Fourth Holcim Awards
Regional and global Holcim Awards competitions for sustainable construction projects and visions 2014/2015
Exhibition of all 62 prize winning projects in the 4th cycle of the International Holcim Awards in Zurich.
Introduction by Edwin Heathcote

A new horizon for sustainable architecture

Geographical overview

Location of all prize winning projects

Members of the jury

Prize winning projects

Gold for Articulated Site, Medellin, Colombia
Silver for Post-War Collective, Ambepussa, Sri Lanka
Bronze for The Dryline, New York City, USA

Finalist projects

Europe
North America
Latin America
Africa Middle East
Asia Pacific

Members of Board, Academic Committee and Office
“The Holcim Awards are a great chance to present professional skills and smart design to the public”

Matthias Schuler, Germany. Professor of Environmental Technology, Graduate School of Design at Harvard University; Founder of Transsolar Energietechnik.

Meisa Batayneh Maani, Jordan. Founder and Principal Architect at Maisam Architects & Engineers.

“The Holcim Awards bring together an enriching variety of ideas and celebrate people’s ambitions to live better lives”

A new horizon for sustainable architecture

By Edwin Heathcote, architecture critic, The Financial Times, London, UK*

Sustainability has become a cliché. It is a word used so often and so carelessly that it can now be used to defend the most banal buildings and an architecture of the most conspicuous consumption. Perhaps precisely because of this misuse and abuse of the word, there is a sense that a new generation of architects is simultaneously building and towards the landscape and the civic realm of public participation.

Happily, that is exactly what we are seeing in this 4th cycle of the International Holcim Awards competition. There seems to be a deliberate departure from signature architecture which has dominated architectural press and graduate exhibitions for decades. Instead, there is a growing awareness of social issues and the way architecture can be used to reinforce community and increase the resilience of what look like increasingly fragile cities. Marc Angélil, the chair of architecture and design and senior dean of the Department of Architecture at ETH Zurich, Switzerland, who has been present on all five regional Holcim Awards juries 2014, said: “There has been a transformation in attitudes to sustainability. Ten years ago there was a general understanding, but the projects have become more sophisticated, on the one hand offering the possibilities of aesthetics and on the other, social agency. The responses have become far more complex.”

The judges concurred that where there had once been a visible hierarchy in the quality of designs, with Europe and North America leading the pack for sophistication and ambition, that gulf between what we might call the Global North and the Global South has receded. This round of submissions shows, if anything, a more wide-ranging, more searching set of submissions from Africa Middle East and Latin America in particular. Perhaps it is because those are the continents where the most rapid urbanization is occurring – the problems of architecture are being felt most acutely right now in rapidly-expanding cities and at the edges between wealth and poverty, between the established and the informal city.

Alfredo Brillembourg, founder of Urban-Think Tank in Caracas, Venezuela, who was on the Holcim Awards jury for Latin America confirmed that sustainability has become a cliché: “We should be working towards resilience. There needs to be recognition of complexity and multiplicity of uses. Until now there has been an emphasis on technology and innovation, but a lot of that kit doesn’t work or never gets built. Instead we should be looking at re-using existing buildings and asking a bigger question – a super-discussion about what sustainability is. Is it sustainable to have this much poverty in a city?”

Stuart Smith, a director at engineering giant Arup in London, United Kingdom, and a member of the Holcim Awards jury for Europe notes a trend towards land and society. “The recession has left a legacy of more realistic projects,” he says, “an awful lot of people are thinking about landscape and social conditions as opposed to individual
buildings – and hardly any seem to be looking at form or geometry.” Although Smith is a little critical of the lack of real research into technologies, he is also very upbeat. “I came away from the process energized,” he says, “the younger generation in particular seem impressive in their commitment and in the realism of their work.”

Dana Cuff, professor and founding director of CityLAB at UCLA (University of California, Los Angeles, USA) was a little less impressed by the North American entries. “It is not a problem with the competition,” she says, “but with the United States, where we’ve abandoned the idea of the public realm in an almost complete manner.” It is an interesting moment for sustainability, she suggests. “We’re leaving the Birkenstock era and sustainability is becoming cool, which is a good thing – but we need to start thinking of buildings more like pets than objects. What I mean is that we’re going to have to live with these buildings, take care of them over time and that requires a new relationship with architecture.”

It also demands a new and more symbiotic relationship with the land and the surrounding environment. The idea of an international style, and subsequently of signature “starchitect” buildings looks increasingly unsustainable. Marc Angéllîs says: “This year we noticed a very strong focus on water. It provided a red thread through many of the schemes, addressing climate change and infrastructure as a recurrent theme.” There is a remarkable range of designs dealing with this subject, from attempts to map subterranean water in California and a system of flood defenses around Manhattan to a floating market and civic space in the Amazon. Both the scarcity and abundance of water are dealt with in a series of often visionary proposals.

Another theme that Angéllîs elicits is waste. A number of the projects in this year’s lists pick waste, whether from the construction process or domestic and industrial needs and use it to create something, be that a new settlement or a new structure. It seems like a kind of guilt, as if our consumption has come back to haunt us and we require some kind of signpost to assuage our guilt but also to begin addressing what seems to be a problem that we have buried in landfill for too long, out of sight and out of smell. The vague memory that there are whole settlements built on the recycling of waste from the West seems to haunt our consciousness, while simultaneously providing an intriguing model for a Global North version, a more humane interpretation of a place consuming what is thrown away.

One more theme which Angéllîs extracts from his extensive survey of the more than 2,500 submissions is the wall. “Water, waste and walls,” he jokes, “somehow we seem to have picked the three W’s.” Whether they are “breathable” walls, or walls capable of transforming carbon dioxide into oxygen, whether they are high-tech or low-tech walls, and whether they are protecting cities from the elements or attempts to understand the nature of porosity in the digital city – the wall remains a seemingly mesmeric element. In the context of sustainability and of the desired ideas of resilience that

"The Holcim Awards contribute to the evolution of sustainable construction from something rare to establishing a new convention within the discipline"

Marc Angéllîs, Switzerland. Senior Dean of the Department of Architecture at the Swiss Federal Institute of Technology (ETH Zurich).

"The Holcim Awards show that sustainable solutions often have a considerable economic advantage"

Rolf Soiron, Switzerland. Chairman of the Board of the Holcim Foundation for Sustainable Construction.

The Holcim Awards show that sustainable solutions often have a considerable economic advantage.
Brillembourg proposes, it is also a profoundly symbolic element. The wall is the symbol of enclosure, of keeping things out: the weather, other people, the noise and the throng of the city.

But what if it could be reinterpreted as a less finite gesture? The increasing polarization of the world’s cities and the widening gap between rich and poor brought about an acceleration of the gated community and the privatization of once-public space. “We’ve seen the wall reinterpreted in a very sophisticated way,” says Angélil, “as something that can generate oxygen, that can be responsive to climate, that can be biodegradable. It is being encountered as an element that could be negotiable.”

If the wall can be reinterpreted as an architectural symbol of cooperation rather than exclusion, it would be a massive change in the meaning of architecture. Perhaps the 4th Holcim Awards can help nudge the definition of the wall – and the architecture it defines from barrier to embrace. That would be an achievement.

“The Holcim Awards have not only brought awareness, but have also raised the standard for how we deal with sustainability”

Alejandro Aravena, Chile. Partner Architect and Executive Director of Elemental.

“The Holcim Awards are the most significant – they are the only awards that focus purely on innovation in the context of sustainability”

Maria Atkinson AM, Australia. Sustainability Business Advisor; Founding CEO of the Green Building Council of Australia.
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“Using what already exists”

Water reservoirs as public park
Medellín, Colombia
Medellín lies in a valley. Its water reservoirs are located atop the surrounding hills. This project shows how disused water tanks can be adapted to serve people in other ways.
Colombia has been the author of its own economic success story for the past ten years. Paradoxically, its former problem child is proving to be a particularly celebrated model student: Medellín, the country’s second-largest city. With an economic growth rate of ten percent annually, this city outstrips the national average of four percent. In March 2013 Citibank and the Wall Street Journal named Medellín “the most innovative city in the world” – ahead of New York and Tel Aviv. International companies are heeding the call of the city in great numbers, building infrastructure and offering skilled jobs; for example, as Holcim has done there by establishing a shared service center to support all its activities in Latin America. Yet only 20 years ago no one voluntarily went to Medellín. The city was in the death grip of the powerful drug lord Pablo Escobar until 1993. When Escobar was shot, the city experienced an even greater increase in violence: Cartel leaders fought over the inheritance of Escobar, and Medellín had the highest murder rate in the world. "Preserve the site’s positive qualities"

In 2002 things began to turn around, primarily thanks to vigorous grassroots politics. City planning officials concentrated their efforts where the potential gain was greatest: in the poorest neighborhoods of the city, where the crime rate had been the highest, where the people urgently needed change and showed the strongest will to support it. These are the areas that have spread up the hills surrounding Medellín. The general rule is: The further from the valley you live, the poorer you are. Many of these neighborhoods, which previously consisted mainly of two-story houses butted wall to wall, have been densified by replacing the houses with large multi-unit buildings. New kindergartens, schools, and parks were built on the cleared land. The city expanded and improved the street system and created new infrastructure. Since then, pictures of luxurious-looking cable cars, which link the poorest people in the hills to the valley below, have heralded the city’s astounding revitalization around the world. The metamorphosis has earned Medellín great recognition. An example of this is the Holcim Awards Gold 2008 for Latin America, which went to a transformation project in the once highly notorious district Comuna 13. But the city has not rested on its laurels. The authorities continue to use every chance to continue the success story.
One such opportunity was offered by the UVA Orfelinato drinking water reservoir. Typical for such facilities, it is situated on a hill overlooking the city, and it is in the middle of a steeply-sloped residential area. The two giant tanks had become outdated and were recently substituted by two new ones. Demolishing the old reservoir tanks would have been very expensive and a waste of resources, so the city planning department “Empresas Públicas de Medellín” (EPM) organized a competition to gather ideas to adapt them for other uses. The competition participants included Mario Camargo and Luis Tombé, the two young architects who run the firm Colectivo720 in Cali, the largest city in western Colombia.

What were the requirements of the UVA Orfelinato competition?

Mario Camargo: There were only a few conditions. The most important one was that the solution must benefit the public.

Luis Tombé: And there was a rudimentary program. The basis for this was a participatory process by which the EPM had previously clarified the needs and wishes of the local citizens. The involvement of the people in such projects in Medellín is taken for granted today, and I don’t think we can overestimate the importance of this approach.

What were your goals when you developed your project?

Luis Tombé: For us it was clear from the beginning that we wanted to preserve the site’s positive qualities and create a multifunctional facility – using what already exists.

The intervention that Colectivo720 proposed, and with which they won the city’s competition, is diverse and comprehensive. Previously inaccessible, the entire area, including the two disused tanks and the two new ones, will be fully open to the public as a park and venue for cultural events and sports activities – the uses are virtually unlimited. The site is uninterrupted and linked to the various surrounding neighborhoods.

A large portion of the sloping site will be covered with a roof, thereby creating two usable levels. Large openings in the roof will allow light to reach the lower level and accommodate vertical circulation. The lower area will be re-graded to make the area level; the two disused water tanks will not be covered. One of them is to be trans-
“Helping to give Medellín back to its citizens”

Mario Camargo

formed into a round outdoor auditorium, a multi-use arena with steps that double as amphitheater seating. The second tank will be refilled with water. The architects envisage this as an aquatic garden full of water plants and with a viewing pier extending out over the water. Other areas on the lower level include covered gathering spaces and open green spaces where water games can be held, and toward the rear is plenty of space for offices, a shop for local products, an internet café, and a large auditorium.

The usable roof deck of the upper level will be carpeted with turf and converted into a multi-functional park. From here you can see the open-air auditorium and the pond, and enjoy a breath-taking panorama of the city. Small interventions, sustainable programs, and interesting attractions are spread throughout the large park. This is a socio-technical landscape of exceptional beauty – and very close to a new, well-used public library and another park to which it will be connected by new pedestrian paths.

To minimize construction costs, the architects are using primarily what is already available; recycled materials and local construction methods will be used for construction. The use of local workers enables knowledge transfer through simple training programs, and builds engagement with the project.

Where are the recycled materials being applied?

Luis Tombé: Some of the concrete we need, for instance for the roof, will be made from recycled concrete as aggregate in the new concrete, reducing the volume of quarried rock required. We will also use the old water pipes which were excavated from the site; they will serve as decorative features or will be converted into planters.

Mario Camargo: We are using recycled plastic for the furniture. And we will make sandboxes and bicycle stands from old car tires. We are looking for sustainable solutions across every detail.

Are the recycled materials relevant to the overall project – or are they more of a symbolic gesture?

Mario Camargo: Recycling is an important and visible part of our strategy. Our aim is to create a genuinely sustainable project; so every aspect of the project is being optimized according to this target.

The architects paid particular attention to operation and maintenance costs. The need for artificial lighting and the associated power consumption is being kept as low as possible – which is why they are using reflective surfaces and skylights to bring daylight through the lower level. Still,
artificial lighting is required for the rooms in the rear areas and at night; the power is supplied by an on-site photovoltaic system. Openings allow cross ventilation; the constant breeze dissipates the heat. The green roof and the roof overhang shade large areas to keep temperatures comfortable. Air conditioning is not required except in the internet cafe, where the computers need greater cooling. The local microclimate makes the architects’ job easier. Medellín is known as the “capital of eternal spring,” thanks to its altitude of 1,500 meters above sea level, and the perfectly-balanced climate with average temperatures of 21 to 22 degrees Celsius. Some of the various interventions on the site involve waste management. A newly developed program facilitates and encourages the collection of glass, paper, and cardboard; the materials are used for arts and crafts projects, increasing the environmental awareness of the population. In addition, green waste is processed and composted.

Another program supports the rational use of water resources. Various methods are applied to reduce water consumption on the site – thus raising people’s awareness of possible ways to minimize water use. These include simple technologies for collecting rainwater and graywater used for irrigation.

How strong is the awareness of recycling in Colombia?
Mario Camargo: At schools around the country there are now workshops in which recycled materials are used in arts and craft classes. Universities are also pushing a new vision of the importance of recycling. Awareness is definitely growing.
Luis Tombé: Incidentally, getting set up for separate collection and recycling of waste is the result of an EPM initiative.

The variety and number of measures – reuse of building materials, renewable energy sources, recycling programs, graywater use, integration of nature – make this project a
symbol of sustainable urban development. And thus also a concrete demonstration of the positive development that Medellín is currently making a reality.

Colombia found the path to success very quickly. What are the drivers for the transformation?

Mario Camargo: I think it has a lot to do with today’s information technology. We can better take on board what happens in other countries, we can get ideas, and transfer proven concepts. In rational terms, there are fewer and fewer limits.

The benefits of IT apply globally – yet not all countries are making such a leap forward as Colombia.

Mario Camargo: That’s true. Another reason for the progress being made in Colombia is certainly that there’s very strong political will here to improve the situation. Sometimes it all seems to me like an avalanche that carries everything along with it. There’s a strong competitive spirit to improve things; people are proud of what they achieve, and no one is willing to let what has been achieved slip away easily.

Luis Tombé: Schools are also significantly contributing to the development. Ultimately, our progress is a consequence of the democratic process. The community wants to see things improved, and they are ready to vote for politicians who will achieve this.

Mario Camargo: The government and the people are cooperating with each other. You can see that in our project: It’s helping to give Medellín back to its citizens. Until now, the site was off limits; but afterwards, everybody will be able to use the park.

In Medellín, one is struck by the large number of green areas. Does the city really need more new parks?

Luis Tombé: It’s also about conserving existing space – the city is growing fast, and more and more rundown areas are being rehabilitated. Even if our intervention is only a small measure, it has great significance for the immediate neighborhood.

“Conserving existing space”

Your entry stated that construction would begin October 2014. This date has passed without anything happening. Why?

Mario Camargo: As often happens, things took a bit longer than we first thought – but
the delay benefitted the project: We studied further, and tried to link our park even better with the nearby library. The idea is a more integrated outdoor public place for the community. Construction begun in April 2015, and will be completed by the end of the year. There is great enthusiasm for the project, also in the city government. And there are more such reservoirs in Medellín that need to be revamped in the near future. The symbolic power of our project – and the honor to have been recognized with the Holcim Awards Gold 2014 Latin America – is therefore not to be underestimated. Receiving the prize has increased our commitment to materializing the project.

Project appraisal by the Global Holcim Awards jury

From a place of neglect to a place of hope

Great care went into the further development of the project, with particular attention given to the elaboration of construction and landscape details that strengthen the overall objective of the proposal. A hidden infrastructure within the city is opened up, made public, and transformed into a civic space – one situated at the intersection of architecture, landscape, infrastructure and urban design. The jury applauds the careful integration of the ensemble into the physical and social fabric of Medellín, reading the scheme as a robust proposition that fulfils all criteria set forth by the Holcim Foundation.

The project foregrounds the value of water as an important resource of urban life, celebrating a piece of infrastructure as a civic work of collective pride and beauty – another step in the transformation of Medellín from a troubled city a decade ago into a city with a high quality of life, from a place of neglect to a place of hope. It is in this respect that the jury considers the scheme to offer a model of best practice, one to be emulated in other cities, whether in Latin America or around the globe.

Initial project submission see page 160
The project UVA Orfelinato presented on the previous pages won the Global Holcim Awards Gold 2015 and will be open to the public by the end of 2015. It is one in a series of projects through which Medellin is collaborating with the EPM Group to create public spaces and further enhance quality of life in the city.

The refurbishment and adaptive reuse of partially- or fully-decommissioned reservoir facilities to ensure the drinking water supply is part of a master plan by the EPM Group. This multinational company, mainly active in the fields of water, electricity, and gas

The reservoir sites of Medellin, formerly fenced-off oases amid densely populated areas (example at the top of this page), are being opened to the public as parks that include community rooms and connect the neighborhoods as shown in the completed projects of UVA de la Esperanza (Moscu) and UVA de los Sueños (Versalles).
supply, has grown over a period of six decades from the public works of Medellín; EPM stands for Empresas Públicas de Medellín. Within just a few years, EPM is spending USD 100 million across 20 UVA (Unidades de Vida Articulada) projects in Medellín. Through its EPM Foundation, the company is also overseeing the operation and maintenance of the newly created facilities. The projects are being conducted in close cooperation with the various offices of the city of Medellín, which are coordinated and supported by Mayor Aníbal Gaviria.

Links between neighborhoods
Reservoirs are logically placed at elevated locations, where gravity assists water distribution. Until now, they have been fenced off for security reasons, which create barriers that separate the adjacent densely-populated neighborhoods from each other. In close cooperation with the residents of these neighborhoods, EPM has developed concepts that are bringing light into the districts in a number of ways: active reservoirs are being wrapped in vertical gardens and beautifully illuminated at night; the grounds are being opened to the public as communal space, enhanced by public buildings. Meeting rooms, auditoriums, toilet facilities, cultural rooms, computer rooms, viewing platforms, and playgrounds are being created. The UVA sites have free WiFi hotspots, which makes them a magnet for the predominantly young population.

Sustainable and utilitarian construction
The reservoir sites, typically on steep hillsides, are being transformed into public spaces through simple and practical means: robust materials, natural ventilation systems, and solar panels. Connecting paths crossing the sites, fountains, and other amenities have inspired the local residents to give the formerly restricted areas endearing names such as “dream,” “happiness,” or “hope.” The award-winning project UVA Orfelinato is the only one in the initial series for which a design competition was held. With two tanks remaining in service as reservoirs and two which have been decommissioned over time, this is the most complex project in the master plan. It is now being executed by the external office Colectivo720. All the other projects have been designed and are being realized by the EPM architecture department, Sustainable Urban Interventions, under the direction of Horacio Valencia. Half of the newly created facilities will be opened by the end of 2015.

Shared joy: Luis Tombé (left) and Mario Camargo (right), winners of the Global Holcim Awards Gold, with Juan Calle, CEO EPM Group (second from left) and EPM Chief Architect Horacio Valencia (second from right).
“Designing with plenty of tolerance”

Community library and social recuperation
Ambepussa, Sri Lanka
Building this library on a military base was not only about the physical result, but also about the process: The soldiers who worked on it acquired new skills that will ease their transition back into civilian life.
Sri Lanka struggled through a brutal civil war for over a quarter century – from 1983 until 2009. On one side stood the Sinhalese government troops, on the other the Tamil rebels who were fighting for an independent state in the north of the island. The conflict cost the lives of 80,000 to 100,000 people and drove hundreds of thousands to flee their homeland.

An important segment of the government troops was the Sinha Regiment, which comprises 24 battalions. It is stationed at a base in Ambepussa, 45 kilometers northeast of the capital city, Colombo. Many soldiers in the regiment are still young; they joined the Army at the age of 17 or 18 in the final phase of the war. Most of them come from underprivileged families and had no previous training. The reintegretion of this large group of young men is one of the great challenges Sri Lanka faces in the aftermath of civil war.

The Army is aware of its responsibility and launches initiatives to open perspectives for the soldiers – and it is doing so in alignment with the government, which aims to transform Sri Lanka into a knowledge society over the long term. The officers in charge of the Sinha Regiment decided to establish a library on the base. This would support the continuing education of the soldiers and offer them a context in which they can expand the knowledge they acquire through their training. The library would also be open to the civilian population of Ambepussa.

“Skilled workers are essential for us as architects”

The library with a capacity of 100 occupants including reference area, children’s library, research area, computer lab, newspaper area, and cafeteria is planned to be opened in June 2015. It was designed by Milinda Pathiraja and Ganga Ratnayake. The pair lived, studied, and worked for almost ten years in Australia, until they moved back to Sri Lanka about four years ago. Today, Milinda Pathiraja teaches at the University of Moratuwa and runs the office Robust Architecture Workshop along with Ganga Ratnayake and another partner. “We want to be practicing researchers,” says Milinda Pathiraja about the projects the team takes on. The architect is fascinated about working with construction processes. At the close of his studies he wrote a thesis about the relationship between architectural design and construction knowledge. In 2011 he received a “President’s Award for Outstanding PhD Thesis” from the Royal Institute of British Architects.
What is your thesis about?
Milinda Pathiraja: Building has much to do with processes. One is often confronted with underqualified workers on construction sites and in Sri Lanka this situation has definitely worsened. In earlier times, young people went to a master builder and learned their trade from an experienced artisan over a period of time. Today this system hardly exists anymore, because subcontractors are usually employed, and the main contractor – the present day equivalent to master builders – no longer has a relationship with the people who actually construct the building. So I searched for processes through which I can help train workers – as the architect. How can knowledge be transferred on the building site? How can real building projects be conceptually organized – architecturally – to act as training grounds for the development of construction labor skills?

What intrigues you about questions such as these?
Milinda Pathiraja: I think an architect has three responsibilities: first to oneself and the practice; second, to clients; and third, to society. We always aim to bring these three dimensions together in our work. Through our projects, we want to contribute to the improvement of construction in Sri Lanka. Skilled workers are essential for us as architects, but acquiring skills is also necessary for all those workers aiming at building careers in the construction industry. So the benefits of such process are reciprocal. And, quite honestly, it’s simply more exciting for us to work in a comprehensive capacity than simply drawing plans. With projects like the library at Ambepussa, we can learn so much!

Why did the Army want to build a library? In the computer age, the book is on the way out...
Milinda Pathiraja: This is certainly correct, seen globally, but in Sri Lanka not everyone has a computer. And many Sinhalese books are not available through the internet. We still need libraries.

Why did the Army choose you for this project?
Ganga Ratnayake: We were involved in the building of a private residence near the base, where we used stabilized earth-cement blocks as the main material. Some high-ranking officers saw it, thought that it was good – and wanted something with a similar material response.

So your thesis had nothing to do with this commission?
Milinda Pathiraja: No. The clients didn’t know who we are. They also had no program – although we ultimately realized one – they simply wanted a conventional library. But we saw this project as a chance to introduce something new. And we were also willing to work for free.

This is a pro bono project?
Milinda Pathiraja: Yes. The Army actually has no budget for such projects. The construction cost was minimal because the work was done mainly by the soldiers, and these were assigned to the job.

