practices and the inclusion of the community. Overall, the playful and poetic character of this project was highly commended.

“Addressing contradictions between local and global, high-tech and low-tech” Chamss Oulkadi
This renovation and transformation project of an abandoned farm in the center of Siewiller, a small town in north-east France, creates housing for elderly people. The proposal includes the retrofit of four existing volumes positioned to form a U shape, and the design of a new structure to enclose and focus the complex around the resulting courtyard converted into the core.
Can architecture revive historic rural villages? This is the question addressed by the project which received high praise from the Holcim Awards jury Europe. The revitalization and sustainable development of small towns is a contemporary challenge for architects and urban planners. Social sustainability implies strengthening a place through its community and local identity. The project’s methodology for salvaging both tangible and non-tangible elements of Siewiller, through the discrete and elegant refurbishment of the rural fabric transformed into a retirement home, was recognized as a gesture of great sensitivity that embraces sustainability under the environmental, social and economic aspects.

Elegant refurbishment of the rural fabric

of the shared domestic experience. Beyond the residential units, the common house accommodates spaces for some public facilities, including an office for social services, a small library and a multipurpose room. The courtyard is also designed to occasionally host private or public events, like small local festivals. The semi-public features of the complex allow its senior inhabitants to maintain and nurture their connection with the community while creating new social aggregation opportunities for the entire village. The architectural language adopted for the renovation process is very respectful of the town’s historical character. The existing buildings are salvaged without altering their original aspects, and the new intervention achieves a dialog with the context while showing a distinct, contemporary aspect. The project privileges the use of local materials, notably wood, stone, straw for insulation and hempcrete, that ensure the low-embedded energy of the complex and offer high environmental performance.

“Using existing buildings to avoid material consumption” Florent Revel
This project transforms a pier and the adjoining bay at La Punta de San Felipe in the north of Cádiz that forms an inlet particularly exposed to the prevailing east-west winds that funnels through the Strait of Gibraltar. Geomorphological conditions of the area lead to a periodic accumulation of sand at the right extremity of the bay. Based upon this situation, the proposal suggests the creation of a dune-beach that grows naturally through the adoption of two main design elements: a wind wall and a park. The wind wall is conceived as...
a high-tech gigantic sculpture that acts as a wind barrier that slows wind speed and allows airborne sand particles to land and form the dune. The protective wall rises over a pre-existing structure which now hosts a number of facilities including a restaurant, library and art gallery. Part of this “living” wall is gradually buried by sand deposits as the dune grows. Ventilation and daylight are then ensured by big “light cannons” that emerge from the sand like art pieces. On the right side of the wind wall, a landscape intervention converts the current pier into an urban park which anchors the dune while offering the city a new recreational space where the prevailing winds are mitigated. Based on a series of studies, the author estimates that the sand beach will start to appear after three years and that the sand accumulated at the base of the wind wall will ultimately reach a height of 16 meters.

“Focusing on large scale transformation”  
Javier Estebala Alández

Strong and provocative reconfiguration

This project, merging landscape and architectural design with ecological insights, attracted the attention of the jury for its creativity but also for the impressive research work that the proposal is built upon. The Holcim Awards jury Europe highly appreciated the technology-driven and ecological approach of the design which ultimately leads to a strong and provocative reconfiguration of the city coastline, while offering tangible benefits for its inhabitants, the tourism industry and the local ecosystem. In particular, the harnessing of natural phenomena as part of the coastal infrastructure was a strong contribution.
The Indus tile system uses the principle of microalgal bioremediation to clean polluted water. The ability of microalgae to convert complex organic and inorganic waste into less toxic products is the basis of this modular bioreactor – and has clear applications in developing countries, such as the textile industry. The surface was inspired by the veins on a leaf that have evolved to uniformly distribute water. Microalgae are grown on the tile using a novel seaweed-based hydrogel and are secured to
the surface’s vein-like channels. Wastewater that flows down the wall is purified as the microalgae isolate heavy metals and degrade compounds from the dyes. The tiles can be used as a façade cladding element or can be tessellated to stand-alone vertical surfaces. The Indus tile system targets small-scale artisanal industries such as those in rural India that lack access to on-site wastewater treatment infrastructure - but with broad applicability in diverse geographies. The innovative building component would enable water regeneration and re-use within manufacturing processes, avoiding dangerous contamination of soil and natural water bodies. The tiles can be made from locally available materials and fabrication methods. Local communities can engage in the manufacturing process as well as in the maintenance operations, contributing to a circular economy.

Low-tech with high impact

The Holcim Awards jury Europe commend- ed the project’s low-tech but high-impact approach. The bio-based technology with an extremely simple production not only makes it widely accessible but also promotes social sustainability through local skills. Based on careful research work, the multilayered and multipurpose character of the project was particularly appreciated: the tile not only purifies the water but can also initiate virtuous economic and social cycles in the communities that adopt this device. In addition, it offers the buildings a beautiful expression that changes over time - showing that a tile can do much more than what we might first think.

“Setting new forms of daily practice by rethinking our relationship with natural resources” Shneel Malik
The project seeks to address the typical typology of data centers as high energy consumption structures. There are currently more than 4,000 data centers in Switzerland that create an energy demand equivalent to 60,000 households. Not only do these buildings have significant energy requirements, but the servers and computers also produce a large amount of heat that must be evacuated. Java, a lean high tower situated at Manesseplatz along the Sihl River, is conceived as a new waste heat power station and residential com-
plex in Zurich. With 1,024 server racks, the building produces around 19 GWh of heat per year. The waste heat reaches a temperature of 60°C in the data center and is pumped up and transported into sorption machines which lower the temperature to a two-stage range: 35°C and 12°C, ideal for building heating and cooling respectively. The energy, in the form of heat, is subsequently channeled into the heating and cooling supply network of Zurich, and cold water from the Sihl River increases cooling efficiency in winter. Photovoltaic panels provide electricity for the data center. A total of 72 residential units are located across all floors of the data center. As the sorption machines work like a huge air conditioner for the building, optimized thermal conditions can be ensured inside the apartments.

**Rethinking a typology**

The Holcim Awards jury Europe was particularly fascinated by the visionary qualities of this “living machine” that channels the waste energy of infrastructure into heating and cooling for housing. The project touches many design dimensions: functional, technical, and aesthetic. Most importantly, it rethinks a typology that has become increasingly important in urban space – that of the data center and its environmental impacts. The combinatorial thinking as well as the conceptualization of a hybrid building as infrastructure were qualities that set the project apart.

“Developing a new form of living within the process of digitalization and densification” Yufei He
In response to the current housing crisis and the increasing need for urban densification, this project revolutionizes the conventional idea of social dwelling by proposing a new habitat solution founded on the concept of “sharing”, here understood as a political, economic and social claim. The project proposes the adaptive re-use of different rundown building blocks in Brussels to offer more sustainable, democratic housing conditions. Spaces are rethought to offer a diversity of apartment typologies to suit different family configurations and enhance overall quality of
Project author: Annik Keoseyan, architect, Mexico City.

Feasible and cheerful

The Holcim Awards jury Europe highly commended the maturity and pragmatic character of the project, which was perceived as the genuine commitment of a young designer to address two core issues that are central to sustainability: the transformation of existing building stock and the promotion of social sustainability. Housing is imagined as a new social institution that embeds several environmental features. The optimistic character of the project was very much welcomed: the project exemplifies the idea that building transformation can be not only feasible but also cheerful.

The suggested architecture was found both essential and compelling in establishing a needed dialogue with the urban context. Overall, the proposal was considered remarkable for the political message it conveys, which makes the project highly relevant and replicable in other social housing contexts.

“Upgrading existing domestic spaces to reintegrate people into the social fabric”  Annik Keoseyan

living. The strategy for the design of the new dwellings is to minimize the surface of the private domestic area in favor of a number of spaces shared with the neighbors, including kitchens and common areas for adults and children. This paradigm shift of “collectivism versus individualism” results in an increased apartment space when collective areas are included (from an average of 40sqm to 90sqm). By reducing private space, energy consumption is lowered and the implementation of extraordinary social reinforcement dynamics for vulnerable groups – especially pregnant women and single mothers – is achieved.

Project author: Annik Keoseyan, architect, Mexico City.
Extending a hand
Restoring Common Ground in Bosnia and Herzegovina
The Most Mira Peace Centre in Kevljani, a village in the north of Bosnia and Herze-govina, aims to reunite and reconcile ethnic groups that were split by war and have lived apart until this day. In developing this new cultural center, the architect employed a participatory approach that goes beyond the typical design process.
In 1992 a brutal war broke out in Bosnia and Herzegovina that cost an estimated 100,000 lives. It began with the breakup of Yugoslavia and was fueled by tensions between the local ethnic groups. The scars of the Bosnian War have not healed even after a quarter century.

The war brought together the paths of Vernes Causevic and Kemal Pervanic. “I grew up in a multi-ethnic Yugoslav neighborhood in Sarajevo, which was transformed into a war zone almost overnight. I lived through 497 days in the besieged city and was seven years old when we were forced to leave for London,” Causevic recounts. At that time, Kemal Pervanic, then 24 years old, was imprisoned in a concentration camp where thousands of people were incarcerated. “Everyone experienced the war differently, and as bad as it may sound, it’s the driving force for both of us,” says Vernes Causevic. He and Kemal Pervanic are peace builders. Both are committed to helping people in their homeland find their way back together.

Vernes Causevic studied architecture at the University of Nottingham in the UK and received his master’s degree and professional qualifications from London Metropolitan University. He worked at various architectural offices in Germany and England before opening his own office in 2015, Project V Architecture, in London and later the Sarajevo branch with his partner Lucy Dinnen. They co-teach a masters design studio at the University of Sheffield School of Architecture which re-imagines Sarajevo as a laboratory for exploring alternative models of resilience for uncertain futures.

Kemal Pervanic is a filmmaker and writer. After the war he received a Bachelor of Science in Management at Royal Holloway, University of London and a Master in Peace Studies and Conflict Resolution at the University of Bradford in the UK and then trained as a human rights advocate at Columbia University in New York. When he first returned to Bosnia...
“Architects have a social responsibility to set an example” Vernes Causevic

Kemal Pervanic had the Bosnian-British non-profit organization registered in 2008. His latest project is the Most Mira Peace Centre. With this new cultural and meeting center, the organization aims to create a place for people in the north of Bosnia and Herzegovina where new and lasting friendships can be forged across ethnic and religious boundaries. Vernes Causevic initiated “Architecture for Democracy,” a participatory education and learning program that he developed with Kemal Pervanic for Most Mira. “Architects have a social responsibility to set an example of resisting war and environmental destruction,” believes Causevic. Most Mira is a work of passion for him. It just bubbles out of him – and it’s infectious when he talks about the new cultural center or about how he found his way to the project in 2014 and how he convinced the Most Mira staff of the need for a sustainable architectural process.

The war ended in 1995. How deep are the wounds still felt today? Vernes Causevic: The country is more divided now than ever. The imposed Dayton Peace Agreement is based on each of the three ethnic groups keeping to themselves. In many towns, the children go to separate
schools and have no exchange with each other. Sometimes two separate schools with separate curricula exist under one roof, separated by walls and fences. In teaching history, each ethnic group teaches its own version of the truth. Everything is over-politicized, and at the same time the country is blocked and lacks impetus. Things might seem okay from a distance, but dysfunctional chaos lies beneath the surface.

Is the Most Mira Peace Centre meant to counteract this?

The center is intended to become a meeting place where young adults can learn about the impact that war, politics, and post-war divisions have had on the region. It should also be a place where children and young people can learn about art and theater and develop their own performances and a shared version of the future.

Where will the peace center be located?
The site is located between two separated villages: Petrov Gaj, where Bosnian Serbs live, and Kevljani, with its Bosnian Muslim returne population. A war-torn house on the site will be transformed into a lively public facility for cultural and reconciliation activities. Most Mira is counting on the power of dialog to build a more peaceful society.

How does one approach a reconciliation project as an architect?

I’ve been dealing with the issue of social responsibility and political engagement in architecture since my student days when I initiated sustainable return and revitalization projects in marginalized post-war communities in Bosnia and Herzegovina. Everything is interrelated, from what I experienced to the culture and building materials, and for me it’s central to develop a common understanding of a building and its context to enrich the design. The community inherently knows the place much better than the architect. So it’s important for architects to enable people to inhabit the process of

“We tested ideas and experimented with the materials of the place” Vernes Causevic

“We tested ideas and experimented with the materials of the place” Vernes Causevic
developing a building long before it’s built, by curating an environment to facilitate exchange and to test ideas. That’s why we developed a participatory and holistic architectural process we call “Architecture for Democracy.” The building was designed through research and workshops in the field and with the aid of educational residencies and community engagement.

What happened at these workshops?
Over the course of four years, we conducted around ten courses in which students from London, Banja Luka, and Sarajevo dealt intensively with local conditions, environmental issues, building materials, and sustainability. Through this collaborative approach, a vision and mission for the peace center slowly emerged. In the research work, it was always about defining the practical approach step by step and developing the building as a living culture and peace project. These workshops are kind of peace-building performances in themselves, which we are recording. We plan to eventually make a film and a book about the project.

With the workshops we also wanted to get into contact with the locals and interact with them. To make the process transparent, we reviewed key design stages not just with the client but also with the community and future users of the space. We tested ideas and experimented with the materials of the place throughout the design process, engaging the community in making physical models, sampling materials, and holding live building demonstrations and interactive exhibitions to learn together and build trust. This was extremely insightful and helped shape the design.

“Architecture for Democracy” is driven by contextual research, the development of new architectural processes, and the desire to make meaningful projects that have social impact. It’s an architecture that aims at common wellbeing while preserving the ecological foundations of life. Vernes Causevic uses each design project as an opportunity to research new ways that people can live and work in the built environment in a more holistic and sustainable way.

Do you think architects should try to make the world a better place?
With their buildings, architects can accelerate processes, slow them down, or steer them in a different direction. Doing that requires thorough understanding of the
How is the peace center progressing?
The plans are finished, we have received the preliminary building permit, and if nothing else comes up, we will soon start construction. A major fundraising campaign has generated the necessary money for the building envelope, over 300,000 euros. We expect the building envelope to be completed in 2022. We will fundraise to complete the interior work during the construction of the envelope.

One goal is climate and carbon neutrality
In our workshops, we analyzed all the possible influences on the climate and the environment as well as potential savings to be gained through circular economy strategies. Our rammed earth structure is well insulated, with wood-fiber insulation and triple-glazed wood-frame windows. Water is scarce in the region and the connection to the municipal system is unreliable, so we are harvesting rainwater as a secondary water supply. This also conserves groundwater.

Why rammed earth construction?
Rammed earth is symbolic of the reconciliation process. We are not only mixing different soils and clay colors but blending materials from ethnically divided communities and historically meaningful sites into a new whole. It’s our recipe for peace.

Potential savings to be gained through circular economy strategies
Vernes Causevic

You worked with the Austrian rammed earth specialist Martin Rauch. Has local knowledge of this construction method been lost in the region?
That surprised me too. With the war, not only have people been displaced, apparently knowledge has disappeared as well. We had to understand the advantages and disadvantages of the material, and how to use it in a contemporary way. We are lucky to be able to collaborate with Martin Rauch.

With this clay, have you in a way reinvented the vanished heritage?
It might be fair to say that we are in the process of doing that. In our studies, our mapping of industries, materials, and resources showed that clay was one of the preferred
building materials before the war. Instead of firing it, by mixing clay with local waste materials such as crushed stone, slag, and gravel from the nearby quarries, iron-ore mines, and abandoned clay pits, you could say that we are reinventing the heritage. We also want to provide vocational training for local builders, engineers, and architects.

What are the advantages of the green roof?  
The green roof insulates the building from the cold in winter and from the heat in summer. It supports biodiversity and buffers rainwater runoff. The roof is also expected to help attract bird populations that disappeared when occupying forces cut down trees during the war. These are important microclimatic and ecological functions.

What sort of program is planned for the peace center?  
We want to continue with knowledge transfer, in a way to continue what we initiated with the workshops. Martin Rauch’s visit was exemplary. In the courses, the students and local craftspeople learned firsthand how wonderful it is to work with clay as a material. That’s why we are focusing on such educational and informational programs, as well as cultural, dance, and theater performances for young people and children. The peace center will include a theater, art studio, and crafts workshop on the ground floor and provide accommodations for up to 14 people upstairs.

The operation should be financially self-supporting in three years. Is that realistic?  
Most Mira is fundraising for the first three years of operation. Future revenues will include proceeds from the art and theater events and from rental income. We also want to generate income from summer school programs, which will include architects and design students who will develop local products from natural materials as part of completing and furnishing the center and as part of developing social enterprises to ensure future sustainability.

What are you personally taking away from this project?  
This is a task for life. This project is just the beginning of what we want to achieve in this community. It’s a catalyst. I want us to have a positive influence on architectural and construction culture in Bosnia and Herzegovina and use this as a vehicle for social change. Day by day, I realize what a valuable contribution we can make with the peace center. We are creating a place with room for everyone. For me it’s also important to realize that it takes very little time to destroy something, but it takes many years and generations to rebuild it. When I look at the many happy faces of the children and young people working on something positive together, it fills me with great joy.

“There is hope,” says Vernes Causevic – hope for renewal and a return to social normality in which the different ethnicities peacefully coexist with one another. “With the peace center we want to extend a hand and finally break through the invisible barriers between the communities.”

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Informative architecture

Towering Virtuoso in Sweden
Is it possible to make an entire city more attractive by building a sustainable wooden cultural center? The Sara Culture Centre in Skellefteå, currently one of the tallest wooden high-rises in the world, aims for nothing less. The building is also designed to attract people who are not particularly interested in cultural events.
With a population of around 36,000, Skellefteå is one of the youngest cities in Norrland, the northernmost of Sweden’s three national regions. The city, founded in 1845 by vicar Nils Nordlander, is located in a particularly mineral-rich area. The mining company Boliden is the city’s largest private employer. But Skellefteå is no longer just the industrial center of yesteryear, when it was nicknamed “Gold Town.” The city’s gold is not only in the ground, but increasingly in the digital realm. The IT industry has become increasingly important to the local economy since the 1990s. Sustainability plays an key role for the city, and the local timber industry is well established too. The Skellefte River, one of the largest in northern Sweden, feeds several medium to large hydroelectric power plants. In spite of all these attributes, there are more attractive places to live in Sweden, especially for career-oriented young people. In the rural areas of the municipality, which has a total population of around 72,000, exodus has already begun. In order to stop this loss and even reverse the trend, Skellefteå is actively striving to enhance its attractiveness – and aims to have 80,000 residents by 2030.

In 2015 an international design competition was announced for a new cultural center in the heart of the city. It should provide space for a hotel as well as the Västerbotten Regional Theatre, Anna Nordlander Museum, Skellefteå Art Gallery, and the municipal library. 55 entries were received. In summer 2016 it was decided that the Sara Culture Centre, named after the Swedish writer Sara Lidman, would be designed by Oskar Norelius, Robert Schmitz, and their team from White Arkitekter.

Oskar Norelius studied architecture at the Universitat Politècnica de Catalunya in Barcelona, at the École Nationale Supérieure d’Architectures de Paris-La Villette, and at Lund University in Sweden, where he received his master’s degree in 2010. He has worked at White Arkitekter since his internship in 2007 and became a partner at the internationally active office in 2016. Oskar

“The problem is not the material itself, but the way it is used” Robert Schmitz

“We want everyone to see how the building is constructed” Robert Schmitz
Norelius has been a member of the steering committee of CTBUH Scandinavia Future Leaders since 2019.

Robert Schmitz graduated from Chalmers University of Technology in Gothenburg in 2005. He has worked for White Arkitekter since 2006 and is now a partner. He was appointed Stockholm Director of Competitions in 2013 and is a member of the strategic office management team.

The wood industry is strong in Skellefteå. So designing the cultural center largely as a wooden structure was an obvious choice, wasn’t it?

Oskar Norelius (ON): Yes, there were in fact a number of motives. Skellefteå was once a town built mainly of wooden buildings. But then, for various reasons, many of the buildings were replaced by brick ones, especially in the city center. With our project, we are bringing wood back into the city and to the people – and most prominently in the city center.

Robert Schmitz (RS): That’s the beauty of it. I love that the project is not just another sustainable building, but something with civic significance – a wooden building that can be used by everyone.

ON: All of the columns, beams, decks, and walls of the cultural center will be prefabricated in a local factory and assembled on site. The hotel rooms are even being prefabricated as complete 3D modules, including the bathroom and fittings & finishes. All you have to do is stack them on top of each other on the site. This method reduces the emissions and gray energy that would be generated by transporting them from far away, reduces construction time and cost, and creates work for local companies.

“You can do a lot using prefabrication and standardization” Oskar Norelius
Many people have reservations about wooden buildings, especially those on the scale of the cultural center. Why is that?

RS: Mainly because of a perceived fire hazard. But that’s jumping to conclusions. Of course wood is a combustible material, but if you analyze fires of wooden structures, they are almost always due to insufficient fire safety regulations and poorly constructed buildings. The problem is not the material itself, but the way it is used.

In the Sara Culture Centre, the wooden elements made of cross-laminated timber (CLT) and glue-laminated timber (GLT) are installed in such a way that, in the event of an emergency, there will be sufficient time to evacuate the building – a time period that can be ascertained quite reliably today. But the architects also ventured into uncharted territory with their design. The building comprises a high-rise and a low-rise volume.

The 20-story high-rise reaches a height of nearly 75 meters and will house a modern hotel with conference rooms and a spa. The hotel rooms, made of prefabricated modules in CLT, will be stacked between the two elevator cores. The special design and clever placement make it possible to construct the elevator cores from CLT as well. On the top three floors, a concrete deadweight of 500 kg/m² ensures that the tower will not sway excessively. The height of the low-rise, the actual cultural center, adopts the scale of the surrounding buildings. The framing consists of GLT posts and beams and some steel elements; the cores and shear walls are CLT. The low-rise is designed to additionally stabilize the adjacent high-rise, and the entire building rests on a concrete foundation.

When it opens, the Sara Culture Centre will be one of the tallest, if not the tallest, wooden buildings in the world. Was this made possible by software applications?

ON: Unfortunately not. There was no software available that we could use to calculate how the wooden structure would behave under these conditions. The structural engineers actually had to develop their own software in order to make the initial calculations for the dimensioning of the structure. We also had to study stiffness and movement in detail. This is because the loads on
the structural elements of the tower are of course completely other than those you find for example in a wood-framed house. We had to develop and dimension a lot of things ourselves: the elevator core, the CLT beams and panels, all the connectors – and we had to understand how everything works together as a whole.

You attach great importance to the fact that special features of the design are visible.

RS: We want everyone to see how the building is constructed, how the wood is used. Maybe they will even develop an interest in wood construction and the related technologies. You might say this is a piece of informative architecture. We really wanted to show what wood can do!

ON: In the context of the construction industry, the Sara Culture Centre is a showcase project that comes at the right time. Wood is gaining popularity as a building material. Many investments are being made in the industry, and new standards are being developed. To build such a large building now, incorporating all the different solutions we have developed, shows that you can do a lot using prefabrication and standardization – and at the same time meet individual needs and requirements.

One of the specific requirements of the municipality of Skellefteå was to pay the utmost attention to sustainability. In response, the architects gave the hotel tower a double-layer glazed façade through which the wooden structure remains visible. Between the inner layer of high-performance triple glazing and the outer layer of glazing is an adjustable sunscreen made of GLT louvers. This design has several advantages. Firstly, the sunscreens are protected against wind and weather. They can be used in sunny but windy weather, are more durable, and are therefore more sustainable. Secondly, the double-skin glazing encloses an insulating air space that envelops the entire high-rise. This enhances the thermal efficiency of the entire building – an advantage not to be underestimated, since Skellefteå is located close to the Arctic Circle and has correspondingly cold winters. The fully-glazed façade offers another attractive feature for hotel guests: When the sunscreens are retracted, guests enjoy an unobstructed, breathtaking view of the city and countryside.

Another requirement of Skellefteå was to maximize overall energy efficiency. To min-
imize energy consumption, the architects equipped the cultural center with a hybrid ventilation system, which provides controlled ventilation to the large foyers and theater stages. This significantly reduces the loads on the main HVAC system. The architects also implemented a smart grid equipped with an AI unit that, over time, will learn to autonomously predict and control the building’s energy consumption according to projected use and occupancy. This will optimize energy consumption and reduce the load on the city’s energy grid.

1,200 square meters of solar panels on the roof surfaces generate power for the building. The backup system for the sprinkler system is powered by large batteries instead of conventional diesel generators.

Once you closely study the cultural center, you can understand why the estimated construction cost is 100 million euros. But do the taxpayers of Skellefteå understand this?