“The whole building consists of the same elements”
Ganga Ratnayake: The Army usually builds its own smaller buildings itself. After all, it has plenty of labor available. We also saw that the soldiers were making all the Army furniture: beds, tables, and so on. We thought: we must use this too.

You proposed to the officers in charge the idea of treating the construction of the library as a training project. What were their reactions? Ganga Ratnayake: We were met with support from the very beginning.

Milinda Pathiraja: Our argument was: We are pushing for positive change by placing the process at the center. This is perfectly fitting: A library represents knowledge, and our construction process is all about construction knowledge.

The architects’ mandate was formulated in very general terms: Build a library to serve the soldiers and the community. The program included a children’s library and a small study area. Based on this, the architects conceived a building that is sustainable in every way. They paid special attention to economic aspects: The construction materials should cost as little as possible. They proposed making the walls out of rammed earth – using waste material excavated from a playground built nearby. These walls require only a small supplement of cement, they are easy to build, and they provide thermal mass. The floors are constructed from salvaged railroad ties. The Sri Lankan railway is gradually replacing its old wooden ties with new concrete ones, and selling the old ties for a pittance. Another building material used was steel framing members that were salvaged from decommissioned factories.

The architects also designed the building for low operating and maintenance costs. They provided cross ventilation using a monitor roof and monitor windows to catch the breeze – optimizing a commonly-used system in Sri Lanka.

How did you determine the form of the library? Ganga Ratnayake: The design took about four months. We built several models and visited the site many times. Many trees are on the site and we wanted to keep them, so we designed the library around them. Actually, in the end, only one tree had to be cut down. Also, it was clear from the outset that the building would have to be narrow and elongated – for good natural ventilation and lighting. The building does have electric lighting, but we wanted this to be required as little as possible.

Milinda Pathiraja: Also, the building would have to be designed to suit the way the army builds: individual sections repeated as many times as necessary. The whole building consists of the same elements. We drew up
simple instructions for building the walls out of rammed earth and making the various steel connectors. We provided an exact schedule of all the required connectors and went through the whole series with the soldiers. They began by making the easiest pieces and gradually worked their way up to the most challenging ones. I had already developed a system for this in my thesis—now it was being put to use.

**“You must accept compromise”**

**How did you organize the training?**

**Ganga Ratnayake:** We worked together with about 100 soldiers, whom we divided into groups. One group handled the floors while another handled the walls, and so on. We showed the soldiers how they must proceed, and in this we were supported by some tradespeople who served as instructors. The soldiers were good students. Basically they followed the principle of trial and error. They built the first wall; we inspected it and gave recommendations for the next one. They learned everything in small, continual steps. Today you can easily see which walls were built first and which ones later.

**The less-perfect walls weren’t torn down and replaced?**

**Milinda Pathiraja:** That wasn’t necessary. You can’t design a delicate building if you plan to build as we did here. You have to design the building and the process with plenty of tolerance. The process must be robust, flexible, and adaptable—and be able to withstand many interventions.

**Would the soldiers now be able to build the same building again without instructions?**

**Milinda Pathiraja:** That was the idea—that they would be able to replicate this building. But now they can even build other buildings. It’s about the system. With the skills they have learned, they will be able build their own houses when they return home after their military service. They also receive a certificate from the Army that authenticates their training, so they can apply for jobs in the construction sector. In another project we already saw how such newly-learned skills can be applied. About a year ago at another place we built a building similar to the library, but made of brick. Afterwards, the workers built their own houses in the same method. They replicated the process.

**“Building has much to do with processes”**

**Milinda Pathiraja**
What were the main challenges of this project?

Milinda Pathiraja: Certainly the most difficult part was to enhance the skills of the soldiers while organizing everything so that the building itself would also meet high standards. The second challenge was the cooperation with the clients. Once the building was there, people suddenly had new ideas such as a marble floor, and it wasn’t easy to insist on the original concept as planned. That’s always a problem in sustainable construction: On paper everything looks fine, but then comes reality and all the change orders. If you want to achieve something within such a context, you must accept compromise. If you are too ideological, you will stumble. So we thought: Give the client what they want, but do it in the right way.

Ganga Ratnayake: A great challenge was also the rate at which the soldiers worked. The Army is able to post any number of people to a construction site. For architects, this is both a dream and a nightmare: Barely after we had suggested something, it was already done.

The library will be opened soon, also to the public. Will civilians really use it? What is their relationship to the Army?

Milinda Pathiraja: There is some mistrust among the broader public, but the people who live around the base hardly have reservations. Each party is dependent upon the other. Today there are already some public facilities on the Army base, for example, a swimming pool used by the local schools. The Army is not yet as close to the public as it would like to be, but you can sense the will to look ahead and to build bridges. And this bridge-building already works in many ways: Men from the villages also did volunteer work to help build the library.
The soldiers learned a lot through this project. What about you?
Milinda Pathiraja: We learned very much too! Our practice is still very young and every building project gives us the opportunity to experiment, learn and grow. The construction of this library was a difficult experience, but a satisfying one. In the end, for us as architects it’s always a matter of seeing how the ideas turn out – and in this project the final result comes very close to our original intention.

Project appraisal by the Global Holcim Awards jury

The vision can indeed be translated into reality

The project submission tells a powerful story, not just of a building, but of a society in the process of establishing strong foundations for its future development. The juxtaposition of weapons and tools on the introductory panel sets both the tone and objective of the endeavor, with a persuasive and well-chosen pair of images, making the conceptual framework of the project more than clear: how to transform a discharged army without mission into a motivated workforce at the service of society?

The project offers proof that the vision can indeed be translated into reality. Rather than remaining in the realm of the abstract, the submitted entry outlines a set of concrete measures, ranging from the introduction of an educational program to the deployment of particular construction techniques – all beautifully and clearly outlined. The authors recognize the potential of using an army’s know-how in logistics for peaceful purposes, while strengthening social bonds. The jury sees significant value in the basic message of the scheme and greatly appreciates its translation into a tangible physical structure – the construction of a library and public facility for building the physical and social fabric of a community.
“Reclaiming the waterfront”

Urban flood protection infrastructure
New York City, USA
How can a coastal city be protected against surging floodwater without simply surrounding it with a dyke? “The Dryline” is designed to provide flood prevention and enhance daily life on Lower Manhattan in New York City.
North American hurricanes, which have historically hit mainly the US Gulf Coast states and North Carolina, are now reaching the northeast seaboard of the United States with increasing frequency. On October 29, 2012 Superstorm Sandy caused enormous damage to New York City. For the first time in over a hundred years, many subway tunnels were flooded, millions of people were without power for days, and public institutions remained closed. The disaster claimed 50 lives in the State of New York.

This natural disaster was the second most costly in the history of the United States – following Hurricane Katrina, which wreaked havoc in New Orleans in 2005. The federal government provided USD 50 billion dollars in emergency relief in Sandy's aftermath. Ten percent of it was earmarked for preventive measures. To use this money to best effect in the northeastern states, the United States Department of Housing and Urban Development, with the support of private foundations such as the Rockefeller Foundation, conducted a competition in 2013: “Rebuild by Design” was held to collect innovative ideas for flood protection.

Among the winners of the ideas competition was the BIG Team, comprising various experts from the USA and the Netherlands, and their governmental partner and grantee, the City of New York. The team put together for the competition was headed by the New York office of the Danish Bjarke Ingels Group (BIG), which is also based in Copenhagen. BIG Partner Kai-Uwe Bergmann worked on the competition entry, and Matthijs Bouw from One Architecture in Amsterdam reinforced the BIG Team.

“The problem was to define the problem itself”
How did this international team come together?

Kai-Uwe Bergmann: US government officials visited the Netherlands and were very impressed by the country’s experience in flood prevention. The Dutch are simply the best when it comes to flood protection – they have centuries of experience. The officials then hired Henk Ovink from the Netherlands to lead the “Rebuild by Design” competition.

Matthijs Bouw: He was formerly director general of spatial planning and water affairs. Because my office has worked on many government contracts, I know him well, and that’s how I found out about the competition.

Kai-Uwe Bergmann: Shortly after Sandy, Matthijs Bouw and I were talking about how the Europeans know how to tackle such problems jointly. He told us about the competition – and arranged collaboration with BIG.

Matthijs Bouw: Then, when the competition was launched, it was clear that BIG should take the leading role – after all, their office is in New York.

Kai-Uwe Bergmann: We had to make sure that our project would genuinely be viable. That’s why we added an economist and an environmental scientist to our project team. We put together a team that could present a credible business case.

What did the competition brief call for?

Matthijs Bouw: The competition was open, but it was not formulated in the usual way. Normally in a competition a problem is stated, and the teams then propose their solution. But here the problem was to define the problem itself. The brief merely stated: Propose something to make the flood zone safer.

We tried to anticipate the future

The jury ultimately paid for each of the ten teams to develop their idea into a business case. Each team handled its own piece of shoreline; the BIG Team won with a vision for Manhattan, a protective system for ten continuous miles of low-lying geography stretching from West 54th Street South to the Battery and up to East 40th Street.

How does one go about tackling such an enormous task?

Matthijs Bouw: We always start by discussing and developing ideas, visualizing things with sketches.

Kai-Uwe Bergmann: Ideas begin to take form through the information one gathers. We analyzed the topography and studied the relationship between the dynamic water level and the terrain. We also knew we needed a good process to manage the project; we had to find a way to deal with the many local citizen groups. We put these elements together and realized: If we organize the shoreline in sections, we can combine everything. This was the germ of our concept of compartmentalization into resiliency districts. The analogy for this is the system of float chambers in a ship.

Matthijs Bouw: We not only looked at the water situation, we also asked ourselves: What else do the people of Manhattan need? Can we combine our water management measures with solutions to other problems?

The waterfront properties are owned by the City of New York, the State of New York, and, to a lesser extent, private entities. To develop its proposal, the BIG Team familiarized itself with the political boundaries and interacted with representatives of the various citizen groups. Special attention was given to communication with the many stakeholder groups: Over 20 workshops were held, in which the BIG Team explained the project to the public. Dialog was maintained with over 30 neighborhood groups, institutions, and cultural associations. Because the Lower East Side is home to many
immigrants, simultaneous translators for Spanish or Chinese were used at some of the workshops. The locals were also asked what they miss the most in their neighborhood.

**Doesn’t such an approach make things incredibly difficult?**
Kai-Uwe Bergmann: Communication is an important tool! We want to launch a new development and we need the support of the people. If we can give them something they want, we can win their support.

Matthijs Bouw: The communicative approach and the idea of "social infrastructure” are part of the very DNA of BIG. The reactions at the workshops showed us that something special could happen.

**What did the citizens say they were missing the most – what were their wishes?**
Matthijs Bouw: People give you very clear information when you give them a chance to express their opinion. The most common complaint was that they lacked shopping opportunities and community space – or that they didn’t like the outdoor public areas. Fears were often expressed, especially on the East Side; people were very definite about what the waterfront means to them. They were worried about change and want reassurance that their view or their access to the waterfront would not be cut off.

**Was there much resistance to the project?**
Kai-Uwe Bergmann: The vast majority were positive. There are always NIMBYs, those who

“Communication is an important tool!”

“At one time, Central Park was also just an idea”
Kai-Uwe Bergmann
say “not in my backyard.” But you also have to understand that people are not happy about losing part of their view. This problem is somewhat alleviated in that insurance companies are recommending moving ground-floor apartments to higher floors in response to the flood risk.

**How can you discuss all the various options with so many people?**

**Kai-Uwe Bergmann:** We used renderings and physical models to make it easier. We told the participants: There are different possibilities – play around with the parts of the model, as with Lego.

**And how do you make sure that the wishes remain in the realm of feasibility?**

**Kai-Uwe Bergmann:** The costs are determined in a detailed feasibility study. The central question is: Will the budget support everything we want to realize or do we have to reduce the scope? That’s why our concept to reclaim the waterfront and to create resiliency districts is so important – we can invest in phases.

The design proposal for ten miles of waterfront was developed over a period of about three months. A number of interventions were planned in conjunction with the city and the community, always tailored to the local needs and physical circumstances. Several basic elements were employed. A system of variously shaped concrete elements is called “big bench.” These form water barriers while also, depending on the particular form, serving as benches, planters, playground seating, bike shelters, or skateboard ramps. The second major element is dykes, which can be built up where space allows. These also serve as green areas and attenuate traffic noise emitted from FDR Drive, the freeway along the East River. Bleak leftover spaces beneath elevated roadways could be transformed by adding public pavilions. Here, market stands, exhibitions, and event venues can be set up. In the event of an emergency, the storm shutters can be rolled down and locked, and the dual function of flood containment comes into play. Also, the entire twelve-kilometer stretch of waterfront could be enhanced with a continuous bicycle path.

The Manhattan waterfront is densely built up. Where have you found space to build dykes, for example?

**Matthijs Bouw:** That’s one of the major challenges, because there is very little space indeed. Nevertheless, we decided to plan for the time being using only the available land. If some legal boundaries happen to change in the next ten years or so, one can always reevaluate. We tried to anticipate the future in all of our measures.

While the BIG Team was working on the project, it was decided together with the New York City Mayor’s Office of Recovery and Resiliency that the Lower East Side would be given priority. The team invested much unpaid work in the project, and also presented proposals for Battery Park at the southern tip of Manhattan and for the Two Bridges District. Thus, measures for a total of some 20 kilometers of waterfront were developed.

**“Reactions showed that something special could happen”**

Matthijs Bouw
From where do you get the confidence that additional funding will be found?
Kai-Uwe Bergmann: At one time, Central Park was also just an idea. Today the whole world knows it. This gives me the determination and the optimism that in this city one can effect change.

But this will cost a lot of money.
Kai-Uwe Bergmann: Compared with the damage a hurricane can cause, it is not so much. In the Financial District, which was also flooded, many building owners are now building their own dam. A collective project would be much more efficient. And if our district fares better than the others in the next storm, the insurance companies will pressure the other areas to implement similar measures.

The plans for redesigning the waterfront are now being developed in detail by the City of New York in preparation for project implementation. The initial measures in the Lower East Side are expected to start
by 2017 and be completed by 2020. Over time, the people of Manhattan will gradually win back the water and the shoreline. New York City, which until now has not had a comprehensive plan for flood protection, is about to become a global trendsetter in yet another way.

Project appraisal by the Global Holcim Awards jury

**Turning a problem into an opportunity**

Notwithstanding the merit of the proposal’s vision and its commitment to translate an infrastructure into an urban space accessible to all, the project was nonetheless controversially discussed. On the one hand, the jury appreciated the scheme’s bold proposition to tackle the ramifications of climate change by means of a construction that offers a surplus value to society – turning a problem into an opportunity.

On the other hand, the issue was raised as to whether the project was not more reactive rather than proactive, addressing the effects of climate change instead of its root causes. Debate aside, the project makes a political statement by means of an architectural and urban proposition, arguing that climate change indeed can no longer be suppressed or discarded as a figment of environmentalist imagination and that tangible solutions truly exist. Moreover, the jury considered the project’s potential as model to be applied in other contexts, with the case of New York understood as a prototype from which to learn in order to pursue similar strategies in susceptible regions around the globe, including, most importantly, regions with limited economic resources.

Initial project submission see page 136
“We must listen to nature”

Freshwater ecological reserve and remediation, Saline Joniche, Italy
Wounds to the countryside inflicted by humans are being healed in the small locality of Saline Joniche in southern Italy. The intervention could serve as a worldwide reference for the sustainable reuse of disused industrial sites.

Intrinsically, Saline Joniche is a splendid piece of land. This district of the municipality Montebello Ionico at the “toe of the Italian boot” was blessed by nature with rich flora and fauna – and with an extremely picturesque location. It is situated on the shore of the Mediterranean Sea at the Strait of Messina. Across the strait, in Sicily, Europe’s highest and most active volcano stands tall and proud, Mount Etna.

Notwithstanding these postcard-like surroundings, Saline Joniche itself is not really beautiful. The development of the district is a prime example of how business was done in southern European countries a few decades ago: National subsidization programs pumped a lot of money into structurally weak regions, but this trickled away somewhere and left a mess. In southern Italy, organized crime often had a hand in such “improvement” scenarios.

Backed by a government program, a biogenesis plant was built by Liquichimica in Saline Joniche in the early 1970s. The factory was to manufacture proteins for the enrichment of livestock feed and provide jobs for thousands. It was built directly on the shoreline, in a countryside rich in ecological value and tourism potential – adjacent to the historic salt mines which gave the place its name. An evocative symbol of the exuberant ambitions of the project is the 174-meter-high exhaust stack, one of the highest industrial stacks in Europe. A large sea terminal was built adjacent to the plant to serve it.

“A symbol for the recovery of the region”

The factory went into trial operation for a short time, but the Italian Ministry of Health ultimately withdrew Liquichimica’s license because the plant’s products were found to contain carcinogens. This huge, almost brand-new, factory was abandoned – an industrial graveyard defiling this most beautiful landscape with its soaring stack standing as a beacon of mismanagement and corruption.

Just a few kilometers away from the Liquichimica site, a second large project was implemented which was likewise unsuccessful in the long-term and left behind a ruin. The Italian state railway Trenitalia oper-
In the years that followed, the OGR and Liquichimica sites remained deserted and ignored. But in the new millennium, another project was born in Liquichimica – and again one that threatened to cause serious damage to the local ecosystem: A Swiss energy company planned to build a coal-fired power plant. The Italian government was in favor of the proposal, but strong local resistance arose, and the idea ultimately found no support in Switzerland either, so the project was abandoned. The administration of Reggio Calabria province sought alternatives. (Provinces were a level of government between municipality and region in Italy that has recently been abolished.) To collect ideas for an alternative project, Reggio Calabria held an international competition in 2012. The central question was: “How can the eight-kilometer-long, 170-hectare coastal area of Saline Joniche, with the OGR and Liquichimica sites, be utilized in a way that is environmentally, socially, and economically beneficial?” The Palermo-based architectural firm AutonomeForme, which specializes in landscape design, decided to participate in the competition in association with grupo aranea from Alicante, which also specializes in landscape and urban renewal projects.

Why did you decide to participate?
Marco Scarpinato (AutonomeForme): We had already participated in several large projects on the Mediterranean coastline. We are very interested in the relationship between landscape and brownfields. In this sense, the project in Saline Joniche was an opportunity to extend our work based on the process of flooding and on the controlled re-naturalization of these places through the use of the waters.

You developed your proposal in collaboration with grupo aranea in Alicante, Spain.
Lucia Pierro: We believe in teamwork and we think that exchanging different experiences can improve the design of the project. Our agency has always combined research and design and, as curators of the architectural magazine URUK, we had already published an interview with Francisco Leiva. When we read about this competition, we decided to contact them.
Francisco Leiva (grupo aranea): Yes, this interview was the starting point.
How was the collaboration organized?

Francisco Leiva (grupo aranea): We never met face to face during the competition, but we exchanged thoughts with many video conferences and e-mails.

In this way the unusual project “Anthropic Park” was born. It ultimately won the province’s design competition – and it also topped the Holcim Awards for the region of Europe. The intention of the proposal by AutonomeForme and grupo aranea is to restore the natural balance of the largely destroyed landscape, and to gradually undo the damage caused by human hands. This healing process will progress continually; the scars in the countryside will remain visible for a long time, serving as a warning to future generations.

Several channelized streams flow through the Liquichimica site. They will be renaturized to support the transformation of the area, and to gradually undo the damage caused by human hands. This healing process will progress continually; the scars in the countryside will remain visible for a long time, serving as a warning to future generations.

The OGR site, somewhat removed, measures over 100,000 square meters. A large part of it will become a tree and plant nursery. Plants will be grown here whose roots will stabilize the renaturized riverbanks on the Liquichimica site. Part of the roof of the former workshops will be removed to accommodate the nursery. Also planned on the OGR site is a research and museum center specializing in the recovery processes. Office space for start-up companies committed to sustainability will be provided in various buildings, forming a southern Italian business incubator.

“Anthropic Park” includes two further important symbols of the region which also have significant tourism potential: Pentedattilo, a village abandoned following an earthquake at the end of the 18th century, and the “Laura C,” a shipwreck from the Second World War lying off the coast.

A total of 75 projects were developed for the idea competition held by the province. Did some of the participants propose completely different uses than you did?

Andrés Llopis (grupo aranea): Everything was proposed. Many projects proposed new buildings: hotels, housing, infrastructure. Our project was probably the only one without new buildings.

What inspired the focus of your proposal?

Francisco Leiva: The need to help nature recover. We must listen to nature – then it’s soon clear what’s needed here.

But if that’s your objective, why take any measures at all? Nature will reclaim the territory on its own sooner or later.

Francisco Leiva: That’s true, nature would return here without our help, but we want to provide support – and accelerate the process. Our project works with time as a natural resource.

Lucia Pierro: This landscape was destroyed by human activity. I think it’s our duty now to contribute to its repair.

Andrés Llopis: Otherwise it might take some 2,000 years before the recovery becomes significant.

“Anthropic Park” is formed by four sub-projects: OGR, Liquichimica, the deserted village of Pentedattilo, and the wreck of the “Laura C.” Would it be possible to realize only some component parts of the concept?

Marco Scarpinato: Certainly. One could easily adopt a phased approach. But we shouldn’t see the interventions as isolated elements – this project is about a regional system, a fine-meshed network of interventions that form a whole.
Is there a need for the business incubator you are proposing?
Lucia Pierro: Absolutely. Italy suffers from brain drain – many young and well-educated people are leaving the country, but we need them here with us. With “Anthropic Park” we want to give them a center for their innovative initiatives.

Andrés Llopis: The business incubator would also be an international destination for companies wanting to do research in recovering areas.

A striking feature of this entry in the Holcim Awards competition is the magnificent watercolors painted by Francisco Leiva: colorful, inspiring, and fascinating visions of “Anthropic Park.” They build anticipation for the experience of walking through the transformed industrial wasteland and experiencing the reawakening of nature.

How long will it take for the situation in reality to look like the renderings?
Francisco Leiva: We expect a very lengthy process – it will take a lifetime before the area really recovers. Still, I think “Anthropic Park” could look much like the renderings within about ten years after the interventions are done. But it’s all a question of political engagement, investors and willingness of the authorities. It’s a question of looking around with a new mindset.

The budget estimate for the overall project is USD 70 million. What makes it so expensive?
Lucia Pierro: The large number of interventions.

Andrés Llopis: It’s also a huge area. The Liquichimica site: the renaturization of the streams and the correction of the topography, and such earthmoving works are costly – equally costly as the earth movements made in the first place to build the useless Liquichimica. Sometimes it seems easier to assume the costs of the destruction of a landscape than the costs of its restoration.

What has been the public response to your proposal?
Marco Scarpinato: Many people are enthusiastic; others are against it, particularly those who have certain short-term economic interests in mind. They would prefer an industrial park.

Francisco Leiva: But we have also taken the economic component into account. We propose to heal the land first – and then to reap the benefits of this work, through tourism, foreign investment, new technologies and quality of life for the region.
The Swiss energy company stopped its project after it had been rejected. So no coal-fired power plant will be built at Saline Joniche. Does this mean your project is dead now too, because an alternative to the power plant is no longer needed?

Lucia Pierro: Of course the parameters have changed, first of all because the provinces have been dissolved, which means the competition organizer no longer exists. But I am sure the project will be realized because the local communities now know that their future depends on the development of tourism and the green economy. It is now even more crucial that the public stands up in favor of this intervention. It is a blessing for the project that it has received the Holcim Awards Gold for Europe; this recognition means that the relevant bodies can no longer ignore our proposal.

Francisco Leiva: You must also see that this beyond the region. It shows how industrial wasteland can be used – and our methods can be applied in other places. So it would not all be in vain even if the project were to go unrealized.

Project appraisal by the Global Holcim Awards jury

Natural reserve as armature of a planning strategy

Whereas a tremendous amount of work was produced and an overwhelming quantity of material submitted, the project remains within the realm of the visionary, missing the opportunity in the second stage of the competition to offer proof of the scheme’s feasibility as real construction. The jury appreciates the idea to transform a brownfield into a natural reserve as armature of a regional planning strategy, one that values the site’s breathtaking scenery. Similarly, the jury applauds the beautiful renderings on the panels, which offer a suggestive visual depiction of the site after its conversion.

Nonetheless, what is missing is information at the intermediate level, material that could establish the link between the overall vision at the large scale and the anticipated image of the final product at the human scale. To allow nature to simply take over is probably insufficient as a proposition. The proposal would have benefited from an editing process – with less being more – as well as from more attention given to content, particularly pertaining to the specific translation of abstract ideas into concrete reality.
“Leave the use up to the users” Low-cost flexible university building, Paris, France

The architects of Muoto designed a recreation center to link a number of universities on the evolving campus of Paris-Saclay. The building is an “urban shelf” that stacks a variety of flexible-use spaces on top of one another.
The Plateau de Saclay lies 20 kilometers to the south of Paris. On this plain, near Versailles, life was dominated by agriculture for many centuries. In the postwar years, universities and research centers began to be built among the fields – the Centre national de la recherche scientifique and the Commissariat à l'énergie atomique et aux énergies alternatives. The state-run engineering school École polytechnique followed in the 1970s. The list of companies that are now settled around these universities reads like a who’s who of international industry: Airbus, Alstom, BMW, General Electric, HP, Siemens, Volvo, and many others.

In 2006 the decision was made to capitalize on this outstanding situation and establish a leading European science and technology cluster at Plateau de Saclay. Since 2010, the government-managed Établissement public Paris-Saclay (EPPS) has been in charge of the development of this cluster. It is directing the work in two development zones: first, Moulon, in the area of the municipalities Gif-sur-Yvette, Orsay, and Saint-Aubin, and second, the area around the École polytechnique.

This project, scheduled to be completed by 2018, integrates eight universities into the Paris-Saclay campus. The project “Grand Paris Express” is creating an efficient link between the campus and the French capital. Four new metro lines are being built for it and two existing lines extended. The Grand Paris Express will require some 200 kilometers of new railway lines to be constructed to complete the route.

Rapid mass transit is not the only measure with which the EPPS intends to help the Paris-Saclay campus to spread its wings. The developer announced a design competition for a new building to enhance the infrastructure for the surrounding educational and research institutions. It should mainly provide facilities for dining and for indoor and outdoor sports. The “Lieu de vie” in Moulon will be built near new dormitories and will be open to all employees, teaching staff, and students of the surrounding universities. Five architectural firms were invited to submit their designs for the new building. Among

“The whole is more than the sum of its parts”
Holcim Awards Gold 2014 Latin America: Articulated Site – Water reservoirs as public park, Medellín, Colombia

to make a strong statement. We wanted to sow the seed for things to grow. Whether the building will flourish with activity remains to be seen, but I believe it will.

The building is divided by a central staircase into two wings with different floor layouts. Each of the five floors has an assigned type of use. On the ground level is on one side the cafeteria with additional outdoor seating on the spacious plaza and on the other side logistics spaces. Above this are the mechanical rooms on an interstitial level and on the other side a terrace for non-defined uses. Above the mechanical rooms is the kitchen on the third floor and fitness and weights rooms on the fourth. Across from these is a double-height restaurant that can also serve as a conference room. The entire rooftop, 900 square meters, is occupied by a soccer
field and a basketball court. These sports surfaces are not covered; the roof perimeter is circumscribed by a high mesh fence.

You placed the sports areas on the “top shelf.” Was that a point of discussion?

Gilles Delalex: When we presented the concept to our engineers, they said: “Guys, this is totally wrong. Sports fields and restaurants should be organized horizontally.” But it was worth trying.

“How precise was the building program?”

Yves Moreau: It was well defined and actually was quite complex with the various uses as well as the technical requirements, the playing areas, and the dining areas. Only the number of outdoor sports areas – which are now on the roof – was not finalized. The brief gave us a certain degree of freedom to interpret the program.

How did you use that?

Gilles Delalex: We wanted a flexible building in which the rooms would be kept as neutral as possible. At first, the client asked us to program the rooms precisely, but we proposed a different strategy, and finally convinced him to keep as much space as possible without a predefined function. For instance, the restaurant can also be used for events. Our goal of flexibility was most fully achieved in the terrace on the first floor. You can furnish it, play ping-pong in it, or just wait until people bring something themselves and things happen spontaneously. The stairs can be used in a similar way.

Why did you insist on this flexibility?

Gilles Delalex: Usually in architecture we work the other way around, developing everything from the program: One visualizes the space and gives it a name. But why do we have to assign a specific function when a room can be anything? Everybody needs space – and if you give it to them they will find a way to use it. We want to leave the use up to the users!

Is there a need for undefined spaces?

Gilles Delalex: Not at the outset. We often don’t even know our own needs until we see

“A place with high amenity value”

Gilles Delalex

“Usually in architecture we work the other way around”
“Achieve good performance even with modest financial means”

The activities analysis inspired the Muoto team to design the building unconventionally not only in terms of use: Instead of the usual entrance hall with stairs there is an open vertical circulation core that connects all five levels of the building. This staircase, in the interior of the building, is an outdoor space. The architects compare this arrangement with the geometric object of the Klein bottle, in which the inside and outside merge. This vertical connector is intended to facilitate transparency and interaction between the various floors and uses. The façade serves the same goal; it was designed to be as transparent as possible to allow maximum insight into the “urban shelf.”

Why did you strive for this effect, which you illustrate with the Klein bottle?
Gilles Delalex: I like the fact that “Lieu de vie” appears very normal and rational at first glance but no longer than that. If you consider the indoor spatial experience, this becomes quite complex. You don’t always know for sure what is inside and what is outside.

Why did you design the building to be as open as possible?
Gilles Delalex: The point of departure was the question of how an urban project should present itself in this setting. How could we produce urbanity with a modest building of 2,000 square meters of space – when the neighborhood around it does not yet exist in its entirety and the urban density will develop only gradually?

What is your answer to this challenge?
Gilles Delalex: We achieve the goal less through size and density and more by the fact that the building can be animated around the clock. It can be used day and night without interruption, a bit like a local convenience store. For this purpose, we analyzed sensible opening times for the various activities and organized the building so that these can take place simultaneously and independently of each other.

So the building will be freely accessible at all times?
Yves Moreau: The future facility manager, an organization for student accommodations and meals, asked us to make the building lockable using rolling shutters. We implemented them without compromising our basic idea – after all, these are not true doors.

In this building, where do you see the aspect of sustainability considered the most?
Yves Moreau: We designed the building with a modest budget of just over USD 5.5 million. We looked at all sorts of ways to save money. I think this project shows how you can achieve good performance even with modest financial means.

How did you keep the costs down?
Gilles Delalex: The building is very compact; we minimized the ceiling heights everywhere – except in the restaurant, which is double-height. We designed a low-tech building that contains very little mechanical equipment and requires
very few materials. There are no finishes on the surfaces, except where it was necessary because of acoustics. The building is naked as a skeleton. This is also an environmental response.

How do you insulate a building that is constructed so simply and should be as open as possible? Gilles Delalex: You can imagine how difficult it is to design the thermal insulation of such a building. There are holes everywhere – actually it’s a disaster! So we proposed to our specialists another unusual idea: We only insulated activity spaces, like inner bubbles, and not technical and circulations spaces, as it is usually done.

Project appraisal by the Global Holcim Awards jury

A high degree of coherence

The jury repeatedly returned to this project during its deliberation process weighing both pros and cons at length. On the one hand, the jury appreciates the transfer of engineering principles – as found in many industrial structures and rarely considered of visual value – to the domain of architecture. Appropriating warehouse construction assemblies with large spans, the project achieves a high degree of coherence, both technically and aesthetically. Additionally, the project aims to make do with less, working with an economy of means, while maximizing the structure’s effect.

On the other hand, the building was scrutinized in terms of its construction details, its potential lack of daylight in the building’s interior, and the amount of insulation needed to cover façades, roofs and soffits. Although the project was ultimately not awarded a prize, it belongs without doubt to the league of outstanding buildings.
“The green space defines the structure”

Participatory urban neighborhood
Vienna, Austria
The Madrid-based architectural firm arenas basabe palacios developed a hands-on concept for the redevelopment of an abandoned site in Vienna – one which represents a new form of garden city.

Most large cities have long been built, especially those with a lengthy and important history such as the Austrian capital, Vienna. Disused sites for something completely new to be built are a special challenge and must be treated with care.

Such a challenge is an 11-hectare site in Vienna in the Rosenhügel district in the southwestern part of the city. It is surrounded by railroad tracks, a neighborhood of stand-alone houses, a cemetery, and an area of allotment gardens. The site was first occupied by a pig farm, then by the Federal Office for Protection of Pets Against Virus Infection – and ultimately it was abandoned.

Today the land belongs to the state-run real estate company Austria Real Estate (ARE), which intends to build housing on the site as part of a larger district development project. In January 2009 ARE launched the international design competition Europan 10 for this housing project. The young architectural firm arenas basabe palacios, based in Madrid, took part. The three principals, Enrique Arenas, Luis Basabe, and Luis Palacios, have been working together since 2006.

“Build the city together and share living in it”

Why did your office decide to take up a project in Austria?

Luis Palacios: We see Europan as less of a competition and more of a congress for young architects to exchange their ideas about the city. At Europan 9 we won with a project in Kapfenberg, Austria. The project was never realized, because the small town was not ready to take the next step. For Europan 10, we decided to participate again in Austria with another project – perhaps it would work on a second try…

Luis Basabe: Our office has worked in various ways on situations that are socially very complex; we call this our red line. At the same time, there is a green line that runs through our work, often applying to suburban contexts. Our prize-winning project in Kapfenberg revolves around a pronounced suburban situation: The village with its train station had become a bedroom community. We found an analogous situation at this derelict site in the southwest of Vienna.
What was the ARE brief?

Luis Basabe: Europan usually issues very open briefs, because they often choose places for the competition where no one could so far figure out what to do. That makes it particularly interesting for us. So the program was flexible – only residential use was prescribed – and we could have proposed practically anything.

When master-planning large sites such as this one, designers typically concentrate the program into large buildings surrounded by large green areas and other public spaces. But here, the authors sought a solution whose smaller scale is more suited to people and the place. The Spanish architects proposed not only a housing development but a concept with a high level of abstraction – their master plan looks playful, reminiscent of those popular board games in which a schematically displayed landscape is to be colonized following a set of rules. The concept is based on an overall grid of gardens upon which various building types, from stand-alone houses to large apartment buildings are organized. The result is a new type of garden city, one which will receive its final face only after the various players have erected their buildings over time.

How did this hands-on concept arise?

Enrique Arenas: Many entries in architectural and urban planning competitions are geometrically based. We believe, however, that the diversity of complex issues in urban development must be addressed not formally but strategically. That’s why we always like to start our projects by asking what role the architect should assume in each specific case. Would it be better here not to build at all? Should the architect design everything or rather coordinate the collaboration of a team? In this project, our contributions are a first step following which many different players will negotiate further steps. There must be inherent flexibility because we also know that our plans often will not be built exactly as we have proposed.

Luis Palacios: For us, the relationship between research and competition projects is important. The idea for our garden city arose through workshops on urban development we carried out in India. We learned how cities evolve there.

Luis Basabe: In India, you will hardly recognize an informal settlement ten years later, because so many changes and expansions occur, and it’s the same with the designed buildings too. Such ideas can also be applied to the contemporary European city.

But the context is completely different. How can this understanding apply in Vienna?

Luis Palacios: In Europe, we use the mechanism of the land parcel. We divide land into plots and say: Everything within these boundaries belong to me; here I can do what I please. Things work differently in India. There, buildings expand to the wall of the neighbor’s house. Then negotiations begin. For example, where do we have to erect our plans often will not be built exactly as we have proposed.
development. 33 percent of the land area will be covered with nearly 1,000 residential units, 10 percent is reserved for private gardens, and 57 percent will remain as common green space. The architects defined an urban code for all the gardens. Private owners and investors can buy garden plots and construct buildings around them, ranging in size XS to XL, in accordance with the urban code. The unbuilt areas, or “the commons,” remain open to everyone. Thus, the actions of the owners will determine the appearance of the public space and of the whole neighborhood.

In your plan, why did you begin with the gardens and not with buildings?
Enrique Arenas: The structure should be defined not by buildings but by the green spaces. The gardens are the playing board – or the hardware for the project. Once the playing field is defined, we need rules for interaction, or the software. Our garden city also has rules and playing cards. They define how things can develop and which relationships can arise among citizens.

After defining the playing field and the rules, how much freedom do the people have when they build?
Luis Basabe: The owners are free to decide on the volume and the design of their buildings.

The future residents have not been included in the planning process. Can we still call this a participatory design?
Luis Basabe: Normally, the planning phase is participatory in the sense of asking people what they want, and of course this is important. But the issue is not only to decide how the city should be, but also to build the city together and to share living in it. The production of cities also requires participation – and this is often forgotten. A good example of participation might be something like ten garden owners pooling their land to plan something jointly. These participants didn’t determine the concept, but the concept is flexible enough to accommodate their various needs.

The flexibility of the Spanish architects’ concept has already been proven. The project has been developed in further detail. Workshops on mobility, landscape design, energy, and other aspects have brought The Commons into a form that will be implemented in 2016. The client demanded much higher density than the original proposal provided, so some large buildings have been added. In addition, an eight-story building was removed from the garden neighborhood because of the opinion of the neighbors.

Your plan met some resistance and was adapted in response to a variety of critical comments. How much is left of the original concept?
Luis Basabe: It’s still one hundred percent our idea, it’s simply been upgraded. The reality now looks somewhat different than our original plan – not worse, but a bit less radical and

“Testing this alternative to the usual models of urban development”
Luis Palacios

“We could have proposed practically anything”
Luis Basabe
Luis Basabe: We are demonstrating that suburban form can be sustainable, in that our proposal is not low-density sprawl. It minimizes travel and infrastructure and ultimately makes residential space more affordable. Our concept opens opportunities for people of various income levels, cultures, and age. An urban gardener can live here as well as someone who just wants their own apartment. The plan calls for a certain number of clustered buildings for small cooperatives of people who share common ideas about building and living together. This social element will enliven the neighborhood.

Enrique Arenas: In the original brief, the client called for lower density – but later saw that higher density is necessary for feasibility of the development.

Despite the higher density, the fabric still looks quite open, the building volumes seem relatively small. Is it sustainable?

Enrique Arenas: We are striving for sustainability on many different levels. We have proposed a highly permeable fabric that is open for many circulation systems, including water, for example. We also worked together with a group of future residents, and of course the client wants the project to be economically sustainable.

Luis Basabe: We are demonstrating that suburban form can be sustainable, in that our proposal is not low-density sprawl. It minimizes travel and infrastructure and ultimately makes residential space more affordable. Our concept opens opportunities for people of various income levels, cultures, and age. An urban gardener can live here as well as someone who just wants their own apartment. The plan calls for a certain number of clustered buildings for small cooperatives of people who share common ideas about building and living together. This social element will enliven the neighborhood.

“The gardens remain untouchable”

The large buildings set diagonally on the “game board” are very prominent. Why were they added?
A grid of streets runs through the new garden city for deliveries, services, emergency vehicles, and people with disabilities. But as a rule, motor vehicles will remain outside the gates: Cars will go no further than the parking lots along the periphery of the neighborhood; the inhabitants will then walk through The Commons to their home. Zoning law requires 0.7 parking spaces per unit of 100 square meters of living area – so over 700 parking spaces are planned. Two bus stops are near the site. Ideally, an additional train station for commuters should be built.

**What importance do you attach to your project?**

**Enrique Arenas:** When we started, we wanted to develop a place in which everybody can live as they see fit – and at the same time to build a community.

**Luis Palacios:** I think we can be proud that we have created and are testing this alternative to the usual models of urban development. You could apply our idea to other suburban contexts. There are many similar neighborhoods in Vienna – of course, adapting to each particular situation is necessary. The mindset and the method are always paramount.

**Project appraisal by the Global Holcim Awards jury**

**Valuable instrument for particularly complex tasks**

The jury appreciates the idea to promote a form of democratic architecture, foregrounding participatory processes in decision-making, while involving a great number of stakeholders and actors. The proposed toolbox offers an appropriate and valuable instrument to be deployed for particularly complex tasks that require collective consensus.

The jury, however, criticized the lack of architectural resolution of the proposed scheme. Very little is shown in terms of the procedure’s output; and not everything should be possible. Additionally, attention must be given to the long tradition of social and cooperative housing in Vienna, a history that the project would need to acknowledge. All things considered, the jury raises doubts about the quality of the resulting architecture, but applauds the project’s social objectives.

Initial project submission see page 114
“Mostly not enough water – but dramatic floods”

Water absorptive surface and subterranean basin
Las Vegas, USA
Water presents complex problems to the gambling and entertainment city of Las Vegas. Two young architects from the East Coast are tackling the challenge with a concept that’s as ingenious as it is simple.

Nobody would ever build a city for millions where Las Vegas stands today. But it was also never planned that such a city would arise in this arid basin in the Mojave Desert. That the mobster Bugsy Siegel opened the “Flamingo,” Las Vegas’ first luxury casino, in 1946 when the town was but a dreary jerkwater was related to the legalization of gambling in the US state of Nevada. Gambling was forbidden in neighboring California, and Bugsy Siegel wanted to attract the rich and famous from the “Golden State” to the desert with a great offer – a promise of luxury and the thrill of gambling, and the chance for the casino to lighten the wallets of its guests.

“We quickly encountered the issue of water”

Bugsy Siegel went into debt with his mafia cohorts to build the casino, which was initially a failure, and cost him his life. But in time, history proved him right: Over the past decades, Las Vegas has seen an almost dizzying boom. Since the “Flamingo” was built, the population of the region has risen from 10,000 to nearly two million people, and no end of growth is in sight.

The location of this gambling city in the desert has of course remained unchanged. Annual rainfall here averages just ten centimeters. The city must source its water from afar. Lake Mead formed on the Colorado River by the Hoover Dam 40 kilometers away supplies some 90 percent of the city’s water. Las Vegas covers the remaining ten percent of its needs with groundwater.

Water is unquestionably a precious commodity in the metropolitan area. Nevertheless, it is squandered here as in few other places in the world. The daily per capita consumption rate is about 800 liters. By comparison, the rate for India is 25 liters, for Germany 122. Passing through Las Vegas, you might think you immediately see what all the water is needed for: to fill the giant pools of the big casinos, or to be squandered by ostentatious water features that in recent decades have redefined the term “fountain.”

But in fact, the large casino hotels on The Strip, the main boulevard of Las Vegas, account for only about three percent of the city’s total water consumption. Twice as much is swallowed by the more than 40
irrigated golf courses in the area. But the worst wasters are the citizens, who spray the water – which remains absurdly cheap in Las Vegas – over the lawns around their houses. Most of the water sprinkled in this way evaporates without any beneficial effect – because of the searing heat of summer in Las Vegas where temperatures frequently exceed 40 degrees Celsius.

Because more and more water is constantly being pumped out of Lake Mead, the level of the reservoir has reached a historic low. Over the past 13 years, the surface elevation has dropped by 30 meters to 337 meters above sea level; if it falls below 328 meters an emergency will be declared. Limiting consumption would painfully affect not only Las Vegas but also much of the rest of Nevada as well as Arizona and New Mexico, because these areas all draw their water from the lake or direct from the Colorado River. The river is a lifeline on which some 40 million people depend.

The authorities of Las Vegas are well aware that they must address the water problem. Among the many projects being discussed is the construction of a desalination plant on the Pacific coast and a USD 15 billion pipeline to the gambling city – a proposal that is heavily criticized by environmentalists, who are calling foremost for the official target for water savings to be revised. Currently, the authorities are aiming to reduce water consumption to about 750 liters per capita per day by 2035. Critics say this reduction is too small and would come too late.

Some measures have already been taken to curb water usage. The city collects domestic wastewater, treats it, and pumps it back into Lake Mead. This slows the draining of Lake Mead, but does not stop it.

Water presents another type of challenge to Las Vegas, one that would probably surprise most outsiders: The city is regularly inundated by floods. When it rains here, the showers are often so strong that the ground surface, predominantly paved or else bone dry earth, cannot absorb the water fast enough. The water then flows through the streets; the world-famous Strip rapidly turns into a rushing river. Rain showers can lead to disaster in Las Vegas.

So the city has a multifaceted water problem – which has been grappled with two young architects: Caitlin Gucker-Kanter Taylor and Amy Mielke.

What made two architects from the East Coast of the USA decide to deal with the water infrastructure in far-away Las Vegas?

Caitlin Gucker-Kanter Taylor: We were both in the same studio at the Yale School of Architecture, and were given the assignment to develop a project for Las Vegas. So we...
Why did the gambling mecca become a focus of the studio?

Amy Mielke: Because there’s a lot currently happening in downtown Las Vegas in terms of unusual forms of urban redevelopment, and because our professor, Keller Easterling, wanted us to engage with the unique set of players. She asked us to focus on the relatively derelict downtown neighborhood, which is north of The Strip, and to figure out what it needed.

The primary driver of this dynamic has a name: Tony Hsieh. The eccentric and charismatic entrepreneur has made a fortune in e-commerce. In 2009 he moved with his shoe and clothing shop Zappos to downtown Las Vegas – and announced that he would be investing USD 350 million in the redevelopment of this neglected district. His goal is to create an attractive living and working environment. Hsieh’s commitment is probably the largest and certainly the most ambitious private urban development program in the USA.

Were there any requirements for the project you were to develop for Las Vegas?

Caitlin Gucker-Kanter Taylor: We had to develop ideas that can be multiplied, or what we refer to as “active form.” Our studio was asked to focus on producing an active form, as opposed to an object form, which is the typical language of architects.

Amy Mielke: First, we thought about residential projects: How could we densify urban life in downtown Las Vegas and make it more attractive than suburban growth? It’s not surprising that we quickly encountered the issue of water – because the water scarcity problem of Las Vegas is obvious, but also because of the recurring floods.

Caitlin Gucker-Kanter Taylor: It’s really strange: The people of Las Vegas mostly don’t have enough water – but there are dramatic floods during annual rainstorms.

Amy Mielke: There are over 90 detention basins, but they’re not near the downtown area. The existing detention basins are located in the suburbs surrounding the city. They are shallow and have enormous surface areas, so they are not a replicable model for dense urban neighborhoods. Storm water follows the path of least resistance; much of it ends up in the Las Vegas Wash, which conducts the water to Lake Mead, but the capacity of this channel is inadequate and about 74 million cubic meters of water get lost every year in the form of urban runoff – water that never makes it into the wash. That’s why the floods sometimes have disastrous consequences.

Caitlin Gucker-Kanter Taylor: So it was quickly clear to us: We need detention basins in the downtown area that can rapidly absorb very large volumes of water.

The two architects then developed an amazingly simple concept that is carefully attuned to the complex urban context: Huge tanks to collect rainwater would be excavated at strategic locations in downtown Las Vegas. The tanks are made of concrete and covered with a textured concrete surface; storm water flows into the tanks through this surface, which is perforated with a pattern of variously-sized pores.

How big are the tanks?

Caitlin Gucker-Kanter Taylor: The tanks can be sized and customized as required. The
How should the tanks be used for events?
**Amy Mielke:** Of course not for permanent exhibitions, but for example as concert halls or for temporal performance pieces.

Is there really a need for this?
**Las Vegas has no lack of stages and halls.**
**Caitlin Gucker-Kanter Taylor:** Las Vegas has many faces. Downtown has little in common with the glamorous world of The Strip – it lacks civic spaces for the locals, places they can identify with. So the tanks serve two purposes – they are both crucial pieces of flood control infrastructure, and public spaces that connect people to their natural resources.

Don’t the tanks become very dirty after a flood?
**Caitlin Gucker-Kanter Taylor:** Yes, of course they must be maintained. But there is experience with this, because other types of reservoirs also need maintenance.

The idea behind your project is so simple that you wonder why such systems haven’t been around already for a long time...
**Caitlin Gucker-Kanter Taylor:** We also don’t know why. Of course, many types of water collection systems exist. The unusual thing about our proposal is the porous, textured surface, its site specificity, and its ability to fit into existing dense urban context.