ON: Of course with projects like this there is always the question of whether so much money should be invested in culture or rather in healthcare or other areas. But in fact, no taxpayers’ money is being used for the Sara Culture Centre. Rather, the project is a joint venture between the municipality as client and developer and the hotel operator, who is the tenant. After all the contracts were signed, the entire project was sold to a public pension fund as investor at the price of the total budget. The bottom line is that the cultural center is cost-neutral for the citizens.

Didn’t the citizens don’t get any say in this?

RS: On the contrary! At the start of the competition, we came to Skellefteå to get to know the city better. We interviewed locals to better understand what they thought about the planned cultural center: “If you were allowed to decide, what would you want? What is your biggest wish for this project?” We took all the answers and integrated them into our design process, as part of the program.

“The building is inviting”  
Oskar Norelius
ON: Any architect who values sustainability mustn’t neglect the social aspects, in other words, the people. Environmental, economic, and social sustainability go hand in hand. When we plan and implement a showcase for environmental sustainability, we also have to make sure that everyone can use it and that it’s not limited to certain people. The Sara Culture Centre is located downtown, right between the main square and the future train station. So there will be many people there who don’t necessarily want to attend a cultural event. Maybe some will just want to warm up inside the building. This is also possible because admission to the cultural center is free of charge. The building is inviting, with generous glass fronts at the street level allowing views from outside into the foyers and public areas. The building’s design must not exclude segments of the population from the outset.

RS: The cultural center is to become a meeting place for the people of Skellefteå, whether they are interested in culture, want to borrow a book, or just want to talk to each other in a warm, cozy environment. The project is first and foremost for the people, not for the city of Skellefteå!

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House as Garden
Self-sustaining collaborative neighborhood
Chicago, USA

House as Garden originates from a collaboration with a non-profit organization, Blacks in Green, to transform a problematic neighborhood of Chicago into a new sustainable district – a “sustainable square mile”. The project consists of a residential complex including eight flexible housing units and a number of internal and external shared areas, including a guest bedroom, spaces for collective recreation and green areas for on-site agriculture. The provision
of community spaces that serve different functions fosters a sense of shared empowerment by encouraging self-sustainment and collaboration between residents. The construction process promotes local participation and training using simple and easy-to-assemble timber elements. Engagement in sustainability is encouraged through the instructive visibility of environmental systems. The building achieves a net positive energy demand thanks to a rational and appropriate use of passive and active design strategies for energy efficiency. Water treatment, collection and re-use is also conceived as a part of the sustainable concept.

“Creating a new normal for affordable housing” Naomi Davis

Potential for flexibility and replicability

The Holcim Awards jury North America considered the project to be an impressive gesture of “organic” regeneration that is energetically focused on designing a socially viable and autonomous environment to empower the community. The proposal suggests an innovative residential building typology that not only gravitates around the value of sharing as a means of human empowerment, but that is also environmentally friendly and aesthetically pleasing. The jury particularly appreciated the great potential for flexibility and replicability of the project which promotes transferable sustainable practices under many aspects. The interesting and compelling way the architecture integrates “off the shelf” technologies was highly commended, especially in consideration of the affordability of the project. This proposal exemplifies how sustainable architecture can be designed to be both economical and beautiful to offer underprivileged communities a new opportunity for their future.
The Artic Indigenous Wellness Centre (AIWC) is a building conceived to provide cultural and health-related services to First Nations, Métis and Inuit peoples who are often forced to travel out of their communities to obtain specialized medical assistance. The complex reflects the traditional Indigenous concept of wellness that acknowledges a relationship between physical, cultural and spiritual dimensions. In this sense, the building is organized around three specific yet interconnected programmatic volumes serving three distinct functions: people gathering, education, and health assistance. AIWC will assist 22,000 people from seven indigenous groups.
spread over 1.3 million km (four times the land area of Germany) through activities related to mental wellness, traditional medicine revitalization, and elder-to-youth skills transfer. Beyond the strictly functional aspects, the shape and interior layout of the building are designed to establish a harmonious dialog with the natural context and landscape, while offering a more intimate and de-institutionalized atmosphere. Aligned with traditional construction, the AIWC is built of wood and stone, and uses a series of sustainable design strategies to provide comfortable spaces while maintaining a light energy footprint for construction and operation.

“Focusing on sustainability through material selection and climate specific strategies” Lola Sheppard

Main authors: Lola Sheppard and Mason White, Lateral Office, Toronto, Canada. Not pictured: Nicole Redvers and Wilbert Cook, Arctic Indigenous Wellness Foundation, Yellowknife, Canada.

Further authors: Kearon Roy Taylor, Lateral Office, Toronto, Canada; Be’sha Blondin and Francois Paulette, Arctic Indigenous Wellness Foundation, Yellowknife, Canada.

Respectful physical and visual integration

The Holcim Awards jury North America greatly appreciated the authors’ ability to deeply integrate fundamental needs in terms of health assistance of the Arctic Indigenous people, and deliver a convincing proposal that emerged after a 3-year-long participatory design experience. The jury was convinced that the genuine community engagement, which is a rare yet admirable effort in a design process, was key in providing the authors with the necessary instruments to conceive a building not only relevant to the community but that is also architecturally compelling. The project ultimately resulted in a forceful and attractive design concept which brilliantly succeeds in combining cultural, social and health-related services. The jury applauded the way the project aims for a respectful physical and visual integration with the territory and the landscape.
The project proposes the reintegration of a roadway and a river through a new green infrastructure that incorporates multi-modal transportation and public recreation. Frederick Law Olmsted’s Emerald Necklace was a pioneering model of urban green infrastructure from the 1880s that has been fragmented by elevated highways built in the last century. This urban operation restores the Charlesgate green area as a critical link in Boston’s regional park system across 1km of new shared-use pathways, over 20km of reconnected greenway and 300m of restored shoreline. The requalification of the area includes new pathways and mobility connections that also enable roadway viaduct maintenance access for lift and vacuum truck, public areas with rain gardens for roadway water runoff storage and treatment, as well as habitat for...
Avoiding the spectacular

The Holcim Awards jury North America was fascinated by the project’s vision of a “re-discovered” symbiotic urban green infrastructure able to provide a multitude of social and environmental benefits to the city. The project is the result of a participatory design process that involved different stakeholders to find shared interests and offered an opportunity for a shared investment. This approach is a decisive strength of the proposal that enhances the project’s economic viability since the requirements of multiple funding agencies and local communities are astutely considered. The jury acknowledged the impressive scientific work underpinning the proposal that makes the project highly realizable and its methodology replicable. The thorough analysis of why other revitalization attempts had failed was commendable in the context of enhancing the long-term viability of the project. All in all, through punctual strategic actions, the Charlesgate project avoids the spectacular in favor of the practical.

pollinators. The river’s edge is reshaped to protect from floods, reduce erosion, and provide riparian habitat for animal and plant species. The involvement of actors from the public and private sectors ensures the economic viability of the project.

“Taking into consideration the full environmental and social impacts of the highway” Marie Law Adams
The Hydroculus is an organic-shaped prototype for building cooling that uses hydroscopic materials and radiant heat transfer geometries. Its elongated structure is constituted by waffle ribs covered with a photonic membrane that reflects short-wave solar heat and emits longwave radiant cooling stored in the embedded thermal mass. A hydrogel membrane positioned at the top of the system stores water at a specific percentage to induce a proportional evaporative cooling and downdraft rate. It is connected to water supply tanks at the base that are linked to a desiccant water.
vapor recovery system at the edges. Water is supplied with small tubing and peristaltic pumps powered by photovoltaics. Through these evaporative and radiant mechanisms, the Hydroculus reduces cooling energy tenfold, while increasing comfort and health. Evaporative cooling provides constant cool temperatures within the pavilion during the day. During the night, the thermal mass encapsulated in the modules of the pavilion’s skin is radiated upwards, creating a cold radiant envelope for additional cooling during the day.

“Rethinking the way that sustainable cooling can be achieved”  Forrest Meggers

Combining engineering and design

The global energy demand for the cooling of buildings is projected to surpass that of heating by mid-century. The over-cooling of homes and offices is a diffuse cause of discomfort for occupants, and also constitutes a major contribution to building energy consumption worldwide. This is the reason why providing new sustainable cooling modes can be revolutionary. The Holcim Awards jury North America particularly commended the manner in which the authors successfully combined engineering and an interesting design. While results from the research underpinning the project were very promising, the jury recommended further extrapolation of the methodology for integrating the system into a building. The authors are on track to achieve a functioning prototype and to test a system that has a great potential to be patented.
The aim of this design proposal is to convert a brownfield block in the Beltline Industrial District of Detroit into a sustainable and productive community. It implements a new construction and economic system based on the recovery of a wealth of materials from the abandoned and deconstructed fabrics of the city and this once-thriving industrial precinct. The project includes the construction of housing, workspaces, parking areas, community gardens and orchards. To reduce fossil fuel energy consumption, the buildings are integrated...
Restoring a sense of community

In his 2000 essay, Isis Brook asks an important question: “Can spirit of place be a guide to ethical building?” It is through the search for a reconnection with the genius loci, the identity and sense of a place, that the Bellevue Block project pursues an ambitious triple bottom line of social, environmental, and economic equity. The Holcim Awards jury North America applauded the principled objective of restoring a sense of community, that had become fragmented over the last century, through a meticulous upcycling operation of its assets. The re-use of existing materials from dismantled buildings of the past century makes the project not only very respectful of the environment but also economically sustainable. The jury admired the ability of the project to preserve the historical context of the site while rebuilding a sense of belonging and inclusiveness for the local people. It was also noted that despite the scale of the design being limited to one city block, the project longs for an urban dimension. The jury encourages refining the design to be more aesthetically compelling, but unanimously agreed on the overall merit of the proposal and its goals.

“Creating wealth from waste” Diane Van Buren Zachary

with green technologies (solar and battery systems and geothermal HVAC) while rain collectors enable the re-use of water for on-site food production. Collaboration with local partners for the (re)construction of Bellevue Block will create new green jobs and make people of the community main actors of this transformation process.

Main authors: Diane Van Buren Zachary (front right), Zachary and Associates, Detroit, USA; Armita Chitsaz (back right), architect, Tehran, Iran. Not pictured: Roozbeh Kholdani, architect, Tehran, Iran.

Further authors: Chris Rutherford, Architectural Salvage Warehouse Detroit, USA; Ronald Norwood, Jordan Yagiela, Jianhang Xiao and Alen Amini, Humanity in Action, Boston, Detroit and New York, USA; Athina Ntavasili, Humanity in Action, Kos, Greece.
The proposal describes an artificial intelligence-based method that enables the up-cycling of building components (e.g. concrete floor plates, glass elements, façade cladding) destined for dismantling. Starting from an indexed library of demolition rubble, a computational tool is able to guide the design of new buildings in order to optimize available materials. The entire library can be matched like jigsaw puzzle.
pieces onto adjustable shapes, producing significant money savings as well as a reduced carbon footprint for building construction. Material is placed in a holding pattern so that it maintains value and use through generations. The approach thereby attempts to create a less wasteful materials cycle by redeploying materials, and also reducing the volume of building rubble sent to landfill.

“Re-using materials rather than plundering for new resources” Daniel Marshall

Main author: Daniel J.M. Marshall, Massachusetts Institute of Technology, Cambridge, MA, USA.

Supervisor: Sheila Kennedy, Massachusetts Institute of Technology, Cambridge, MA, USA.

Pragmatic design for compelling architecture

The Holcim Awards jury North America was very impressed by the pragmatism of the design method proposed in this research project that is able, in parallel, to promise a very compelling architecture. The idea of bringing new life to demolition rubble was found very relevant in terms of economic and environmental sustainability. The jury also appreciated the elegant and precise exemplifying design solutions that are featured along with the computational tool, which shows a clear sensitivity for architectural quality. In general, the idea of putting artificial intelligence combined with 3D printing at the service of both attractive design projects and resource conservation was found to be very powerful. The jury also saw the wide applicability in terms of building types and replicability in different geographic contexts as a strong asset of the proposal.
The goal of the project is to develop innovative sustainable alternative construction materials for wall veneers and insulation purposes. Building wall components are produced from cement kiln dust, byproducts from agriculture (crop fibers, rice husks, bean pods etc.), and aquaculture (fish) used as a natural binder. Depending on the fiber type, different colors, weight

Off the Wall
Building components from food production byproducts
Waterloo, Canada
and textured of the blocks can be obtained. Compared to conventionally fired bricks that are burned at high temperatures, IXIM (a Mayan word for maize) components require less energy to be produced. The project claims to not only mitigate Greenhouse gas emissions entailed by the production of conventional bricks but also reduce land degradation to extract raw materials.

**Versatile manufacturing system**

The Holcim Awards jury North America applauded the elegant way industrial waste from agriculture that is usually discarded is repurposed. The use of fish processing byproducts as the adhesive agent demonstrates a commitment to reducing the demand for virgin materials in building products. The jury members considered that, albeit for a niche market, the integration of such type of byproduct could turn out to be a true revolution for the cement industry. The variety of colors depending on the crop residues was also seen as a strength of the product. The jury commended the versatility of the manufacturing system, as blocks can be made from multitude of natural fibers which means their production is adaptable to different global regions while encouraging the use of local resources. The building products can support the low carbon building industry and enhance the construction sector by introducing new trends of manufacturing processes.

“Re-using by-products from other industries to create new quality building materials” Daniel Francisco Gonzalez

Project authors: Daniel Francisco Gonzalez and Noor Shaikh, IXIM Bioproducts, Waterloo and Toronto, Canada.
The project proposes a solution to reduce the environmental impact of the Big Bend Station, a coal-burning facility of Tampa Bay with a long history of pollution and limited oversight. The design consists of a network of facilities able to capture and utilize the harmful waste of the power plant and phosphate mine as a means of agricultural production. Bioreactors, open pond farms and constructed wetlands surround the site to generate a new productive landscape. The new facilities enable the containment of harmful algae growth due to phosphate mine runoff and utilize its potential for
The Holcim Awards jury North America recognized the impressive relevance of the project that adapts to the specific site context to propose a clever and potentially replicable solution to mitigate these two environmental problems. Appreciation was expressed for the author’s ability to orchestrate technology, architecture and landscape in an integrated and research-based urban strategy. The design not only serves to advocate for climate justice but also provides new green spaces to the community as well as a safer environment to the local aquatic fauna. The jury commended the design ambition to reconvert the area into an appealing landscape that blends nature and architecture in an industrial dimension.

“Mitigating harmful by-products as the globe shifts towards green energy infrastructure” Samuel Clovis

agricultural products. The new reactors collect over 90% of CO₂ produced by the station. They are structurally integral, requiring limited additional structure, and are covered with soil and grass to generate playful landforms. The system is embedded in an expansion of the neighboring wildlife reserve, creating a naturalized buffer and refuge for the local manatee. Issues related to air pollution and harmful waste disposal demand urgent solutions. CO₂ emissions from coal-burning power plants and waste runoff from phosphate mines constitute a serious environmental threat worldwide.
The proposal describes a research project aimed at the implementation of plant-based design modules for the construction of building vegetated components. The project identifies multiple benefits ranging from improved air quality to food production and education. From an energy point of view, the project offers an alternative to mitigate the carbon footprint of
Rethinking the enclosure of buildings

The Holcim Awards jury North America recognized that the proposal relies on a significant amount of research work. If benefits for human health provided by the vegetation are well known, what was found interesting in this proposal is the ambition to use building-integrated plants to combine the notion of ecology with justice and social inclusion. The integration of the vegetation into a modular system is visually very convincing and offers the opportunity to rethink the enclosure of our buildings in a more sustainable way. Furthermore, the modularity of the structure allows for a multi-scale application of the components and, therefore, for a wide flexibility and adaptability of the project.

“Using the wall as a resource for community members to re-foliate their neighborhoods” Phoebe Mankiewicz
A living organism
House as Garden in Illinois, USA
Chicago’s South Side is home to a large Black community working to strengthen and equip itself for a sustainable future. House as Garden is a project designed to advance that objective.
With a population of around 2.7 million, Chicago is the third-largest city in the USA, with Black Americans accounting for 29 percent of residents. During the Great Migration, between 1916 and 1970, hundreds of thousands of Blacks from all over the country moved to the city on Lake Michigan. Initially, they settled mainly on the South Side. By the mid-20th century, the so-called Black Belt had emerged, in which about three quarters of the Black population lived, principally because they were not welcome in white neighborhoods. Many prospered through their courage, creativity, and hard work. Many were thwarted by discriminatory policies and the collapse of Chicago’s manufacturing sector. Racial equality had long been recognized politically, nevertheless Blacks routinely earned less than whites in equal positions, and were denied career advancement and their fair share of public resources and opportunities.

Access to affordable housing was also denied to Blacks. Here is where House as Garden aims to sow a seed to gradually grow sustainable communities. Located in the neighborhood of the future Obama Presidential Center, House as Garden is a collaboration of the local organization Blacks In Green and Michael Sorkin Studio.

Naomi Davis is the founder and CEO of Blacks In Green (BIG). The attorney graduated from John Marshall Law School of the University of Illinois and holds bachelor degrees in Speech & Drama and English from Fisk University in Nashville, Tennessee. She is a board member of the Chicago Environmental Justice Network, Emerald South Economic Development Collaborative, a Steering Committee member of the Illinois Clean Jobs Coalition, and a contributor to numerous projects spearheaded by Mayor Lightfoot and other City offices. She serves as a bridge and catalyst between communities and their stakeholders in the design and development of green, self-sustaining, mixed-income, walkable-villages in Black neighborhoods. She is a nationally recognized advocate for the Blacks in Green Sustainable Square Mile model and has lived and worked in West Woodlawn in the Obama Presidential District since 2010.

Michael Sorkin, Principal of Michael Sorkin Studio, was President and Founder of the non-profit research and consulting group Terreform as well as Editor-in-Chief of its
Michael Sorkin (1948-2020) was a major Chicago South Side booster. The Holcim Foundation for Sustainable Construction proudly co-sponsored his New York City (Steady) State project in 2010. He contributed as a panelist to the Holcim Forum on “Urban_Trans_Formation” in Shanghai and on “Re-inventing Construction” in Mexico City. In March 2020 Michael Sorkin sadly died of a SARS-CoV-2 infection. He is the first person to receive a Holcim Award posthumously, and the Foundation is honored to have collaborated with him.
Michael and I recognized the congruencies in our philosophy and design approaches that were reflected by BIG Urban Homestead, which had evolved from our experience and understanding of the traditional African American conservation lifestyle. It coalesced with Michael’s decades-deep and award-winning portfolio of thought, design, and building. His award-winning New York City House as Garden found new expression in what became House as Garden/Illinois.

The lot on which House as Garden will be built is owned by BIG. “We purchased it through Chicago’s Large Lot sale, but with disproportionately high real estate taxes in Black communities, it has been expensive to maintain,” says Naomi Davis. BIG planted half the site as a community fruit and nut orchard, which will one day give the residents of

House as Garden is to be built in the West Woodlawn neighborhood. What is the situation of the Black population there?

Naomi Davis: Like many Black communities across America, West Woodlawn had its glory days some 50 years ago. It was once perfectly stable – most folks employed, property well maintained. Now we are a typical blighted Black community with a high ratio of vacant lots where the buildings have been demolished for structural, political, or social reasons. Many of the buildings that remain are in a state of deferred maintenance. There is disinvestment, which is the slow-motion disaster of structural racism.

How did the collaboration between BIG and Michael Sorkin Studio come about?

Michael Sorkin was a major Chicago South Side booster, and one day in December 2016 he was here in Woodlawn to host a program on urban planning. We met and clicked from the start. By January we were already talking partnership. Our discussions began to revolve around the Blacks in Green sustainability brainchild, the BIG Urban Homestead created in 2014. Meeting Michael gave us the opportunity to collaborate with a professional deeply committed to the technological and spiritual aspects of our work. He helped us get where we wanted to go.
House as Garden beautiful pastoral views – a rarity in this city of millions. The building design deviates from the east-west orientation typical to Chicago. It’s oriented to the south in order to make the best use of sunlight. Composed of four residential wings that unite to form a mews, the design is a modern, flexible reinvention of the classic Chicago four-flat. A mix of apartment sizes and bedrooms accommodate Black family needs.

Residents will share indoor and outdoor communal space, a resident guest suite, and an entire on-site agricultural system including greenhouse, harvest processing station, root cellar, and composting chambers. Its ground level is built of low-impact concrete and include other noteworthy features such as co-working and cooperative relaxation space, neighborhood-accessible meeting space, electric vehicle charging stations, waste sorting and recycling, bike racks, storage, and technical facilities.

Batteries ensure that the energy generated by the large area of photovoltaic panels on the roof is stored and made available to the building as needed or sold back to the electric utility grid as clean energy. A large cistern stores rainwater collected from the roof. This is mixed with blackwater, which is pretreated in an anaerobic digester, and then used for flushing toilets and irrigating the orchard.

Are recycling and composting things that Chicagoans care about? Chicago has the dubious distinction of being one of America’s worst recyclers. At BIG we understand the value and the harm of what we are throwing away. The idea that we could recycle as well as compost is something we’ve been cultivating for years.

The ground floor and the upper stories are largely built of wood, using four simple basic elements: columns, beams, cross-laminated timber (CLT) plates, and modular exterior panels. All transport distances are being rigorously minimized. This type of wood construction is not yet common in the United States. This is despite the fact that, on the one hand, the material is attractive enough
“Recycle as well as compost is something we’ve been cultivating for years” — Naomi Davis

to be left visible, and on the other, CLT is also so stable that it meets structural requirements. All the elements are dimensioned so that they can be installed as easily as possible. They can be prefabricated by local companies and transported short distances to the construction site – to the benefit of the environment and the owner’s budget.

Sorkin was known to reject more than one paneling system because his engineers warned it might be a great idea too distant or too complicated for local builders.

The climatic conditions in Chicago are extremely variable. Ice-cold winters are just as common as blazing hot summers. This means that the materials are constantly working, and condensation can become a problem, especially in winter. The architects responded with a thick, multi-layer wall design consisting of wood paneling, waterproofing membrane, plywood, batt insulation, and an additional layer of mineral wool insulation. Windows with insulating glass prevent cold bridges and thermal loss from the interior. Season-specific shading ensures that the maximum amount of sunlight can enter the interior while preventing overheating.

BIG sees a ‘City of Villages’ being catalyzed by House as Garden, which factors future residents in its approach to sustainability. Constructed on BIG community land trust property, House as Garden helps ensure sustained affordability across generations with a rooted sense of belonging essential to kinship, a critical “walkable-village” currency. Naomi Davis and Michael Sorkin bonded early on their belief that neighbors must not merely live next door to one another, but live together. At House as Garden, this is made possible by shared elements like the on-site greenhouse, raised garden beds, and common care of the lush life embodied in the orchard and by plantings for all units on the robust terraces. These allow residents with a green thumb to grow vegetables and fruit for themselves and fellow residents. Those with less skill or inclination are supported with land stewardship services by employees.
House as Garden is intended to be the nucleus of a larger development, the so-called Sustainable Square Mile. What is that about? It’s a village where Black households can walk-to-work, walk-to-shop, walk-to-learn, and walk-to-play. It’s a place where neighbor dollars circulate to create a local living economy, and a place where the conservation lifestyle is dominant, experienced as “the beautiful life!” It embodies BIG’s Principles of Green-Village-Building which is our foundational work: a whole-system solution for a whole-system problem found in Black communities everywhere. Across a city, black families living in a Sustainable Square Mile can experience the value of their heritage and the ecology of green economies – architectural and natural – as stewards of their water, waste, energy, and horticultural infrastructure.

Unfortunately, Michael Sorkin, main author of the project, died in 2020. Does that mean the end of the project?

No! Michael lives on in this project, and I made a solemn promise to him – just weeks before he died – that BIG would get it built. It embodies the gift of Michael’s life. It will revolutionize affordable housing in Illinois. It will connect and uplift the forgotten middle class as a catalyst for replacing today’s normalized blight in Black neighborhoods with infrastructure of ‘the beautiful life.’ It embodies “GOD” – the practice of Garden-Oriented-Development which BIG has pioneered with our West Woodlawn Botanic Garden, Village Farm & Arboretum. And though there are still conversations with officials to be held – Michael and I agreed nothing would stop our vision!
A place for holistic healing

Arctic Indigenous Wellness Center in Canada
In the Indigenous worldview, wellness is a holistic relationship between culture, community, and environment. The planned Arctic Indigenous Wellness Center in Yellowknife, the capital of Canada’s Northwest Territories, will provide a place for this, serving 22,000 people from seven Indigenous groups.
Measuring 1.1 million square kilometers, the Northwest Territories (NWT) make up a large part of northern Canada. As of 2021, approximately 45,000 residents were counted throughout the territory. Half of them are Indigenous, including Inuit, Métis, and First Nations, the latter being composed of 26 communities. Their predominantly nomadic way of life, a tradition for thousands of years, was increasingly lost in the course of colonization of the New World and subsequent industrialization. The introduction of foreign diseases wiped out millions of Indigenous people throughout the continent, and the extraction of natural resources disrupted local ecosystems, depriving most Indigenous people of their livelihoods. Stripped of their land and their rights, these people were forced into reservations in the 19th and 20th century. Like other countries, Canada forcefully assimilated its Indigenous population.