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**“Water is not worth much here”**

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**tank we are planning for downtown is large enough to accommodate all the water that accumulates in the neighborhood in a rainstorm; it’s about 25 meters deep and holds as much as 100,000 cubic meters of water.**

**After a rainstorm, what happens to the collected water?**
**Amy Mielke:** It’s filtered and pumped into Lake Mead. The systems for this are already in place. We are currently studying whether the back-flowing water could power a turbine. We could produce electricity in this way – for the pumps and maybe even for other uses.

The surface water is led to the pores through a visually striking spiny structure. The main source of inspiration for this was the thorny devil, a small, orange-red lizard found in the deserts of Australia. In these areas there is no standing water, and the thorny devil cannot drink in the conventional sense. The lizard meets its fluid requirement using its skin, which is completely covered with spines. The scaly skin collects water droplets from dew, fog, and the infrequent rains; capillary force carries the water along microscopic grooves in its skin to its mouth.

What is the advantage of your proposed surface?
**Caitlin Gucker-Kanter Taylor:** It leads water quickly to the pores according to the unique hydrology of each site, and its texture acts to slow moving water.

**Amy Mielke:** We also find this surface quite dynamic. It gives the tanks considerable visibility, and this would help raise public awareness of water scarcity and excess in the urban landscape.

Some of the inlet pores are quite large, people might fall in ...
**Amy Mielke:** We are looking for solutions to that, for example, there’s an iris that opens only when rain falls. We know already now that there will be areas of the surface where people can circulate freely and other areas where this will not be possible.

The architects intend to make not only the surfaces of the tanks accessible to the public – but the tanks themselves. The tanks can be used in periods of good weather as venues that can be evacuated safely in time if necessary.
Actually, it should be easy to convince the Las Vegas authorities of this obvious concept – especially since the estimated cost seems relatively low in view of the damage the floods can cause. What do the authorities think about your project?

Amy Mielke: They don’t even know it very well! We are still working on many details, but have had very productive preliminary conversations with the municipal stakeholders. One problem is certainly that water is still not realistically appreciated in Las Vegas. Las Vegas is the city of currencies – and water is simply not worth much here. Or rather: It is still not worth enough.

Could your system be implemented in other places?

Amy Mielke: Definitely. In our research we focused on the needs of downtown Las Vegas, but the idea is scalable and adaptable.

Caitlin Gucker-Kanter Taylor: It can be adapted to any city that faces similar problems as Las Vegas: where there is generally too little water, but occasional downpours cause flooding. This applies to many arid cities.

Project appraisal by the Global Holcim Awards jury

As significant for the city as the Hoover Dam is for the region

The submitted panels exquisitely present the project’s idea to introduce a new infrastructure for capturing and holding rain precipitation in Las Vegas – a project as significant for the city as the Hoover Dam is for the region. The jury argues that the formal articulation of the surface might be too excessive for what it needs to do and wonders whether the choice of concrete as surface material is indeed appropriate for a hot and arid climate.

Though beautifully drawn, the project remains within the realm of the abstract and is rather schematic, foregoing the opportunity to further develop more concrete propositions for practical implementation. Criticism aside, the project indisputably offers an important contribution to the Holcim Awards and greatly enriched the debate during the jury’s deliberations.

Initial project submission see page 134
“Reinventing the brick” Zero carbon emissions compostable structure, New York, USA
New York is arguably the most important hub for art and culture in North America – because this metropolitan area, with a population of 19 million, is one of the most innovative places in the world. Here, countless platforms are dedicated to the new, the thrilling, and the spectacular.

One of them is MoMA PS1 in the borough of Queens. It was established in 1976 under the name PS1 and today is among the oldest and largest institutions for contemporary art in the United States. The platform has been annexed by the Museum of Modern Art (MoMA) since January 2000. Among its well-known activities is the “Young Architects Program,” a competition in which young and ambitious architects and their teams are invited to submit a portfolio. A jury then shortlists five of the teams, who each develop a tangible project for the competition. The best project is then realized on the MoMA PS1 outdoor courtyard, where it forms the architectural backdrop for the “Warm Up” summer music series – a magnet for culture buffs.

In 2014 a project called Hy-Fi by the New York architectural office “The Living” led by David Benjamin was chosen as the winner of the “Young Architects Program.” David Benjamin is a social scientist and architect. He and his colleagues at “The Living” build unusual projects such as their pop-up athletics stadium for sporting goods manufacturer Nike. He constantly seeks innovation – as can be seen in the tripartite round tower ensemble Hy-Fi, standing over twelve meters tall. But only when you look closely: The towers are not built of clay brick, as it first seems. Each masonry unit is a naturally-grown composite element consisting of chopped corn stalks and mushroom mycelium.

“We believe that the material is revolutionary”

David Benjamin, how did you come upon the unusual idea of making a building out of this material?

We’ve been working with living organisms for some years now, and we have several projects that involve using them to produce materials. In this endeavor we collaborated closely with the New York start-up company, Ecovative Design. They are known for their invention called “Greensulate,” a material...
that is used as a substitute for polystyrene packaging. They originally thought of the composite material made of agricultural by-products and mushroom mycelium as a type of insulation. Here at “The Living,” we believe that the material is revolutionary. That’s why we’ve collaborated with Ecovative to extend Greensulate technology and created a new version, sort of a spin-off.

Hy-Fi bricks...
Right. Greensulate gave us the opportunity to reinvent one of the oldest elements in the history of architecture – the brick. With our project we wanted to explore the limits of its potential.

The principle of making bricks using the Greensulate method is astoundingly simple. It requires only a reusable plastic mold containing chopped corn stalk, an agricultural by-product. This medium is inoculated with mushroom mycelium – these are root-like branching networks that typically grow underground around mushrooms, and are thus not seen. Mycelium can be propagated nearly indefinitely, much like yeast, from a small starting stock. As it spreads throughout the plastic mold, it forms a sort of matrix around the chopped corn stalks, working like a binder that weds the vegetable pieces together and at the same time hardens the mass. The process requires no energy or complicated catalyzing, and no waste or by-products are produced. Besides the mold and the constituents, only a sterile environment and some moisture are needed. Mycelium also grows in the dark.

It takes five days for a brick to grow into form and harden. Then it’s ready to be used for construction. Is it still alive?
No. For Hy-Fi we stopped the process by drying the bricks. But theoretically it would be quite possible to build with living bricks – and they would display certain characteristics of living organisms. For example, they would be able to heal themselves: a crack in a brick would grow closed by itself.

Would such a building grow?
Probably not perceptively. But it would be quite possible to build without mortar, because the bricks would grow together naturally.

This all sounds like science fiction: living buildings that regenerate themselves! Would you have to feed such a building somehow for it to survive? And how long would it live?
Maybe you would have to sprinkle it with a small supply of nutrients, but we’ve studied this as little as we’ve studied the lifespan of the bricks. Ultimately, we had to keep our project within a clearly defined scope. Our main task was ultimately to deliver a building!

David Benjamin and his team worked together with the Arup engineering firm to ascertain whether the new bricks possess the compressive strength necessary for a 12-meter-high structure. Tests and calculations of load-bearing capacity were done in the laboratories of Columbia University.

The architects of “The Living” ultimately decided to work with Hy-Fi using cylindrical forms and warped surfaces – because these are intrinsically efficient for building tall, stable structures. They designed an ensemble of three winding and intertwining cylindrical towers using a total of 10,000 organic bricks grown over ten weeks. Furthermore in the interest of sustainability,
the architects specified lime mortar, which after demolition would be easier to break down than normal mortar.

Meanwhile, the exact position of every single brick was determined using an algorithm. In doing so, it became evident that two more formats of brick were required: a half-brick and a quarter-brick. With these the expressive design, open at the top, could be realized with precision and stability.

This building would have been a perfect task for a construction robot – which specialize in stacking masonry units in precise and complex patterns ... That’s right, and also because the individual bricks are very light, weighing only about one kilogram each. Placement of the three types of brick would have been child’s play for construction robots. But we would have needed more time from the beginning to exploit this option.

So you hired a conventional masonry contractor?
Yes, and the form of the structure and the weight of the bricks proved to be a challenge for the masons. By the end we were working in two teams: A group of young architects and trainees from Columbia University laid out templates and bricks and prepared string guidelines to help position everything correctly; the other group were the masons, who laid the bricks with mortar, and Hy-Fi rose skyward, course by course.

It was decided to do without a roof so that sunlight would illuminate the interior of the structure. To better conduct the light downward to the floor, the architects treated the upper ten percent of the bricks with a highly reflective coating, a new development of the 3M technology group, which specializes in adhesive products. The reflective foil can be adhered to practically any surface; here it was applied to the plastic molds in which the bricks were grown. The 1,000 reflective bricks were not – like the 9,000 others – taken out of the plastic molds, but rather used with the mold in place.

The architects also studied the organic bricks using accelerated aging tests. The testing simulated three years of exposure to wind and weather – within three weeks. Samples within a test chamber were subjected to moisture cycles, temperature swings, and other environmental conditions. The test delivered very promising results: The bricks showed no change of properties whatsoever after the simulated three years. Empirical values for aging behavior under real conditions have not yet been obtained.

“We want to share our findings with the design community”

David Benjamin

“It’s now clear that the general concept works”
This is almost too good to be true! Were there any problems at all during the project?
There were some scheduling and logistical problems, but at least they were never so severe that the experiment had to be stopped or further research was put into question. But let’s not forget: Hy-Fi had a limited timeframe from the beginning. The structure was intended to stand only for about twelve weeks. We know that there’s definitely room for further development. For example, the plastic molds can be improved to make the production process even more sustainable. Also, the bricks are not reusable at the moment because they are laid with mortar, which causes them to break when they are removed.

As soon as they come into contact with other compost material they start to decompose. Within a short time, high-quality organic compost is produced, which can be safely used as a soil conditioner.

After having grown your organic bricks, built with them, and composted them: What have you learned from the whole project? First of all, it’s now clear that the general concept works, even at a larger scale – because once you get the logistics under control and can produce the required molds, organic bricks can be grown basically in any shape and size. We also found out how people react to the material, whether they will accept it – and they do. The structure generated great enthusiasm, everybody wanted to touch a brick. And finally, we were also able to show just how much is feasible at the local level: Everything we needed for this project came from within a small radius. The corn stalks came from up state New York, the factory in which the bricks were grown is just to the north of New York, the composting plant is just a few kilometers away, and the compost was used in local community gardens and for planting trees in the city.

What are the next steps of this project? We’ve made a long list of things we would like to follow up on – for example, how can we get the most out of the insulating properties of the material. We also want to share our findings with the design community, so that the research can continue. More projects like Hy-Fi are in the pipeline, but none that we can mention yet.

“Everybody wanted to touch a brick”

The latter is only a minor problem, because the architects planned their project from cradle to grave. After Hy-Fi was demolished, they simply brought the bricks and the mortar to a nearby composting facility. The organic bricks, stable and strong when built into walls, can be easily composted afterward.
Then only one question remains, actually: How did the project get to be named Hy-Fi?
Good question! First of all, the name derives from hi-fi, obviously relating to the musical events at MoMA PS1 “Warm-Up.” And then “hyphae” is another name for the mycelium we used. And finally, we saw the project as a sort of hybrid between the familiar and the new. At first glance, you think you know these bricks, but in fact they are something totally new. The building is meticulously calculated down to the last brick, yet it looks raw, handmade, organic. We were intrigued exploring all these contrasts!

Project appraisal by the Global Holcim Awards jury

**Accelerated simulation of a building’s performance**

Insofar as that the building under consideration has already been erected and removed; it represents an interesting and potentially rich case for the Holcim Awards. The project underwent an entire lifecycle in an extremely short timeframe – a type of accelerated simulation of a building’s performance for scientific purposes. The scheme is accordingly presented as an experiment in a laboratory setting in order to test particular material properties, construction assemblies and de-assemblies as well as recycling procedures.

The jury appreciates the great care given to each step of the research, but hoped to encounter a more critical assessment of the material used, including suggestions of its application in other situations and transferability to other contexts.

Initial project submission see page 138
“A symbol of forest protection”

Low-impact timber rainforest center
Puerto Viejo de Sarapiquí, Costa Rica

The Fundecor foundation is dedicated to rainforest protection. Its new headquarters in Costa Rica, designed by the Mexican firm PLUG architecture, is a physical expression of its commitment.
Rainforests are found in tropical climate zones around the world and are mainly concentrated in five major areas in Asia, Africa, Madagascar, South America, and New Guinea. In these places, high temperatures and persistent moisture and sun have given rise to forests in which plants thrive in dense concentration in up to six different horizontal levels of vegetation. These diverse and complex habitats harbor the highest levels of biodiversity on earth. It is estimated that up to 70 percent of all species are found in this habitat – over 30 million species of plants and animals. But rainforests are more than an important place to live for people, animals, and plants – they also act as a kind of “air purifier” for the whole earth and help to regulate the global water cycle.

In spite of their importance, rainforests around the world are under heavy pressure. In 1950, tropical rainforests still covered approximately 11 percent of earth’s land area, or about 17 million square kilometers. Since then, people have cleared vast areas in order to mine natural resources, harvest exotic woods, create farmland, or raise cattle. Satellite images show that the area of rainforest has now been reduced to about seven percent of the earth’s land area. Although protective measures have slightly decelerated the rate of destruction here or there, the problem persists. In its “Global Forest Resources Assessment” of 2010 the Food and Agriculture Organization of the United Nations (FAO) writes that between 2000 and 2010 deforestation continued at a rate of 130,000 square kilometers per year – 40,000 of which were in South America.

“Simple construction methods that can also be used elsewhere”

Rainforest decline threatens the habitat of indigenous peoples and can have serious consequences for the earth and its inhabitants: It alters the global water cycle, releases heat, CO₂ and methane, leads to soil erosion and desertification, and reduces biodiversity and thus the gene pool.

Many organizations are fighting against rainforest destruction. Among them is the Costa Rican NGO Fundación para el Desarrollo de la Cordillera Volcánica Central (Fundecor)
in Puerto Viejo de Sarapiquí, founded in 1989. It operates programs in various Central and South American countries and is committed to research, environmental education, maintenance of national parks, and sustainable forest use.

The headquarters of Fundecor is located in the middle of the forest in Puerto Viejo de Sarapiquí in northern Costa Rica. An interdisciplinary team of biologists, forest engineers, geographers, and environmental specialists works there. Due to the actual demand of their services they have outgrown their rented building, which is not in a desirable operative condition, so the organization decided to construct a new building. Román Cordero and Izbeth Mendoza from PLUG architecture in Merida, Mexico were commissioned to design it after having won an international competition.

Why is Fundecor building its new headquarters in the middle of the forest?
Román Cordero: The organization owns a large piece of land there, bordering Braulio Carillo National Park.
Izbeth Mendoza: The Fundecor staff of about 25 people deal directly with this forest in their work, helping the local community to manage forestry sustainably. About 12 researchers go into the forest every day to take measurements, survey, and record changes.

What made you decide to take part in the competition?
Román Cordero: Izbeth and I have been running our studio PLUG architecture since 2009, and an important part of our practice, in parallel to teaching and researching, is taking part in competitions that focus on themes of landscape and territory. This competition fit perfectly to put in to practice our architectural research and theoretical discourse.

Your design won the competition. Why?
Román Cordero: The landscape is beautiful. When we visited the site for the first time, we were speechless. The building will be swallowed within the forest, which is still quite untouched. Only a small unpaved road leads there, next to it there is a swampy area that turns into a pond when it rains.

Izbeth Mendoza: The Fundecor staff of about 25 people deal directly with this forest in their work, helping the local community to manage forestry sustainably. About 12 researchers go into the forest every day to take measurements, survey, and record changes.

What kind of competition was it?
Román Cordero: It was the first open international competition ever held in Costa Rica. It took place in October 2011 and drew 60 entries from near and far.

“Wood is already suited to the climate”

What made you decide to take part in the competition?
Román Cordero: Izbeth and I have been running our studio PLUG architecture since 2009, and an important part of our practice, in parallel to teaching and researching, is taking part in competitions that focus on themes of landscape and territory. This competition fit perfectly to put in to practice our architectural research and theoretical discourse.

Your design won the competition. Why?
Román Cordero: I think Fundecor liked our project for three main reasons: First, we proposed building with wood. The foundation director has a chair in the Forest Stewardship Council, the organization that issues the FSC label. When a foundation is committed to sustainable forest management, it can generate credibility by build using certified wood from the region. Secondly, our design is straightforward and recalls traditional rural architecture. And thirdly, the Fundecor people were excited about our proposal for the atrium. It symbolizes how the building protects the forest, and they liked this analogy.
What were the requirements for the design?
Román Cordero: When we visited the client for the first time, they showed us an old wooden building in the area; it was built 170 years ago and is still in impeccable condition. Fundecor told us they wanted their new building to last a hundred years. They didn’t ask for an atrium or a wooden building, but they presented a very precise program: We received a list of spaces that the building must provide.

What is the main idea of your design?
Izbeth Mendoza: We wanted to create a building that would not disturb the soil or the hilly landscape. It was also pretty clear that we wanted only one floor, in order to ensure easy access.

PLUG architecture’s design displays impressive simplicity and beauty – a square building with sides 30 meters long, four wings enclosing a large atrium. The shed roof of each wing slopes toward the courtyard, full of trees. A corridor circumscribes the atrium; the rooms are arranged along the outer perimeter of the building, facing the forest. Elevated on stilts, the wooden building floats above the gently undulating green terrain. It will cost only USD 600,000 to build.

Why the four wings?
Román Cordero: We deal intensively with the program for every project we do, and here we translated the list of required spaces into activity functions. This resulted in four different areas: “Manage” for administration and storage, “Receive” for reception and public events, “Research” for working and studying, and finally “Host” for accommodations and meals for staff and guests. So we proposed structuring the building into four wings, one for each functional area. The jury appreciated the layout-by-activity applied in our plan.

But is the building flexible enough to adapt to changes in use?
Izbeth Mendoza: An important requirement stated in the brief was that the building and its rooms should be designed for maximum flexibility. Our proposal with the four contiguous wings allows the lines between the areas to be shifted, so the size of the areas can be adapted to suit changing needs.

In your submission to the Holcim Awards competition, you call your project a “rethinking of wood.” Wouldn’t this require an innovation?
Román Cordero: Yes and No. At first, we thought building in wood is still commonplace in Costa Rica, but in fact this is no longer the case; it has been all but forgotten. So another main idea of our project is to bring back wooden construction. That’s what we mean by rethinking.
Could your building help usher in a renaissance of wood construction in Costa Rica?

Izbeth Mendoza: We don’t know whether that will happen, but we think the chances are there. Wood is not so expensive in this region, and other building materials are difficult to bring there. Wood construction is quite different and requires an understanding of joints and sections – but it’s a responsive material with a certain magic.

Román Cordero: We wanted to find simple construction methods that can also be used elsewhere. We’ve worked with bamboo in Mexico, but we had little experience with wood.

Are you working together with specialists on this project?

Román Cordero: We’ve had the great opportunity to work together with a local partner who has extensive experience in wood construction in Costa Rica. Fundecor also has good connections with other professionals and local sawmills.

PLUG architecture’s design incorporates passive climate-control systems for the building: Placement of the building on stilts amid the trees and the use of a deep-drawn shed roof make for natural cooling and ventilation, taking advantage of the region’s constant year-round breezes. Rainwater is collected from the roof and the sewage is transformed into fertilizer that can be used in the forest.

Are the passive measures sufficient to keep the building comfortable in this tropical climate?

Román Cordero: In all of our projects we are careful to make buildings that breathe. In this case, the perimeter plan with many openings makes for good passive cooling. With small fans we will be able to move the air enough so that we don’t need mechanical air conditioning. This system has worked in our previous projects in tropical climates.

“WE were driven by passion”

Does the building need a heating system?

Román Cordero: Not in this climate. The only problem is the humidity. But if you build with tropical wood, it’s already suited to the climate and can tolerate the moisture.

The roofing is made of aluminum recycled from milk containers. Is this a common practice in the region?

Román Cordero: Not yet, but maybe in the near future because this material is better suited than the regularly used corrugated metallic panels; it offers better acoustic and thermal insulator proprieties. So we can do without an additional layer of ceiling, which would add to the cost.

Where does the recycled aluminum come from?

Román Cordero: Every company in Costa Rica is required by law to engage in programs of social responsibility. One local producer of aluminum beverage cans devel-
oped a method of recycling used cans into corrugated panels a few years ago. Costa Rica has a well-developed recycling culture.

Since the competition ended, Fundecor has been at work collecting the remaining funds needed for construction. Construction is scheduled to begin in 2015 and be finished within nine months.

**Will Fundecor manage to raise the necessary funds and start their building?**

**Román Cordero:** The foundation will begin the construction even if they don’t have all the money yet. I know that they enjoy a certain level of support and are fighting hard for their building – because they really need it. I think the Holcim Awards Silver for the Latin America region will help Fundecor secure the rest of the money.

**Was the Fundecor commission a pro bono project?**

**Román Cordero:** No, we got paid for our services but to be honest the economic support we received was not enough for the great amount of work the team did. We didn’t take on the project for the money but for the challenge that it represents. I think that’s how it was for everyone involved in the project: We were driven by passion.

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**Project appraisal by the Global Holcim Awards jury**

**Entire repertoire of what is associated with a green approach**

This is a remarkably well-executed scheme deploying the entire repertoire of what is normally associated with a green approach to building. However, what seemed far-sighted at the regional level of the competition lacked innovation at the global stage.

The project is undoubtedly professional in its execution, but would have benefitted from a more thorough exploration of a broader range of facets pertaining to sustainable construction – as, for example, outlined in the “target issues” promoted by the Holcim Foundation.

Initial project submission see page 162
“A building can help children understand life”

Pedagogically-aligned school, San Andrés Payuca, Mexico
The World Bank considers Mexico one of the emerging market countries. Although the strongest economy in Central America measures up to the world’s leading nations in many ways, in certain aspects it is still lagging far behind, as illustrated by the school system.

One reason for this is the high rate of population growth. The average age in Mexico is only 27 years; the increasing proportion of children and adolescents demands that more and more teachers be trained. This takes a toll on quality, and the shortage of teachers cannot be overcome even through accelerated training programs. The student-teacher ratio in the country at 28:1 – around half the number of teachers compared to the European Union.

“Children’s natural creativity mustn’t be lost”

For teachers to reach as many students as possible, lessons in many villages are given via satellite television. This so-called telecolegio is daily routine for about 20 percent of all students in Mexico and is particularly widespread in rural areas – although it’s clear that the teacher on a television screen can never have the impact of a physically-present teacher.

The Mexican school system offers nine compulsory years of education: six years of primaria and three years of secundaria. But less than half of the students complete this obligatory term. According to government statistics, at least 300,000 girls and boys under 14 years of age drop out of school every year. In many poor families, attending school for more than six years is considered an unnecessary luxury; whoever is in school is not available for work.

The public school situation in Mexico, as in many other countries, has led to a dual-class society regarding education: Those who can afford to, send their children to a private school. The trend away from public schools has grown since 2011, when the government declared school expenses tax deductible.

This development has been met with resistance not only by teachers and parents from less privileged segments of society but also by many privileged Mexicans. Among them

“Kokokali” looks radically different to every other school in Mexico. And the difference goes beyond appearance: The architects of AT103 developed a holistic education concept which also influences the design of the school.
is Enrique Lopez, a young real estate entrepreneur in San Andrés Payuca, a village to the east of Mexico City. Enrique Lopez decided to build a school in the village that would address the needs of the children in a comprehensive way and promote the most gifted youths. To realize project “Kokokali” – the Children’s House – he commissioned the two architects Julio Amezcua and Francisco Pardo. With their office AT103, they pursue at least one project every year to help socially disadvantaged people. “Kokokali” is a compound word derived from the local Nahuatl language using kokone (children) and kali (house).

Why did Enrique Lopez and his Fundación La Concepción come to you?
Julio Amezcua: It was quite funny: at that time, Enrique Lopez was in a relationship with my ex-partner – and she highly recommended us for this project.
Francisco Pardo: The idea originally came about one day as Lopez observed that his two daughters played quite normally with the other children of the village. He knew the time would eventually come when his privileged daughters will grow apart from the other children – simply because they have other possibilities. So he decided to build a school in San Andrés Payuca that will give all the children the same possibilities and allow them all to stay together. Enrique Lopez is one of those privileged people who is willing to give something back to his country and its citizens. We need such people – and they deserve our support.

Isn’t there a school in San Andrés Payuca?
Julio Amezcua: Yes, but it’s in poor condition in terms of both its architectural and educational substance. For project “Kokokali” our client envisages a sort of private school for gifted children in the region. The parents must pay an enrollment fee, but it’s a symbolic sum – this is intended to give the children and their parents the feeling that they are part of something worthwhile.
Francisco Pardo: It’s also a matter of pride: The parents and the children are giving something in order to be part of our project. If everything were for free, it would make no difference whether one seizes this opportunity or not. Then “Kokokali” would be just another school.

“Learn first-hand about interconnections and dependencies”

AT103, along with a multidisciplinary team, not only designed the building and the furniture but also developed an education concept and an expanded curriculum for
the school. This includes the national school curriculum – after all, the children from San Andrés Payuca should ultimately receive a certificate that is recognized everywhere – and it also includes many other subjects, such as farming.

The architects soon realized that they needed the help of specialists in order to develop a holistic solution. Education experts, designers, and engineers were called in to augment the team of AT103. The concept of the project is based on a thesis of the British social developer Sir Ken Robinson. In his view, schools in the western world still follow an industrial model: Knowledge and rationalism press students into a mold, the objective of which is productivity.

How does one go about changing an entire school system?

**Julio Amezcua:** By questioning absolutely everything! Through our research we found out that the face of schools hasn’t changed since time eternal: The teacher stands at the front of a rectangular classroom, facing rows of the more clever students, and far at the back the lesser ones. We wanted to break down this hierarchy, so there are no corners in our classrooms, no edges, no front and back. The round classrooms look completely differently to conventional ones, and they are also furnished suitably for children – because teaching happens here in a different way.

**Francisco Pardo:** Why is it that so many children today must be treated for attention deficiencies? It’s because many teachers and parents fail to understand that it’s quite natural for children up to a certain age to constantly move. That has nothing to do with concentration problems, and countless studies now prove that movement even supports the learning process and concentration process. So the team of designers developed stools that allow children to continually move. We looked at every single element of the school in this way.

**Julio Amezcua:** Children’s natural creativity mustn’t be lost! Today, when children enter kindergarten, they paint with every color they can find. But when they leave school later, they use only a pen or pencil. This typifies the current school system very well – and we want to change this.

Julio Amezcua and Francisco Pardo are responsible for the overall project and for ensuring that all the threads are woven together correctly, but as architects they are mainly concerned with the implementation of the building. That the school they designed is something quite special is obvious from the first glance: The round classrooms of the school are defined by a serpentine wall that meanders through the site. This undulating wall gradually encircles itself, forming an enclosed courtyard where the playground is located. The sequence of classrooms reflects the students’ school careers: As the children advance through the school years, they physically move along the pearl necklace of classrooms. The architects oriented the rooms for the younger children toward the inner courtyard and those for the older ones outwardly. This is a formal metaphor for the gradual opening to the outside world.

**Can architects change the school system?**

**Francisco Pardo:** A building like “Kokokali” can help children to understand life. The
building is like a body with water flowing through its veins. The source of fresh water used in the building is harvested rainwater. Some of it is stored in tanks and some of it is used directly, for flushing toilets and so on. Fish swim in the water tanks, and they will eventually appear on the lunch table of the school. So the children learn first-hand about such interconnections and dependencies at the school – and this type of learning makes a much longer-lasting impression than simply hearing from a teacher that we shouldn’t waste water for one reason or another. Julio Amezcua: The children will also experience how the vegetables on their plates come from plants they’ve grown themselves, and they will see how the animals develop which are kept on the school grounds.

In Mexico’s public schools and kindergartens it is usual that school opens at 7:00 am for children to arrive in time to eat breakfast. This is a response to the traffic levels in cities, which are still tolerable in the early morning. This arrangement might be beneficial in Mexico City, but it’s not in San Andrés Payuca, where the early mornings are still very cold. The school is situated at more than 2,500 meters above sea level. In the afternoon, temperatures generally rise to 35 °C or more. So the architects decided to have the school day begin later instead of installing a heating system for the cold early morning hours, which would be completely superfluous by the hot afternoon. The individual rooms are positioned so that open windows can catch the breeze for afternoon cooling.

Progressive school projects contribute substantially to sustainable development. In the previous Holcim Awards competition, Francis Kéré won the global gold prize for his school project in Burkina Faso which was finally built with the help of the whole village. Is the local population involved in building your school? Julio Amezcua: We and the client had differing views on this point. Enrique Lopez didn’t want the population involved in the construction; he had studied other projects in Mexico which ultimately failed because of such involvement. Still, we definitely wanted local participation. Once again, it’s a matter of pride: Your relationship with the school will be stronger if you’ve helped realize the project yourself. Francisco Pardo: So the team developed a special masonry unit, which looks a bit like a Lego brick, and which we have now had patented. These blocks are cast on site using earth, cement, and gravel, and they interlock when they are stacked to build a wall. The method is very simple; we see this block as an improvement over the traditional masonry method in Mexico using clay bricks. Julio Amezcua: Building contractors will now take over the main part of the construction process. Locals may help, if they are willing and have time, for instance to help put up a wall on a weekend.

The community will derive additional benefits from the new school. The old school, which will remain open, will be able to share the

“Improvement over the traditional masonry method”
kitchen of “Kokokali.” And a new public library is planned to be built on the grounds of the new school.

The classrooms for the youngest students will be built first, as the client wants the school to grow along with the children. “Kokokali” is scheduled to open in 2016. Once the campus is complete, about 400 children will enjoy a standard of education that has never before been available in the region. If the concept proves successful not only on paper but also in practice, Fundación La Concepción plans to spread it to other regions – until all 32 federal states of Mexico have their own “Kokokali,” adapted to their local conditions.

Project appraisal by the Global Holcim Awards jury

Investigating their architectural potential from an entirely new perspective

While the global jury greatly appreciates the intention to creatively re-think “the school” as a building type, the further development of the scheme appears to have been trapped by the initially proposed form of the entire compound. The undulating wall might be overpowering in its expression and potentially too inflexible to adapt to changing conditions.

With the plan considered to be the prime generator of the building, the project’s qualities need similarly be explored in sections and elevations. Notwithstanding the critique, the jury applauds the authors’ effort to reassess school buildings and investigate their architectural potential from an entirely new perspective.

Initial project submission see page 164
“Always the best individual solution”

Green building showcase and enterprise hub, Ankara, Turkey

A competence center for sustainable development and research is planned to be built on a hilltop site in the Turkish capital of Ankara. ONZ Architects respected the challenging topography and developed an uncompromisingly sustainable concept.
The Turkish capital Ankara is an economic hub of the country and is home of Ortadoğu Sanayi ve Ticaret Merkezi (OSTIM), one of the Turkey’s largest organized industrial zones. It measures about 500 hectares (the equivalent of almost 1,000 football fields) and accommodates some 5,000 companies across 17 industries. Most of them are small- or medium-size companies; together they employ more than 50,000 people.

More than fifty of these small businesses in the industrial zone are already associated as members of the Renewable Energy and Environmental Technologies Cluster. This makes OSTIM a “center for energy technologies” on a sustainable basis. These companies primarily deal with matters involving alternative energy sources. The OSTIM operators want to promote sustainable development even more and create an additional competence center for sustainable development and research where enterprises, schools, and organizations can rent space.

“Harmony with the natural topography”

A site for this competence center was quickly found, because there was only one large parcel still available in the densely developed precinct. It is located on the edge of the zone and had never been used because the land includes a steep hill, making development difficult. A design competition was held for the new competence center. Ten architectural firms were invited to participate, including ONZ Architects, based in Ankara and founded in 2007 by Onat Öktem and Zeynep Öktem. ONZ practices architecture, city planning, and urban design employing an interdisciplinary approach. The staff is convinced that architecture can directly contribute to improving the world, hence their great interest in sustainability.

Why was ONZ Architects invited to participate in this competition?

Onat Öktem: Because we were able to substantiate our experience in the field of sustainable construction. In 2012 we won first prize in the Green Dot Awards for our project Green Mosque. In addition, we have conducted and continue to conduct numerous sustainability studies. We are known for carrying out all our projects as sustainably
Thus, ONZ Architects could plan their project on a virtual green-field. The special challenge was that the site extended over a hill. The team decided to accept this challenge and neither remove nor plan around the hill; rather, they integrated the topography into their concept. This significantly distinguished their design from those of competitors. Their proposal featured a prominent linear wing connected to a four-level terraced wing nestled into the hillside.

The form of the wings relates to the functions within. The terraced wing houses mainly workshops, storage rooms, and test labs – spaces that do not necessarily require daylight or permanent artificial lighting. The floors in this wing penetrate deep into the hillside, 15 to 20 meters. Office space is also planned for the front sections of these floors. The terraced roofs are planted, which adds insulation. It’s a natural way to save

“People do not feel comfortable in fully automated buildings”

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as possible – whether the client specifically requests this or not.

How important is sustainability in Turkey?
Zeynep Öktem: In the construction industry, sustainability is mainly a selling point and a marketing strategy. Very seldom are new projects designed holistically as sustainable buildings. What is usually labeled “sustainable construction” is merely a conventional building with some green elements added on at the end. Using this scheme, houses and apartments can be sold or rented for a somewhat higher price. But we see sustainable construction as much more than implementing sustainable technologies. One must seek the best individual solution for each project from the very start. This might mean, for example, that the building should be positioned for optimal solar orientation.

What was the brief for the competition?
Onat Öktem: There wasn’t one. They merely specified the functions that the competence center must accommodate. Then they said: “Now show us how it should be done.” There was also no budget defined, which is normal in Turkey. The sky is the limit! Costs never play a role in the planning phase; estimates are made only when a project becomes concrete.
heating and cooling energy. The green roofs also provide a place for open-air experiments – or for employee recreation. Because the terraced structure follows the original profile of the hill, the wing blends into its natural surroundings.

Can buildings in Ankara do without a sophisticated heating and cooling system?
Onat Öktem: No, because the summers are too hot and the winters too cold. For this project we are proposing geothermal heat pumps, which in Turkey are still uncommon but slowly starting to catch on. Dutch colleagues initially introduced us to these systems. They showed us how it all works – and then we used heat pumps in the sustainable “Super School Campus” in Kastamonu in northern Turkey.

Do you have previous experience with terraced buildings?
Zeynep Öktem: In all of our projects the land and the topography is one of the main elements which shape our design. The hill on this very site constitutes a very different typology from the sites that we had worked with so far. Here we had the opportunity to design terraced buildings in harmony with the natural topography of the site. We soon found out that the challenge of creating terraced buildings is the architectural design, and not necessarily the engineering. It took over a month to get the individual floors correctly positioned in the hill. You have to study the terrain very carefully and try different variations again and again until everything fits.

The elongated wing flanks the hill and looks much like a conventional building ...
Onat Öktem: Correct. We needed this volume to counterbalance the terraced wing: The rectilinear form of this block creates a visual counterweight to the curvilinear terraces, integrated into the natural setting. Each floor of this wing – in which offices, conference rooms, and event halls are planned – is directly connected to a floor of the terraced wing. So you can easily move back and forth between the wings. This facilitates collaboration among people in both wings.

Many sustainability features are integrated into the slender, elongated wing, including a pool for collecting rainwater. The water is cleaned by means of a simple mechanical filter and is used for the toilets and for irrigation. All plumbing fixtures use water-saving fittings. The geothermal pumps run on solar energy provided by panels mounted on the façade. Corridors between the façades and the main spaces in the middle of the building provide ventilation in the summer and in the winter acts like a greenhouse, in conjunction with a large area of glazed façade, generating heat and thereby reducing energy consumption. A translucent second envelope layer creates a further insulation sheath by encasing warmed air.

The entire building is oriented to permit sufficient sunlight so that artificial lighting is required only in certain areas or at specific times. Sensors regulate how much light the dynamic lighting system produces. Adjustable lattice panels provide shading where necessary. Eco-Techno Park is however not a fully automated building.

Why did you decide against an automated system that could constantly optimize lighting, ventilation, and temperature?
Zeynep Öktem: A study showed that people do not feel particularly comfortable working in fully automated buildings in which they have no control over the environmental factors. So we tried to strike a perfect balance.
Onat Öktem: We are giving the users a certain amount of control over everything that affects the working environment: ventilation, shading, room temperature, and so on. This type of flexibility is necessary because we don’t know who will actually work in Eco-Techno Park and exactly what their needs will be.
But to keep them from overdoing it, we are setting a framework within which they can adjust the settings.

“Overwhelmed by the complexity”

Eco-Techno Park is more than a building incorporating sustainable elements - it’s an integrated concept with the focus on sustainability. Still, Onat Öktem and Zeynep Öktem are well aware that sustainability is not enough as the sole selling point. For clients, owners, and users the attractiveness of a building remains the prime criteria. This must be taken into consideration when promoting sustainable construction in Turkey. The architects also wish that the entire sector would show more patience and long-term thinking. That clients and users are now asking for sustainable elements in their buildings is a step forward. There is still a long way to go before buildings in general are holistically designed and built as sustainably as possible – but the breakthrough of sustainability remains only a matter of time.

ONZ estimated the cost at USD 126 million for Eco-Techno Park, which has the potential to become a landmark of sustainability for OSTIM.

Was the cost a reason why you didn’t win the OSTIM competition despite the many obvious merits of your design?

Onat Öktem: Maybe. In addition, it became evident that the intention was to develop the site in phases, which of course would greatly ease the financing. Phasing would not work with our highly integrated project; for it to work, it must be built completely – or rather not at all. But you must also see: Eco-Techno Park will attract attention and draw universities and companies working with sustainability. That’s another reason we designed the building to genuinely be as sustainable as possible.
With the consequence that it will not be built at all ...

Zeynep Öktem: That’s not certain. After the competition a new dialog arose between OSTIM and us. The client explained that they were overwhelmed by the complexity and scope of our proposal. The jury was comprised of only one architect and the remaining members represented various companies in OSTIM. Since then, the chances have become not so bad that Eco-Techno Park might still be built. Now much depends on whether the state will share the costs. OSTIM could carry the costs alone, but the whole country stands to benefit from Eco-Techno Park.

Can winning the Holcim Awards Gold for the Africa Middle East region help the project to be built?

Zeynep Öktem: Absolutely! Such prizes draw attention to a project and later to the finished building – and place the operator in a good light.

Project appraisal by the Global Holcim Awards jury

Treating architecture as landscape and vice versa

The project explores the architectural potential of technical solutions that appropriately respond to environmental and climatic factors. Though the proposed solutions per se are not new, they are nonetheless used in a resourceful way to create a handsome structure.

While the jury enjoyed the project’s formal and spatial manifestation, it nonetheless argues that the scheme remains within what is normally perceived to be a standard approach to sustainability. Criticized is the lack of a vision that goes beyond customary professional practice. Despite the fact that the authors omitted to show a longitudinal section, the jury appreciates the idea of treating architecture as landscape and vice versa – a type of crossbreeding of disciplines that could offer more than the project currently aims to investigate.

Initial project submission see page 184
“Raising environmental awareness”

Urban pine forest rehabilitation, Beirut, Lebanon

Beirut offers little public green space. “Beirut Pine Forest” in the city center is soon to be reopened, after having been closed for decades. Architect Raëd Abillama has shown how the park should be upgraded to serve as many users as possible.
Beirut is a city of contrasts, and as such it is exemplary. On one hand, the capital of Lebanon is a party and shopping destination for the rich and famous of the Middle East. On the other, its desolate streets and devastated buildings testify of the turbulence of civil war from 1975 to 1990 and the 2006 Lebanon War. Beirut has seen a veritable boom in construction in recent years; condominium prices have tripled within the past eight years. In fact, in the city center there seems to be a building site on every corner, reinforcing the impression of Beirut as a "concrete jungle" on the Mediterranean. But many construction sites have been abandoned because the investors ran out of money. In any case, it's difficult for outsiders to understand the rules by which this city functions.

Working in such an environment is at once an exciting opportunity and a constant challenge. Raéd Abillama knows this as well as anyone. He established his office "Raéd Abillama Architects" in Matn, east of the city, in 1997. A Lebanese national, he grew up in France and studied in the USA, where he also worked as an architect.

"Architecture is more than deciding which park bench to place where"

Raéd Abillama, why did you decide to leave New York and set up an office in Lebanon?
At that time, I knew Beirut only through occasional family visits. Lebanon was in civil war, and I couldn’t work here. But when the war was over, the city offered a young architect countless opportunities to develop projects. The work here is completely different than say in New York. There, at Rafael Viñoly Architects, I worked almost exclusively on very large projects that I knew from the beginning I would never see finished. Here, things might be smaller, slower, and more down to earth—but we can make a difference through our work.

By building?
For me, architecture is more than deciding which park bench to place where. I see myself as a kind of coordinator with the big picture in view, making sure that solutions will be found for the small problems. In my company we have the know-how necessary to handle each
project holistically. That’s important, because to realize a project here, you must understand every detail: who it’s for, who is financing it, which officials are involved in it, for which context it’s planned, and of course the technical and environmental requirements.

So Beirut is a complicated work environment?
The city is more than a mixture of widely differing cultures and religions, views, and education levels. Add to this the fact that for many years people have been operating in survival mode. Quite naturally, they placed their own basic needs above the needs of the community – and they still do. All of this sets the scene for relatively chaotic work processes, as we quickly learned. If you want to have success here, you must keep things as simple as possible in order to keep everybody moving.

When Raed Abillama heard that the Beirut Pine Forest – the Horsh El Snoubar – was to be reopened, he saw this as an opportunity to achieve something. Green spaces in this city are a genuine rarity. The Pine Forest, laid out in a triangle, was replanted and reopened after the civil war by the City of Beirut with support of the Île de France (Paris metropolitan) region. The team of architects from France and Lebanon comprised Jacques Sgard, France Trébucq, Ivy Papadakis, Jean-Claude Hardy, Pierre Neema, and Frederic Francis. But the park remained open to the public only for a few weeks. Although the landscaping was quite adequate, the park infrastructure was insufficient for the throngs of visitors. In view of impending chaos, closing the park to the public again was the only viable option. Since that time, the park may be entered only by persons with special authorization. Armed security guards enforce compliance with this rule.

"We must all make a contribution"
Why did the city suddenly want to reactivate the park?
One can feel that the people want to have such green spaces - there are hardly any at all in our city! Also, we see examples like London and New York, where well-managed parks enhance urban development.

So they launched a competition?
No. After I heard about the city’s intentions, my office prepared a revitalization plan for the park. It showed everything necessary for long-term operation. We did it at no charge.

Why did you donate your services?
We made a contribution. We took a comprehensive approach with our proposal. We knew that the available funds would not primarily be allocated for architectural services or for reforestation.

Why is fire safety such a big issue?
The carpet of dry pine needles beneath the trees can catch fire in a heartbeat. Let’s say someone is smoking a shisha – very popular here – in the shade of a tree, and they’re not so careful with it and a small fire starts. If it cannot be put out quickly, there will be a full-fledged forest fire before a firetruck arrives.

Raëd Abillama and his team did not have to reinvent the wheel to bring the park back into form. They focused on minimal interventions that would produce maximum impact. The Île de France region, which had played a leading role in the first reopening of the park, gave the architects all the plans and documents still in their possession. The objectives were clear: to reopen the park, provide durable paths for maintenance, and create a place that serves and is accessible to all the people of Beirut.

The architects divided the park into three zones: a green living room for leisure and relaxation, similar to a classic park; an urban extension & fitness zone, where a broad range of activities is possible, everything from a skating park to a playground to fitness areas; and a cultural, public programs & community events zone, with space for markets, festivals, outdoor exhibitions and installations, and a botanical garden. In this way, all visitors – an estimated 25,000 or more per day – will be able to use and enjoy the Pine Forest as they wish. The park is intended to be filled with life all week long, not just on the weekends.

Did you talk to the local people to find out what they would like the Pine Forest to be?
No, but we worked with consultants. Here in Beirut such a survey would be an impossible task. Remember: To do a successful project, you have to keep things simple. If unforeseen needs become evident, these can still be incorporated into the plan at any time.

“You have to keep things simple”

What are the main interventions to be carried out?
Basically, the main thing is to expand what’s already there – primarily regarding the infrastructure. Right now there are three toilets in the park, we have increased the number to eight. The network of paths must also be expanded and improved. The ones we have now become very dry in the summer, and when many people use them a veritable dust cloud is created. Bike trails should be added as well as all the usual details: benches, trash bins, and so on. A water supply will support
firefighting in case the need arises; a storage tank will be installed either under the water fountain in the center of the Pine Forest or under the parking lot. The perimeter fence must also be improved.

**Why? Should the park be fenced off?**

No, but people in Beirut still lack sufficient environmental awareness. They throw their trash through the ineffective fence into the park. We want to improve the attitude of the public toward the public space, so we’ve developed a concept with rangers. The park rangers will see to it that the rules are respected, but unlike security guards you see everywhere else in Beirut, they don’t just say no – they explain why this or that is not tolerated and why the rule was established. By doing this, they will help slowly but steadily raise the environmental awareness of park visitors.

That the project “Evergreen City” should not only provide pleasure and recreation for the people of Beirut but also serve educational purposes is shown by the planned botanical garden. Currently it’s only a reserved area on the map, but soon – with the help of the Geneva Botanical Gardens – it could be flourishing magnificently. Representatives from Switzerland have already seen the concept and are interested in supporting it – because the creation of a new botanical garden opens up unimagined possibilities. Whether this collaboration will become reality remains to be decided. At any rate, it’s not a question of money. The garden would be a gift of the Swiss Embassy to the city. Indeed, financing seems to be no major problem for the park project. Funds are available, assures the architect, because the property taxes and construction fees that are being collected go directly into the city’s purse. The big problem in Beirut is the distribution of those funds. But since the city is determined to reopen Horsh El Snoubar, Abillama expects no significant complications in this regard.

The planning document developed by Raïd Abillama and his team does not yet envisage inclusion of the private sector. While it would certainly be possible to collect private donations or sponsoring funds for maintenance at a later time, presently no one except the city and its residents stand to benefit from the project. It would also be conceivable to combine the park and the adjacent race-course into a larger concept in the future.
the 1960s this venue was one of the most active horse-racing tracks in the world.

“Expand what’s already there”

Do you have any influence on how the park will actually be developed?

No. Since we’ve submitted our proposal, everything is in the hands of the city. For instance, we are calling for opening and closing times to be synchronized with sunrise and sunset in order to follow the rhythm of the day. We will have to wait and see whether they choose to adopt such recommendations.

When will that be?

We believe and hope that all the necessary work can be completed within one year. Winning the Holcim Awards Silver will certainly encourage the city to complete the project quickly and on schedule – so that the Beirut Pine Forest can hopefully be reopened as early as 2015!

Project appraisal by the Global Holcim Awards jury

Green spaces must have a place in a city’s development

Undeniably, there is a need to promote projects of this kind, particularly in cities that have lost their open spaces due to unbridled building activity. The scheme makes a clear political statement arguing that green spaces belonging to the collective and open to all must have a place in a city’s development.

While the jury generally concurs with the proposition, the project seems to remain “a statement,” missing the opportunity to further develop the proposal beyond mere declarations and to offer proof of the viability of the proposal in concrete, practical terms. Notwithstanding the value of the vision, the project could have benefitted from more depth and elaboration.
“An experiment that is proven in practice”

Low-cost modular housing scheme
Addis Ababa, Ethiopia
Participants from three countries built the prototype for a modular house in Ethiopia, thereby exchanging knowledge – and showing how living conditions of the very poor can be improved through simple means.