In spite of this, Indigenous people have demonstrated remarkable resilience and have started a resurgence of locally-led initiatives regarding health, education, culture, and land. The Arctic Indigenous Wellness Foundation (AIWF) is part of these efforts. Based in Yellowknife, the capital of the NWT, this organization represents all of the different Indigenous peoples of the NWT. Lateral Office in Toronto has been working with the AIWF for five years on the programming and development of the Arctic Indigenous Wellness Centre (AIWC).

Lola Sheppard holds a Bachelor of Architecture from McGill University and a Master of Architecture from the Harvard Graduate School of Design. She was awarded the RAIC Young Architects Award in 2012. She is a professor at the University of Waterloo where she also serves as undergraduate officer.

Mason White earned his Bachelor of Architecture at Virginia Tech (VPI&SU) and his Master of Architecture at the Harvard Graduate School of Design. He is an architecture professor at the University of Toronto.

Lola Sheppard and Mason White founded Lateral Office in 2003. Lateral Office was awarded a National Urban Design Award from the Royal Architectural Institute of Canada in 2016 and Special Mention at the 2014 International Architecture Exhibition of la Biennale di Venezia.

How did you become involved in this project?
Mason White (MW): We have long been interested in the unique role of architecture in northern Canada. Initially, we found the special climatic and geographic conditions fascinating, but then, after years of travel in the region, we realized that the cultural questions imbricated in architecture were equally
The North, and its peoples, makes you humble – and it is an inspiring environment for architecture.

Lola Sheppard (LS): Architecture was used as a colonialist tool for a long time, something that was imposed on people by governments. For decades, architects simply replicated imported southern architectural models and solutions in the North. But we see that architecture can be used as a tool for cultural empowerment, by listening to people and giving form to their priorities and their understanding of places and programs.

The architects chose a special approach for the design process of the AIWC: co-design. In workshops, they collaborated with their client, the AIWF, a nonprofit organization founded several years ago by a group of Indigenous elders. The foundation has brought together Indigenous peoples across northern Canada to form a symbolic, self-determined association in order to culturally revitalize traditional healing methods and practices in the region. It is dedicated to improving culturally based healthcare for Indigenous people in the NWT. Numerous statistics, including the suicide rate, prove the need for this. Indigenous Canadians are more likely than others to suffer from cancer, diabetes, addiction, or autoimmune diseases.

Can you tell us about your co-design process?

LS: Co-design is about breaking down the hierarchy between the architect, client, and user. Elders are knowledge holders and important to the development of this project. We co-designed the project using a series of programming and model-building workshops with the elders. A council of elders represents the total of seven Indigenous cultures of Canada to the AIWF, so the concerns of all the groups are represented. This council is not an official body or any sort of a political parliament.

MW: Elders are not elected by the community. One becomes an elder by being a keeper of traditional knowledge, showing leadership qualities, and having experience. An example is Be’sha Blondin, who is a member of both the foundation and the council of elders. She possesses great knowledge of Indigenous traditional health and wellness, medicinal plants, and other natural healing practices. Her contributions to the program and organization of the building are tangible.

Was there a sort of culture shock because the way locals approach a project might be significantly different than what you’re used to?

MW: At the start, we had to develop appropriate tools for the workshops. We didn’t want any technical barriers to get in the way of anyone contributing. For the model-building workshop, we made a box full of wooden shapes and provided paints and brushes. Using these, we began designing different schemes together in an intuitive and collaborative way. We painted the terrain and organized the wood shapes on it to relate...
the design to the site and to the program elements, and when a scheme emerged that seemed to work, we photographed it and made notes. I think we developed six ideas in that first workshop, and it went on from there. This helped everyone figure out what they wanted and what they didn’t like.

How formative were the workshops for the project as a whole?

MW: Very inspiring. We held three large workshops over the nine-month co-design period and had a lot of additional discussions along the way. It required a lot of patience, especially because the council of elders had to be motivated to reform after their disappointment with the larger hospital project.

Stanton Hospital opened in Yellowknife in 2019. The council of elders had lobbied in vain for a space in the hospital tailored to the needs of Indigenous Canadians. Although unsuccessful, this process paved the way toward constructing their own building. This is needed because there are only a few such facilities in the province, like the healing camp opened by the foundation in 2018, located a few kilometers from the planned wellness center.

The new wellness center is to be built very close to Stanton Hospital. Isn’t the hospital sufficient? Do Indigenous people have such different needs in terms of health and wellness?

MW: Yes, their wellness needs and worldview of health are significantly different. These needs have less to do with physical healing and more with mental healing. Many traditional wellness activities such as smudging – the burning of sacred herbs – contribute to spiritual health. Western medicine, which Stanton Hospital embraces, pays no attention to these practices. Indigenous people don’t reject conventional medicine, but their practices and approach to wellness are more holistic.

“Preserving knowledge for future generations”  Mason White
LS: It’s also about mental and spiritual health and the idea that the health of the individual is linked to the health of the community. We have learned that wellness for Indigenous people is about being on the land and being connected to culture and nature. It’s about language and emotional healing, about the community and about the individual.

Accordingly, the AIWC is conceived as a holistic healing center and organized like a camp – as smaller buildings within a larger building within a landscape. The building is divided into three volumes which differ in terms of form, light, and views. The curved part to the east houses healing activities, the circular space to the west is designed for ceremonies and celebrations, and the elongated building to the north focuses on traditional knowledge. The three volumes are connected by a circulation area with various spaces that can be used for informal events and activities. The building is supplemented by a large outdoor gathering space to the south.

Why is the building divided into three sectors?

LS: These three areas, although joined, allow for different kinds of privacy and celebrate the connectivity of individuality. These differences also recognize the varying ways that healing can take place. The round ceremonial room is a meeting and celebratory place for the community. The wellness wing has facilities for group and individual therapy. The traditional knowledge and education wing provides space for oral traditions as well as arts and crafts.

MW: Arts and crafts are a form of cultural expression, a kind of language. Giving this language ample space in a wellness facility recognizes that it’s part of wellbeing and the healing process. But that’s not all. A school class, for example, can come here and learn how to build a teepee or make a drum using deerskin. This is a way of pre-
sunshine in summer, strong north winds, and drifting snow. What’s more, the Canadian Shield – an expansive area of exposed Precambrian igneous and highly metamorphic rock – covers more than half of Canada. It extends northward from the Great Lakes to the Arctic Ocean and also characterizes Yellowknife.

How does your design respond to the extreme climate?

MW: We are considering two options for insulation: mineral wool and wood fiber. We would prefer the latter, but we would probably have to import it, so that isn’t good for the project footprint. We are trying to avoid foam products. For heating, we hope to have a district system that uses waste heat from Stanton Hospital; this is still in discussion. We are trying to keep the floor warm. Exposed rock at some places within the building will be a sustainable way to bring in natural warmth in the cold season.

LS: There are very long summer daylight hours in the North, so that can heat up the building. We intend to control indoor temperatures by using suitable passive design strategies.

What role does the wind play?

LS: The wind blows from the north, which is why the north walls are thicker. The shape of the building is designed to direct the wind over the building, and the snow in winter as well.

The building is strategically oriented to the southeast toward Frame Lake, the rock, and the trees, with its back turned to the north winds and driving snow. The south façade is glazed, allowing thermal gain in winter when serving knowledge for future generations, and it contributes to larger cultural wellness.

What will happen around the building?

MW: The outdoor spaces for this project are just as important as the indoor spaces. For example, there is a large space for gathering around a fire, because fire is probably the most important element when it comes to healing. There are also places for personal ceremonies and space for temporary structures.

LS: The AIWC will be situated on Frame Lake, around which there is an important path that showcases local geology. Although the site is within the city limits of Yellowknife, it is a natural setting. The pine forest, showing exposed pink and white granite, is really quite remarkable.

The capital of the NWT lies close to the timberline and the interface between the arctic and subarctic climate zones. This is a region of extremes, with harsh, dark winters, excess sunshine in summer, strong north winds, and drifting snow. What’s more, the Canadian Shield – an expansive area of exposed Precambrian igneous and highly metamorphic rock – covers more than half of Canada. It extends northward from the Great Lakes to the Arctic Ocean and also characterizes Yellowknife.

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LS: There are very long summer daylight hours in the North, so that can heat up the building. We intend to control indoor temperatures by using suitable passive design strategies.
the sun is low. The cantilevered roof limits heat gain in summer when the sun is higher and shines longer. Regarding material selection, the architects are focused on minimizing energy consumption, using predominantly local wood and stone. The structural frame of the building is made of glulam spruce, with the circulation area designed as a forest of beams and columns to echo the surrounding landscape. Wood is used in different ways for the exterior cladding of each of the three volumes: The ceremonial space is clad in charred shingles, the healing wing is clad in vertical boards of varying thickness, and the educational space is enclosed with raw logs in a diagonal pattern.

It would be highly consistent with the concept if the center were to be built by the Indigenous people themselves. Will that be the case?

**MW:** We hope so, but the project is not that far yet. We are currently in the design development phase.

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16.5 million dollars seems like a fairly high price for the project. What makes it so expensive?

**MW:** It’s actually a rather moderate budget for the building in the North. Logistics makes building here very expensive. We are trying to keep the costs down everywhere we can. Having multiple buildings within a larger one will also make it easier to make adjustments to optimize costs during the operational phase. Heating and electricity costs, for instance, are very high in Yellowknife and the Canadian North.

**LS:** Another issue is that some specialized trades aren’t based in Yellowknife. They may have to be brought in from elsewhere, which of course costs more.

**MW:** The project is a labor of love for everyone involved.

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“Bring in natural warmth in the cold season” Mason White
Plural infrastructure
Emerald Gateway in Massachusetts, USA
The extensive Emerald Necklace park system is one of Boston’s distinctive urban amenities. The system was severed at various points as a result of the highway expansion era that began some sixty years ago. Today, a broad-based project aims to repair one of the most important and heavily impacted sections of parkland.
Boston is one of the oldest cities in the USA. Founded in 1630 on the Atlantic coast by English settlers, it played a key role in the American War of Independence. The famous Boston Tea Party of December 16, 1773, when Bostonians dressed as native Americans dumped three shiploads of tea into the harbor in protest of British colonial policy, is known well beyond historian circles. Among the many famous people who were born, lived, or worked in Boston are statesman Benjamin Franklin (1706-1790), author Edgar Allan Poe (1809-1849), “Spock” actor Leonard Nimoy (1931-2015), and film star Uma Thurman (*1970). Another Bostonian native is Frederick Law Olmsted (1822-1903), although he is not as widely known. The father of American landscape architecture was born in Hartford, Connecticut and during his career designed many projects around the country. His monumental designs include Central Park in New York, the Niagara Reservation, and the Emerald Necklace in Boston, a system of interconnected parks laying like a necklace around the “neck” of the Boston Peninsula. It would be impossible to imagine Boston’s infrastructure today without the Emerald Necklace – as a recreational area, as a transportation corridor for non-motorized traffic, and as part of the city’s water and wastewater management system. But the Emerald Necklace as a whole has been severely impacted by road construction and other interventions. Marie Law Adams and Dan Adams intend to reverse some of that damage – and restore the integrity of a key section of parkland to its original level.

Marie Law Adams and Dan Adams are founding principals of Landing Studio, an architecture office that specializes in improving urban infrastructure and the public realm. Marie received a Bachelor of Architecture from the University of Michigan and a Master of Architecture from MIT, where she also received an Emerson Fellowship and an AIA Medal. She is a lecturer in Urban Design at MIT in the Department of Urban Studies and Planning.

Dan Adams holds a Bachelor of Architecture from the University of Michigan and a Master of Architecture from Harvard University, where he received an AIA Medal and the Kelly Thesis Prize. He also received a Druker Research Fellowship for ongoing research studying global production and transport of salt and the unique integration of this industry with cities and ecology. He is director of the School of Architecture at Northeastern University in Boston.
What was the original significance of the Emerald Necklace to the city of Boston?

Marie Law Adams (MLA): It was the first park system built in the United States by Frederick Law Olmsted. One of its biggest contributions, originally, was that it envisioned the park as infrastructure. It served as a sanitation system, a flood management system, and of course also a landscape amenity.

Dan Adams (DA): The Emerald Necklace is fundamentally different from what Olmsted built in New York’s Central Park. It was never conceived as a single park; it was always seen as a network, a string that interweaves with the city. It has rivers, roads, pathways, and habitat corridors that tie into so many other systems of the city. Back in the 1880s you could get on a horse and travel through the city using the park system. Unfortunately, we forgot about such concepts in the highway era after World War II; there was a mad dash to build road systems that ended up breaking the Emerald Necklace in various places. The parkland was used as a convenient site for all sorts of structures built in this period of environmental ignorance. That’s how many jewels of the Emerald Necklace were destroyed.

The greatest impact of this development was at Charlesgate, originally known as the Beacon Street entrance to the Back Bay Fens. This 83,000 m² park includes the section of the Muddy River that flows into the much larger Charles River. Charlesgate is an important link within the Emerald Necklace system. But in the 1950s and 1960s a multi-level highway interchange was built on and over it, destroying Charlesgate as a park. Legislation protecting green spaces from such development did not exist at the time. With their project, Marie Law Adams and Dan Adams now intend to revive the 19th century roots of Charlesgate and usher the park into the modern era with renewed integrity.

Why is it so bad that the Charlesgate connector was severed by the road system?

DA: Sustainability and resilience in ecology depend on connections. Yet everything we do today is to singularize. We conceive projects designed to function only within themselves.

MLA: The problem also has to do with how infrastructure in the United States is organized. In terms of management, transportation is separated from water systems, which are separated from conservation and open
space systems. They are all managed by different state agencies. But in our project, these agencies all have to come together for everything to work properly, and this has been a source of inertia for many years.

In what way?

DA: We spent 18 months just negotiating the jurisdiction of water! When rain falls onto the elevated roadways, the water is in the jurisdiction of the State Department of Transportation. When the water falls onto the surface roads, it’s either in the jurisdiction of the State Department of Conservation and Recreation or the City of Boston. The water is then in different jurisdictions when it passes through the subterranean pipes versus after it’s been discharged into the river. So in our project, one drop of rain travels through many jurisdictions and environmental stewards. That’s why one of the major aspects of our work since the project started in 2017 has been to find common ground for everyone to work from.

A new, post-Olmsted design for Charlesgate was implemented in the 1960s. It was actually only built to prevent parking under the overpass. The design approach was anything but sensitive: The course of the Muddy River was altered to circumnavigate the pillars of the overpass, and the inflow into the Charles River was built over and channeled through a sewer tube. The modernist design ethic with harsh lines and high walls resulted in many nooks and crannies, which is why people feel uncomfortable and unsafe passing through the area today. As a consequence, they avoid the area, or at most use it as a throughway.

As an initial step, the architects helped to secure funding to tear down those walls and open up the views beneath the overpass. Little remains of the former park; overpass maintenance work and the heavy equipment it requires gradually destroyed the park elements, even the benches and lighting. Many locals don’t even know that this park exists, tells Marie Law Adams.

That’s why the initial intention of the commissioning organizations – the Charlesgate Alliance citizens group and the Emerald Necklace Conservancy – was to beautify the 1960s park and make it more attractive to the public. But Landing Studio, with its vast experience in dealing with transportation agencies, took a broader long-term approach and was awarded the commission.

How do you intend to keep your Charlesgate from suffering the same fate as the 1960s project?

MLA: First, we must avoid the pitfalls of the past. We must always keep in mind that we are not just designing a normal park. The site includes an important feeder road into the city and a link to a hospital. Thousands of people use it every day. We can’t change that, but we can try to make best use of the existing conditions.
DA: Until now, the roads, the park, and the river had nothing to do with each other. They were completely independent, even ignorant of each other. For example, the plants under the highway were selected as if there were no highway. The runoff from the highway was fed straight into the river. And because the elements were ignorant of each other, they also became damaging to each other, with the roads as the most aggressive player in this destructive relationship. We pursue a different philosophy. We look at the area as an urban ecology wherein all the elements are tied together in various ways. We are redesigning Charlesgate in such a way that every element operates in concert with the others. Ideally, all the elements will even benefit from one another.

A core element of the project is water management. Currently, surface runoff flows untreated into the Muddy River and Charles River. Problem is, this runoff is rich in nutrients that promote algae growth and duckweed blooms. And when these plants die, they release CO₂ into the rivers and ultimately into the ocean. At the same time, the plants extract oxygen from the water. In contrast to this, at the new Charlesgate, all stormwater – systemically separated by jurisdiction – is channeled into constructed wetlands where it is naturally filtered before reaching the rivers. The nutrients captured serve as natural fertilizer for the wetlands. The architects are using the existing sewer systems to the greatest extent possible and adding new lines only where necessary. Roadway runoff, which is typically heavily polluted, is pretreated in catch basins before being fed into the wetlands.

“Find common ground for everyone to work from” Dan Adams

Another part of water management work involves renaturalization of the armored banks of the Muddy River. In Olmsted’s day, the riverbanks were part of the flood control system of the Emerald Necklace. With the construction of the overpasses, the Muddy River was rerouted and channelized, as were many rivers around the world at that time. These armored river walls will now be opened and planted to enhance the local ecosystem and reduce the risk of flooding. In addition, the inflow of the Muddy River into
the Charles River will be reopened. This will visibly reconnect elements of the Emerald Necklace in a symbolic way and expand the natural habitat of plants and animals in the riparian zone. By relocating some bridges, the Muddy River will still be passable – once the responsibilities for this subproject have been clarified.

Multifunctionality is central to the concept of the new Charlesgate. The wetlands not only serve as a filter zone, they are a recreational amenity for park visitors. The flora, which will grow lush in the future, will also help to establish and increase local biodiversity. The plants, in turn, will draw CO₂ from the air for photosynthesis and release oxygen into the atmosphere. With all of these measures, the architects are basically pursuing Olmsted’s intent to benefit the city with natural, integrated systems, while always working within the framework of the city’s existing infrastructure. In this way, landscape becomes infrastructure.

The highway overpasses cannot be designed away, and they require regular maintenance. How can this work be done when the parkland is “in the way”?

MLA: In another project involving a road viaduct above a public space, we worked with the maintenance and repair teams to learn what kind of equipment they use and how they use it. Then we tried to think creatively and find ways to allow access for those big vehicles without interfering with the park below. It’s fortunate that a bike path which is 12 feet wide is just wide enough to accommodate a manlift, the main maintenance vehicle being used. Basically, the pathways for maintenance of the roads and the park and its structures can function as recreational space when no work is being done. We call that plural infrastructure. Here, again, two different elements integrate instead of separate – and function within the bigger urban picture.

In order to make Charlesgate an appealing urban recreational park, the overpassing roads will be hidden by trees as much as possible. A small forest of evergreens will be created, which will also provide shade in the summer. An added bonus is that the maintenance of such a grove is relatively simple. Playgrounds will keep children entertained, elements like fitness stations court will attract young adults, and the car-free trail

“We look at the area as a common urban ecology” Dan Adams
network is ideal for walkers, joggers, and cyclists. Seating areas and a dog park round out the planned facilities.

The proposed budget for the Charlesgate project is striking: USD 80 million seems exorbitant for a park of this size. Much of it will be spent on fitting the new Charlesgate into the existing infrastructure, creating connections, building new bridges, and repairing old ones. Funding for the project comes from a number of sources. The Department of Transportation is bearing the lion’s share.

The Charlesgate Alliance and the Emerald Necklace Conservancy, which initiated the project, are in the process of tapping additional funding sources. The Department of Conservation and Recreation is also doing its part, as is a city initiative called the Community Preservation Act, which provides a portion of tax dollars for projects of this type.

The Solomon Foundation, a private philanthropic foundation, and the Boston Red Sox Foundation have also contributed funds. Other sponsors are being sought. Thus, the Charlesgate project is broad-based also in terms of funding. A little patience is still needed, however. Initial work will begin in 2021, with the larger works scheduled for 2023. Ultimately, Charlesgate should shine in renewed splendor in 2026.
The landscape design proposal for an intervention in the Jaboque wetland in Bogotá recuparates a very delicate area of transition between the urban fabric and the natural ecosystem. The consolidation of the 157,000m² wetland is achieved via a 5.5km-long linear park that integrates recreational and natural areas, and also offers educational opportunities for the community. The selection of plants for the landscape is determined by each species’ impact on the ecosystem and ability to strengthen wetland flora and the fauna. The urban, environmental and landscape project thereby creates a live botanical collection that restores the ancestral values of plants that were made invisible by the trauma of colonization, while also contributing to the food security and economic viability of local populations. Beyond the benefits provided in the local context, the Jaboque Territory project also delivers a broader environmental contribution since wetlands...
Inspiring spatial and cultural opportunities

The proposal was recognized by the Holcim Awards jury Latin America as an outstanding example of how landscape design can be the most effective way to preserve a natural environment – in this case a wetland system – and to create a dialogue with the urban fabric and its inhabitants. The project’s adroit approach to move beyond an environmental recovery intervention to include a social dimension that also recovers the identity of place was very much appreciated. The intervention remediates an ecosystem type that is vital for human survival and also upgrades the local community’s quality of life by offering inspiring spatial and cultural opportunities. Despite the large dimension of the project, the jury was very impressed by the level of detail provided in the proposal and the refinement of the landscape design. The quality of the drawings was also highly commended.

“Establishing a symbiotic relationship between wetlands and urban development” Sébastian Mejía
The project deals with the construction of a nut processing building in São Francisco village adjacent to the Iratapuru River in the Amazon Basin. By modernizing the manufacturing plant, the facility will provide productive, cultural and economic opportunities for the local community. The main objectives of the intervention are to enable the storage and processing of Brazil nuts collected in the area, and also to ensure adequate working conditions for employees. The building is the result of a long and fruitful participatory design process between the architects, the local community...
Flexible simplicity

A lack of hard definition and flexible simplicity stand as the signature of the architects of this beautiful project, and as key elements to achieving a sustainable intervention in the delicate Iratapuru region. The Holcim Awards jury Latin America especially praised how the programmatic function of the building is solved through the elegant duality between light roofs and the massive walls to create volumes that accommodate the facilities necessary for Brazil nut processing. The engagement of the community during the design and construction process was also considered as a remarkable contribution to social inclusion and knowledge transfer.

“Transforming matter into architecture by delivering knowledge to the local community”

Gustavo Utrabo
By reinterpreting Colombian vernacular pitched roof structures, this design proposal suggests a residence for farmers living at high altitudes above 3000m above sea level that combines housing and agriculture by optimizing space and material selections. The building consists of two parts: an inner wooden volume that constitutes the main habitable area, and an additional translucent shell that functions as a second skin for the house while creating a contiguous greenhouse. The polycarbonate envelope not only enhances the thermal performance of the house but also enables a variety of produce to be grown despite the low...
The Holcim Awards jury Latin America was fascinated by this smart energy-efficient rural house concept for Colombian farmers living at high altitude. Through its iconic and compelling geometry, the project proposes a sustainable and affordable way of living, mixing the domestic and vocational dimension, and creating a new sense of belonging for the community. The manner in which the design facilitates the connection between people and nature in this specific region, where weather conditions can be harsh, was considered a great asset of the project. The polycarbonate shell creates a buffer space that serves a three-fold objective: to provide an external yet enclosed living area, to enhance thermal comfort inside the building and to ensure appropriate growing conditions for vegetables. From a construction perspective, the jury appreciated the author’s choice with regard to the materials and the construction technique, which, while remaining simple and affordable, result in exciting architecture.

“Re-interpreting ancestral vernacular architecture”  Carlos Betancourt
Cities like Quito have uncountable underused flat rooftops that can be transformed to become a strategic resource for urban densification. The project proposes the installation of housing modules to inhabit the unoccupied roofs of existing buildings in a form of urban commensalism. Juxtaposing an extra layer over an existing construction, the strategy is sustainable across many facets: avoiding land speculation and urban sprawl, using existing facilities and infrastructure – thereby offering significant potential for financial savings – and providing affordable housing opportunities for the population. Despite the minimalist approach underlying the project, the prototype is designed to be modified and customized to adapt to different users’ needs. The structure is made of unprocessed wood with interior walls in plywood and an exterior metal cladding. The two main opposite
Responsive and proactive approach

Tackling the housing crisis in rapidly growing cities is one of the most urgent challenges of current urban and architectural practices. At the same time, urban density has become a primary growth strategy for revitalizing the commercial and housing potential of urban cores. This implies a more prudent use of the available surfaces for construction and, therefore, a reconsideration on what is really needed for comfortable living. The Holcim Awards jury Latin America applauded this project not only because of the interesting architecture proposed but, especially for how it questions the current consumer attitude to the manner of design for habitable spaces. The minimalist approach pursued by the authors was considered responsive and provocative, and very effective in showing that living with less is possible. The resulting architecture was commended for the elegance of its form and the simple refinements.

“Using forgotten spaces above the existing infrastructures of our cities”  

Maria Reinoso Guerrero
El Tepozán is a new space designed for arts and crafts education. Borne from collaboration between the architects and the Tierra Adentro Cultural Mission Foundation that owns the land, the art village provides a safe and creative environment where the people of Canalejas, 100km northeast of Mexico City can meet, work, learn and produce art. The architecture establishes a synergy with the landscape and makes the site an attractive place especially for young locals to whom new cultural and leisure opportunities are offered. The master plan of the area includes different types of buildings that vary according to site topography. The design is largely inspired by vernacular techniques that enrich the sustainability profile of the project. Traditional jagüeyes (large pools) are used to collect and distribute water, high-thermal-inertia walls can
naturally regulate the thermal environment while permeable structures allow for natural ventilation during the hottest days. The use of local materials and traditional construction methods are part of the circular economy strategy of the project.

Main authors (from left): Jorge Arvizu Soto, Diego Ricalde Recchia, Emmanuel Ramirez Ruiz, and Ignacio del Río Francos, Estudio MMX, Mexico City.

Further authors: Gonzalo Álvarez Tostado and Mariana Braga Martins, architects, Mexico City; and Laura Alonso Blasco, architect, Spain.

Opportunities for the next generation

The Holcim Awards jury Latin America enthusiastically welcomed the idea of a building complex that showcases new opportunities for the young generation’s future by providing spaces to learn and stay connected with the arts. The openness of the spaces was found coherent with the program that is the basis of the project, which requires a high level of flexibility to serve the community at its best. Besides the social and educational merit, the jury applauded the way the project engages in sustainability under other aspects. From an environmental perspective, the meaningful integration with the landscape as well as the use of materials from the region and the adoption of bioclimatic strategies was highly commended. The incremental construction concept for the complex to match the erratic financial availabilities was also considered a good strategy to ensure economic viability.

“Maximizing the positive benefits of architecture” Emmanuel Ramirez Ruiz
The design proposes a compact construction that answers the demand of housing in urban areas where one of the main problems is scarcity and the high cost of land. The authors’ solution to promote urban density is a small modular system that adapts to multiple users and requirements, fits different urban morphologies and is potentially scalable from the first stage of 64m² to fourth stage of 128m². The internal layout voluntarily relinquishes a strong spatial hierarchy, allowing for a high degree of flexibility. The final configuration of the building is also the result of environmental design strategies that complement the infill design operation: green roof, improved thermal comfort solutions, solar panels and rainwater harvesting systems are used to minimize energy consumption while the almost exclusive use of wood makes the construction footprint quite low. One of the challenges of sustainable urban design to minimize the impact of construction activ-
Adapting to life dynamics

Although the “infill” strategy for city growth is not a novelty per se, the Holcim Awards jury Latin America was very much convinced by the sustainable features the project claims which make this design operation quite revolutionary for Argentina. The bioclimatic strategies used in the building are skillfully contemplated and the use of wood was considered audacious but attractive. The flexible and clever internal layout makes the prototype able to adapt to different life dynamics and was considered as an additional strong point. All in all, the jury unanimously acknowledged the project’s ability to offer, especially to families, an appealing new opportunity to repopulate the city.

“Promoting a dense and compact urban fabric” Tomás Quaglia Martinez
This transformation project turns the problem of dismantling a zoo into an opportunity to create a more environmentally aware consciousness in Mendoza. The design reconverts the area formerly occupied by a zoo that closed in 2019 into the site’s original morphology and landscape without imposing a new or too distinctive language. The new park articulates itself around a series of thematic paths (sports circuit, native culture circuit, recycling circuit etc.), along which different activities or temporary events take place. This results in a recreational public space that is deployed.
to bring a universal message of respect towards both people and nature. In so doing, the project becomes the container of sustainability practices and the place par excellence in the region where awareness around these themes can be enhanced. Five separate volumes that house eating and cultural facilities integrate into the natural slopes of the area. Covered by green terraces, they achieve minimal visual and land impact. The reconversion of the site is expected to be carried out by the local workforce, which would help strengthen the regional economy.

How to deal with the future of zoos has become an urgent question in many regions of the world – due to both an increased public consciousness about the importance of conserving the natural world, combined with a radical mindset change on the related preservation modalities. The Holcim Awards jury Latin America appreciated the way this paradigm shift is interpreted by the project which proposes the re-use of the former structure for multiple educational and recreational purposes. Landscape is voluntarily undefined and the boundaries between human space and wilderness can become blurred to accentuate how nature can reclaim its place and reconnect with people. The park is a place for the community where knowledge and sustainability practices can be shared, taught and learned.

“Conveying integrity and coherence to shift the paradigm”
Guillermo Lesch
The project’s objective is to provide housing for the low-income riverside population of Manaus currently living in precarious and risky conditions. The design takes inspiration from the traditional stilt and floating house typology to not only suit the local environmental conditions (including the seasonal fluctuation in water levels of the river) but also to recover and recognize the
The work is a compelling alternative to the prevalent social housing provisions currently offered in Brazil, which too often ignore social and cultural specificities of local communities. The Holcim Awards jury Latin America applauded the quality of the project, sensitive to the climate and coherent with the Amazonian culture. The design emphasizes the importance of rescuing the vernacular riverside architecture while offering high quality spaces. The interplay of solids and voids that characterizes the complex was acknowledged as both very functional and of aesthetically merit. The modular structure assembly system, which allows for self-construction and replication, becomes an incentive for social inclusiveness. The jury also highlighted the attention paid to water treatment, which indicates a real awareness of ways to minimize environmental issues linked to water pollution in the area. The high quality of this resilient architecture was unanimously acknowledged and considered an inspiration for similar projects elsewhere in the world.

“Creating an alternative to the status quo of social housing projects” Danielle Gregorio

value of indigenous cultural identity. The complex is organized on three different levels: a primary floating level mainly used for fishing and resting, a second floor above the water where collective commercial and cultural spaces are located, and an upper level occupied by dwellings. The project also includes a landscape intervention that connects with public leisure areas. Particular attention is paid to the optimization of natural resources through the adoption of water re-use and solar energy systems. To strengthen the local economy, material supply consists almost exclusively of local wood, and the local labor force is involved in the construction.
Finding effective water and flood management strategies is critical for the province of Chaco, Argentina which is affected by extreme rainfall and related flooding events. This proposal, resulting from a multidisciplinary and multiscale design effort, attempts to offer water infrastructure for the city of Resistencia that goes beyond merely solving an environmental problem. Located in a territorial void of a peripheral area, the urban dike proposed by the project is conceived not only as a hydric platform but also as a social catalyst for the city. The artificial water basin is equipped with a series of modular structures adaptable to different uses that create various leisure scenarios according to the water level. A band of vegetation...
Turning flooding into a resource

The Holcim Awards jury Latin America was very impressed by the multidisciplinary approach of this proposal ranging from architectural and landscape design to hydraulic engineering. The way in which the project transforms the critical issue of flooding into a resource for the community and the environment was considered to be a brilliant idea. The project effectively combines large-scale water infrastructure embedded in the territory that is welcoming to the local community and thereby reaches an urban dimension. The playful character of the water basin that changes its configuration depending on the weather was considered a clever and interesting operation. The intelligent landscape design as a permeable buffer around the water basin was commended. It is a key asset of the project which made it convincing and unique. The project suggests a design methodology to tackle an environmental problem that exists in many regions of the world, which makes this proposal globally relevant.

“Combining knowledge for a new typology of water infrastructure”  

Maria Rosario Ruiz Cabello
The project proposes the renovation of Plaza Merced 2000, a building in one of the oldest retail areas of Mexico City. The precinct houses a public market that is currently working at 20% of its capacity. Instead of the envisaged demolition, suspended after several objections, the architectural design proposes the implementation of a series of retrofit interventions to achieve 100% building occupation while involving new and ex-
Integrating the informal economy into the formal sector is an important policy challenge that has had limited success in Latin America. The solution described by the author is convincing and makes the project realistic. The Holcim Awards jury Latin America found the idea of mixing business activities with other cultural and leisure facilities a provocative solution to promote community interaction and social inclusion. Moreover, the recycling approach proposed as a design methodology to improve the urban metabolism and reduce the environmental impact of construction was considered a great asset of the project and very relevant to the Target Issues central to the Awards competition. Ultimately, the architectural proposal for the new market was applauded for its light and pleasant aspect, that not only reconfigures the commercial spaces inside but also provides a new urban character to the plaza.

“Bringing different actors together to generate value for circular processes” Pablo Goldin Marcovich
Surrounded by the southeastern hills of Bogotá that have suffered long-time illegal mining and informal housing construction, the Entre Nubes Ecological Park is a vast protected area providing habitat to a wide variety of regional fauna and flora. In this natural yet anthropized environment, the project suggests the realization of a light botanic pavilion that reshapes the silhouette of the excavated mountain. Steel cables fixed at the edges of the dig walls form 130m-long catenaries connected to vertical tensioners anchored to the ground to ensure the stability of the structure. A transparent ETFE plastic polymer cushion layer is positioned over the cables to act as a translucent roof protects the exotic and
natural plant collections. Different volumes made of metal and glass elements accommodate vegetal species representative of the Colombian ecosystem. Pedagogical and recreational areas alternate in the sequence of paths and squares. In so doing, the greenhouse becomes a public educational space that recognizes the importance of the recovery, protection and preservation of nature.

“Demonstrating that architecture is a method of response and intervention” Juan Camilo Muñoz

Celebration of ecology

The Holcim Awards jury Latin America was fascinated by this determined yet gentle architectural gesture attempting to mend a wound inflicted in the landscape by mining exploitation. The silhouette building was perceived as very elegant and the message it carries very powerful. The jury applauded the project’s ambition to not only protect biodiversity but also create public educational spaces for the city of Bogotá. The structural and constructive elements of the greenhouse appeared very appropriate and comprehensively evaluated. The program is well organized and efficient. All in all, the jury applauded the greenhouse pavilion for its thoughtful and convincing integration into the landscape with its sophisticated and compelling architecture standing as a celebration of ecology.
Adding a political statement

Collective Harvest in Brazil
An important aspect of many sustainable construction projects is the participatory design approach: The people who will use a building should be involved in its creation. In order to realize the full effect of this approach, architects sometimes have to embark on adventurous journeys.
The Amazon rainforest spans an area of 6.7 million square kilometers in nine countries of South America. Most of it – a land area larger than Western Europe – lies in Brazil. Uncounted animal and plant species live beneath the lush green forest canopy, which from above looks like an endless green carpet. Some 350 indigenous peoples also inhabit the rainforest. Many of them have preserved a very traditional way of life. But some of the communities, especially those in river areas, interact with modern urban society. This interaction is often economic; for instance, the people harvest resources from the rainforest and sell them to a manufacturing company.

One of many examples of this can be seen in the Iratapuro River community with its center Laranjal do Jari in northeastern Brazil. For many years now, the villagers have been collecting and processing Brazil nuts, from which they extract oil that they supply to the Brazilian cosmetics company Natura. The industrial giant pays for the product and gives the community a share of the profits. The good relationship between village and company led the Cooperativo dos Castanheiros do Rio Iratapuru, the local association of Brazil nut collectors, to approach the company with a request. The cooperative asked for support in modernizing its existing workplaces in order to consolidate the community’s economic base and to make it fit for the future. Natura agreed to provide financial support and in 2018 commissioned Gustavo Utrabo to plan and execute a development project for the local nut industry.

Gustavo Utrabo earned his degree in architecture and urbanism from the Federal University of Paraná in Brazil in 2010. He is a contributor to lectures and other activities at institutions including Harvard GSD, IIT in Chicago, the Future Architecture Platform at MAO museum in Ljubljana, RIBA London, and FAU-USP in São Paulo. He was a visiting professor in the master’s program at the University of Hong Kong and an assistant professor at Escola da Cidade in São Paulo. He was a founding partner of Aleph Zero, where he directed the office’s major projects over a period of six years. He is currently a visiting professor at IIT College of Architecture in Chicago.

What caused you to get involved in a project in the middle of nowhere?
**Gustavo Utrabo:** For many of us who live in the big city, the community of Laranjal do Jari may seem like the middle of nowhere. But for the local villagers, around 40 families, it’s the central place in their lives. So it’s all a question of perspective. A project like this is also a political statement. We live in a country that doesn’t understand the importance of conserving nature. With this project, I can share ways to help people in the rainforest improve their lives while treating nature respectfully. I can also show that those people possess vast knowledge of nature. We could learn a lot from them if only we listened.

**How do you reach the village?**

The journey is quite an adventure. It takes 36 to 48 hours to travel there from São Paolo. I fly from São Paolo to Brasilia, and from there to Macapá. Then it’s 8 to 12 hours in a four-by-four, an overnight layover, another three hours by car, followed by an hour by boat. The first time I made the trip, I got sick with Malaria. The people in the village used to live scattered in the forest along the banks of the Iratapuru River. Then a dam and a hydroelectric power plant were built in 2012, and the people were forced to move to Laranjal do Jari. The village isn’t even on the power grid. It was a shocking change in their lives, and they first had to learn how to live in such a community. On the bright side, the new situation helped create the local Brazil nut industry centered in the village. The newly constructed plant gives them the possibility to expand and thereby help other communities in the area who also depend on Brazil nuts for a living.

**You are an urbanite. How could you know what changes were needed in the village and what the villagers expected?**

I lived for ten days in Laranjal do Jari and tried to understand what the people wanted, what they need for the industry, and how to best design a sustainable project around that. I needed to gain a holistic view of the Brazil nut industry, the people, and the people’s lives beyond work. It’s my responsibility to realize a project that best fits the villagers’ needs in every aspect. I’m not there to impose my solutions on them; I’m there to exchange views and knowledge and develop something that’s perfect for those people at this particular place. But it’s also my responsibility to discuss unreasonable ideas. For example, initially, the villagers

“We could learn a lot from the villagers if only we listened” Gustavo Utrabo
Gustavo Utrabo quickly saw that these people live and work under special conditions. They spend three to five months collecting and cleaning Brazil nuts that have fallen from the trees. In keeping with sustainable, FSC-certified forest management, they leave some of the nuts lying on the ground for animals to eat and as fertilizer for the soil. Home-made/self-made boats are used to transport the nuts back to the village, where they are opened and processed, a task that keeps them busy for another four months. For the remaining three months a year, they have no income at all. That’s why Gustavo Utrabo wanted to involve the locals in the construction of the new building. They would learn new skills that they could use to earn additional income during the off season.

It was also clear that the project had to be realized with local materials as far as possible. It would have been extremely inconvenient and costly to transport machines and materials to the construction site. Thus, it made sense to use forest lumber for the structure of the canopy that covers the new processing area. Moreover, the villagers already knew how to work with wood. After all, they build their own boats, so they could help build the structure of the roof. Only certified wood is used. It is collected within a reforestation cycle that is attested by the Brazilian official environmental agencies in support of sustainable forest management.

The building does away with the traditional four perimeter walls. This is because of the tropical temperatures, which make good ventilation of the workplaces necessary. Humidity and heat must not be allowed...
“I’m not there to impose my solutions on them” Gustavo Utrabo

to accumulate under the roof. Mechanical ventilation solutions were ruled out from the start because power is unavailable. The large, overhanging roof is also sufficient to protect the workers, their workplaces, and the Brazil nuts from the frequent rains. The work areas beneath the canopy are located in individual bays that can be flexibly fitted out. Each one is designed according to its intended use. For example, bays where fire is used will have perforated walls to allow the heat to easily escape. In addition, these bays do not have their own roof.

**The separate bays beneath the canopy are partitioned with mudbrick walls. Where do you get these bricks?**

We produce them in situ, under the canopy that is already in place, with the help of the locals we are training. So in addition to being able to build things with wood, the villagers will also be able to build things with bricks of their own making. Why should we buy expensive bricks and go through all the effort to transport them to the building site? Instead, we use a mixture of local soil, a little bit of cement, and sand from the river. The mix is pressed into bricks and dried in the sun.

**Where did you get the recipe for the bricks?**

I took samples of the local soil back to São Paolo and had them analyzed in a specialized laboratory. In collaboration with the university, we then developed the final recipe. I knew this would work because I had successfully done a similar thing in a previous project.

The relatively thick mudbrick walls are advantageous not only in production. They also ensure pleasant climatic conditions at
weight. “At the end of the day, it’s a kite,” says Gustavo Utrabo, “and a kite wants to fly.” So concrete foundations were designed to firmly anchor the canopy structure to the ground. The structure is attached to concrete columns that extend 80 cm into the soil, where they rest on solid rock. A concrete floor slab provides a durable and stable base for the bays erected upon it.

The openness of the overall building provides a high degree of flexibility to accommodate any future changes the working environment may require. The building currently includes only the basic elements the community needs for its Brazil nut industry, i.e. for processing and oil extraction. If one day they want to expand or sell more Brazil nut products, this is easily possible. The individual bays can be dismantled very easily, reconfigured, and rebuilt or expanded as needed.

With mudbricks, there is no waste to dispose of. The same applies to the project’s wooden elements, which can simply be returned to nature at the end of their life cycle. Only the polycarbonate roof would require special disposal. But it’s so light and durable that it

“The villagers will be able to build things with bricks of their own making” Gustavo Utrabo
"This is a process that will take time"

Gustavo Utrabo

could be cut into pieces and used for other purposes when its service life is over.

Electricity would certainly aid the development of the village and its industry, wouldn't it?

Definitely. There are generators that can provide power, but from an ecological point of view, they are no long-term solution. We could have installed solar panels on the roof, but due to the remoteness of the site, the project costs would have skyrocketed. What’s more, maintenance for the photovoltaics would have been extremely complicated and, again, expensive. So we had to abandon that idea. But we are planning to go to the officials and convince them to connect the village to the electrical grid. Whether they will depends, as is so often the case, on the political forces.

Nonetheless, it still sounds like the village could become a hub for the wider region. The people told us that they have that aim. They are ambitious and really well organized, much more so than many other remote communities. But this is a process that will take time. I’m excited to be part of this development, although, to be honest, it also carries a certain amount of frustration. There are so many things that can’t be done the way I’m used to doing them. For example, the canopy structure was finished mid-2020 before the collection season began but the masonry work on the bays was then put on hold for the next nine months. Completing the building could easily take another two years, even though it’s relatively simple. That’s because the construction work must be put on hold until the people have finished their annual collection and processing season. First things first!
Shifting focus to the land

Vernacular Greenhouse in Colombia

Farmers are among the poorest members of society in Colombia. Providing them with sustainable housing suited to their needs is the vision of a team of architects.
Colombia, South America’s most populous country after Brazil, has the highest level of domestic migration in the world. Today, more than three quarters of the country’s 50 million inhabitants live in cities – 30 percent more than 60 years ago. The rural exodus that started at the beginning of the 20th century fueled the economic development of the country’s cities and industries. However, especially in the recent past, relocation to the city has hardly fulfilled the economic dreams of the migrants. The gap between rich and poor is wide, and there is hardly any middle class left. Exacerbating this trend are the many displaced Colombians who have been forced to leave their homes due to armed conflicts, people who often end up settling in suburbs. A consequence of this demographic shift is that Colombia’s rural areas are largely deprived of dynamic economic development. Local and regional markets are poorly established, while the rural population generally tries to make ends meet with agricultural products. This is all the more true for those who live in the mountains, some at altitudes above 3,000 meters above sea level. For these farmers, Carlos Hernán Betancourt, Aldo Marcelo Hurtado, Sebastián Contreras, and their team have designed a prototype house that is affordable and offers adequate quality of life.

Carlos Hernán Betancourt graduated from the Universidad de San Buenaventura in Cali with a degree in architecture in 1999. Since then, he has taught intermittently at his home university and at the Universidad Javeriana de Cali. Since 2000 he has worked as a freelance architect in Cali, and in 2010 he co-founded Espacio Colectivo Arquitectos S.A.S. where he is currently co-director. In 2020 he obtained his diploma in landscape architecture.

Sebastián Contreras graduated from the Universidad Católica de Chile in 2003 and obtained a Master of Architecture in 2005. In 2010 he completed his specialization in comprehensive urban planning and man-

“These people have always lived sustainably”  Aldo Marcelo Hurtado
“The form is inspired by Colombian vernacular designs” Carlos Hernán Betancourt

Is Colombia in some sense caught in a vicious circle?
Sebastián Contreras (SC): In a way, yes. Keep in mind that cities are not synonymous with wealth. A large sector of the urban population is poor. However, many people are still drawn to the city, and that tends to make poor rural areas even poorer.
Carlos Hernán Betancourt (CB): It’s not just about the migration of people and labor, but about the loss of ideas and knowledge among the rural population.

Is sustainability really the most pressing issue for the people you are addressing with your project?
SC: They see sustainability through different eyes than we do. They don’t see it as following certain rules or trying to live up to certain values. But of course, sustainability is a problem for them on a small, day-to-day scale, and it has been for a long time.

Aldo Marcelo Hurtado (AH): Actually, these people have always lived sustainably. They are farmers in a region where there is nothing in abundance. They have to be sustainable in ways like re-using materials over and over instead of just throwing them away. We want to make it easier for people to go back to the earth and start over.

Does that mean there’s a migratory trend back to the countryside?
CB: We can well imagine that the pandemic could support such a trend. Even earlier, the outlook was bleak for migrants. Things got even worse during the pandemic, with all the restrictions and risks of living together in a confined space.
The Vernacular Greenhouse is, in simple terms, a house within a greenhouse. The house is a two-story structure that rests on a gabion foundation. The ground floor, supported by a steel frame, consists of wooden walls, floors, and ceiling. The space created under the floor by this construction method is used to store a water tank. The upper floor is a pure wooden construction on which the roof of the residential building comes to rest. The greenhouse is a wooden A-frame structure, fully glazed. It encloses both the house and an area in front of it that can be used e.g. to grow fruits and vegetables.

Controlled ventilation ensures the circulation of fresh air.

In selecting the building materials, the architects placed great emphasis on achieving an optimum combination of sustainability and functionality. For example, all wood is sourced from controlled, well-managed forests. The elements are designed to be prefabricated to ensure economical and efficient construction. The wall elements are made of laminated guadua, the most abundant and important bamboo species in Central and South America. Guadua grows quickly, is easy to work with, and possesses high axial strength. That’s why people call it vegetable steel. The glass and the few steel components of the structure can be easily dismantled and replaced if needed, and recycled.

Is the A-frame design simply a logical development of the gable roof, or does it have a practical purpose?

CB: The form is actually inspired by Colombian vernacular designs. But of course it was also chosen for practical reasons. It’s easy to build and makes optimal use of sunlight. Also, Colombia is a rainy country and rainwater can be used sustainably. The water that runs off the roof is collected and used for example to irrigate the greenhouse. We also want to use special systems to condense water from the moisture in the air.

The affinity with traditional Colombian construction methods is even more evident in how the dwelling is insulated. A technique called bahareque is used on the dwelling.

“We can consider the whole as a single system”

Aldo Marcelo Hurtado
roof. This thermal and acoustic insulation system consisting of soil, straw, and wood is widespread in rural Colombia. Rice husk is used as insulation in the cavities of the laminated guadua walls.

**Why is the dwelling placed inside the greenhouse and not next to it?**

**AH:** Because it requires less space, and material usage and is generally more efficient. Take thermal performance, for example. With our home design inside the greenhouse, we can consider the whole as a single system. A thermal buffer is created between the house and the greenhouse envelope. Together with the insulation, this generates pleasant temperatures of around 20 °C inside the house and at the same time creates the ideal conditions for growing vegetables in the greenhouse.

The architects have designed great flexibility into the Vernacular Greenhouse, and not just in terms of the size of the structure. Depending on the size of the family – families of five or more members are common – the building will one day be available in three sizes between 60 and 94 square meters of total space. The living area will account for between 50 and 70 percent, depending on the version. The use of the structure can also be tailored to suit the needs of the occupants. For example, those who cannot or do not want to operate a greenhouse can use that space as extended indoor living space for the family.

It would also be conceivable to equip the space for events, as a place for gatherings, as a school room, or simply as a place to meet with friends and neighbors in any weather. Once the children have left home, or if for
other reasons less living space is needed for personal use, the upper floor could be rented out to tourists. “Colombia is becoming safer and therefore more popular with tourists,” says Carlos Betancourt, “and many tourists don’t just want to visit cities and typical sights; they want to explore the whole country.” The Vernacular Greenhouse could generate additional income in this way.