The picture is much the same in many large African cities: in some districts ultra-modern buildings cluster like islands of abundance, while in others vast slums struggle to survive. Ethiopia’s capital Addis Ababa is no exception. Modern convention centers, hotels, and broad boulevards stand as proof that this city of three million people is a political, economic, and social hub. The presence of the United Nations Economic Commission for Africa as well as the African Union confirms the city’s international standing. But the neighborhoods outside the business district present a very different face: the poorest live in informal settlements, where neither toilets nor running water are a fact of life.

Dirk Donath has lived and worked in Ethiopia for six years. The 53-year-old German is a long-term visiting professor at the Ethiopian Institute of Architecture, Building Construction and City Development (EiABC) in Addis Ababa. His involvement in Africa began as part of the “Welcome to Africa” program of the German Academic Exchange Service. The program, supported by the German Federal Ministry of Education and Research, aims to strengthen university ties between Germany and Africa. Teaching and research projects of the participating universities are being conducted to strengthen the academic infrastructure on the African continent. Altogether eleven projects were approved and supported over a period of three years with a total budget of USD 3.6 million.

“Uncharted territory for the participants”

Why did you decide to go to Ethiopia?
Dirk Donath: I was a professor at the Bauhaus University in Weimar for 20 years. When I was invited to participate on-site in a project with the EiABC, I thought: Why not step out of my comfort zone and expand my horizons?

Was this your first experience in Africa?
Dirk Donath: It was my first genuine experience abroad! I had previously worked outside of Germany, giving lectures and so forth, but I had never lived abroad before. My three sons knew more about Africa from school than I did.
Other countries, other customs – Does this also hold true in the academic environment?
Dirk Donath: Absolutely. Traditionally in Ethiopian universities only teaching is done; research and actual building play a very minor role. But the “Welcome to Africa” program has changed that quite a bit.

But there was some caution about this change in approach, and what would happen by expanding the scope of the universities’ role. Young professors at EiABC Asgedom Haile and Brook Teklehaimanot concur that Ethiopians are conservative by nature – especially when new ideas come from the outside. Nevertheless the benefits were evident. Under the “Welcome to Africa” academic program, three residential building projects were completed in Ethiopia all in collaboration with the Bauhaus University Weimar and the University of Juba in South Sudan: SECU, SICU, and MACU. Each of them had a different focus.

The experimental Sustainable Emerging City Unit (SECU) focuses on construction materials. The structure is built of waste straw and is designed specifically to suit the needs of fast-growing settlements in Africa. The Mobile Automated Contemporary Unit (MACU) focuses on maximum-efficiency production. The third experimental project is called the Sustainable Incremental Construction Unit (SICU). It focuses on the production process – and this is the project that won the Holcim Awards Silver 2014 for the region Africa Middle East.

Modular semi-finished buildings in a variety of versions are suitable for creating housing for the poor: They provide a basic shelter which people can extend or finish off incrementally as needed. Examples of this concept are the multiple award-winning low-cost housing program by Nobel Peace Prize laureate Mohammad Yunus, a founding member of the Board of the Holcim Foundation; or elements of the “Sustainable post-tsunami reconstruction masterplan” in Constitución, Chile, for which Alejandro Aravena won the Holcim Awards Silver 2011 Latin America; he has been on the Board of the Holcim Foundation since 2013.

Why have you reinvented the wheel and not simply used one of the many modular approaches of your colleagues?
Dirk Donath: We didn’t reinvent the wheel – but you can’t simply take a solution from South America or Asia and apply it in Ethiopia. So we looked around to see how traditional and modern construction is being done in this country. And then we developed our project by blending international and local know-how together.

Brook Teklehaimanot: The novelty of our approach is that students from all participating universities were involved. So we developed courses that ran throughout the entire project. Specifically, the six professors from the three universities kept the big picture in view while the students worked on particular elements such as the stairs or the roof. This was a totally new experience for us!

“A totally new experience”

How did the students respond to this approach?
Dirk Donath: They were proud to be involved. All in all, we had about 20 students from Addis Ababa, 15 from Weimar, and 7 from Juba who all came together in Ethiopia to build the SICU. This was also a new approach for most of them. The students built the SICU with their own hands within nine days.
The project was designed as a hands-on assignment for the students for two reasons. First, Dirk Donath believes that all young architects should get their hands dirty on a construction site at least once, to enhance their practical knowledge of the building process. And second, a fundamental requirement for the SICU was that even someone with minimal construction know-how should be able to build one. The students were to prove that even beginners can put the concept into practice.

The design of the two-story structure is simple: prefabricated concrete footings, slab on grade using recycled stone, reinforced-concrete columns for the ground floor, and eucalyptus wood framing and plywood sheathing upstairs. The outside walls are clad with a combination of various but available material like vertical wooden boards or a pattern of sheets out of rubber from old tire tubes.

The roof is covered with corrugated metal sheeting. The stairs are prefabricated steel. Another goal was to make maximum use of prefabricated modules that only need to be fastened together on site. This approach allowed the structure to be erected within nine days.

Why did you choose eucalyptus as a building material?
Brook Teklehaimanot: Eucalyptus was imported into Ethiopia because it grows very quickly and can be easily planted and felled. Eucalyptus is everywhere here. We know how to work with the material; it is often used for scaffolding and roof framing.
Asgedom Haile: Also, cutting down large areas of the trees is not detrimental. Eucalyptus extracts a lot of water from the soil and dries it out. So it makes sense to fell eucalyptus and use it as a building material.

Hasn’t it been forbidden to use natural materials for construction in Addis Ababa since 2009?
Asgedom Haile: That applies mainly to informal settlements. A simple clay building can be built almost overnight, but isn’t aligned with aspirations for the city to be seen as modern and international.
Brook Teklehaimanot: If you want to use natural materials anyway, you have to submit a convincing plan to obtain a building permit. We seem to have had the right pitch – after all, the city even provided us with the land we needed.
Another goal of the SICU experiment was urban densification. Considering this, it might seem surprising that the prototype is a two-story structure for two families of five. That the building is no larger is explained firstly by the fact that one- and two-story houses are traditional in Ethiopia. The upper floor is the residence; the ground floor is a working area. Secondly, there is a practical reason for limiting the construction to two stories: Building higher would require complex scaffolding, which would be contrary to the requirement that all future residents should be able to easily construct their houses themselves.

When, how, and with what the residents will complete their house remains up to them. For example, it would be conceivable to initially close in the walls with plastic sheeting and later, when more money or better material becomes available, to add wooden boards or replace the sheeting altogether. The poor of Addis Ababa are adept at improvisation and reusing things. This also explains why the amount of annual waste per person in Ethiopia’s capital was only about 150 kilograms in 2010.

“As architects we’ve done all we can”

Still, the question comes up: Can the poorest segments of the population, for whom the SICU is conceived, really afford such a building? After all, each housing unit will cost around USD 7,100 to build.

Dirk Donath: Yes, that price is our estimate for a completely built house. The basic structure, as we would provide it, would cost half that amount.

Brook Teklehaimanot: And don’t forget; this is the price for a single house. If the SICU went into mass production, everything would be produced faster and the unit cost would be significantly lower.

Dirk Donath: Nevertheless, you have to admit: With an average monthly income of perhaps USD 30, the only affordable shelter for many urban poor will still be a tent using stakes and a tarpaulin.

So in the end, the SICU is really just a nice experiment?

Dirk Donath: An experiment, yes, but one that is proven in practice. We have prepared business plans, variations of the concept, cost estimates, construction manuals, and much more – and all of this was also uncharted territory for most of the participants. We handed these documents over to the authorities and now it’s up to the authorities, business, and policy-makers to carry the ball – as architects we’ve done all we can.

Asgedom Haile: The authorities have already said they are prepared to use the SICU on a larger scale. But we told them it’s better to wait and see how the experimental unit develops.

And how is it developing?

Dirk Donath: To be candid, the project has faltered a bit. One family is currently ready to
move into the house; the ground floor space is used for commercial purposes. And we are probably not entirely faultless in this. We treated the SICU as a showcase project, and after it was finished we devoted ourselves to new tasks. We would have done well to go out and explain the project to the people in the neighborhood a few more times.

Brook Teklehaimanot: Another problem is that the building is not recorded in the land registry. Officially, it doesn’t exist. The residents would have no rights to the house if it should be slated for demolition at some point in the future. But this is a common situation and a challenge within many informal communities.

So the house is like a concept car: it exists and it works, but it’s not really used?

Dirk Donath: In a certain way, yes. But the house was a learning tool and the success of the project should be measured more broadly! In the context of sustainability and “Welcome to Africa,” the prototype house is just one of the outputs. We have brought together students and professors from three countries and have exchanged knowledge: all of this will move construction practice in a more sustainable direction, and that really makes a difference!

Project appraisal by the Global Holcim Awards jury

A manual for simple and straightforward construction.

The jury commends the project’s aim to improve housing conditions in poor urban settlements. Particularly valued is the idea of an instruction manual for simple and straightforward construction. The scheme is viewed as a fresh and welcome alternative to the Addis Ababa Grand Housing Program, which has so drastically altered the face of the city. Although the scheme has been greatly developed since the regional Awards, as the panels convincingly demonstrate, the global jury pondered upon its innovative contribution.

While the project is undoubtedly of great significance, it nonetheless remains within the realm of known and tested solutions. Critically viewed are the construction of the tin roof and the use of one layer of sheeting, which insufficiently protects the interior from the sun – a problem that could easily be rectified. Critique aside, the jury encourages the team to continue its efforts in low-cost construction, moving from the singular unit to the development of clusters and entire neighborhoods.

Initial project submission see page 188
“Our clients are the birds”

Bird sanctuary, Chiang Mai, Thailand
The project “Chiang Mai Bird Sanctuary” meets the needs of birds and humans alike – thereby expanding the scope of sustainable construction to include a feathered dimension.

Most people probably think of animal trafficking as a marginal economic phenomenon. But it is not: According to the World Wide Fund for Nature (WWF), animals are the world’s third largest illegal commodity, following weapons and drugs. Interpol estimates the business volume of illegal animal trade at about USD 20 billion.

A key East Asian hub for wildlife trafficking is the Thai capital Bangkok. It is said that one can buy any animal species in the world there. In 2014 a raid on an animal trader found 14 African lions and 23 long-tailed monkeys in his house.

Birds too are often illegally traded in Thailand; for example, nightingales (bulbuls). In Thailand these are believed to bring good fortune and are kept as songbirds. When police discover such birds, they usually take them back to the station. The confiscated animals are considered evidence and must be kept until legal proceedings are conducted. But most of the birds die after a short time because many arrive at the police station injured and cannot be properly cared for there.

Chak Cherd’satirkul shares the typical enthusiasm for animals of the Thai people. The 34-year-old studied sustainability management at Columbia University in New York and now works as an operations manager. He was born in Chiang Mai province in northern Thailand, where his family runs the Kaomai Lanna Hotel and Resort. Here, at this hotel, begins the story of a remarkable project to help animals confiscated in police raids.

“Architecture is spatial problem-solving”

What kind of hotel is it that your family runs?
Chak Cherd’satirkul: There used to be a thriving tobacco industry in our region. When the plantations were closed down about 20 years ago, among the remnants was a local plantation that included 50 tobacco barns – these are brick buildings, six to eight meters wide, in which tobacco leaves were dried. My family owned the land on which these buildings stand, and we decided to convert them for use as part of a hotel resort. So far, 20 of these tobacco barns have been converted for this purpose. Our guests love the...
authenticity of this place and the nature here in the foothills of the Himalayas.

Many years ago, Chak Cherdsatirkul’s father had purchased an 11-hectare site very close to the present hotel. He intended to create a residential development there, but Thailand was hit by a severe economic crisis in 1997 – and the project stalled.

The land is a natural paradise of rich diversity, with grassland and bushland, streams, big ponds, bamboo forests, and large trees. This varied habitat is frequented by numerous indigenous species as well as by migratory birds. Ornithologists have identified a total of 53 species of birds here. Chak Cherdsatirkul proposed to his father to convert this vital habitat into a bird park.

What gave you this idea?
Chak Cherdsatirkul: I love to observe wildlife – and I travel around the world to do so. Three years ago I visited the Buraco das Araras in Brazil, the famous sinkhole in which hundreds of macaws can be viewed on the wing. This inspired me to create an attraction for birdwatchers in Thailand. The birds here are not as brightly colored as those in South America, but we also have very beautiful species. My idea was to improve our terrain with an excavator to give the birds a better habitat. That was it.

Since that time, the project has taken on a completely different face – and one that relates to animal trafficking. The changes in the project have much to do with Singh Intrachooto. The 47-year-old architect and head of the Creative Center for Eco-design at Kasetsart University in Bangkok is known in Thailand for his sustainable projects, one of which won the Holcim Awards Silver 2011 for region Asia Pacific. Chak Cherdsatirkul’s family asked Singh Intrachooto if he could assist in the optimization of the hotel resort. At the first meeting, Chak Cherdsatirkul happened to mention his bird project. The architect visited the site, was enthusiastic, and brought the Bangkok-based architectural firm Architectkidd on board – and in particular its principal Jariyawadee Lekawatana, with whom he had collaborated on the 2011 prize-winning project.

The architects and Chak Cherdsatirkul worked together to develop the Chiang Mai Bird Sanctuary (CBS) project. It includes two
sites: the hotel premises and the natural area. The focus of the project is twofold: the birds, both wild ones and those confiscated from traffickers, and people, who are bird enthusiasts.

It is planned that ten of the remaining tobacco barns on the hotel site shall be turned into permanent aviaries for birds that have been injured through captivity and are no longer able to survive in the wild. These birds will be able to be observed up close. One of the tobacco barns is to be converted into an auditorium, still others into libraries.

At the heart of the natural site is the Bird Rehab Facility, for which the three model homes have been converted. A clinic is planned here, as well as separate areas for small birds, birds of prey, and waterfowl. Here, birds are cared for and prepared for release into the wild – or nursed back to health so that they can at least live in the hotel aviary.

Other structures have also been built on the site, for example the 16-meter-high bird-watching tower. The old police station has been converted into the main information center. Viewing platforms and meditation pods for Buddhist monks have also been built. Everything that is being built is located on the six-meter-wide strip of the existing road – so that not one more square meter of natural land is touched. The pavement is also punctured in places, so that nature can gradually reclaim more area.

How is the program developing?
Singh Intrachooto: It’s progressing step by step in close cooperation with everyone involved. We knew little about birds; Chak Cherdatsirkul gave us thick books to study. We have researched bird habitats intensively and talked with many veterinarians and bird specialists.

How did you come up with the idea of setting up meditation places for monks?
Chak Cherdatsirkul: Sometimes bird poachers come here, and of course we want to prevent this. In temples, no animals may be killed, because monks protect life. My idea was to bring monks here in order to create something of a temple atmosphere. Thais respect monks and will not hunt near them.

Will monks really come here?
Jariyawadee Lekawatana: Many monks walk hundreds of kilometers as a form of meditation; they find a place for the night, and they sit down and meditate. They want to protect as many lives as possible, so they go where they are needed.

Many of the measures you have planned are to improve the habitat for birds. Will the birds actually notice that something has changed here?
Jariyawadee Lekawatana: Yes, definitely. They can hide better. When we make small improvements, many more birds will come – and these birds will attract even more birds.

Less than a million dollars is budgeted for the project. Where does the money come from?
Chak Cherdatsirkul: The project must carry itself. Sponsoring and donations certainly play a major role, and we will ask large institutions such as BirdLife or WWF for support. The project also needs funds available for its ongoing operations; we need skilled personnel in the Bird Rehab Facility and in the aviary. The construction need not be done all at once; I have some small machinery and a few workers, so we can accomplish quite a bit without spending a lot of money. We have already taken the first measures.

Will the bird sanctuary be operated independently from the hotel?
Chak Cherdatsirkul: Yes, the hotel cannot
carry the project – even though it will benefit from the bird sanctuary as an attraction.

**Can injured birds be an attraction?** It breaks your heart to see some of the pictures of the animals confiscated during police raids.

Singh Intrachooto: The injured animals are not the main attraction. The magnets are the wild birds on the second site – there the birds can be observed in their natural habitat. And that definitely attracts nature lovers.

**Will the police really offer up the birds?** They must be kept as evidence ...

Chak Cherdtsaikul: We will need to work closely with the institutions. There is still a lot of persuading to do. But I’m sure the police will be happy when they no longer have to worry about the birds.

A special feature of the project is the building envelopes in the park: Every building, whether clinic, meditation pod, or observation tower, is clad with a skin made of palm fibers. This cladding serves as thermal and acoustic insulation and as a habitat for birds and animals – because plants can grow on the palm fibers.

**How was this unusual material selected?**

Singh Intrachooto: Five million tons of organic waste is produced at Thai palm oil plantations every year: leaves, stems, nut shells, and so on. Until now, this material has simply been left to rot, which taints the groundwater and produces the greenhouse gas methane. The waste cannot be used as a fuel because the moisture content is too high. I am involved in a project of the Thai government to find commercial uses for these materials. We are researching a variety of applications, such as plastic production. Palm fiber lends itself as a building skin at the bird sanctuary because new plants can grow on this material and small birds can hide in the building envelope, safe from predators. Clad in this ecological covering, the buildings blend nicely into the environment.
Do the palm fiber boards have to be replaced every few years?

Singh Intrachoto: The material lasts a long time – we don’t know exactly how long because no one has much experience with it yet. But the material is so cheap that there would be no problem to replace the building skin every so often. Important for us is to show that palm fiber can be an ideal material for energy-efficient and environmentally-friendly architecture.

In spite of the innovation here, one gets the impression that the architecture plays only a minor role in this project. Why are architects involved?

Chak Cherdasatirkul: Although it’s a park, there are a variety of architectural interventions, and these must be implemented well.

Jariyawadee Lekawatana: As an architect, we usually work for people, but here our clients are the birds. The measures we are implementing on the hotel grounds must suit both the birds and the people – but the park focuses primarily on the needs of birds.

Singh Intrachoto: Architecture is never a matter of simply creating a building. For us, architecture is spatial problem-solving – so a project for a bird park can also be an architectural project.

Project appraisal by the Global Holcim Awards jury

A true manifestation of tectonic expression

The submitted entry is situated within domain of conservation, offering valid and appropriate solutions for the preservation of wetlands as habitat and sanctuary for endangered birds. Accordingly, the project’s contribution to the field of sustainable construction is more limited, a fact intensively debated during the jury’s deliberation process.

The project’s primary architectural element is a tower, one relying on standard construction techniques, with innovation limited to the articulation of the tower’s enclosure. All in all, the jury enjoyed both the project’s intellectual proposition as well as its translation into physical form – a true manifestation of tectonic expression.

Initial project submission see page 208
“Promises to be kept”

Locally-adapted orphanage and library
Kathmandu, Nepal
“Lali Gurans Orphanage and public library” is an example of how personal drama can release positive energy – and how clever architecture can be combined with sustainable systems to form an optimal whole.

Amid lush green fields of the Nepalese Sangla district stands an imposing concrete skeleton. The massive and unique structure – at first glance difficult to read – is the lower half of the project “Lali Gurans Orphanage and Library.” The institution, which has been in planning for almost ten years, is a sort of distillate of personal commitment and sustainable construction: It combines social, economic, and environmental aspects in a highly refined and sophisticated way that is possible only after a long process of optimization.

“MOS architects showed enormous dedication”

The orphanage is designed to function almost in complete self-sufficiency: Enough energy for day-to-day operation, in the form of electricity and methane gas, will be produced on the small site – as well as sufficient fruit and vegetables for 50 children and 12 adult staff. Natural filter systems will be used to recycle greywater; mainly passive systems will be used to cool and heat the spaces. The structure is designed to withstand major seismic activity – up to an 8.0 magnitude earthquake – which explains why the concrete skeleton makes such a massive impression.

The frame of the lower half of the building is the materialized vision of 36-year-old Christopher Gish from Colorado, USA. For years, he has been pumping his energy, his knowledge, and his resources into this project in the Kathmandu Valley, which is gradually beginning to blossom like the eponymous national flower of Nepal: Lali Gurans.

Christopher Gish, your website says: “He made a promise to himself to create a positive change in a world of chaos.” What is the origin of this motivation?

Originally, this all began resulting a very serious car accident. I had broken 17 vertebrae, and I was paralyzed for a time. Determination and perseverance are what I learned the most from that moment that I made a promise to myself and to the world that I would do more with my life, if, or when I could walk again.

Many people make similar resolutions in crisis situations – and afterwards their resolve is eroded ...
I made that hard for me. I had the phrase “Promises to be kept” tattooed on my chest – in mirrored letters. Whenever I look at myself in the mirror, I am always reminded of my promise.

After his recovery, Christopher Gish set out to fulfill his promise. He did not want to donate money for a better world but to take action himself. And he soon found the opportunity. In 2004 one of the worst tsunami disasters in history occurred in Asia. He went to Thailand to work for ten months for a small aid organization. Then he moved to Nepal, where he worked as a volunteer in an orphanage – and there he ultimately decided to build a sustainable orphanage himself. His rationale: I will commit my life to improving the lives of 50 children; that’s a good investment – one life for 50.

Why Nepal, why children?
Nepal is a beautiful country, but between 1996 and 2006 civil war raged here, destroying so much. The country is almost drowned in chaos including frequent to fuel, water and electricity shortages that exacerbate the challenges of its development aspirations. Nepal’s history is riddled with seismic activity. I believe that the children of this world should be seen as an asset, especially in economically developing countries. They crave alternative solutions to problems and education. We must inspire children and equip them well through education, so that they really can change society. They are the key to improving things. There are so many orphans in Nepal, and if we train them well, they can lead Nepal into a better future. But the institutions are weak – that’s why I decided to create one myself.

“We had to build higher and make use of every available surface”

After returning to the USA, Christopher Gish took up his orphanage project. He set up the “Seeds of Change Foundation” (SOCF) and, together with a friend in Nepal, founded the NGO “Prakriti Ko Ghar” (PKG), the local organization which will later be in charge of the home. Christopher Gish and PKG bought a piece of land that is ideally suited for his project, one that is nested between the capital city Kathmandu and the rural communities, next to the Sangla River between two villages; it also has sufficient access to water resources. The orphanage and the orphans should be well integrated into society: It is planned that the children will attend the village schools and in return the villagers will be able to use the orphanage library. Good libraries are rare in Nepal, but the need for knowledge is great, says Christopher Gish.

To design the building, the project leader brought Hilary Sample and Michael Meredith from the New York firm MOS Architects on board.

How did the collaboration with MOS Architects come about?
That’s a unique story. I read and researched a lot about green architecture. I tried to bring together all the things that were important to me – and I made some wild-eyed sketches but got no further. Then I heard that MOS Architects would be making a presentation on green architecture near where I live. I went, and I saw at once: These are my people! After the lecture I talked with Hilary Sample and Michael Meredith and told them about my project. They were the first ones who didn’t consider it completely utopian. Everyone else had thought I must be crazy to pursue such a project. These two people are just great; they showed enormous dedication and donated their architectural services to the project.
MOS Architects designed a highly functional and largely self-sufficient building. It makes use of what is freely available: water from a nearby stream, energy of the sun, rainwater, even the sewage waste produced by the orphanage is transformed into odorless methane in a biogas plant and used for cooking. The slurry by-product from methane production is filtered and used as compost. All these systems influenced the design of the 21-meter-high building, but the visual form is most strongly influenced by the seismic design. Kathmandu is situated in a region of enormous seismic activity. In April 2015, a devastating earthquake took the lives of about 8,000 people. It proved how vulnerable the region is. The building shell of the orphanage designed by MOS Architects came through the catastrophe undamaged, confirming its seismic performance, and also serving as a temporary shelter for a group of local residents.

Why are so many sustainable systems being implemented?
When I worked as a volunteer at an orphanage, I saw that the biggest challenge for such an institution is the long-term procurement of fuel, food, electricity, and water. I thought: If we can produce everything ourselves, operating costs will be lower, and we will be able to invest more in the children’s future education and staff training. The land we have is not large, so we had to build higher and make use of every available surface. For example, on the ground we have 81 fixed planters for food production – and we have nearly 400 more planters hanging all over the building and on the roof gardens.

That’s enough?
Our goal is to produce enough fruit, vegetables, and herbs for our needs. But because we cannot grow enough grain, we have started a project with an organic farm in Nepal. It’s planned on a piece of land that belongs to the director of PKG.