The design also includes a small photovoltaic system because energy supply can be a problem in rural areas. The power grid is by no means omnipresent. Many people who live off the grid don’t need that much energy anyway. Cooking is usually done over a fire, and most people get up early, work all day, and go to bed early again. The solar power system therefore only needs to supply a relatively small amount of energy. The energy is generated by eight solar panels mounted above the entrance to the dwelling, which would ideally be augmented by a three-meter-diameter wind turbine. With this combination, there is no need for energy storage systems, which are not unproblematic to manufacture. “We hope to make this type of power supply widely known, especially in remote areas,” says Aldo Hurtado. Of course, the farmers have long been

“People wait to see how well something works before committing”
Carlos Hernán Betancourt
aware of the principle of composting – circular economy in its purest form. A separate zone for waste collection and composting is therefore planned in the outdoor area.

**Won't farmers be overwhelmed by all these innovations?**

**CB:** We don’t want to force anyone to do anything, and we certainly don’t want farmers to abandon their traditions. We just want to offer an alternative model, based on traditional knowledge of indigenous practices and peasant habitat, and make it available to anyone who is interested. It often happens that people wait to see how well something works before committing.

**SC:** Architecture has always focused on cities and urban life. It’s time to shift that focus from large-scale urban projects to more modest, but no less ambitious, rural projects. Farmers are the protagonists of the 21st century; it’s they who have to ensure our food security, especially in times of crisis. That’s why they need and deserve decent housing and living conditions.

And that’s exactly what the architects aim to achieve with the Vernacular Greenhouse. A site for the prototype has been chosen in Sumapaz, the southernmost and most rural district of Bogotá. It is situated at 3,600 meters above sea level. Temperatures there range from 2 to 30 °C, ideal for testing the design in real life and assessing the performance. From prefabrication of the individual elements in Bogotá to completion of the construction in Sumapaz, realization will take only 90 days. The architects hope that the prototype will develop into entire sustainable village communities – because just as the family unit is essential in rural regions, so is the community, which includes one’s neighbors and village as a whole.
Growing Social Fabric

Urban restoration and community hub
East Jerusalem

The proposal for the restoration of the historic center of Kafr ‘Aqab, a neighborhood in East Jerusalem, creates an environmental, social and cultural hub for the local community. The project is the outcome of a collaborative effort made with local institutions, administrations and, most importantly, the local community. It moves through different scales to include infrastructural and landscape interventions as well as targeted measures at the building scale for the restoration of historical fabrics. The program includes a play area for children, eco-kitchens for the women’s association as well as spaces for cultural activities and local institutions. To strengthen the connection with the location’s rural history and promote an environmentally friendly approach, the project emphasizes local materials (limestone, crushed pottery and sand, wisely mixed with structural concrete) for reconstruction. In addition, the project adopts green practices including rainwater collection, greywater irrigation,
Holistic restoration process

The Holcim Awards jury Middle East Africa recognized this project as a gesture of significant global importance and a substantive contribution to architecture. In a region that has suffered for years from poor planning and development inertia, resulting in overcrowding, poverty and inadequate public infrastructure, the proposal shows how vital collaborative design can be in achieving the social reconstruction of a community occurring before any physical restoration of a place. Beyond the optimistic and cheerful message conveyed by the proposal, the jury highly appreciated the sensitivity and authenticity revealed by the project in considering the opportunity it offers to salvage ancient habits and traditions through story-telling practices as a necessary step in a truly holistic restoration process.

“Adopting an ecological and community-based approach” Saja Mansour

reviving a water spring, and the integration of vegetation as a key design component. Green areas are conceived as social activators to promote interaction between community members and shared agricultural practices, offering new quality spaces away from pollution and urban densification.

Main authors (from left): Shatha Safi and Saja Mansour, RIWAQ-Centre for Architectural Conservation; and Yara Bamieh, freelance architect; all Ramallah, Palestine.

Further authors: Khaldun Bshara, Tareq Dar Naser, and Michel Salameh, RIWAQ-Centre for Architectural Conservation; Renad Shqierat, Khalil Sakakini Cultural Center; and Mawed Abu Shamaleh, freelance engineer; all Ramallah, Palestine.
Post-war Reconstruction

Heritage recovery for community enhancement al Mukalla, al Shihr, Yemen

Since 2015, Yemen has experienced times of great political unrest that have resulted in a civil war and consequent damage throughout the country. The architectural heritage has been impacted by this conflict, and several important cultural sites have been severely damaged or, in some cases, almost entirely destroyed. This proposal aims to rehabilitate or reconstruct important Yemeni cultural landmarks, notably three Sufi shrines and two mosques in Hadramut, two mosques and the Domes of Al Habib Abu Bakr in Shihr and the Shaikh Yaqub Dome of Mukalla. The project also addresses the imminent danger of the further collapse of structures that are already damaged. Led by the Daw’an Architecture Foundation with the support of local authorities, the design encompasses impres-
**Sensitive and respectful approach**

The Holcim Awards jury Middle East Africa applauded the project’s ambition to restore the integrity and social beliefs of a community through the rehabilitation of Yemeni historic sites rich with social, cultural and spiritual values. The project reaffirms the significance of the inherited aesthetic forms, which have a lasting impact on the quality of their environment. The interventions are conducted with high cultural and environmental awareness, that show a sensitive and respectful approach towards places and their history.

“Interacting in perfect balance with the environment” Salma Samar Damluji

Young people from the community participate in training schemes on the building sites, that aim to raise awareness of the historic cultural heritage and resources in their region. The reconstruction also involves local master builders and artisans as the project prioritizes the use of traditional building techniques and materials, including mud bricks and a water-resistant plaster to ensure the long-term sustainability of the edifices. This not only goes in favor of the local economy but contributes also to an ecologically sound building restoration. Stone used in construction is mostly collected on-site from debris, minimizing the need for new materials.
Rebuilding Erupts

Post-disaster community reactivation facility
Chã das Caldeiras, Cabo Verde

Chã das Caldeiras is a small community established in 1917 in the crater of the active Pico do Fogo volcano on the island of Fogo, Cabo Verde. At 1,700m asl, it is the highest village in Cabo Verde. After a disastrous eruption in 2014, the national government promoted the realization of a masterplan for a sustainable rebuilding and redevelopment of the village. As part of the plan, this project proposes an educational complex whose construction is considered to be a catalyst for the reactivation of community life. Based on a participatory approach, the school is built through the involvement of local people previously trained on specific construction techniques. On-site workshops are organized for the production of building elements, such as bricks and prefabricated slabs. The complex accounts for seven small volumes, centered around a courtyard, hosting a kindergarten, a classroom, a canteen, a washroom and storage facility as well as spaces for teachers and administration. The school is mainly built with local volcan-
ic rock that, coupled with cross ventilation enabled by small openings in the masonry walls, provides interesting bioclimatic features for thermal comfort. A light reinforced concrete structure answers stability. Wide fenestrations ensure adequate amounts of daylight while shading systems minimize direct solar incidence. A 60-ton cistern equipped with a filter allows the storage and re-use of precious rainwater in irrigation systems for the surrounding vegetation.

Main author: Leão Lopes (3rd from left), M_EIA/Atelier Mar, São Vicente, Cabo Verde.
Further authors: Teachers and students, M_EIA/Atelier Mar, Cabo Verde.

“Producing on site by the people of the community” Leão Lopes

Effective low-tech design

The top-down approach that is the groundwork for this proposal and its implication on the social and economic re-stabilization of the community was considered highly commendable. The Holcim Awards jury Middle East Africa praised the low-tech yet effective design and construction operations through which architecture is tied to its context, its environment and its people. Despite the adoption of traditional materials, the project shows a clear effort to introduce new design and construction methods that reflect Chã das Caldeiras people’s optimistic foresight in taking community life back into their own hands.
Connective Threads

Refugee shelters using upcycled textile waste
Zaatari Refugee Camp, Jordan

Combining the surplus of the global textile industry with the limited means of refugee camps, T-Serai (Textile System for Experimental Research in Artistic Impact) introduces a “cultural technology” to strengthen the ethnographic and environmental resilience of displaced populations. The project deploys participatory design and upcycled textiles for the creation of modular tapestries that serve as refugee shelters for displaced Syrians in Jordan. Inspired by cultural traditions of the Middle East & North Africa (MENA) region, the tapestries can provide a better insulation of temporary settlements, preserve cultural memory and add aesthetic qualities to the refugees’ daily reality. Recycled jeans layered over emergency blankets can be used for mobile storage, or to set up colorful tents for
social gatherings. The project also aims to foster cross-cultural collaborations through the involvement of students from the USA, Europe, and the United Arab Emirates. In so doing, the multidirectional knowledge exchange between participants of different generations and backgrounds becomes the opportunity for self-expression, self-determination, and advancement of pluralism. The project draws its strength in blending two contradictory conditions of our society: the culture of abundance – partly represented by the textile industry responsible for more than 80 billion m² of surplus garments every year – and the lack of livelihood of displaced people fleeing from conflict and disasters.

"Upcycling discarded clothes and textiles to support cultural resilience" Azra Aksamija

Support towards cultural resilience

The Holcim Awards jury Middle East Africa found the way the project creates an “out of the box” humanitarian innovation from these two critical social, political and environmental issues to be highly commendable. The jury also appreciated the project’s support towards cultural resilience of displaced communities through the promotion of cooperative-based practices. Introducing cross-generational knowledge exchange, T-Serai acts as a bastion against the loss of the living culture, while offering opportunities for cultural expression, education and vocational training of refugees. All in all, the project outlines a culturally sensitive, socially inclusive, and environmentally conscious approach to humanitarian design.

Main author: Azra Aksamija (1st from left), Future Heritage Lab, Massachusetts Institute of Technology, Boston, USA.

Further authors: Melina Philippou, Nicosia, Cyprus; Natalie Bellefleur, Lillian Kology, and Johnathan Kongoletos, Boston, USA.
Due to the increasing waves of urban migration, the Oasis Drâa Valley in southern Morocco is experiencing a loss of its tribal heritage in music as well as of its vernacular architecture and agricultural techniques. The project is the result of an interdisciplinary work to promote culture preservation.

Cultural Interlude

Music school and ecotourism center

M’hammad El Ghizlane, Morocco
through the creation of a self-sustaining music school in the town of M’hamid El Ghizlane. Beyond the pedagogical facilities, the project considers the construction of ecolodges to promote profitability and the center’s self-sufficiency by hosting visiting teachers, students and tourists. The project for the Joudour Sahara Cultural Center combines vernacular knowledge with innovative design approaches. It alternates traditional construction systems in rammed earth, palm reeds and trunks, with cutting-edge technologies, including solar chimneys and solar-powered geothermal systems for improved thermal conditions. Facilities such as composting toilets streamline waste output while efficient rainwater harvesting systems are deployed for domestic and irrigation purposes. The orientation of all buildings and the specific placement of L-shaped elements consider the prevailing wind patterns in an effort to protect the site from encroaching sand dunes. The proposal also includes a landscape design conceived for anti-desertification and erosion purposes.

“Having no choice but to be sustainable” Aziza Chaouni

Showcasing environmental techniques

Through the programmatic overlapping of the music school, ecolodge and anti-desertification testing ground, the Holcim Awards jury Middle East Africa found that the project successfully engages with sustainability under many aspects. The way architecture is deployed, in particular to protect the endangered centuries-old tribal music tradition, was considered highly commendable. The educational center goes however beyond preserving the local culture to act as community booster while showcasing environmental techniques to mitigate the desertification risk in the area. The fact that strategies for the center’s economic viability and self-sustainment are also taken into account in the design and program development was also highly praised.
Inundation Harvest

Urban flood mitigation using ancient techniques

Bandar-e Kong, Iran

Located in a dry region in southern Iran, Bandar-e Kong receives 130 millimeters rain each year, concentrated over winter into intense rainfall that leads to episodes of severe flooding. This environmental criticality is exacerbated also by the lack of adequate agricultural infrastructure and green spaces in the city that could mitigate urban flood risks. To face these problems, this project suggests the restoration of an indigenous ecological system that would help the city mitigate stormwater runoffs and harvest rainwater for drinking and gardening purposes. The sophisticated infrastructure consists of flood paths that allow rainwater to be distributed across the city—a system used until the middle of the last century and abandoned by recent urban practices. Flowing through 35 hectares of date and palm tree gardens, the rainwater channeled by the flood paths reactivates local agriculture and expands urban gardens. Water is also collected in the historic reservoirs of the city or injected into the aquifer for fur-
Visibility for precious pieces of history

The proposal is based on a simple but very valid concept that has been the mainstay of stormwater management and irrigation techniques in the region for centuries. The Holcim Awards jury Middle East Africa admired the multilayered narrative of the project which, through a gentle infrastructural operation, is able to provide a number of environmental, economic and social benefits to the city of Bandar-e Kong. Traditional elements, such as flood paths and water reservoirs, are salvaged and restored to adapt to the actual urban fabric thereby making precious pieces of the city’s history visible again to its inhabitants.

“Preserving traditional ecological knowledge and integrating it into urban planning and design” Ghazal Raheb
Traffic congestion in Kampala, like in most sub-Saharan cities, is acknowledged as a costly, dangerous and suboptimal aspect of African urban life. Inadequate road infrastructure poses serious health issues for both pedestrians and drivers, while impacting on the entire economic system through logistics inefficiency and lost time caused by traffic jams. This proposal suggests a multi-modal transport scheme for Kampala that blends road engineering and landscape design to improve current transport.
infrastructure and overall livability of the city. Streets are redesigned to adequately accommodate vehicular traffic while designating generous surfaces for clearly identified pedestrian and bicycle paths. Some key areas become pedestrianized and are entirely closed to vehicular traffic. The intervention promotes sustainable mobility, more organized business activities, and designated areas for street vending and plazas. Urban furniture, streetlights and an appropriate landscape design contribute to the pleasant amenity of the pedestrian zones. New small constructions are conceived to serve as shelters along footpaths or train platforms. Beyond enhancing urban mobility, this project enables more fluid motorized traffic flows to sensibly improve environmental sustainability by minimizing the concentration of vehicles. In addition to reducing CO₂ emissions and noise levels, the newly organized traffic configuration also positively impacts the commercial and urban center to deliver a more appealing character for tourists.

Sensitivity beyond providing new inputs

The Holcim Awards jury Middle East Africa acknowledged the relevance of the project for its context in Uganda, as well as for many African countries that suffer from similar problems caused by a poorly organized and overloaded urban transport infrastructure. The impressive amount of detail provided by the author indicates a sensitivity that goes beyond providing new inputs of a purely utilitarian nature. The proposal offers valuable solutions to more responsibly rethink human activities that gravitate around congested urban areas.

“Reinventing transportation is a sure way of securing the future of our cities” Joseph Kigozi

Main author: Joseph Kigozi, Prome Consultants Ltd, Kampala, Uganda.

Further authors: Ronald Kibuuka and Jacinta Nakanwagi, Prome Consultants Ltd, Kampala, Uganda.
Kampala, the principal and capital city of Uganda, suffers from territorial, social and economic fragmentation. The Muyenga-Namuwongo neighborhood, where high- and low-income communities face each other without any interaction, is a striking example of this condition. The goal of the project is to bridge these gaps through the creation of a system defined by a network of punctual and transversal interventions, allowing for people in the different parts of the neighborhood to connect. This system consists of “points,” which refer to social and public areas strategically and equally distributed across the neighborhood, connected by “links” including improved pedestrian and transport infrastructure. Colorful bridges, jogging trails, food...
markets, train stops, urban gardens, and cultural and recreational facilities are all design elements deployed to transform the neighborhood from a grey/cold space into a green/social district with an improved sense of place. Undeveloped land is converted into open public spaces that accommodate informal economic activities, stimulating the generation of synergies across sectors in different parts of the city and encouraging the creation of a circular economy. Local people are involved throughout the project implementation as co-creators and “curators” – together with the city authorities – of this resilient and sustainable improved community.

“Co-creating to solve community problems in a spatial sense and in terms of policy”  
Priscilla Namwanje

Redefining the identity of a neighborhood

The Holcim Awards jury Middle East Africa enthusiastically applauded this project: first, because of the young author’s maturity in understanding and analyzing the physical, environmental and social challenges of the context; secondly, for the convincing methodology and ultimate solution proposed to tackle them. The project is well articulated and suggests an interesting inter-scale approach to redefine the identity of the neighborhood, introducing concepts that are easily transferable to other parts of the city or to other geographical contexts. The proposal provides a fresh, optimistic vision of an empowered community through the improvement of the spatial dynamics of Kampala and consequent strengthening of the social and economic connections.
Today, many municipalities around the world impose the construction of cemeteries on the cities’ outskirts neglecting, in most cases, how to deal with their integration within the urban fabric once the cities start to encroach beyond their initial limits. Starting from this consideration, the project suggests a change of perspective in the way cemeteries are currently perceived in Amman, reclaiming their construction in the urban area to serve as public spaces for the community at large. The architectural design focuses on a new cemetery typolo-
gy that distinctly separates burial units and the funeral house, all placed below ground level, and the ‘general’ public area made by a system of plazas and greenery at street level. The new typology enables far more burial spaces to be accommodated, courtyards open to the sky allow sunlight to reach the below-ground level while serving as meeting points required for funerals. The program of the project includes an Al-Tikyeh (hospice), a traditional communal building that dates back to the Ottoman era, to assist poor people and to collect donations from the deceased to support the community. It also incorporates a worship space, a library, a community kitchen and other public communal facilities. The project provides additional green spaces to punctuate the dense residential areas of Amman while offering new occasions for the gathering of people inside the neighborhoods.

New relationship between the living and the dead

The Holcim Awards jury Middle East Africa was fascinated by this audacious proposal that revolutionizes the way in which cemeteries can be conceived in the Middle East, adding a remarkable social character to this architectural typology. These revisited spaces suggest a new relationship between the living and the dead, which was found to be very poetic. The architecture creates a beautiful atmosphere which is very appropriate for the place. Also this design option alleviates soil consumption by drastically decreasing the footprint of graveyards inside the cemeteries, which was considered a powerful claim.

“Turning cemeteries into positive spaces that serve the neighborhoods” Tala Khaled Shelbayh
Plastic Extractor

Multi-purpose recycling facility
Freetown, Sierra Leone

The design aims to enhance the livability in Kroo Bay, an informal settlement of Freetown, Sierra Leone. As is the case across the country, this community suffers from several sanitary, social and environmental emergencies – including the contamination of the local ecosystem with plastic particles due to inadequate waste management systems. The project uses a simple but radical low-tech approach to provide a multi-purpose facility able to collect plastic
trash and upcycle it into valuable products. The proposed architectural object, placed on a riverside, consists of three elements: a bridge that collects plastic trash carried by the river via a net; a recycling plastic workshop where plastics are separated from other rubbish and warmed up to 200°C through solar concentrators then transformed into new products; and spectator seating for football games designed to store objects underneath the stairs while serving recreational activities. The pavilion is intended to be built from recycled on-site plastic panels fixed to steel elements, ensuring the affordability of the construction. In a place characterized by an extreme lack of facilities, the project strives to help residents improve their lives with a public space that reduces pollution from plastics. The small recycling production chain provides opportunities for work, education and gathering while contributing to a safer and cleaner environment.

Incorporating vernacular references

Plastic pollution is amongst the most critical environmental issues to address, especially for countries were programmatic recycling practices are difficult to implement. The Holcim Awards jury Middle East Africa appreciated the creative suggestion to combine different programs in a low-tech facility that, by optimizing spaces together with resources, is able to provide multiple social, economic and environmental benefits. The technological aspects were found thoughtful and carefully calibrated with the specificities of the place. This results in a convincing architecture whose ability to incorporate vernacular references was particularly praised.

“Solving the global problem of plastic trash with simple means” Evgenii Varlygin
The Mesopotamian Marshes in Iraq are a unique site of high natural and cultural value with a desperate need for educational facilities and policy measures for the architectural heritage preservation. The project asserts the design and construction of an educational facility in Basra to accommodate classrooms, a library and a music room, as well as multipurpose halls and activity rooms. The pedagogical complex is generated by the repetition of vaulted roof units centered around a large square that is

Earthen Education
School reinterpreting vernacular architecture
Basra, Iraq
accessible to the public. The architectural language recalls traditional geometries and construction techniques of the Mesopotamian (or Iraqi) Marshes and emphasizes the traditional vernacular bioclimatic features. The building is constructed principally using rammed earth cast on-site from local soil. The walls are further stabilized through the addition of a small proportion of cement to create a hybrid material that is very affordable and more durable. The uppermost sections of the walls are made of woven reeds that allow the access of daylight and enable cross-ventilation in the classrooms. Entirely built by the local workforce, the project is implemented as a collaborative community hub, resulting in an opportunity for knowledge and skill transfer to younger generations.

“Modernizing building practices while considering people and local knowledge”  Noor Marji

Relevant to cultural identity

The Holcim Awards jury Middle East Africa applauded this beautifully described and presented proposal, whose program was considered context-sensitive and coherent with the cultural and geographical specificities and needs. The reinterpretation of Iraqi vernacular architecture was found not only aesthetically compelling but also very relevant to cultural identity and community empowerment. Material choice and construction strategies are very thoughtful and effective to improve indoor comfort while creating an evocative atmosphere inside the classrooms.

Project author: Noor Marji, architect, Amman, Jordan.
Building on cultural heritage

Growing Social Fabric in East Jerusalem
Among the consequences of the West Bank in East Jerusalem are a booming population, chaos, and the destruction of a historic center. This important center is now being rebuilt and transformed into a green cultural hub. It is to become a place of peace and tranquility for the community.
Jerusalem is the focal point of the Middle East conflict. The Israelis and the Palestinians both claim the city for themselves. East Jerusalem is a hotspot within this tension. Occupied by Jordan in 1948 during the Palestine War and seized by Israel in the 1967 Six-Day War, the district is now part of a united Jerusalem from an Israeli perspective and the capital of a future Palestinian state from a Palestinian perspective.

A barrier several hundred kilometers long runs along the border between Israel and the West Bank, in some sections cutting through eastern Jerusalem. The district of Kafr ‘Aqab is severed from the rest of the city by this barrier and is therefore something of a legal no-man’s land. The infrastructure has suffered accordingly, and the consequences include high poverty and unemployment rates, rampanty growing high-rises, mountains of garbage, dirty water, and a general lack of law enforcement. The municipal government, whose members are appointed by the Palestinian Authority, is trying to solve the problems but is in danger of failing in this herculean task. It receives hardly any funding, even though the residents pay municipal taxes.

This is the context in which Riwaq is engaged. The institution is an association of students, architects, archaeologists, and historians. It is dedicated to the preservation and restoration of historic buildings and centers in rural Palestine. From 1994 to 2004, Riwaq conducted a comprehensive architectural survey of the historic buildings in rural areas of the West Bank and Gaza. The results were compiled into its Registry of Historic Buildings. Based on this publication, Riwaq created the “50 Villages” project under which the organization has begun restoring the historic buildings.

Shatha Safi is a director of Riwaq. She received a Bachelor of Architectural Engineering from Birzeit University and holds a Master of Arts in World Heritage and Cultural Projects for Development from the International Training Centre of the Interna-
Shatha Safi is important for identity” Shatha Safi

Saja Mansour also earned her Bachelor of Architectural Engineering from Birzeit University. She has worked on various rehabilitation projects including those at Beit Iksa, Hajjah, Birzeit, and Qalandia. Her main interests are cultural landscape and community engagement.

What kind of data does the Registry of Historic Buildings include?

Saja Mansour (SM): Information on the typology of the historic buildings, their structural status and architectural details. The registry gives an overview of how many historic buildings there are and about their structural stability.

Shatha Safi (SS): We registered a total of 50,320 historic buildings. They include very typical historic farm buildings as well as guest houses, landmarks, olive oil presses, schools, mosques, churches, shrines and others. In 2019 we revisited many of the villages to propose possibilities for an adaptive re-use of some of the buildings and to establish strategic plans for our future interventions. Unfortunately, at that time we found that many of the surveyed buildings had further deteriorated and many others had been destroyed. This is mainly due to the lack of legal protection. All in all, about half of the buildings we originally surveyed remain intact today.

What is the motivation behind your project?

SS: Documentation of this kind simply did not exist before, because cultural heritage is not a priority where basic needs are such an urgency. Today, the focus is on things like current politics, healthcare or hygiene. Nevertheless, we think cultural heritage is important to the identity of the Palestinians and to the socioeconomic development of the area. Rural areas are especially significant because they are the sources of local...
crafts, local agriculture, and local historical knowledge. The significant buildings there should be restored not as passive museums but to be used every day for socioeconomic development.

The use of buildings is indeed an important issue in Kafr ‘Aqab, because the population has soared from nearly 25,000 in 2017 to around 100,000 today. The de facto lawless state means that building permits are not required here. As a result, mid-rise buildings spring up like mushrooms, and they are rented out cheaply, mainly to people with unclear residency status. Kafr ‘Aqab’s predominantly Arab Palestinian residents basically have the status of permanent residents. But this status can be revoked if they reside outside Jerusalem for several years. Many Palestinians have forfeited their right to reside because, they live or work in the West Bank for example. In Kafr ‘Aqab, they can move around freely.

How much does the political situation influence your work?
SS: Very much. We can currently move about only in the areas of the West Bank, and we need special permissions to visit or work in Gaza. The historic centers there are usually in Zones A and B, which are fully or partially under the control of the Palestinian Authority. Consequently, we are dealing mainly with Palestinian officials. But there are also villages where you have to pass through checkpoints to enter or leave. So a project that would normally take one year can extend to two or three years. The political situation limits us.

Riwaq was founded 30 years ago. What can you say about it today?
SS: We have developed over time and responded to the circumstances. It started with creating jobs, then we developed alternative cultural infrastructures in rural areas, giving space to cultural organizations in the restored historic centers. You don’t need huge and expensive structures and spaces, you can do it as a network of smaller spaces within the rural areas. With the 50 Villages project, we’re trying to reconnect the community by providing the necessary space and activities. The restoration of the historic center of Kafr ‘Aqab fits well into this picture.

The complex, which covers around 5,000 square meters, had been destroyed almost completely over the years. At the start of the rehabilitation and transformation into a green...
cultural hub, it was little more than a mound of ruins. For Riwaq, this meant first digging up everything to determine what was still there to be reconstructed and what would have to be built anew.

The planning process began in early 2020. Riwaq involved the community by giving lectures on the history of the center and by holding an event in collaboration with the Dalia Association. This organization, which plans to settle in the new center soon, supports local initiatives and is committed to the future of Palestinians in Jerusalem. The meetings brought together old people who had lost touch with the center and young people who had never been there before. Shatha Safi recalls, “It was a sort of forum where new relationships were formed and old ones refreshed.”

Thus emerged Riwaq’s vision for the new cultural hub in Kafr ‘Aqab: the creation of a safe place where people can meet and children can play. The plans include a playground, an eco-kitchen for the women’s association, community gardens, green roofs, a water management system, green waste management programs, and spaces for cultural institutions, local businesses, and educational facilities. The local water source is also to be tapped once again and the farmland around the area reclaimed.

“We rely on locally produced or recycled material”

Shatha Safi

How much of the project is restoration work and how much is new construction?

SS: In general, it always depends on the condition of the buildings and what reusable materials are available. We always try to restore as much as possible, or at least rebuild using traditional methods. But anything that is newly built should be recognizable as such. This applies to about 15 to 20 percent of the planned elements. We rely on locally produced or recycled material, such as wood or steel, for about 80 percent of all the work, because that generates jobs.

You are also relying primarily on local workers for your project. Are they familiar
with traditional materials and construction methods?

SS: Part of Riwaq’s concept is to train workers. By now, we have a good selection of companies that can build to our specifications. We’ve also put together manuals that we can give to potential new partner companies. It’s interesting and gratifying to see formerly untrained workers become true masters in their field. We are proud of this. It shows that our concept works.

How do cooling, shading, and water management work at the new center?

SM: Temperatures are regulated mainly by the thick walls. These provide cooling in summer and warmth in winter. Controlled ventilation further improves the indoor climate. Shading is provided mainly by the greenery on the site. Water management includes collecting graywater from the kitchen and restrooms. The filtered water will be used for irrigation.

SS: Due to the lack of infrastructure, we are not yet able to install systems that could, for example, treat wastewater from toilets to be used for irrigation. But the people here do know how to collect rainwater. Traditional roofs are gently arched for this purpose.

This is another example of how our project builds on existing knowledge and develops it further.

The project is progressing well. In two or three years, the center should be finished and operational. By then, Riwaq estimates that at least 20 women will be working in the eco-kitchen, 300 children will be playing on the courts, at least 50 trained workers will be able to make a living there, and four nonprofit organizations will be able to set up their offices there. “All in all, an estimated 30,000 inhabitants will benefit from our project,” Shatha Safi calculates.
One of the two streets leading through the neighborhood was cleared by mid-2020. The second street should be cleared soon. Work is currently underway on the public open spaces, which take up around half of the project site.

**Do such open spaces also have symbolic character?**

**SS:** Yes, because they are at the crux of several problems. In some places, due to the geopolitical situation in East Jerusalem, people are allowed to go out only at certain times. Moreover, it seems that Palestinians no longer have a real connection to public spaces, perhaps because they were once under the control of Israel. With our project, we are trying to reclaim public space in a positive way. We want people to take back their spaces and make them part of their lives.

However, this is not so easy because there is vandalism and people dump their waste. That’s why we use hard construction elements and recycled materials, so that no one gets the idea of dismantling these elements and taking them home. We are seeing progress in this regard, but there is still a long way to go.

A hiking trail is planned to connect the historic center of Kafr ‘Aqab with that of Jaba, which is located even further on the eastern outskirts of the city. Why?

**SS:** The historic centers we are working on are in part highly fragmented. We are planning the trail to connect these two because the area in between is rich in natural and archaeological sites. An interactive map will allow the walkers to directly integrate their personal impressions. Cultural heritage is multifaceted and therefore must be processed in a variety of ways.

Initial project submission page 170
An integral way of thinking

Post-War Reconstruction in Yemen
Reconstructing destroyed historic buildings is extremely challenging – especially when you set out to rebuild them using the original construction materials and methods.
The Republic of Yemen in the south of the Arabian Peninsula is one of the most unstable nations in the world. Various groups have been fighting for power in the country since 2013. The conflict, which remains unresolved, is described by the children’s charity UNICEF as the greatest humanitarian crisis in the world. 80 percent of Yemen’s population of 30 million are dependent on humanitarian aid, according to UNICEF. Much of the country has been destroyed in the fighting, including many buildings of religious significance. Thus, in addition to losing their families, jobs, and homes, many people in Yemen have lost their spiritual bases. Rebuilding religious landmarks during raging war seems risky at best. Salma Samar Damluji dares to do it anyway.

The Iraqi-British architect graduated from the Architectural Association School of Architecture (AA) and The Royal College of Art in London. She was a senior tutor at the AA, a research fellow, and a tutor at the Royal College of Art (1987–1994). In 2008 Salma Samar Damluji and colleagues in Yemen established the Daw'an Mud Brick Architecture Foundation in Hadramaut, where she has been working on earth construction and postwar reconstruction projects. She has curated several exhibitions of her work in London, Paris, and Madrid. Salma Samar Damluji has been professor of the Binladin Chair for Architecture in the Islamic World at the American University in Beirut since 2013.

How did you become involved in Yemen?

Salma Samar Damluji: I’ve had a connection to Yemen for many years. I first became aware of the country’s extraordinary architecture in the 1970s through P.P. Pasolini’s film “Il Fiore Delle Mille E Una Notte.” During my studies in the UK, I got involved with mud brick architecture through the Egyptian architect Hassan Fathy, with whom I was able to work in 1976 and again in 1984. Ever since then, I wanted to visit Yemen and learn all about this architecture. I had that opportunity in 1982 when I worked with...
“My engagement in the project is both a professional and an emotional one” Salma Samar Damluji

the UN Economic Commission for Western Asia’s Human Settlement department, and I have remained involved in the country ever since. I seem to be the only female architect practicing there.

How did that lead to your postwar reconstruction project?
I established the Daw’an Mud Brick Architecture Foundation in Hadramaut, Yemen in 2007. We were restoring and reconstructing a complex of 12 buildings for a heritage hotel at Masna’at Daw’an until war broke out. In this conflict, landmarks and cultural edifices including historic forts and mosques were destroyed in major cities like Aden, Taiz, and Sana’a, the capital. It broke my heart to see the destruction, so I applied to the British Council’s Cultural Protection Fund for support for our reconstruction project in Hadramaut. The Prince Claus Fund in the Netherlands also stepped in to coordinate and support us as a partner and sponsor. My engagement in the project is both a professional and an emotional one.

As part of the reconstruction project, which has since been completed, the architect and her team focused on five Sufi shrines and two mosques in the Hadramaut Governorate. The two domes of Al Habib Hamad bin Saleh in the coastal town of al Shihr were destroyed in 2015. The original buildings date to around 1400. The Shaklanza Mosque in the same town remained an important landmark even after its destruction, and it was included in the project at the residents’ request. The Isma’il Mosque and domes are also located in al Shihr. The domes, which are over 100 years old, were partially

“We return the buildings to the urban landscape and community” Salma Samar Damluji

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destroyed in 2016. In Mukalla, the capital of the Hadramaut Governorate, the project team worked on the Shaykh Ya’qub dome, which was blown up and leveled in 2015. The largest and oldest cemetery in Mukalla grew around this 12th century landmark.

The objective was to restore the buildings to their original condition using traditional Yemeni construction materials and methods. The war in Yemen was, and still is, raging. Fortunately, however, this was not so extreme in Hadramaut, where the architect was able to enter and leave the country indirectly via Say’un International Airport, which has remained open. At the start of the project, it was necessary to get the local people on board since there was great fear of reprisal against cooperating with foreign agencies or defying the forces responsible for the original destruction.

How did you manage to overcome these barriers?
We showed the people that the workforce for our project should come from within their own ranks and that we aren’t just going to build something and then leave. We are going to collaborate with the community and builders and train them in their own traditional construction techniques that have been lost. I’ve been in the country for decades now, and everyone there knows who I am, so it wasn’t hard to appeal to them and get their support. After all, we were contributing to their own spiritual culture and sense of meaning. It was really that simple. After that, volunteers came in droves, including female architects. We had not planned on accommodating large numbers to train, but they worked with us and the master builders trained them. The difficulty was that we were under a lot of time pressure, because of the timeline attached to the funding and the project deadline. The situation was further complicated because the infrastruc-

“Culture and architecture are inextricably interrelated”

Salma Samar Damluji
You chose religious buildings for your project. Did that make it complicated or even dangerous?
Not at all. These are cultural and spiritual buildings. We received support and worked in collaboration with the office of the governor of Hadramaut, and that is significant. We returned these buildings to the urban landscape and community. As important places of social interaction, they constitute a spiritual reference in local life.

So it was important to involve the community in this project.
Of course – the buildings are a part of their lives! And part of what I do, and what I enjoy, is to engage with the local people, talk with their elders, over tea, coffee, or sharing a meal. Culture and architecture are inextricably interrelated.

The project team had to answer a fundamental question at the outset: What did the buildings to be restored look like before they were destroyed? Architectural plans didn’t exist, so the architects had to reconstruct the buildings from photographs, historical documents, the existing remains, and written information from the communities. “We were archaeologists and architectural investigators,” says Salma Samar Damluji. The team then prepared architectural drawings to facilitate the construction and structural engineering of the buildings. The community and keepers provided support by watching, engaging, and assisting when needed.

Master builders and craftspeople from the region played a central role in the reconstruction planning and execution. They brought the knowledge and skills needed to reconstruct the structures using traditional building methods and materials – a nod to the cultural heritage of the region, but also an important measure in terms of the sustainability of the architecture. After all, what had lasted hundreds of years before being destroyed will last hundreds of years again using the same construction techniques. In restoring the buildings, nothing foreign was introduced, and no additional footprint was created, except when an expansion was necessary or infrastructure needed upgrading.

Are there still many of these master builders around?
I am very worried about losing them. As architects, we don’t build things by hand anymore. But they still do. The more they vanish, the more contractors tend to adopt industrial construction methods. The consequent loss of the tradition and discipline of earth building leads to the loss of architectural heritage, sustainable qualities, and...
culture. In Yemen, there are no construction companies that employ master builders anymore. The old generation of master builders is dying out. Some of them are still building with mudbrick, shale, and stone. But the introduction of concrete in the 1990s led contractors to adopt cheaper, quicker, and thus more competitive options. You can’t speed up the building process when you use courses of mudbrick plaster. Saruj is an ancient type of water-resistant or damp-proof coating. It’s made of crushed baked clay bricks mixed with different percentages of sand and lime, resulting in a very durable and hard material. Local master builders helped us work out the exact method of making and processing it, and we used it on all the reconstructed domes and buildings.

Two of the traditional construction techniques you used are nurah and saruj. What are they?
Nurah is a very effective way to seal the mudbrick and stone walls on the inside and the outside. Correctly applied, nurah almost looks like marble. It’s a thick glossy paste made of fired lime and is used as a plaster to render the walls in several courses that protect the buildings against water, which is the main threat for mudbrick walls. Up to four layers of nurah made in different consistencies and formulas are applied in courses of mudbrick plaster. Saruj is an ancient type of water-resistant or damp-proof coating. It’s made of crushed baked clay bricks mixed with different percentages of sand and lime, resulting in a very durable and hard material. Local master builders helped us work out the exact method of making and processing it, and we used it on all the reconstructed domes and buildings.

What are the architectural advantages of traditional earthen construction?
The very thick walls and the low conductivity of mud as a material make the interior of buildings very cool during the day, eliminating the need for a mechanical cooling system. At the same time, the walls absorb heat during the day to transmit warmth to the building interior at night. In summer, the difference between inside and outside can be up to 7 or 8 degrees.

Mud, clay, lime, and sand are available locally and did not have to be transported over long distances to the construction sites. Mud bricks, mortar, and all other necessary building materials were either produced on site or procured from the immediate vicinity of the sites. Where parts of the original buildings still stood, structural integrity was first restored by using wooden wall ties and...
shoring up existing walls with round stone pillars. Since religious buildings in Yemen are minimally decorated, there was no need for elaborate ornamental restoration. Nor was a blessing necessary after the work was completed, as the architect says: “Religious buildings are consecrated by their use, after which time they are no longer entered with street shoes.”

Nearly all the stone needed for the reconstruction of the buildings, which took around six months, was salvaged from the rubble – an approach that is as sustainable as it is poetic: The new emerges from the remains of the old, like phoenix rising from the ashes. This sustainable principle can easily be replicated. “This is how building has always been done in this region,” says the architect, “Break down and reassemble. You don’t waste anything. Why should you?”

Is there a sustainable construction movement happening in Yemen?
There is no widespread awareness of sustainable construction in Yemen or a significant movement in that direction. The problem is that certification labels are being promoted that can actually substitute for genuine sustainability. I call that a corrupt view of sustainability. Sustainability is not a theoretical concept or an added feature for enhancing business. It’s a holistic way of designing and building, a system that involves participation and thinking. It’s integral to the balance between the natural and built environments. Sustainability will always remain an integral part of Yemeni earthen architecture – even if Yemenis don’t refer to it as such.
Living with the volcano
Rebuilding Erupts in Cabo Verde
On an island in the Republic of Cabo Verde, a community lives in the shadow of an active volcano. Invited by the government, a former Minister and his team are helping to rebuild the village after a recent devastating eruption – and they are taking a long-term approach.
With only about half a million citizens, the Republic of Cabo Verde is one of the smallest nations in Africa. The island state off the west coast of the continent consists of 15 islands, nine of which are inhabited. One of them, Fogo, is dominated by Pico de Fogo – the peak of fire. This volcano is still quite active. Despite the danger it poses, nearly 40,000 people live on the island. About a thousand of them live in Chã das Caldeiras, a village located within the semi-circular rock basin along the western flank of Pico de Fogo. Founded in 1917, this village is the highest settlement on the island, and it has been repeatedly devastated by volcanic eruptions. The last eruption occurred in November 2014, as Pico de Fogo spewed lava and ash for 77 days. The entire village had to be evacuated. Three quarters of the buildings were consumed by lava and destroyed. But the people returned afterwards and started rebuilding – as they have done after every eruption. But this time, the government wants to help the inhabitants return to normal life and better prepare for the future.

Leão Lopes was born on the island of Santa Antão in Cabo Verde. As a filmmaker, he made the first ever Cape Verdean feature film, the fictional “The Island of Contenda” (1996). He is also the author of various documentaries. In 1979 he founded AtelierMar, a nongovernment organization supporting the promotion of cultural capacity and local development. He presides over the NGO, which is headquartered in Mindelo, Cabo Verde. Leão Lopes served as Minister of Culture and Communications from 1991 to 1993. After finishing his secondary studies in Cabo Verde, he went to Lisbon where he graduated in painting at the Faculty of Fine Arts of Lisbon and then earned a doctorate degree at the University of Rennes II in France. Leão Lopes founded the University Institute of Art, Technology and Culture (MEIA) in Mindelo, where he is currently dean and professor.

Why must people insist on living next to a volcano, of all places?

Leão Lopes: That’s what we ask ourselves, too, whenever we are there. And we are still trying to understand it. The residents of Chã das Caldeiras have a strong relationship not only with their village but with the volcano too. They see it as their spiritual father. When we started the project, just a few months after the eruption of 2014, the lava was still hot. We asked the people why they don’t just leave and go live somewhere else. They answered: “Because we can’t exist anywhere else.”
Shouldn’t the government convince them to leave?
They tried. They provided housing in two nearby villages for the people to move into, but the people only wanted to return to Chã das Caldeiras as soon as possible. Even when the government prohibited reconstruction of the village, the people wouldn’t listen. Finally, the government gave in and devised a master plan for an area of 60 hectares, including detailed plans for infrastructure and improved housing in Chã das Caldeiras. M_EIA was asked to help in the realization of this master plan, and one of our contributions is to build the educational complex, which will serve as a case-study. We also proposed a health center.

The educational complex consists of a kindergarten, a school building, a canteen, a teachers’ room, a washroom & storage facility, and two administration buildings. Up to 60 children can be taught there. The complex can also be used by the community for a range of other activities like meetings or adult education programs. A garden with endemic plants and a pig farm are also planned. The canteen can also be used as a food processing workshop for local products, where new and improved processing methods can be tried out and then taught and practiced.

Leão Lopes coordinated university’s architectural department where he found the specialists he needed to take part in the reconstruction project. In addition, the NGO he founded, AtelierMar, has a lot of experience in the field of community design. Lopes speaks of a once-in-a-lifetime opportunity to participate in the construction of the community in such a special and sensitive place. Everything that is built in Chã das Caldeiras is constantly put to the test by nature: In November 2020, for example, an earthquake with a magnitude of 4.9 on the Richter Scale occurred that put the structural integrity of the educational complex, still under construction, to its first test. The building project is thus becoming an ongoing research project, both in architectural terms and in terms of community building.

This is a truly holistic experience, which also contributes to a better understanding of the island state itself, with its challenges, problems, and potential.

Two things quickly became clear to the project managers. The construction had to be done using materials sourced as locally as possible. Transporting materials and equipment to this remote location not only makes little ecological sense but would also be time-consuming and costly. The second thing was that the community should help build the school complex. In this way, people would learn skills and techniques that they could use to build their own houses. In fact, during the construction of the educational complex, a program to improve 40 private homes using new skills learned in the var-
"Big window openings ensure constant natural cross ventilation"  

Leão Lopes

ious workshops has been initiated. Ideally, the people involved will be able to offer their knowledge and skills to people in other villages too, generating additional income. “We are building with and for the community,” Lopes says. “It’s the only way we can justify our work.”

Local materials - does that mean building with lava stone?
Volcanic rock such as basalt is the main construction material. They are a reasonable choice regarding the carbon footprint of the project. We don’t need to transport tons of material to the site; suitable material is already there in abundance. The walls of the school are 30 centimeters thick and built up in three layers. Six-centimeter pressed brick made of a mixture of a low percentage of cement, red earth, sand, and volcanic gush make up the inside and outside shells. The cavity in between is filled to a certain level with a mix of concrete and volcanic rock to give the necessary structural stability. After that, volcanic rock gravel is poured in and compacted until the cavity is topped up. Depending on what earth we use, we can create different colors of bricks. Corner stones are made of the same material.

Why did you choose this construction method?
Mainly because it’s beneficial for the indoor climate. For example, one day we measured 51 °C at an exterior southern wall. Inside we measured 21 °C. Additional cooling occurs because the volcanic rock on which the
school stands acts as a heat sink. The sun and the heat also made us think about shading systems. We studied the sun’s annual trajectory and designed shading to prevent direct sunlight from entering the building after 10 am. The windows are wide enough to permit ample daylighting. This is important because the more natural light we have, the less electricity we need. The windows are placed relatively high in the walls, with the overhanging roof providing shading. Furthermore the big window openings ensure constant natural cross ventilation. They also allow a certain degree of interaction between the inside and outside. Children in the courtyard can see inside, from where you enjoy a clear view of the volcano. This is our way of respecting the villagers’ special relationship to the volcano.

Mechanical air conditioning would not have been possible because Chã das Caldeiras currently has neither electrical power nor running water. All buildings in the village are therefore equipped with cisterns to collect water. Drinking water is obtained from a well commissioned by the government. The school also received a cistern that holds 160,000 liters of water. The schoolhouse roof is designed to efficiently collect rainwater. The water is collected and mechanically filtered in two stages. The filter material consists of lava, sand, ash, and gravel. In a future development phase, the school is to be equipped with a photovoltaic system. In addition, the government is connecting Chã das Caldeiras to the island’s power grid and water supply system.

The school’s lightweight concrete roof is an innovative approach.

Roofs have always been an object of our attention, and over the years we have come up with different solutions. At Chã das Caldeiras we are using a fine steel reinforcement mesh covered by a thin layer of concrete to build what we call a shell. This gives a roof with plenty of resistance and durability. The same construction method is used in China for making boat hulls. The mesh makes various forms possible, either as a roof slab, as in our case, or as domes that need little or no intermediate support due to their inherent efficiency. A special feature of our method is that we leave the plywood from the formwork in place as an additional layer on the underside of the slab. The plywood has good thermal properties and provides better acoustic damping than concrete. We are building a school, after all, so acoustic properties are very important. We are fabricating the roofing on site, even though we also have prefabricated options.
available. It would be more complicated to transport them to the village than to build them on site.

The omission of high-tech materials and the focus on natural local materials mean that the environmental footprint of the educational complex will be minimal at the end of its lifespan. The stone can be reclaimed and used for the next building. Roof components can be disassembled and recycled.

“They accept us as part of their community”  Leão Lopes

The wooden elements can be removed because they are screwed into place. But the deconstruction phase is far in the future. In the meantime, the school and kindergarten have been in full operation since 2020.

“We always design our projects to be built in phases, so that the building can be used even while it is still under construction;” explains Leão Lopes.

In this way, the students and staff can also build a relationship with their new surroundings right from the start. “When the school celebrated Christmas, they came to us and offered us food and drink because they...”
accepted us as part of their community, not as just some outsiders who come in, build something, and leave again."

It sounds like the project team agrees that Chã das Caldeiras should remain where it is.

Yes, you’re right. The end of the project will not mark the end of our work for the community. As a university, we intend to stay on site, with the community, so we can keep studying the school and the way it develops as well as maintain a strong relationship with the community. In addition, if we stay here, we can offer accommodations to our partner universities so that they can come and do research here too. The university has purchased a plot here with a house that was buried by lava. We want to preserve that for future generations as a reminder and as an educational tool.

_all in all, the project is a direct investment in the future of the village._

“When the lava comes, it comes”

Leão Lopes
Agrarian Enrichment

Sustainable urban and agricultural system
Lanzhou, China

The rural fringe of Lanzhou, the capital and largest city in Gansu Province in northwest China has undergone a great urban territorial transformation over recent years. Agricultural land has been progressively fragmented, and several scattered villages in the Nanhe River valley are at risk of being razed to the ground due to policies that encourage densification. The Yuzhong Eco(logical) City project 50km south-east of Lanzhou proposes the transformation of the Nanhe River valley with a two-fold objective: the preservation of traditional crop-growing lands, and their integration into a wider urban and agricultural system. These aims will allow for a more productive and sustainable development of the area. The territorial design is based on a finger plan intervention that branches out from the northern and southern embankments of the river to touch existing rural fabrics. This generates a new ensemble of six metropolitan villages characterized by the alternation of agricultural land and residential segments placed in continuity with the historic
Well-balanced and contextualized model

The Holcim Awards jury Asia Pacific highly commended the way in which the proposal offers a sensible and thoughtful alternative to current Chinese policies toward rural urbanization. The project suggests a territorial operation that, as opposed to the more mainstream demolition practices, very elegantly densifies and strengthens the existing rural fabric and co-located agricultural parcels, and brings new opportunities for farming communities. The intervention becomes a particularly well-balanced and contextualized model for an environmental, social and economic sustainable development of rural areas in China and beyond.