Experience shows that vertical gardens often don’t work as well as planned.
Yes, food production is a major challenge, but I’m sure we’ll manage it. We’ve already conducted successful on-site tests with the planters.

Are you slightly over-optimistic about this ambitious project?
All the systems we are using have been proven in Nepal. And our construction methods are widespread in Nepal. What’s new in this project is the combination of successful innovations. And of course we have planned backup systems. For example, the building is connected to the power grid and it’s also equipped with a generator – in case the photovoltaic system

“We must inspire children and equip them well through education”
Christopher Gish
Where does the money for the project come from?
I put everything I had into it, including my house and the insurance payout I had received following my accident: a total of USD 700,000. I’m not rich; I have to work for money.

What work do you do?
Right now I’m a waiter in a good restaurant in Denver. When the accident happened, I had no advanced education. And afterwards, I never pursued further training. Instead I found all the solutions in books and more often than not, in other people.

So you’re still missing about half a million dollars to finish the construction. Where is the money supposed to come from?
We’re now very active in this effort. We’ve set up two websites, we’re doing crowd funding, grant writing, and bringing the right people together. The Holcim Awards prize is invaluable in all this, because it gives us visibility and demonstrates the quality of the project. I knew the money wouldn’t be enough to finish when we started building – but I wanted to be able to show something concrete. No one understood exactly what we were talking about. Now it’s easier to get people involved in the project.

The orphanage is entering uncharted territory also in terms of education. Rather crude forms of education are still widespread in Nepal. Christopher Gish is calling for the caring and supportive nurturing of children. The school program he developed deals not only with the children but first with the adults who work in the orphanage. They must be able to treat the children properly. Christopher Gish envisions nothing less than a shift in mindset – and he hopes that other orphanages will follow the example of Lali Gurans.

The first phase of construction began in April 2013. After five months, half of the structural frame was standing. Then construction stopped because the money ran out. The total budgeted cost is approximately USD 1.25 million.

“New is the combination of innovations”
How much time do you have to finish the project?
Our contract with the government requires that we open the orphanage within five years. So we have three years left.

Will your work be done once the orphanage is opened?
Well in some ways my work will never be done. I will still need to quantify the impact of this project on the children and on society. Yet, the orphanage itself must function without me. And I hope this project will inspire other people to actively pursue change too. It’s important to me that people see: I am far from perfect. I am a person with little money and little education – but with passion. And what I do, anyone can do.

So there’s no excuse for not playing an active part in changing the world?
Exactly!

“I am far from perfect – but with passion”

Project appraisal by the Global Holcim Awards jury

Architecture full of joy and pleasure

The global jury greatly admires the initiative to build an orphanage in Kathmandu and particularly values the effort that went into the design to create an architecture that is full of joy and pleasure – an atmosphere that the presentation on the panels undoubtedly transmits. The form of the structure, though heavy, powerful and archaic in its expression, remains light, humble and playful. The structural frame is conceived as an armature that could accommodate a range of other functions in the future, without losing its strength.

From an environmental point of view, the doubling of the frame along the building’s perimeter performs as a well-conceived climatic buffer in the summer. Less justified is the large amount of glass used as infill for the inner enclosure, which could potentially be problematic during the winter season – a concern that could easily be remedied. This said, the project played an important role during the jury’s deliberation process, repeatedly broadening the discussion in view of what sustainability could entail for the advancement of architecture as a discipline.

Initial project submission see page 210
## Jury meetings and ceremonies 2014

### Europe

**Jury meeting**  
Zurich, Switzerland: June 6/7  
Swiss Federal Institute of Technology (ETH Zurich)  
Supported by Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

**Awards ceremony**  
Moscow, Russia: September 4/5  
Theatre of Dramatic Art

### North America

**Jury meeting**  
Cambridge, USA: June 27/28  
Massachusetts Institute of Technology (MIT)

**Awards ceremony**  
Toronto, Canada: September 18/19  
Evergreen Brick Works

### Latin America

**Jury meeting**  
San José, Costa Rica: July 4/5  
Institute for Tropical Architecture  
Supported by Universidad Iberoamericana (IBERO), Mexico, and Universidade de São Paulo (USP), Brazil

**Awards ceremony**  
Medellín, Colombia: October 2/3  
Parque Explora

### Africa Middle East

**Jury meeting**  
Beirut, Lebanon: June 13/14  
American University of Beirut (AUB)  
Supported by Ecole Supérieure d’Architecture de Casablanca (EAC), Morocco, and University of the Witwatersrand (Wits), South Africa

**Awards ceremony**  
Beirut, Lebanon: October 16/17  
American University of Beirut (AUB)

### Asia Pacific

**Jury meeting**  
Beijing, China: July 18/19  
Tsinghua University (THU)  
Supported by Tongji University (TJU), China and the University of Melbourne, Australia

**Awards ceremony**  
Jakarta, Indonesia: November 13/14  
Djakarta Theatre
Anthropic Park
Freshwater ecological reserve and remediation
Saline Joniche, Italy
Saline Joniche is located in the rich coastal landscape of Southern Italy with abundant natural resources, which suffered continuous degradation through industrial activities and has been left abandoned. Obsessed with short-term productivity for too long without evaluating the risks of such a mindset, the goal is to recover this damaged area. The project proposes a flooded landscape at the mouth of multiple natural watercourses, generating an ecosystem filled with flora and fauna, and a special focus on migrating birds.

Project appraisal by Holcim Awards jury Europe
The project’s bold philosophical posture – investigating the roles of architecture, landscape design, and urban planning and their constraints by the necessity to allow human existence – was greatly appreciated and welcomed by the members of the jury. The design proposal is a manifesto in its own right. It frames a discourse on potential forms of relationship between human activity and the natural environment, offering strategies for understanding architecture as a form of action in a symbiotic rapport with nature, without succumbing to romantic and pastoral notions of the “natural” – and thereby accepting its entropic properties.

Pictured project authors: Francisco Leiva, Grupo aranea, Alicante, Spain; Marco Scarpinato and Lucia Pierno, AutonomeForme, Palermo, Italy. Not pictured: Marta García Chico, Grupo aranea.
Public Condenser
Low-cost flexible university building
Paris, France
The project is a public facility, situated on the new university campus of Paris-Saclay, which aims to become a top international hub in the innovation economy. The building hosts a mix of activities including indoor and outdoor sports facilities, a restaurant, cafeteria, and various public spaces: a pedestrian square, street terraces, and parking areas for deliveries, bikes and cars. Conceived as a minimal structure using rough materials, robust and long lasting techniques, the building is organized vertically with its different activities superimposed on one another, using the roof as a panoramic playground for football and basketball games.

Project appraisal by Holcim Awards jury Europe
The project’s minimal deployment of architectural and technical means was considered a remarkable contribution to sustainable construction by the members of the jury. The elegant design merges economic and aesthetic considerations – a low-cost structure turning a limitation into a quality. The proposed scheme offers a robust framework that is adaptable to future needs – a form of resilient architecture, both in view of its management of resources as well as formal appearance.

Pictured project author: Gilles Delalex, Muoto, Paris, France.
Not pictured: Yves Moreau and Thomas Wessel-Cessieux, Muoto; Igrec Ingénierie; Bollinger + Grohmann Ingenieure; Alternative Acoustic & Lighting Consulting, all from Paris, France; Novorest Ingénierie, Montreuil, France.
The Commons

Participatory urban neighborhood  

Vienna, Austria
Located in the city of Vienna, the project identifies a set of rules for establishing a sustainable urban neighborhood based on democratic principles of governance, communication, and participation. Instead of proposing a pre-designed urban tissue, the strategy tends a collective pattern based on a grid of gardens that structure the area. The gardens function as a framework for physical and social development, outlining a porous fabric with low environmental impact and a collective space – reprogrammable in time, while furthering ownership capacity-building. The area will first operate as an urban park; a matrix of gardens is inserted around existing trees. Gradually the district grows around these gardens and the shared open space. The approach establishes a minimally-invasive intervention that will develop over time according to the needs of the society at every step – a continuous process of small scale growth and appropriation, with autonomy at every stage.

Project appraisal by Holcim Awards jury Europe
The jury especially commends the focus on questions of procedures, including stakeholder participation and its effects on physical form. Particularly interesting is the changing relationship between built and un-built areas that is constantly negotiated and re-negotiated in a process that engages a range of relevant parties. The proposal offers a method for a step-by-step urban densification, combining both bottom-up/top-down and formal/informal practices – to create an urban commons.
Circular Voids

Energy-efficient office building

Holderbank, Switzerland
This project to build a 15,000 square meter competence center includes research laboratories, office space, and generous training facilities. Perfectly circular atria cut through ceilings and floors crisscross the building, creating opportunities for employees and visitors to meet one another while also providing a sense of the building’s size from within. Inner and outer loadbearing structures of the building are mutually-dependent, voids and passive solar heating allow a climate concept with a minimal technical installation with almost no core.

Project appraisal by Holcim Awards jury Europe
The project displays a series of outstanding features responding particularly well to most of the “target issues” for sustainable construction — merging architectural and technical considerations at the forefront of the discipline. The energy concept, for example, using cutting-edge surface geothermal heat-recovery, airboxes, and hybrid collectors, finds an appropriate spatial expression that would not be possible with standard systems. Here, architecture benefits from technological advances, without relinquishing its autonomy as an art form.

Notwithstanding the project’s contributions to the advancement of the field, the members of the jury unanimously agreed that it must be withdrawn from the competition due to a latent conflict of interest. The design was awarded first prize in an architectural competition organized by Holcim for its proposed new center for research and development in Switzerland. Nonetheless, respecting the exceptional value of the project, the jury recommends that it should be conferred an “honorable mention.”
Aggregate Structure
Reusable aggregates requiring no binding agent

Stuttgart, Germany
Aggregates are ubiquitous in the concrete production industry, yet are rarely deployed in an unbound form. This materials research project from the University of Stuttgart examines aggregate architectures made from designed, self-solidifying granulates that are fabricated by injection molding – an entirely novel branch of construction systems. The fact that structures can simply be poured, aggregated, disaggregated, and re-used in relatively short time-spans makes them a novel pioneering and outstanding approach in architectural construction technology. In this context, Aggregate Structure is a pilot project for a ground-breaking construction method using the potential of loose, designed granulates. The individual grains of these aggregates are geometrically defined to interlock and consequently require no additional binding agent. Aggregate Structure is thus fully recyclable and can be rapidly poured into multiple spatial formations and adapt to almost any site constraints from urban to rural.

Project appraisal by Holcim Awards jury Europe
The proposed scheme was praised by the jury for its focus on multi-disciplinary research at the forefront of architecture, engineering, and materials science. The jury views the project as the first step of a laboratory experiment, potentially leading to the development of new construction systems. The suggested method of how to join individual parts to form large aggregate structures is especially promising.
Material Flows

Construction materials recycling and logistics hub

Brussels, Belgium
The construction materials village at the Vergotedok in the Port of Brussels is an illustration of sustainable urban logistics. By distributing construction materials to the city and collecting construction waste from the city, the village functions as an important logistics and distribution hub between port and city. Rather than purchasing an eco-label as an individual building, the village is part of a larger urban ecosystem. The modular and hierarchical structure of the warehouses makes the architecture receptive to different programmatic demands of various concession holders; for example the rainwater collected on the large roof and the energy produced can be put to the service of the ready-mix concrete plant on site and serve future developments in the surrounding neighborhood.

Pictured project authors: Lieven De Groote, Ana Castillo, Annekatrien Verdickt and Jan Terwecoren, TETRA architecten, Brussels, Belgium. Not pictured: Bjorn Gielen, Landinzicht, Brussels, Belgium; Henk Pijpaert, Henk Pijpaert Engineering, Oudenaarde, Belgium; Studieburo Mouton, Gent, Belgium.

Project appraisal by Holcim Awards jury Europe
The jury considers the strength of the project to lie in its objective to situate architecture – as node or relay – within a dynamic, metabolic system of material flows in the midst of a city environment. Addressing an important missing link in the material life-cycle management of the contemporary urban realm, understood as an eco-system, the design proposal aims to apply sustainability principles to the construction of infrastructure.
X Marks the Spot
Socially-focused architectural design

Temporary spaces for public engagement

Productive urban garden

Holcim Awards "Next Generation" 1st prize 2014 Europe

Spain
The jury awarded the first prize in the “Next Generation” category for Europe to a group of young architects from Spain who submitted a range of excellent projects planned for Pujaire and Roquetas de Mar in Almería in southeast Spain, and also in Madrid. The individual entries made it to the last round of jury deliberations and were all deemed exceptional both in terms of content and form. In these unusual circumstances, the prize was conferred to a collection of projects by the group of designers rather than to a single project. Of significance in this regard is the group’s name “Designs for Architectural Territories” (DAT) which is more than a simple designation of an architectural collaborative, but stands for a program of action – where architectural design is a method to raise and potentially solve societal deficiencies.

Project appraisal by Holcim Awards jury Europe
The design propositions aim for a dialog between architecture and politics, taking key social problems into consideration while offering appropriate design solutions to address specific issues at hand. The projects tackle, for example, the devastating social conditions of workers in the agricultural sector in the region of Almería in southeast Spain and the lack of public parks in cities and towns throughout the region. Similarly, measures are offered to improve the role of public spaces in neighborhoods in the city of Madrid. Considering the shared spirit of the group, the jury strongly recommends an equal sharing of the prize awarded to the team.
Net Point
Civic center virtual network  
Sortavala, Russia
The project presents a network of “real virtuality” centers in small towns across Russia including Sortavala near the border with Finland, in an effort to put them on the map. The connection “Points” are multipurpose buildings equipped with modern communications technology, providing the possibility of video-conferences, spreading music from a concert hall into the streets, holding meetings or lectures, etc. It involves people in real communication by virtual interaction with its own citizens and with inhabitants of other towns. By participating in this network, small towns will raise awareness of their own values and reinforce the identity of their citizens.

Pictured project authors: Aleksandr Veshniakov, Sodruzhestvo construction; Nadezhda Pavlova, Monolit Set Stroy Company; Natalia Akhailova, Sodruzhestvo construction; Aleksandra Tyron, ASTAL open company; Dimitry Ivanov, Sodruzhestvo construction, all from St Petersburg, Russia.

Project appraisal by Holcim Awards jury Europe
The jury was primarily interested in the idea of creating an “architectural instrument” to promote political awareness and discourse both within the physical domain of the city as well as the virtual realm of social communication. An appropriate strategy for assembling architectural components is offered, forming a type of bricolage that can adapt to specific conditions. Furthermore, a scalar principle underscores the approach, which aims to connect the small-scale properties of local circumstances with the large territory of a nation, while promoting identity across different civic constituencies.
Bio Ceramic

Moss-grafted clay tiles for green roofs

Barcelona, Spain
This materials research project from the Institute for Advanced Architecture of Catalonia in Barcelona describes an experiment that explores the bio-receptivity of ceramics, taking advantage of the porosity of the material that allows it to retain water and using natural fibers as complement elements that benefit other properties. Botanical species like moss have the capacity to grow on particular surfaces with high concentration of moisture and acceptable levels of acidity. Ceramics, like roof tiles, become suitable places for the reproduction of these organisms, enhancing the material performance in terms of thermal and acoustic parameters – and furthermore photosynthetic organisms also improve air quality and alleviate urban heat island effects.

Pictured project author: Iker Luna, Institute for Advanced Architecture of Catalonia, Barcelona, Spain.

Project appraisal by Holcim Awards jury Europe
The jury commends the research objectives of the experiment – an investigation into the material properties of “bio-ceramics.” Particularly promising is the improved characteristics of mineral matter when combined with an organic substance. The investigation offers the grounds for a potentially new understanding of materials in construction, combining natural and fabricated elements.
De-Salination
Symbiotic water supply and landscape regeneration  
Dublin, Ireland
The project’s starting point is the ongoing water-supply crisis in the Irish capital of Dublin. New water sources are needed to support the city’s growing population. Abandoned landfill sites in industrial South Dublin Bay are surrounded by a nature reserve, walking trails, and two power plants. The project’s main concept is to reuse the warmed salt-water rejected from power plants in a mixed use infrastructure for low-cost desalination. Its own waste product, warm brine, discharges to establish a brine aerosol microclimate—the ideal conditions for the generation of salt marsh gardens, extending the nature reserve and preserving the timber structure of the power plant by keeping the wood perpetually moist. The same water source warms a public bath pool on the roof top via heat exchangers.

Project appraisal by Holcim Awards jury Europe
The jury was highly impressed by the young architect’s ability to translate a complex set of technical parameters into a series of architectural interventions, all represented by means of beautiful drawings. The proposed desalination system is transformed into a poetic artefact in the landscape, a “machine à émouvoir” that performs its functions, while touching the senses.

Pictured project author: András Dankházi, University College Dublin, Ireland.
Vertical Restructuring
High-rise tower rehabilitation

Nantes, France
The project revisits a high-rise building of the 1970s “Tour Bretagne” in the center of the French city of Nantes. The tower suffers from the problematic modernist creed of functional separation, which prevents the structure from being integrated into the urban fabric. The building is actually paralyzing the entire downtown district. The scheme aims to transform the existing structure into a “vertical city,” filled with multiple activities. The proposed design deploys public space as a means to link the existing cityscape with the new public spaces of the tower.

Project appraisal by Holcim Awards jury Europe
The jury read the project as a kind of manifesto that questions the tenets of the Modern Movement and proposing instead an understanding of architecture enriched by multifunctional relationships, social interaction, and spatial sequences. The project presents a strategy of how to deal with the built legacy of the post-war era, without destroying its substance – a process of transformation rather than erasure.

Pictured project author: Grégoire Arthuis, Paris, France.
Air-Shade
Responsive sustainable shading system  Vienna, Austria
Cooling as a process is one of the biggest energy consumers in the building sector around the globe. The project Air-shade from the Academy of Fine Arts in Vienna, addresses this problem by proposing a shading system that is sensitive to solar exposure and powered by air — with no need of any external energy source. Insofar as that it can vary in scale, size, material, and form, the proposed device is applicable to a broad variety of buildings, constructions, façades, roofs, windows, etc. Exposed to solar radiation, the air inside the umbrella-like units heats up and expands, allowing the armature to open. Conversely, when solar radiation diminishes the air cools down and the shutters close.

Project appraisal by Holcim Awards jury Europe
The jury commends the exploratory nature of the project and its ingenious approach to problem solving. Particularly appreciated is the simple transfer of a low-technology artifact — in this case, an umbrella — to create a high-technology apparatus to shade buildings. Architectural design is here deployed as a method to investigate new sustainable construction techniques. Most successful in this exercise are the doubly-curved façades that constantly transform according to the intensity of solar exposure.
Poreform

Water absorptive surface and subterranean basin

Las Vegas, USA
The design proposal for the city of Las Vegas repositions water infrastructure as a civic project. Facing a significant shortage of water in an arid region, local drainage systems are incapable of handling and collecting the water that floods the city when it rains. Poreform, a porous concrete surface poured in place with fabric formwork, manages to absorb water, feeding rain runoffs into subterranean basins with a capacity of over 75,000 megaliters (20 billion gallons). Capable of rapid saturation and slow release, the pores of this “urban skin” are inlets to a new infrastructure that reframes water as a valuable resource rather than a liability.

Poreform, a porous concrete surface poured in place with fabric formwork, manages to absorb water, feeding rain runoffs into subterranean basins with a capacity of over 75,000 megaliters (20 billion gallons). Capable of rapid saturation and slow release, the pores of this “urban skin” are inlets to a new infrastructure that reframes water as a valuable resource rather than a liability.

Project appraisal by Holcim Awards jury North America
The jury commends the project’s objective to conceive infrastructure as an architectural undertaking. Instead of considering infrastructure as a mere servant to utility, it is reclaimed as a truly public matter of concern and treated as equally social in scope and design – an untapped site for making and altering space. The proposal additionally foregrounds the need to treat water as a common good by proposing a modulated ground surface for water retention to prevent urban flooding. While designed for a specific site, the project offers a welcome answer to the general problem of water scarcity – a straightforward, but nonetheless beautiful proposition for a global challenge.
The Dryline

Urban flood protection infrastructure  
New York, USA
The Dryline project addresses the vulnerability of the city of New York to coastal flooding, as experienced during the catastrophic impact of Hurricane Sandy in 2012, and proposes a protective ribbon around Southern Manhattan. The master plan, to be executed in several phases, uses a raised berm strategically to create a sequence of public spaces along the water’s edge along the raised bank. The infrastructural barrier incorporates a range of neighborhood functions and as a result offers multiple design opportunities, fostering local commercial, recreational, and cultural activities.

Project appraisal by Holcim Awards jury North America
To propose a large-scale flood protection system by means of a set of small-scale interventions was viewed by the jury as an ingenious solution that could easily be transferred to other similar conditions – in an age marked by climate change and rising global sea levels. The panel appreciates the project’s conceptual framework proposing to merge the requirements of a “Robert Moses” type of hard infrastructure with the local community-driven sensitivity of “Jane Jacobs.” Here, local neighborhoods actively engage in defining specific programs, functions, and public amenities along a line that acts as a civic infrastructure belonging to the public at large.

Pictured project authors: Kai-Uwe Bergmann, BIG – Bjarke Ingels Group, New York, USA; Matthijs Bouw, One Architecture, Amsterdam, Netherlands.
Not pictured: Bjarke Ingels, Thomas Christoffersen, Daniel Kidd and Jeremy Siegel, BIG – Bjarke Ingels Group; Laura Starr, Stephen Whitehouse, Andrea Parker and Melon Wedick, Starr Whitehouse Landscape Architects and Planners; James Lima, James Lima Planning + Development; Steven Baumgartner, Buro Happold Engineering, Byron Stigge, Level Agency for Infrastructure; Edgar J. Westerhof, Arcadis; Prem Krishnamurthy, Project Projects, all from New York, USA; Ivo de Jeu, One Architecture, Amsterdam, Netherlands; Christina Kaunzinger, Green Shield Ecology, Bridgewater, USA; Daniel Payne, AEA Consulting, Beacon, USA.
Hy-Fi

Zero carbon emissions
compostable structure  

New York, USA
Hy-Fi is a cluster of circular towers formed using reflective bricks, designed for and commissioned by the MoMA PS1 Young Architects Program for construction in New York City. The structure uses recent advances in biotechnology combined with cutting-edge computation and engineering to create new building materials that are almost fully organically grown and compostable – a new paradigm for design and manufacturing. Beyond the use of technological innovations, the tower assembly ultimately touches the senses, while challenging perceptual expectations through unexpected relationships of patterns, color, and light.

Project appraisal by Holcim Awards jury North America
The jury applauds the investigatory nature of the project, both in terms of its objective to research innovative construction materials and their architectural potential. Specifically valued is the idea to test the possibility of creating a structure that is made of a biodegradable substance. The organic bricks, made of a combination of corn stalks and fungal organisms, are carbon free and produce almost no waste at the end of the building’s lifecycle. Most interesting is the “low-tech biotech” approach of the project, which offers great promise for applications at a larger scale. The design’s architectural expression appears to defy the force of gravity through a play of light effects and mesmerizing colors.
Chrysanthemum Building
Affordable residential urban infill development

Boston, USA
The design for the Chrysanthemum Building in Boston offers a viable solution to the “housing question” – promoting an affordable model for residential development in a dense urban neighborhood. The ten apartments include four micro-units and six adaptable family lofts. The structure, a wooden construction with a layered metal screen, takes its identity from its immediate surroundings through set-back terraces, the transformation of wrought iron fire escapes into digitally fabricated shading elements, and a commercial space at street level. The proposal integrates mobile phone applications for bike sharing and building-systems monitoring and promotes the use of social media to enhance user participation and communication.