“Turning nature-based solutions into an amazing example” Sylvie Ravalet
Shajing Ancient Fair is the largest existing historical district in Shenzhen with a particularly rich architectural heritage. With 500,000 residents, the subdistrict is the most densely populated area of the city. Despite the significant sociological and aesthetic values embedded, many historical sites in this district are at risk of being demolished because of their advanced state of decay. The intervention on Shajing’s Longjin River district described by this proposal shows that an alternative to demolition exists – and resides in a careful combination of preservation and rejuvenation actions. Architectural, landscape and interior design projects are proposed.
on six locations along the river. A fire station is transformed into a public stage for Cantonese opera, a building ruin into a sky bridge, a small plaza into a Mantis Boxing practice square, and a triangular space into an outdoor market for artifacts. Local people are invited to participate in art creation to reimagine several old houses into exhibition halls. Key to the success of the proposal is the redesign of the polluted river which is now two-tiered - with clean water incorporating attractive pedestrian paths above and a sewer below. Not only do these actions provide villagers with new public cultural and recreational spaces, but they also bring ancient ruins back to life, revitalizing the local cultural heritage and creating employment opportunities for the district. The project privileges the use of waste and low-carbon materials and the adoption of passive cooling systems.

Respectful of the local environment

The Holcim Awards jury Asia Pacific was fascinated by the bold yet balanced, delicate and non-intrusive spirit of this project that, through simple architectural gestures, turns city density into surprising and joyful spatial and emotional realities for the village dwellers. The effort that the proposal makes in raising collective awareness on the importance of preserving local heritages and attempt to delay, if not avoid, the alarming decay of historic Chinese villages was highly commended. Bringing in a fresh, welcome modern character, the architectural solutions were also found particularly contextualized and respectful of the local cultural and social environment.

“Exciting to see residents actually use what we built” Jing Han

Project authors: Yuxing Zhang and Jing Han, ARCity Office, Shenzhen, China.
The design for the Atlassian Central building in Sydney, positions the project as a game-changer for buildings that pursue low-energy and high-comfort performance. Located adjacent to Central Station and supporting 4,000 jobs, the 39-storey tower will be a fitting gateway to the Sydney Innovation & Technology Precinct and is sensitively inserted into the historic fabric of the city. The project targets a 50% carbon reduction compared to typical contemporary constructions, through the combination of a low-embodied energy structure and a highly efficient environmental performance during the operation of the building. The design gravitates around a structural system and spatial organization that is highly noteworthy due to its degree of integration. Using a concrete core for stability and a steel frame exoskeleton, the tower takes shape from the repetition of eight independent 4 to 7 floor timber (Glulam) units conceived as independent “sky neighborhoods”. The high-rise structure takes advantage of the mild climate of the city to deploy an energy-efficient system that balances a naturally ventilated enclosure with a strategic use of mechanical air-handling zones. Each neighborhood
Main authors: Wolfgang Kessling, Transsolar Energie-technik, Munich, Germany; Edwin Chan, EC3 Design, Los Angeles, USA; James O’Callaghan, Eckersley O’Callaghan Ltd., London, UK; Corie D. Sharplees and Andreia Taixeira, SHoP, New York, USA; Ric Wang, Atlassian, Sydney, Australia.

Further author: Ninotschka Titchkosky, BVN, Sydney, Australia.

New proposal for livability

The Holcim Awards jury Asia Pacific considered the building a remarkable contribution to sustainable architecture that is greater than the sum of its parts. The project successfully combines structural, environmental and programmatic elements to achieve not only outstanding energy performance, in both construction and use phases, but also an indisputable aesthetic character. Two remarkable elements to the tower typology are successfully incorporated: a hybrid structure that dramatically reduces the building footprint and an unusual spatial organization in neighborhood units that combines healthy and comfortable workspaces with protected gardens. According to the jury, Atlassian Central goes beyond being an energy-efficient high-rise building: it is a new proposal for livability in contemporary cities.

“Focusing on people made it turn out as a very sustainable building” Wolfgang Kessling
Empowering the Homeless

Self-financing residential complex
Minalin, Pampanga, Philippines

Homelessness is a global policy problem that, in the Philippines alone, impacts more than 30 million people. The power-HYDE project aims to contain this social problem in Minalin, 70km north of Manila, by suggesting a self-financing model that combines social housing for homeless families with a solar plant that would produce and sell energy to finance the homes. Conceived to provide adequate living conditions to 125 homeless families, the design turns the rooftops of the houses into a mini 2.5 MW photovoltaic plant able to generate 25 times more electricity than the residential complex will use. After the expiration of the renewable energy commitment, residents will become the new homeowners and continue to earn passive income through the sale of energy, which represents a tangible opportunity.
for vulnerable people to emerge out of poverty. The residential units are designed as a zero-discharge and all-in-one infrastructure solution. Besides relying on solar energy, they also include water harvesting and grey-water treatment systems as well as vegetable gardens. Furthermore, a dry assembly structure allows the use of materials during construction to be minimized. Other programmatic elements are included in the project, such as a school, a health center, shops, parks and other essential infrastructure, which makes the community a self-sufficient entity for jobs, education and health care. The project also represents an important step forward in terms of social sustainability by becoming an opportunity for the empowerment of women, as homes are officially owned by the woman in each household.

Project authors: Prasoon Kumar and Robert Verrijt, Billion Bricks, Singapore and India.

Highly transferable accelerator of sustainability

The Holcim Awards jury Asia Pacific was impressed by the project’s ability to successfully and creatively bring together different stakeholders to address two urgent societal issues: homelessness and access to renewable energy sources. Ensuring at the same time the economic viability of housing for vulnerable people and the energy supply in remote locations, the powerHYDE community was considered an innovative business model that simultaneously addresses poverty and energy, making it a highly transferable accelerator of sustainability.

“Making housing affordable for everyone in the world” Prasoon Kumar
Through a step-by-step approach, the Liyumen Waterway Park transforms an inefficient drainage system of the Qianhai district, Shenzhen, into an efficient and desirable green-blue network for the city. The proposed infrastructure provides a new green area for Shenzhen’s inhabitants while integrating flood control and wastewater treatment systems. The new 15-km² CBD is expected to accommodate over 700,000 people, where greenspace will be highly valued in the dense business/residential district. The concrete canal of the existing
Moving beyond landscape design

The LafargeHolcim Awards jury Asia Pacific highly appreciated the symbiotic approach that deploys vegetation at the center of this proposal, and that moves beyond the biophilic landscape design perspective. The project is very refined and provides thoroughly researched and precise information on the life cycle assessment, which reveals a straightforward and robust methodological approach. The issue of drainage systems improvement and inclusion into a wider territorial vision was found particularly convincing and relevant for this geographic region. The jury also praised its high potential for replicability at a global scale.

“Replicable solutions to restore native habitat in the middle of the city” Kongjian Yu
Hanoi, the capital city of Vietnam, is among the most polluted cities in the world, with devastating effects on the environment and on the health of its citizens. Green Lungs Hanoi is a volunteer-initiated project that plans to restore subtropical forests on Banana Island, a 26-hectare parcel of land in the middle of Red River, in the attempt to bring more greenery into the urban area. Unlike public parks and botanical gardens, the project seeks to develop a self-sustained ecosystem through the reconstitution of the local flora and fauna and the promotion of biodiversity, in addition to addressing seasonal flooding and soil erosion. The strategy pursued is to combat the ongoing biotic homogenization phenomenon, which results in native species being gradually replaced by invasive cosmopolitan species and causes a drastic alteration in the ecosystem together with a loss of regional biodiversity. The forest re-creation is conceived as an open-air laboratory that
Reconciling the urban and natural environment

The Holcim Awards jury Asia Pacific recognized the clear relevance of this proposal for Hanoi and highly commended the manner in which the landscape design is deployed to reconcile the urban and natural environment. The project offers a needed ecological and social twist that further engages with sustainability under many other aspects, which in turn generate highly positive impacts at the local and global scale. The pedagogical vocation of the park, meant to serve as an instrument for promoting conservation education, was also very much appreciated.

“Restoring a piece of nature where biodiversity is decreasing”  Marek Obtulovic
Encompassing 353 hectares of land and 121 investment companies, the Phnom Penh Special Economic Zone (PPSEZ), in Cambodia, suffers from inadequate accommodation facilities for the 17,000-plus factory workers that live on site. Home Within House is a social housing project of 3,000 units for these workers and their families in the PPSEZ. Each dwelling is part of a cluster, which is formed by the alternating pattern of voids and solids, ensuring courtyards – one more private and one shared with the neighbors – on both sides.
Project authors: Neha Rane and Avneesh Tiwari, atArchitecture, Mumbai, India.

The Holcim Awards jury Asia Pacific praised this thoughtful proposal for the manner in which it addresses the serious issue of workers’ condition in Cambodian Special Economic Zones. The design of the suggested housing complex was considered simple yet well-balanced in terms of space distribution and programmatic aspect. Well contextualized and aesthetically pleasing, the resulting architecture represents a benchmark for labor accommodation projects in South East Asia for the way in which it reconciles affordability and livability through a human-centered design.

“Implementing a model that could easily be replicated in other rapidly growing cities” Avneesh Tiwari

of each 35m² apartment. At the end of each cluster, double-height volumes contain passageways and common facilities, including shops, bike racks, and childcare that all assist in creating an inclusive environment. The layout of the homes is kept simple with no permanent partitions or offsets so as to allow both for flexibility of use and efficiency of the space. From an environmental standpoint, the design adopts a series of passive strategies including solar shading, natural lighting and cross ventilation to minimize energy consumption for cooling and lighting while ensuring the comfort of the occupants. Construction materials consist mainly of locally sourced bricks and concrete, which guarantees a robust structural system. More than half of the site is allocated to regenerating forests where tree plantations help to counter the rise in CO₂ and enhance community amenity.
The proposal tackles issues linked to unhealthy fishing practices and the lack of adequate sanitation systems in Mahim Koliwada, a neighborhood of Mumbai that emerged from an ancient fishing village. Starting from a bottom-up approach that involves several stakeholders, including the Urban Design Research Institute (UDRI) of Mumbai, NGOs and community members, the project suggests new multipurpose facilities including: Doc-ing, Trash collection, Mangroves flooding, protection and farming, Recycling center, Plaza, Community center, Laundry, Net production, Boats storage in Monsoon, Workshop, Kindergarten, Internet cafe, Fish drying, Market, Fish cleaning.
Transitioning infrastructures for sanitation equity

Showcasing the possible intervention in Mahim Koliwada, the project suggests in a very realistic and convincing way how the Koliwadas of Mumbai can acquire a new centrality in the city’s layout and economic organization. The Holcim Awards jury Asia Pacific recognized that operations of this kind can effectively bring new social and economic legitimacy to remote districts of Mumbai and help avoid long-distance commuting. The quality of the drawings that skillfully communicate the idea of a respectful and considerate transformation was found highly commendable.

“Integrating marginalized communities” Soledad Patiño
Ambujwadi is an informal settlement of around 60,000 people in north-west Mumbai. Typical civic amenities have never been installed here, so the community struggles, day after day, to obtain basic services such as water supply, sanitation facilities or waste management. In such a situation, that in essence withholds social, political and economic support, the project proposes to use architecture as a way to transform the neighborhood and dignify Ambujwadi’s residents through the integration of dedicated social spaces that legitimate the settlement and thus embody a message of political solidarity. The idea is to position a series of multi-functional community towers across the neighborhood. Through the re-use of waste materials, the structures are built in a rather informal and
creative way by local construction workers, enabling the neighborhood dwellers to express their own identity. The towers thereby appear as playful urban artifacts that showcase how architecture can upgrade the value of an existing built environment and its quality of living. The buildings’ programs range from offices to educational and youth centers, from public toilets to NGOs centers, and from a health clinic to an animal shelter. To ensure the energy and economic sustainability of the towers, the project considers the integration of renewable energy systems as well as revenue generation strategies to recover the buildings’ construction and operation costs.

“Designing with the resourceful aid of the users when it comes to re-using materials” Lorenzo Fernandes

Dignifying the bond between people and their place

The Holcim Awards jury Asia Pacific praised the skillful presentation of the project’s ideas and greatly appreciated the clarity and beauty of the submitted drawings that intelligently refer to Indian tradition, while acknowledging the present. This said, the jury wondered whether the technology deployed, particularly with respect to the water purification processor, could not have been partially substituted by more subtle and less intrusive methods as used in other parts of the project, for example, by means of rock and gabion water filtration as well as sedimentation pools. Criticism notwithstanding, the jury greatly valued the author’s objective to regard infrastructure as more than a mere servant to utility – to be reclaimed as a truly public resource and thus as a matter of design.
In the last decades, an over-exploitation of resources, population growth, intensified tourism, aquaculture, and industrial production have caused a progressive coastal degradation in Thailand which endangers local ecosystems and communities. This project recovers the coastal area of the Northern Gulf of Thailand, through the re-creation of a mangrove forest in Khlong Dan municipality. The design solution consists of three small-scale operations that work in synergy to create a massive intervention in the sea, on the shoreline and in the inland.
area. Several kilometers offshore, eighty triangular floating breakwaters are placed in the sea to reduce the intensity of waves. Rather than resisting nature with heavy foundations, these light structures do not damage the seabed and can be removed 30 years after installation, once the mangrove reforestation is well established. Along the shoreline, a system of bamboo docks further absorbs the wave energy, traps the sediment needed for the mangrove afforestation while generating a trail to promote ecotourism in the area. A small pavilion is positioned on the shoreline to serve as a clam embryo shelter and observation tower. Made of biodegradable materials, the architecture will progressively decompose over the next 30 years.

Creating a poetic atmosphere

This very complete and detailed proposal addresses the critical environmental issue of coastal erosion in Thailand through a convincing multi-layered and multi-scale design. The project shows a careful analysis of the site and a thoughtful integration of environmental technologies into the landscape and architectural design. The Holcim Awards jury Asia Pacific particularly appreciated the scientific-driven approach where high- and low-tech elements are interspersed, leading ultimately to an almost poetic atmosphere.

“Developing a sustainable future from local wisdom combined with new innovations” Dolathep Chetty
Buoyant Amenity
Floating sanitation facility upgrade
Jakarta, Indonesia

Jakarta’s communities who live along the river have never been equipped with proper sanitation facilities, entailing a series of impacts on both the ecosystem and people’s health. The design proposed by this project reconciles the ecosystem of the river with the local community through an affordable, culturally aware and environmentally attentive solution. The idea is to revitalize existing vernacular structures, embedding sanitary features with an optimized plant-based filtration system. Floating platforms made of bamboo and wood are placed along the waterway in a diverse array of functions: a roofed space hosts a toilet and a washing area for the residents, water is provided through rainwater tanks, a coral allows for catfish breeding while several containers are used for hyacinth cultivation, essential to filter lead, mercury, strontium and other carcinogenic compounds found
An effective and modest gesture

The Holcim Awards jury Asia Pacific acknowledged the project’s endeavor to highlight the urgency in finding solutions for the urban poor in South East Asia. The project was found simple yet effective and well-contextualized. The proposed solution upgrades a vernacular typology to make it more functional and environmentally sound: a modest gesture that once implemented and multiplied across a larger scale can provide a remarkable impact on the environment and on people’s quality of life.

in the river. A deck that connects the edge of the river to the platform acts as a trash collector. A major asset of the project is to propose an easily replicable system so that environmental benefits can grow incrementally until the benefit at the scale of a city or territory becomes tangible.

“Leveraging water to increase the standard of hygiene and well-being”  Rionaldi Gunari
In response to the worldwide spread of air-tight, fully glazed buildings, that in countries like India can largely fail to meet occupant’s expectations and comfort requirements, the S Nine project suggests an efficient and environmentally conscious façade system for hot semi-arid climates. The façade design is based on the use of thin slabs of natural red sandstone, assembled so as to create a grid of planters and fenestrations. Vegetation becomes a distinct trait of the building skin, offering a charming natural atmosphere inside while providing a lively character to the neighborhood. The semi-permeable natural skin also helps increase indoor comfort, serving as shading device for the building and as a regulator of temperature fluctuations. The stone fins stand only on two vertical metal elements that embeds also water supply and discharge systems. The whole façade grid is independent from the main building.
Moving façade design away from trends

The Holcim Awards jury Asia Pacific highly commended this very developed and advance façade system that went all the way from a concept, to prototype and full-scale construction. The solution was considered very appropriate for the Indian climatic context, well-rooted into the local cultural dimension and aesthetically compelling. The modularity and ease of implementation were compelling aspects that make the system relevant not only for new construction but also for retrofit interventions. The proposal successfully demonstrates that façade design can move away from international trends to be rethought to meet the needs of the territory locally.

“Combining modern technologies with regional materials and methods”  
Divya Jyoti
Metropolitan villages

Agrarian Enrichment near Lanzhou, China
Development is not as advanced in northwest China as it is in the east and south of the country. The French architect sees this as an opportunity for a more sustainable approach and shows that agricultural tradition and urbanization need not be mutually exclusive.
Caravans on the northern Silk Road once passed through Gansu Province, which lies between the Chinese heartland to the southeast and the highlands of Tibet, the Taklamakan and Gobi deserts, and the Inner Mongolia plateau to the northwest. The provincial capital of Lanzhou has traditionally been important because it was one of the few places to cross the Yellow River. On the outskirts of this city of nearly four million, 37 kilometers to the southeast of the center, lies the rural district of Yuzhong, where the architect and urban planner Jean-Pierre Pranlas-Descours and his architectural firm are designing an urban development project.

“I could only see a strange, very large shadow on the horizon,” Jean-Pierre Pranlas-Descours recalls of the night when he first arrived at this place. It was not until the next day, when he was reconnoitering the area, that he saw “this huge mountain wall,” part of the Loess mountains that surround Lanzhou. “I found this quite astonishing because Yuzhong is already at 1,572 meters above sea level. The mountains rise to over 3,000 meters. It can get very hot and very cold here, plus it’s very dry. That’s part of the challenge of this project.”
Jean-Pierre Pranlas-Descours trained as an architect at the École d’Architecture de Versailles and obtained a Master of Medieval History at the École des Hautes Études en Sciences Sociales. After winning a competition of the French Academy in Rome, he worked at Villa Médicis for two years. He is also a professor at the Ecole Nationale d’Architecture de Paris-Malaquais and was a visiting professor at City College in New York. He has taught at many architecture schools in France as well as in Peru, Italy, Spain, and Holland. With his office, Jean-Pierre Pranlas-Descours specializes in architectural and urban planning projects.

How did this project come about? Jean-Pierre Pranlas-Descours: I’ve worked on many urban development projects over the past 25 years, mainly in France, and in recent years also on several in China, so this was not new for me. What’s particularly interesting about this project are the conditions, and not just the climatic ones. It’s not a showcase project in a metropolis like Beijing, so there’s less pressure, and it’s also easier to work with the local people here. We’re not a big office, only about ten people, and I like to stick to that size because it allows me to have better control of my projects. Our team includes people with different skills, not only architects but also landscape architects, and this has been particularly helpful in this multifaceted project, because otherwise we mainly work on classic urban design projects.

Who else is involved in the project? We’ve been working with the French public company CSTB – the Centre Scientifique et Technique du Bâtiment. This is a large institute that mainly conducts research for the construction industry. It has a new department for sustainable urban development and one of the best specialists for climate and water. The Chinese and French governments agreed to support the creation of a new label for environmentally compatible developments, and China called for proposals for the design of ten eco-cities. We saw this as an opportunity to apply our ideas and expertise in part of Yangzhou because the authorities there really want to develop a new type of sustainability.

And who is involved on the Chinese side? Liaison with a Chinese organization is a prerequisite for these projects. We were commissioned by CSUS, the Chinese Society for Urban Studies, a large development
What was your approach for the project?

It’s always important for me to first thoroughly analyze the situation. The first thing that interests me about a project is the issue of regional context, and in particular the relationship between landscape and architecture. This includes the history of a place, because it’s an extension of the geography. My work has revolved around this relationship all my life. This project is all the more interesting because the place is situated between two large mountains with a river valley in between. The scale worried me a little at the beginning. The clients were saying, okay, you can make a park on this riverside piece of land – it’s only about seven kilometers long.

What were the programmatic requirements for the project?

company, and the Yuzhong regional government, which provides the budget. My contract, however, is with the French CSTB, which serves as my employer. An interesting aspect of this project is the large planning area: 11.38 square kilometers. We were able to discuss basic issues with many officials, including the mayor, the vice mayor and the technical services of the city: What is the situation of the city? What has been done so far? What kind of urban development is wanted in Gansu Province through 2030? Our intent is to show an interesting, alternative approach to sustainability with this project. Conventional development strategies are well known throughout China. They can build another development with twenty high-rises anytime.

How has Yuzhong developed over the past 30 years?

Thirty years ago, farming was presumably prevalent everywhere around here, and the mountains, which are now bare, were still green. With urbanization came extensive construction and the loss of vegetation – this damaged the regional ecosystem and led to the land drying up.

“Show an interesting, alternative approach to sustainability”

Jean-Pierre Pranlas-Descours

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What were the programmatic requirements for the project?
We were largely free to define the scope ourselves. We decided that we wanted to include agriculture, because it faces great challenges. In the recent decades, China has lost vast amounts of farmland due to expanding urbanization of the countryside. At the same time, the need for agricultural products has grown. Since water is the basis for agriculture, we studied the local water situation. When the mountain forests were cut down many years ago, the capacity of the soil to absorb rainwater diminished, and today one must drill deeper and deeper into the ground to find water. The natural water reservoirs are gradually being lost. We proposed designing a concept for the entire settlement and involving all the residents in the process. You have to talk to the people and get them interested.

**What measures did you propose?**
The Chinese often adopt a standard, practical approach to development, but they are also open to experimentation. We French like to take a less practical approach by injecting and experimenting with new ideas. At Yuzhong we found that the district is still agricultural but that modern development has also begun. So we planned a mix of uses: agriculture and urbanized housing. We tried to make people understand that these are not mutually exclusive. And we developed a sustainable strategy in terms of energy and water. People are generally in favor of preserving agriculture because they know they need it.

A distance of 37 kilometers is nothing in a land like China, says Jean-Pierre Pranlas-Descourts about the distance between Yuzhong and downtown Lanzhou. Accordingly, as the city has grown, Yuzhou’s agricultural land
“It’s about a morphology of architecture and agriculture”

Jean-Pierre Pranlas-Descours

has shrunk and become fragmented. With his project, the architect and urban planner proposes an expansive transformation in the Nanhe River Valley. The traditional farmlands are to be preserved and integrated into an urbanized residential district. The objective is to achieve a new type of development that is more productive and sustainable.

Stretching along the river, in addition to a park, a new ensemble of six “metropolitan villages” will be created, with agricultural land between the residential sections. The redeveloped zone will be supplied by an improved system of spring water and rainwater collected from the hills and rooftops. Water will be distributed to the agricultural fields through a series of pre-existing canals that will be covered and will also serve as pedestrian paths. It will then flow into the river.

Why is water such an issue in this region?
In some spots there’s plenty of water and in others there’s none. You have to solve this problem before you even start with any modern form of urbanization. But how? I asked a very good engineer of CSTB about this, and he replied, “Oh, we could change the climate.” That’s very ambitious, of course. But we could, for example, reforest the mountains and plant groundcover to reduce evaporation from the soil. This would in fact improve the climate, and temperatures would drop by 2 to 3 degrees. At the foot of the mountains we want to build a system of so-called SAUL basins, Structures Alvéolaires Ultra Légères, to create a water reservoir. With this system, we estimate that we can collect and store a million cubic meters of water per year to support the local agricultural industry. In my opinion, this is the basis for the process of urbanization here.

You intend to avoid the common pitfalls of urbanization and combine agriculture with housing developments in order to achieve densification. Why do you call the result “metropolitan villages”? 
It’s meant to be somewhat provocative. It’s about a morphology of architecture and agriculture. Transition is the most important thing: You pass from urban life on the street to a natural space, a sort of farm, and then into the fields. Farmers should also live here – and cultivate the land.

**How do you propose to provide mobility for this satellite city of Lanzhou?**
Transportation in China works well in terms of inter-city connections by high-speed train. There is also a train connection from Lanzhou to Yuzhou, which is why a new train station is also planned on one edge of the new development zone. The problem in China is local traffic, so a metro has been planned – but more likely we’ll see a light rail connection and a network of mini-buses and bicycle paths.

**What is the current status of the project?**
It was developed and approved in 2019. Because of Corona restrictions, we have been unable to go there again. Once we can return again, we will propose a master plan based on our technical clarifications and calculations regarding energy and water. Obtaining eco-city certification is essential for the implementation – and for the funding as well. So this will still take some time, we can imagine to realize the project in five years. But keep in mind that completing such a project in Europe would probably take 30 to 40 years.
Upgrading heritage

Ancient Rejuvenation in Shenzhen, China
Shenzhen is a prime example of a boomtown that has achieved global importance seemingly out of nowhere. But the rapid growth has also led to some undesirable developments in the southern Chinese metropolis. With a few targeted interventions, the architects raised the quality of life in a timeworn historic district.
The miraculous story of Shenzhen tells of how, within 40 years, a sleepy fishing village has become a technologically leading and vibrant metropolis with a population of around 13 million. This story is accurate only in part. Yuxing Zhang of the architecture firm ARCity Office points out that Shenzhen was by no means insignificant. “The area of present-day Shenzhen has a very long history dating back to the Han Dynasty, which lasted for about 400 years until 220 AD, and is still visible in numerous historic sites. Many of the old villages consumed by the present-day Shenzhen have survived amid the modern development.” Building on this heritage is the project “Rejuvenation of Shajing Ancient Fair,” which Yuxing Zhang planned and implemented along with Jing Han, co-founder of ARCity Office.

Shenzhen is located between the cities of Guangzhou (formerly Canton) and Hong Kong, former British crown colony and a Special Administrative Region of China since 1997. It was a small city of around 30,000 in 1979 when it was declared a special economic zone. Thanks to the special rights it carries, Shenzhen was able to develop into today’s metropolis, a location for many leading technology companies from around the globe. These include the world’s largest electronics manufacturer, Foxconn, which manufactures devices for Apple and other companies and employs an estimated 300,000 people.

The economic boom led to a massive influx of people from all over China. They came seeking work and prosperity. According to a United Nations report, Shenzhen was the world’s fastest growing city from 1980 to 2010. Hong Kong’s South China Morning Post wrote in late 2020 that the population was in fact well above the official 13 million.

The prolonged urban development boom
has resulted in a spectacular skyline. Listed by number of skyscrapers in 2019, Shenzhen ranks third after Hong Kong and New York City. The aim is to increase the city not only in terms of quantity, but also in terms of quality. According to the South China Morning Post, China has a detailed reform plan to make Shenzhen a “global benchmark” by mid-century, “a model of high-quality development.”

Yuxing Zhang obtained a Doctor of Architecture degree from Southeast University in Nanjing in 1995. He is the initiator of the Bi-City Biennale of Urbanism/Architecture (UABB), the most important architecture biennale of China, as well as director of the academic committee and chairman of the UABB Foundation.

Jing Han earned her Doctor of Architecture degree from Tongji University in Shanghai in 2013. She is also an architecture curator. In 2017 Yuxing Zhang and Jing Han founded ARCity Office in Shanghai. The office has developed projects in Shenzhen and Shanghai.

What impact has the unprecedented growth of Shenzhen had on the old districts of the city?

Yuxing Zhang (YZ): During the boom, many of the old villages were swallowed up by the city and urbanized. The problem is that Shenzhen’s land area is severely limited – the city has run out of space. This forced the administrators to adopt the strategy of massive urban redevelopment, which necessitated the demolition of many old buildings. Today, most of the land that remains available for potential redevelopment is part of these old villages and historic districts – like Shajing Ancient Fair, where we developed and implemented our project.

Shajing Ancient Fair is the largest remaining historic district of Shenzhen, with a core area

“We hope this project has opened our clients’ eyes as well” Yuxing Zhang

“An experiment for the future development of urban villages” Jing Han
of about 26 hectares. It includes the Longjin River, a thousand-year-old architectural site from the Song dynasty, and hundreds of old houses, ancestral halls, ancient wells, and other historic sites. Because of the advancing deterioration of the old urban fabric, many young people have left the district which today also contains many temporary buildings, mostly inhabited by newcomers from rural areas.

What's the problem with renovating a deteriorating district?

YZ: Demolishing an old building and replacing it with a new one typically creates economic value in the short term. But this approach destroys the urban and social fabric because it fragments communities and inflates real estate prices. Of course, this also enhances the city’s competitive position. But in our view, this is no model for sustainable development. Looking at our project as an example, the problem is that the central part of Shajing is mixed: there are urbanized neighborhoods with high-rise buildings, but they are still on rural land. Besides the historic parts, there are many buildings that were erected some 30 years ago as housing and will probably be demolished soon because they are not protected. After that, real estate companies will come in and redevelop the area.

You intend to counteract this by making an old neighborhood attractive again with “Rejuvenation of Shajing Ancient Fair.” How did this project come about?

Jing Han (JH): The project was initiated by the regional government’s Shenzhen Urban Institution, the Shajing sub-district office, and China Resources Land Group, a large real estate developer based in Hong Kong. They published a request for proposals for the development of a new type of project. Because our firm specializes in urban revitalization, we submitted a proposal, and we were selected and awarded the commission. The scope of our mandate also includes various aspects related to sustainability and innovation, design and art, and urban curation.

What is special about this project?

JH: The government originally planned to demolish and redevelop the entire Shajing Ancient Fair district. But now it’s reconsidering its strategy, so perhaps some of these urban villages can be preserved after all. In this context, our project is an experiment regarding the future development of urban villages: Should urban renewal continue to use the approach of demolition and redevelopment, or should the original character of the development of a new type of project. We feel like we’re in an urban laboratory” Jing Han

“We feel like we’re in an urban laboratory” Jing Han
villages be preserved? In this respect there is no consensus yet among the agencies involved. We believe that urban villages with significant historic and cultural heritage suffer from a lack of adequate protection and revitalization. We think the heritage of such villages should be used to generate new spatial and social values, thereby also exploiting the economic potential of the place. That’s why this project is an experiment. We feel like we’re in an urban laboratory where we can test possibilities and see the results. We hope that through this project we will be able to find and advance a universal model that can be broadly applied.

“Talk to the people to find better ways of doing things” Yuxing Zhang

This sort of project is typical for ARCity Office. The two founders Jing Han and Yuxing Zhang emphasize that they both specialize in the interaction of architecture with urban design and therefore work together on every aspect. The two are not from Shenzhen but have lived there for about 20 years. Perhaps the most amazing aspect of the “Rejuvenation of Shajing Ancient Fair” project is that the construction, which began in September 2019, was completed in less than three months.

Jing Han and Yuxing Zhang’s project demonstrates a gentler alternative to demolishing and rebuilding the district. The interventions consist of a careful combination of preservation and revitalization measures at six sites along the small Longjin River. These include the transformation of a crumbling old building into an elevated scenic walkway and the transformation of a fire station into a public stage for Cantonese operas.

The intervention of the previously polluted river is central to the project. The river now flows on two levels: The polluted water flows in the lower level, in a sewer canal, and the water purified at a nearby sewage treatment plant flows in a separate upper level, which can be followed along a boardwalk that features seating areas and views of the new water gardens. This emphasizes the importance of clean water. The project also includes the use of low-carbon building materials and passive cooling systems. The concern for sustainability is also seen in stones from local ruins being used as pavers for a new sidewalk. “The combination of old and new elements is the characteristic feature of our project,” says Yuxing Zhang.

The interventions create new recreational spaces, revitalize the local cultural heritage,
and provide local job opportunities. In parallel with the project, ARCity Office curated the site-specific exhibition “Time Drift – Shajing Relic Reborn” and organized various public activities for residents. This was done to help them discover the unique aesthetic value of the historic attributes of the neighborhood. Through the creative designs and the exhibition and activities, the architects aim to create new places for cultural integration of local communities.

**Why have you emphasized the importance of artists and art institutions?**

**JH:** Our project is not only about urban renewal but also about creating a culturally vibrant city. Especially through the exhibition, many artists and art institutions were able to participate in the project.

**YZ:** During the exhibition, I learned that there were Cantonese opera groups nearby that could not find a place to perform. Thanks to the newly created community space, they were able to perform here spontaneously. Other events followed soon thereafter. In this way, our project area quickly became a venue in the public arena.

**Were residents involved?**

**YZ:** Yes, throughout the entire process we tried to talk to them in order to integrate them – because in projects like this, sometimes there are disagreements. We have to talk with people to find better ways of doing things.

**JH:** This project was an experiment. Even some of the players on the client’s side had no clear idea of what the end result would be. This shows the uncertainty that comes with an innovative experiment; most of the ideas we implemented were initially just suggestions. Many locals also took a skeptical stance at first, although they welcomed the improvement of the environment. They feared that the project would encumber their daily lives. The biggest difficulty of the project was the initial lack of consensus and the mistrust. We overcame this by choosing

“Creating a culturally vibrant city” Jing Han
the most open and transparent way possible to communicate the ideas of the project with as many owners and residents as possible. In order to understand everyone’s needs, we had to be on site and let them participate in the process of the project.

How did the locals react once the project was implemented?
YZ: They liked it right from the start, and even the skeptics changed their minds. This also has to do with the fact that the locals could see very well how the place changed for the better during the very short construction period of under three months.

How is the place used now? Are there also visitors from beyond the district?
YZ: During the week, it’s mainly the residents who enjoy the new amenities in their daily lives. On weekends, people from other parts of the city and even from outside come to experience the change the project is bringing.

Do you expect “Rejuvenation of Shajing Ancient Fair” to influence other urban projects?
YZ: Of course we hope so, because we see that the locals have accepted this project and like it very much. We’re happy when we see children gathering after school or elderly people playing mah-jongg in a renovated house. We hope this project has opened the clients’ eyes as well, and that there will be more projects like this in the future. It’s possible, because we recently learned that the government has made the decision to preserve the neighborhood as a whole.

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From box to space
High-Performance Tower in Australia
The High-Performance Tower in Sydney could fundamentally change the way sky-scrapers are built in the future. It places great emphasis on the quality of the workplace – and delights the building users with seven indoor parks.
“Gain confidence on the way to a better construction method” Wolfgang Kessling

When you enter the offices of Transsolar at the Campus of Ideas, a repurposed former industrial zone in Munich, you’re struck by the abundance of indoor plants. Many of them are magnificent banana trees. They were grown by Wolfgang Kessling, a partner at Transsolar and a sought-after global expert on climate-friendly construction and adaptive comfort concepts for buildings. “We need to be connected with nature,” holds the physicist and climate engineer: “I see the overwhelming effect that plants have in our office. Granted, plants make work, but they are also extremely enriching. People like to work in their presence.” There’s no need to dig out studies to back that up, he says: “After all, I constantly experience this resonance in daily life.”

Good workplaces that promote all-round wellbeing and inspire top performance are standard at Transsolar. Wolfgang Kessling aims to provide them elsewhere too. For example, at the other end of the world: in Sydney, Australia. There, he has helped to shape a project that could substantially change the way high-rises and skyscrapers are built.

Wolfgang Kessling obtained his Ph.D. in Physics at the Fraunhofer Institute for Solar Energy Systems in Freiburg, Germany. He was project leader for the installation of the “Perfumed Cloud” at the Louvre in Abu Dhabi and the Gehry building for Novartis in Basel, Switzerland. In Asia he worked on the first zero-energy office building in Malaysia and the innovative comfort and energy concept of the giant cooled conservatories at the Gardens by the Bay in Singapore.

What's the story behind the High-Performance Tower in Australia?

Wolfgang Kessling: Founded in Sydney in 2002 by university friends Scott Farquhar and Mike Cannon-Brookes, Atlassian has grown to become Australia’s largest technol-
Atlassian sought a suitable site for a new building to accommodate their growing workforce – and found the right one next to the Sydney Central Station, where the city is planning an innovation and technology precinct. The new Atlassian Sydney headquarters will be a catalyst for development and serve as the gateway to the new district. The former Inwards Parcels Shed and Parcels Post Office stands on the building site. Built in 1906 and now a registered historic building, it is used as a youth hostel today. The building will be repurposed for public use, and the new office tower will be built above it. The youth hostel will be moved into the lower floors of the tower.

How did you become part of this project?
The Los Angeles-based architect Edwin Chan was already working for Atlassian, and he was commissioned by the company to do a test design. Edwin put me on the team; we had already worked together on the Gehry building in Basel. The team for the High-Performance Tower also included the renowned structural and façade engineer James O’Callaghan and others. We jointly developed the test design over a period of nine months, meeting every four weeks, sometimes in Sydney, sometimes in Munich, sometimes in San Francisco. The collaboration was based on strong mutual trust, and it was successful because we were all pursuing similar ideas.

Namely?
We were never primarily concerned with simply minimizing the carbon footprint.

During the Covid-19 pandemic, the home office became a new standard around the globe. Will we even need new office buildings in the future?
We need them right now, because the question is: What’s going to bring people back into the office and how will spaces be used differently in the future? How can we create excellent workplaces and leisure spaces so that people will not only enjoy coming into work, but also get the most out of the building when interacting with it both physically and digitally in order to do their best work? This is all part of the battle for tech talent that companies are going through, you have to offer more than just good pay and growth opportunities. A good working environment is a very attractive asset.
Instead, we engaged the client in a deeper investigation of what makes a good workplace. What should the workplace of the future look like? It was clear to us that we wanted to create a connection with the environment, with nature. The guiding principle was: from box to space. Closed-off office units are no longer in keeping with the times; what’s called for are stimulating environments that meet different needs. There should be areas where people can fully concentrate on their work, and there should be other areas that are ideal for informal exchanges or leisure. So we put people first. I’m convinced that this is the right approach. If you think about everything from the point of view of the people who use the building – for example, aspects such as daylight, air quality, thermal comfort, or the environment – the result is architecture with a very special DNA. Designing high-rises is difficult in many regards, but it’s essential that we try out new approaches here.

In order to develop a test design, the team went to Atlassian and analyzed how work happens there – to be able to see things from the employees’ perspective and suggest effective improvements. The test design ultimately served as the basis for an international competition with a large field of prominent participants. “The brief didn’t ask for an engineering concept, but a building concept,” says Wolfgang Kessling. The competition was won by SHoP Architects in New York in partnership with Australian firm BVN. The architectural team fully integrated themselves into the team – and proposed spectacular architecture: an elegant tower of steel, concrete, wood, and glass rising above the historic postal building. The steel frame supports seven concrete decks. Individual, so-called “habitats,” are created between these decks, each with a four-story wooden infill structure. A steel exoskeleton wraps everything and supports the glass building façade.

Each habitat comprises three zones. Toward the northwest is a park that extends the entire height of the habitat; it occupies...
about 10 percent of the floor area. Behind this rises the four-story office structure. The open zone beside the park, another 15 percent, is naturally ventilated by the park. Here are meeting and communication areas and informal spaces where people can play table tennis, have a drink together, or hold a video conference. Behind this is a zone which is mechanically ventilated and conditioned and where focused work is intended. So the Atlassian employee sits at a workstation in the back zone and solves a problem at the computer for maybe four hours. Then he needs a break and goes to the natural ventilated zone, where he has a coffee with some colleagues – and then he can go to the park to relax. All three zones are designed for excellent comfort. There are horizontal lines of sight into the greenery from nearly everywhere in the building. Although the High-Performance Tower will be 180 meters high, one always feels as if one is in a four-story habitat. Wolfgang Kessling sees this as the human scale of the building.

The media has been calling the High-performance Tower the world’s tallest wooden building. But in fact the main structure is concrete and steel...

You can’t say that one building material is good and another is bad; each serves its purpose. Wood, for example, binds a lot of carbon, which is increasingly important in view of climate change. But such a tall building needs steel and concrete for structural reasons. These building materials can be combined well with wood, and overall, something very good can be created in this way. The carbon footprint of the hybrid steel-wood construction is 50 percent lower than that of a conventional building. With the High-performance Tower, we don’t want to switch from proven construction methods to something completely new but rather gain confidence on the way to a better construction method. We want to try out new techniques and gain experience. Everyone can imagine a four-story wooden building, there is little mistrust in that.

Where will the wood come from?
This question sparked heated discussions in our team. In Europe, cross-laminated timber is widely used and there is an entire industry behind it. Australia doesn’t yet have such an industry, so we would probably have to import the wood, which is not ideal. But with pioneering work, you often have to take a detour – and by the time others follow, the local industry will be there. It’s a similar story with steel. In Australia, the steel industry is still very carbon heavy. If you want to be as sustainable as possible, you either use steel...
from somewhere else or you wait ten years for the local industry to develop. There is this kind of friction in any transformation process.

The steel exoskeleton supports the double-glazed building skin. Depending on the climatic conditions, the park windows open to a greater or lesser degree. The park is protected from rain and wind. Cold drafts are prevented, but when air movement would enhance comfort, it is permitted. Because the park is not heated or cooled, shading plays an important role in the summer. In winter, on the other hand, the park can get a little chilly. Nevertheless, Sydney has the ideal climate for this concept.

Is Sydney the only place where the High-Performance Tower could be built?

Our design is very much based on local conditions, but similar projects can also be realized elsewhere. We are currently working on a competition in Hong Kong. The climate there is much more humid, but that doesn’t mean you can’t have contact with the environment through thermal zoning. Tropical climates are more suitable for such projects than Moscow or Canada, where the differences between winter and summer are so extreme. The construction boom is also taking place in tropical climatic zones.
Photovoltaic elements will be mounted on the façade louvers. This system will cover about five percent of the building’s electricity needs. That may not sound like much, but Wolfgang Kessling says photovoltaic installations on façades of high-rise buildings are still a no-go in Australia – mainly because of building code and fire safety regulations. “I would have liked to see more photovoltaics, but under the present circumstances this is an interesting contribution. And covering more than five percent of the electricity demand with photovoltaics on the façade is technically difficult to achieve for a high-rise building.” The additional energy required by the building will come exclusively from renewable sources. For a building of this size, however, it’s not just a question of where the energy comes from, it’s also a question of energy efficiency.

**Atlassian is partnering with a developer who will build the High-Performance Tower. One can assume that the developer will place greater emphasis on commercial aspects.** In fact, there have been many discussions with the developer in order to de-risk the delivery of the building, whilst maintaining the project vision. We are all committed to economic efficiency. But of course the developer also sees the qualities of the High-Performance Tower as a significant asset. After all, there are plenty of low-cost buildings around. Intelligent buildings are valued and are in demand. For me the central question is not “Is the square meter more expensive than in other buildings?” but rather “Is the square meter the better one – and can a higher price be justified?” Finding the balance is highly interesting, so I am grateful for the discussions with the developer. When such a large building works for a developer, it has an enormous signal effect – and then doors open. In Sydney, at any rate, our project enjoys a very high profile and deviates from everything that has been built in the city so far. That can be a bit unnerving, and it calls for courage.

Global Holcim Awards Commendation and initial project submission pages 47 and 220
Expressing perfect proportions

The golden ratio, also known as the golden section, is considered an example of divine proportion. We encounter it everywhere: in nature, in art and architecture, and in the symbol of the Holcim Foundation for Sustainable Construction, which has been featured in its Awards trophies since the first competition.

In 2021, Holcim unveiled its new Group identity as a milestone in its transformation to become the global leader in innovative and sustainable building solutions. As an initiative of Holcim, the Foundation reflects this evolution in its own identity by taking on the colour scheme of the sponsor company with the familiar icosahedron. This symbol is derived from the icosahedron, the most complex of the five platonic solids. Three rectangles, touching opposite corners of the icosahedron, positioned at 90° to each other, and intersecting at their centers, can be inscribed within the solid.

This “reduced” icosahedron is the symbol of the Holcim Foundation. Bearing the proportions of the golden ratio, it stands for the objectives of the Foundation: promoting sustainability in the way we build by striving for balance and harmony – between today and tomorrow, between resources and consumption, between needs and opportunities.
Before computers or photocopiers existed, the pantograph was an indispensable instrument used to reproduce drawings at an equal, larger, or smaller scale. Adjustable somewhat like a pair of compasses, the pantograph works on the principle of the intercept theorem. The instrument was invented in 1603 by German astronomer Christoph Scheiner. Pantograph comes from Greek roots meaning “all, every” and “to write.” The pantograph is a mechanical linkage of four arms connected with hinged joints to form a parallelogram. The arms move in fixed relation to each other.

Pantographs were formerly used especially in cartography and geodesy to make scale copies of maps and plans. The pantograph was also used to draw patterns, stencils, etc. A unique variety of pantograph plays an important role in connection with the Holcim Awards. These specially designed instruments – golden mean gauges – measure the golden ratio and transfer golden proportions to other scales – and are presented to the winners of Holcim Awards Acknowledgement prizes in recognition of their projects.

Modulor
Holcim Awards Next Generation prize
Throughout his life, Swiss architect Le Corbusier (1887 to 1965) sought rules and laws in art, in nature, and in architecture. He found no system of proportions that satisfied his needs, so he developed one himself – the Modulor. The Modulor is the most important modern attempt to give architecture mathematical order that reflects both the golden ratio and the proportions of the human figure – because for Le Corbusier the human being was the measure of all things. The Modulor combines imperial units of measure with the metric system. The Modulor is based on a human figure 183 centimeters or six feet tall. From this Le Corbusier calculated a geometric sequence of intervals that relate to each other in the golden ratio – body height and navel level for example display the ratio 183 to 113.

The Modulor: a human figure with a raised arm supplies the main points of spatial division – foot, solar plexus, head, fingertips of the raised arm – three intervals that display a series of golden ratios. A model of the Modulor is presented to the winners of Holcim Awards “Next Generation” prizes in recognition of their projects.

Icosahedron
Holcim Awards main prize
Images and description page 5.
Adapted prize winner announcements
The Awards trophies for the winners in the Next Generation category will be presented at the Holcim Awards Lab in Chicago, USA early in 2022. The winners of the global Awards and Commendations as well as all regional Main Category prizes (Awards and Acknowledgements) received their trophies at a special event at the end of 2021 at the 17th Venice Architecture Biennale or directly in their home country if a trip to Italy was not possible for health or safety reasons. A summary of the Awards Ceremony in Venice, hosted by Hashim Sarkis, Head of the Global Holcim Awards jury and curator of the most recent exhibition at the Biennale, is also available online.

www.holcimfoundation.org

Mid-2021 the Holcim Foundation experienced a first in connection with the announcement of the winners of the Next Generation prizes in the 6th Awards competition. They were published online region by region over the course of a week, always with the first broadcast at midday in the corresponding world region. An average of over 400 people watched the initial broadcasts live, and the films have since been viewed by thousands of visitors via the Foundation’s website or directly on YouTube.

Marilyne Andersen, Head of the Academic Committee, and Edward Schwarz, General Manager of the Holcim Foundation, introduced the 21 Next Generation winners individually with short films and held a technical discussion on each project.

Marius Leutenegger, founder of Textbüro Zürich, produced short videos of all 54 winning projects of the 6th competition presented in this book, accompanied by 54 video statements by the authors. They explain what winning a prize in the Holcim Awards means to them, their project and their career and also what is particularly sustainable about their project that convinced the judges to honor them with a prize. All these videos can be viewed online.
“Winning this Holcim Awards prize...

...allows the project to have a kind of a multiplier effect”
David Benjamin, page 58

...provides our project with international credibility, acceptance and attention.”
Joseph Kigozi, page 182

...gives the project certainty and continuity”
Ignacio del Rio, page 140

...enables us to test our project in the hot-aired desert”
Forrest Meggers, page 96

...promotes new ideas for sustainable construction in a global way”
Chamss Oulkadi, page 62

...gives us the opportunity to present our ideas to the globe”
Tomas Quaglia Martinez, page 142

...helps us to prove that this project is very meaningful”
Mai Lan Chi, pages 38 and 226

...is a great boost of confidence”
Avnesh Tiwari, page 228

...proves that developing countries don’t need to follow the developed ones”
Ashkan Rezvani-Naraghi, page 180

...is a validation of the importance of co-design processes”
Mason White, pages 92 and 116

...means that we are on the correct path of a more holistic perspective”
Gustavo Utrabo, pages 134 and 156

...lets Michael Sorkin live on in this project”
Naomi Davis, pages 90 and 108

...is a recognition of our approach to transform gray into green”
Kongjian Yu, page 224

...is a validation of our research”
Edgar Mazo, pages 136 and 162

...helps us significantly to raise funds to complete the construction”
Aziza Chaouni, pages 30 and 178

...is a reward for 40 years of work in an architectural context”
Barbara Buser, pages 12 and 52

...will keep the project moving forward across multiple phases”
Dan Adams, pages 94 and 124

...is a validation of our concept we are working with”
Aldo Hurtado Mora, pages 22 and 132

...generates further discussion on a global scale”
Danielle Gregorio, page 146

...demonstrates the benefits of a single project for the territory at large”
Jean-Pierre Pranlas-Decours, pages 216 and 240

...is a strong support for the concept we are working with”
Robert Schmitz, pages 56 and 82

...highlights spaces that were out of our field of interest for a long time”
Florent Revel, page 64

...will help us to rehabilitate more and create more jobs”
Shata Safi, pages 170 and 192

...is a great boost of confidence”
Avnesh Tiwari, page 228

...will help us to rehabilitate more and create more jobs”
Shata Safi, pages 170 and 192

...is a great boost of confidence”
Avnesh Tiwari, page 228

...demonstrates the benefits of a single project for the territory at large”
Jean-Pierre Pranlas-Decours, pages 216 and 240

...highlights our project as a game changer for the industry”
Robert Schmitz, pages 56 and 82