Project appraisal by Holcim Awards jury North America
The submitted entry addresses – in a subtle and not exceedingly overstated manner – the manifold criteria set forth by the Foundation’s “target issues.” Economic, social, contextual, and environmental aspects are combined to form a sophisticated and handsome building – an extraordinary and, in a certain sense, innovative approach for an ordinary, everyday structure. The design gives due credit to an understanding of sustainability as a “common sense” culture, one contributing to an architecture based on fundamental and real principles, an architecture nonetheless poetic in its expression.
Heritage Reframed

University building renovation and extension

Toronto, Canada
The proposed building provides a new home for the John H Daniels Faculty of Architecture, Landscape & Design on the site of a culturally significant nineteenth century structure in the center of Toronto. The project’s basic objectives are twofold: to rehabilitate existing urban, landscape, and architectural elements through reuse and complementary additions – and, to demonstrate the university’s aim to foreground sustainability as part of its pedagogic program through the use of state-of-the-art construction materials and energy systems. The envelope of the historic structure is upgraded to increase thermal resistance, while the new addition combines a range of measures to demonstrate responsible resource consumption, with design strategies maximizing fresh air ventilation, effective day lighting, and storm water harvesting.

Pictured project authors: Katherine Faulkner and Nader Tehrani, NADAAA architects, Boston, USA.
Not pictured: Richard Sommer, Dean of John H Daniels Faculty of Architecture, Landscape & Design, University of Toronto, Canada; Erik Olsen, Transsolar, New York, USA; Tas Candaras, A.M. Candaras associates, Woodbridge, Canada; Claudina Sula, Adamson Associates Architects; Barry Charnish, Entuitive Corporation; Shaili Pytel, Mulvey & Banani International; Marc Ryan, Public Work; Phil Bastow, The Mitchel Partnership; David Rulff, MMM Group; Andrew Pruss, Era architects; Jim Broomfield, Eastern construction company; all from Toronto, Canada.

Project appraisal by Holcim Awards jury North America
This project was applauded for its rare approach towards bringing a heritage building back to life through new construction, one respectful of the existing structure, while introducing new spatial qualities to the entire ensemble. Here, a dialog is established between the past and the present, for an educational facility directed toward the future – a dialog most clearly expressed in the sequence of spaces at the intersection of the “new” and the “old.” Additionally, the jury greatly respects the efforts undertaken to integrate environmental principles in the development of the design, without falling into the pitfalls and clichés of “sustainability.” On the contrary, new standards for architecture are confidently brought to the fore.
Divining LA
Digital tool for urban design and water-use planning  
Los Angeles, USA
Using multi-spectral satellite imagery, digital terrain models, and geotechnical datasets, Divining LA is a digital tool for urban design in water stressed environments, applied to the city of Los Angeles. It models precipitation, soil quality, land use, and groundwater contamination in a dynamic, publicly-accessible instrument for architects, landscape designers, and planners. It aims to maximize low-carbon localized water supply, reduce dependence on water imports, and to guide water-smart planning. Providing information on zoning and building policy, the information-based script supports site assessment for public and private investment. Led by the Arid Lands Institute, the tool is produced in collaboration with agencies and universities across the city, with applications worldwide.

Project appraisal by Holcim Awards jury North America
As unusual as this entry might seem for a competition dedicated to construction, it is nonetheless commended as a construction technology by the jury for strategically reassessing storm water runoff in urban contexts. The jury specifically appreciates the proposal’s value as a design tool – a digital device with an ethical agenda. Here, technology is used at its best, as a means to compile valuable data on the constitution of territories, to foreground and prioritize important information, and to raise awareness of site specific conditions for analysis and design. The proposal offers the necessary grounds to address water scarcity as both a technical and social matter of concern for all.
In-Closure

Public park and interactive wall for urban revival  

Seattle, USA
The master plan reintroduces a forest in the heart of Seattle, giving homage to the past while reminding present-day and future residents of the city’s natural habitat. Embracing social life at multiple scales, an interactive wall at the park’s edge contains “event boxes” with different functions – cafés, a library, sports facilities, and areas for cultural events. Planned for implementation over decades to come, the project aims to be adaptable to future changes, an objective that is straightforwardly supported by the project’s current minimal interventions and restraint of formal means.

Project appraisal by Holcim Awards jury North America
The question of how to revive civic space is at the core of the submitted entry. The jury, in this regard, greatly values the importance attributed to the very concept of “civitas” and applauds the manner in which this proposition is translated into an exciting piece of landscape architecture – a forest in the midst of the urban fabric encased by peripheral structures accommodating manifold programs. But the design does not stop there since the project’s essential contribution lies most prominently in the almost surreal atmosphere conveyed: trees mirrored in walls, partially transparent walls, or light reflecting on polished surfaces – blurring time-honored distinctions between the domains of the so-called “natural” and “artificial.”
Trash for Use
Municipal center for harvesting utility from waste

New York, USA
As waste removal becomes increasingly difficult to handle and landfill space ever more scarce, cities such as New York, must become more resourceful in the manner in which they address their refuse. Confronting this problem, the project proposes a building in the midst of the metropolis for waste collection and processing, a “machine for turning trash into treasure.” The municipal Center for Harvesting Utility from Waste (CHUW) recognizes an opportunity to locally treat collected waste, breaking it down into its constituent components – organic substances, metal, paper, plastic, glass, and so forth – in order to exploit its content.

Project appraisal by Holcim Awards jury North America
Greatly appreciated by the jury is the idea to conceive a new type of urban infrastructure that offers an answer to the problematic interplay of material flows in urban environments. In this regard, the project proposes to close a gap in the chain that reaches from material extraction and processing to consumption and disposal. Applauded is the notion to propose an infrastructure building devised to mine the city, an important node within the metabolic system of a fragile urban ecology. Lastly, the jury commended the clarity and beauty of the drawings and models presented in the submission.
Machine Landscape
Coal mining sites for hydro-pump electricity storage
Greene County, USA
The project foregrounds the need to promote renewable energy production in the United States and specifically proposes to utilize abandoned underground coal mining sites for hydro-pump electricity storage in Greene County, Pennsylvania. The water collected in the subterranean caverns comprises a form of embedded energy that can be easily harnessed by using time-honored methods of hydroelectric power generation. During the night, when energy consumption is generally low, the water is pumped into surface lakes and then channeled through turbines to produce electricity during daytime peak consumption hours. Water is basically recirculated in endless loops from reservoirs below ground to lakes above ground, taking advantage of the altitude differential to produce clean energy.

Project appraisal by Holcim Awards jury North America
Notwithstanding the simplicity and ingenuity of the proposed technology, the submitted project recognizes its design potential, particularly its implications for landscape planning. The jury highly applauded the idea to combine abandoned infrastructure, energy production, and spatial design into a “machine” that is both useful and beautiful, one that performs a much needed function, one that is inherently sustainable, one that reuses and recycles deserted sites, and one that ultimately touches the senses.

Pictured project author: Kenya Endo, Atelier Dreiseitl Asia, Singapore.
Pleura Pod

Air purification wall transforming carbon dioxide into oxygen

Cambridge, USA
Developed by students at the Massachusetts Institute of Technology (MIT) in Cambridge, USA, Pleura Pod is a wall system, in which architecture and nature coexist. The term “pleura” is used in biology to describe a thin membrane covering the lungs of mammals, a membrane with closed cavities containing a small amount of fluid that minimizes the friction of respiratory movements. Learning from nature, the research team explored a wall assembly with small cavities filled with algae and through which air is circulated, with the algae transforming carbon dioxide (CO₂) into oxygen (O₂). The Pleura Pod system consists of three layers – the algae pod, specifically developed air bags, and codified units of computer fans – all interacting with each other to purify the air. The wall acts, so to speak, as a “lung” allowing the building to breathe.

Project appraisal by Holcim Awards jury North America
The jury was at first struck by the beauty of the submitted project and was progressively won over by both its technical ingenuity and intellectual rigor. Made of recycled material, the layers of the wall installation are all transparent, visually exposing the inner workings of the façade that functions as an artificial lung. Exploring the possibilities of bio-mimicry, the project offers strategies for understanding architecture in symbiotic relation with nature. The jury commends the project’s bold visionary stance and objective to explore uncharted terrain.

Pictured project authors: Suk Lee and Beomki Lee, Massachusetts Institute of Technology (MIT), Cambridge, USA.
Not pictured: Daeho Lee, MIT.
Timber-Link
Interlocking panelized timber building system
Cape Dorset, Canada
Designed by a young architect from Toronto, Timber-Link uses cross laminated timber to form a flexible system of clustered inhabitable cells at Cape Dorset in Nunavut, Canada. Building panels are prefabricated with insulation and cladding installed before assembly, thus expediting erection and reducing the need for skilled labor on site – especially for situations requiring speedy construction such as disaster relief. The system can be deployed at different scales, in different configurations, and for different circumstances. Infinite outcomes can be produced, either through the stacking of units or by means of a telescoping mechanism allowing unit assemblies to expand or contract. Not only does the system enable arrangements that can respond to particular requirements, but it also allows for a level of specificity that might not be otherwise feasible – as in remote areas of Northern Canada.

Project appraisal by Holcim Awards jury North America
The jury especially commends the author’s courage to revisit concepts pertaining to prefabrication in architecture such as those explored by Konrad Wachsmann and Fritz Haller for the Habitat 67 model community in Montreal. Notwithstanding the criticism to which aggregate housing ensembles were exposed, the proposed scheme aims to learn from history and further develop both construction and assembly to create more adaptable configurations – turning the logic of a quasi-neutral and anonymous system into one producing a site-specific architecture.
Evolutionary Infrastructure
Adaptive reuse of a parking structure for cultural activities
San Francisco, USA
This project by a team of young designers explores the concept and potential of adaptive post-occupation of unused infrastructure in the city of San Francisco. Using a parking garage to create a scenario, the scheme proposes to convert the “found” structure — an “objet trouvé” in the city, so to speak — into a public building hosting a range of cultural activities. The stacked floors of the garage and its circulation ramp are literally re-used to accommodate new functions. Additionally, new architectural elements are introduced, such as a performance hall which acts as cultural beacon on top of the garage, and an open air atrium cut through the slabs as public space. Adaptive reuse is here perceived as a strategy to reduce material flows in the city, using its material stock as opportunity for further development.

Project appraisal by Holcim Awards jury North America
The jury applauds the intrinsic ideological stance and ethical posture underlying the design proposal. Rather than view the garage as obsolete, the authors recognize its inherent qualities in order to create a spatial and social interface between the city and its inhabitants. Specifically valued is the team’s intention to rehabilitate an abandoned structure with minimal means and to revitalize a neighborhood through the provision of new activities — transforming technical infrastructure into social infrastructure.
Latex Formwork
Concrete wall panel construction method

Cambridge, USA
The research project by a Massachusetts Institute of Technology (MIT) doctoral candidate investigates a new construction method for creating thin concrete panels. The faceted formwork consists of two elements: a substructure and a lining, with the former made of a flexible wire mesh tracing the panel’s basic geometry and the latter made of a latex sheet determining the panel’s final form. The proposed method aims to reduce the weight of concrete molds and thus the amount of material used in construction. Additionally, the formwork is both reusable and recyclable. Furthermore, the research of Ephemeral Concrete explores potential applications of the proposed method – leading to modular façades with a unique and strong architectural expression.

Project appraisal by Holcim Awards jury North America
The jury commends the exploratory nature of the project. Particularly appreciated is the author’s intention to establish a dialog between the workshop and the design atelier – a process investigating forms of mutual relationships between the production of full scale prototypes and the design of architectural propositions by means of drawings and digital models. A form of knowledge production is here explored that merges academic and practical work.
Articulated Site
Water reservoirs as public park
Medellín, Colombia
From a multidisciplinary vantage point, this project for a public park in Medellín centers on the creation of spaces around and above a series of water reservoirs. Tracing the site’s history, the architectural form takes its inspiration from the surrounding topography as well as from the structure of the existing tanks and pools, resulting in an intervention with minimal environmental impact. Considering the infrastructural use of the site, special attention is given to water management, which utilizes recycling technologies that involve rainwater and grey water harvesting through simple systems for the irrigation of the park. In an interaction between nature and the urban landscape, the park seeks to improve the quality of life in the city.

Project appraisal by Holcim Awards jury Latin America
Exploring uncharted terrain, the project is situated at the intersection of a range of disciplines pertaining to the definition of the built environment, ranging from landscape and urban design to architecture and infrastructure planning. The jury values the important steps undertaken by the design team to explore the interrelationship of fields of expertise that are normally treated as isolated domains. The submitted design, in this sense, embraces – in a refined and poetic manner – the multiple criteria set forth by the Holcim Foundation’s “target issues.” Aesthetic, social, economic and environmental concerns are combined to form a sophisticated ensemble of public spaces, merging social imperatives with technical requirements to create a “socio-technical” landscape of magnificent beauty.
Arboreal Platform
Low-impact timber rainforest center
Puerto Viejo de Sarapiquí, Costa Rica
The design for the headquarters of the Fundación para el Desarrollo de la Cordillera Volcánica Central (Fundecor) in Puerto Viejo de Sarapiquí in Costa Rica is appropriately located in the midst of a forest. The non-profit organization aims to “contribute to sustainable management of natural resources and improve quality of life” in rainforest regions. Accordingly, the knowledge center will inform its users about the management of woodlands and the benefits to develop an economy dependent on forestry services, while promoting environmental conservation. Entitled Arboreal Platform, the project is organized on an elevated podium that hovers above the ground and is surrounded by trees. Four buildings on the platform frame a central courtyard. The entire structure is made of wood and covered by a roof using panels made of recycled aluminum milk packages. Internal climate comfort is provided by a low-cost combination of passive and active systems, including the use of grey water for the sanitation system.

Pictured project authors: Izbeth Mendoza and Román Cordero, PLUG Architecture, Mérida, Mexico.

Project appraisal by Holcim Awards jury Latin America
The jury greatly appreciates the project’s general posture vis-à-vis sustainable development, one giving due credit to an understanding of sustainability as a “common sense” culture and contributing to an architecture based on fundamental principles. A broad spectrum of complex environmental parameters is addressed to create a simple and seemingly self-evident building, a straightforward structure that is nonetheless poetic in its expression. All in all, the design offers a suitable and convincing solution for a foundation dedicated to preserving the biodiversity of the natural habitat.
Children’s House
Pedagogically-aligned school
San Andrés Payuca, Mexico
Children’s House is a project that is founded on an alternative educational model, offering activities that find solutions to the real problems of the population in the San Andrés Rayuca rural community, north-east of Puebla, Mexico. Correspondingly, the school’s curriculum includes instruction in agriculture, farming and building construction, in addition to normal course work. The design for the school – arranged by Fundación la Concepción and self-built by the community – proposes the use of cement-reinforced compacted blocks using readily accessible local earth. The design of the block with tapered corners permits assembly in a variation of curves based on organic principles. The school will double as a cultural center for the community, offering access to a library, the Internet and the school’s sports fields.

Project appraisal by Holcim Awards jury Latin America
Whereas the beauty and precision of the submitted drawings initially captured the attention of the jury, a closer look at the project revealed a deep sensibility for social, technical and environmental concerns – all combined and transformed into a stunning building for children, a building embedded in the landscape and appropriately playful in its formal expression. The jury was furthermore impressed by the scheme’s minimal deployment of architectural elements, such as the use of one continuous wall encasing the entire school, to achieve maximum effects – an “economy of means” contributing of an elegant and discrete structure dedicated to the next generation, while changing the paradigm of education in rural Mexico.

Pictured project authors: Francisco Pardo and Julio Amezcua, AT103, Mexico City, Mexico. Not pictured: Ariel Rojo Design Studio; Esrawe Studio; Entorno Taller de Paisaje; ROW Studio; all from Mexico City, Mexico; Cadena + Asociados Concept Design, Monterrey, Mexico.
Breathing Envelope
Vertically-stacked convention center and public spaces

Bogotá, Colombia
The new Ágora Bogotá (Bogotá International Convention Center) in Colombia will be unique. The program is stacked vertically to minimize the building’s footprint and to correspondingly maximize the surface area of outdoor public spaces in the heart of the city. Illuminated and ventilated naturally through an actively responding and acoustically sealed enclosure, the building features high levels of flexibility without compromising its architectural quality. Daily fluctuations in temperature of up to 20 °C require a specific approach to climate control. The project focuses on the optimization of natural ventilation and lighting, supported by refined control systems, to achieve optimal energy efficiency.

Pictured project authors: Jens Richter and Ramón Bermúdez, Estudio Herreros, Madrid, Spain; Daniel Bermúdez, Daniel Bermúdez Arquitectos, Bogotá, Colombia. Not pictured: Juan Herreros, Estudio Herreros.

Project appraisal by Holcim Awards jury Latin America
The jury values the dialog that the project establishes between the fields of architecture and engineering, with both disciplines mutually informing one another, ultimately combining state-of-the-art technologies with formal expression. The deployment of high-tech mechanical systems – for ventilation, lighting, heating, cooling, water management and power generation, including the use of surface geothermal energy storage – is done with restraint, leading to an architecture that appears noble, quiet and discreet – technology not for technology’s sake, but at the service of users, architecture and the environment.
Harvesting Agriculture
Community center for water harvesting and agriculture
Matacos, Argentina
The province of Formosa in northern Argentina is one of the most biodiverse regions of Latin America. While forests are abundant in resources, its people live immersed in scarcity, among other reasons, due to the advance of the agro-industrial frontier. The project Harvesting Agriculture aims to build a center for water harvesting and agricultural production based on a system for retaining water during periods of summer rainfall for later agricultural use during the dry season in the winter. The construction will be managed by the Lote 8 community in Departamento Matacos itself, as a form of empowerment, reassessing traditional building techniques and enabling knowledge transfer to future generations.

Pictured project authors: Joaquin Trillo and Damian Fernandez, Fundación Red Comunidades Rurales, Tilcara, Argentina.
Not pictured: Vicky Gonzalez, Manos de Hermanos, Lote 8, Formosa, Argentina.

Project appraisal by Holcim Awards jury Latin America
The project’s vision to restore the balance of rural communities in regions marked by rural-to-urban migration and steadily proliferating poverty is commended by the jury. In this context, the design offers a series of strategies to strengthen local agriculture in order to alleviate predominant deficiencies – with the management of scarcity, whether pertaining to water, labor or food, being at the core of the proposed interventions. Greatly appreciated is the idea to combine forestry with agriculture, and to propose water retention basins in close proximity to both farming fields and settlements. The project makes an important contribution to the field of resource management for regions marked by shortages, though rich in yet untapped assets.
Indoor – Outdoor
Site-responsive school
Jacmel, Haiti
The project for a school in Jacmel in Haiti, for 400 students takes advantage of the topography of the site, introducing reinforced concrete slabs on different levels that adapt to the slope. Grouped as independent units with three walls forming a C-shaped space, the repetitive modules are based on a regular grid, changing position according to programmatic requirements. This results in places of different proportions, orientation, degrees of privacy and intensities of sunlight or shade. The construction technique is simple and can be pursued in stages, and equipped to minimize the impact of seismic activity. To benefit from the enormous amount of rain during wet seasons, roofs are designed to collect rainwater in tanks, and a drainage system uses wastewater for landscape irrigation. The project creates a child-friendly environment, a place full of mysteries and surprises that stimulates imagination and creativity.

Project appraisal by Holcim Awards jury
Latin America
A range of aspects impressed the jury. First, the project’s aim to explore alternative educational models was greatly valued, particularly the provision of indoor as well as outdoor teaching activities and manifold classroom configurations for different teaching methods. Second, the notion of the school as a kind of city with classroom units forming “neighborhood clusters” was considered an excellent contribution to the design of educational facilities. Third, the jury applauded the type of development cooperation proposed by a foreign actor, Fundacja Polska-Haiti, in a country needing support, a collaboration of equal partners. All in all, the project offers an important contribution to discourses on sustainability, going beyond standard formulas.
Rural Campus

University campus for community regeneration

Acatitlán, Mexico
The new campus for environmental studies in Acatitlán, 140 km west of Mexico City will trigger a local regeneration process, reinforcing communities throughout the region. The project’s design for the Universidad del Medio Ambiente is locally attuned, self-sufficient regarding energy and water, promotes on-site food production, and will be realized with low-impact materials to minimize the architecture’s ecological footprint. Rather than promoting efficiency for efficiency’s sake, the authors frame the university curriculum based on local knowledge: “It’s not about the campus, it’s about a community.” Erected in three phases, the buildings are organized around a series of courtyards. Construction assemblies include stone foundations, wooden structures and wall finishes made of soil. The result is a sustainable and regenerative project, a “living classroom” that could readily be replicated.

Pictured project authors: Oscar Hagerman, Federico Llamas, Universidad del Medio Ambiente, Valle de Bravo, Mexico; Paloma Vera, Cano Vera Arquitectura, Mexico City, Mexico; Frida Bidegain, B+E Green Design, Mexico City, Mexico; Arturo Farías, Universidad del Medio Ambiente; Juan Carlos Cano, Cano Vera Arquitectura; Miguel Campero, Centro Viva, Valle de Bravo, Mexico. Not pictured: Francisco Bonilla, Universidad del Medio Ambiente.

Project appraisal by Holcim Awards jury Latin America
The jury greatly values the intention to create a university campus in a rural context, a campus dedicated to the tenets of sustainable development, both in terms of the university curriculum – the environment being at the core of teaching and research – and the campus design according to state of the art ecological principles. The project offers an excellent example of how to act locally, and concurrently thinking globally, fostering regional benefits and cultural exchange, while combining social, economic and environmental regeneration with long-term objectives.
Under Construction

Restoring an urban historical center

Quito, Ecuador
The project Under Construction in Quito is about a form of “social economy” and its implications for people and the physical environment they inhabit. Despite contemporary global urbanization and its attendant economy, there are still rural areas today where barter is the main mode of exchange. The project draws on this tradition and proposes bartering as a practice in an urban context for the refurbishment of the historical center of the city – a process carried out by people without sufficient monetary means. Here, bartering replaces typical capital investment with a direct form of exchange between two parties. For example: the owner of an abandoned house in need of restoration and tenants without monetary means but willing to exchange their labor as a form of rent.

Project appraisal by Holcim Awards jury Latin America
The jury noted that Under Construction is one of few entries in the competition that suggests a method rather than espousing a specific design proposal. The recommended approach encompasses the use of a near-extinct form of trade to rescue threatened historical centers. Additionally, the strategy involves the reuse and recycling of existing material stocks. Materials that cannot be directly reprocessed are re-inserted into new use-cycles: wood for making furniture, stones for making foundations and construction debris for making gardens. All in all, the design promotes not only a promising economic model, but most importantly one put to work to literally mine cities rather than nature.
Fruit Salad
Riverside urban infrastructure redeployment

Manaus, Brazil
Flooding along the riverbanks is one of the major problems for the city of Manaus in Brazil as the levels of the Amazon River greatly vary between the dry and rainy seasons. As a solution, the project proposes to transfer the activities currently on the fragmented waterfront to a floating platform in the river. A large roof offers protection from sun and rain. The reforestation of the river edge and the creation of a retention lagoon are part of a strategy to delay flooding. The platform, linked to the dry land by footbridges, is used both as a harbor and market – a meeting place connecting the activities of the river with those of the city.

This submission was initially developed as a thesis project at the Universidad Nacional de Córdoba, Argentina, based on a workshop conducted in Manaus, Brazil, in 2012. A number of proposals were subsequently developed by different student groups with similar program components on the same site and comparable architectural solutions.

Project appraisal by Holcim Awards jury Latin America
The jury greatly appreciates the idea to conceive of a project as a reflection on an important subject matter – in this case, the question of how to inhabit the region without disrupting its ecosystem. Addressing urbanization processes in harmony with nature, the investigation deploys design as a means to explore the role of markets as a form of common infrastructure along waterways and riverbanks. The market platform – a kind of architectural “fruit salad” mixing manifold everyday activities – is intended to take on the role of an agent nurturing public and civic life in the vast territory of the Amazon Basin.
Laguna Chapel
Recycled timber church and community center
Zoh Laguna, Mexico
The project comprises the rebuilding of a church of an old lumber town on a lagoon in the province of Campeche in Mexico. Wood from the original chapel and other buildings is recycled to erect a modular structure adapted to local timber construction. Respecting the site, the new church and community center define a square for public use, including cultural and educational programs that complement religious activities. The building ensemble uses passive ventilation; rainwater for drinking and irrigation is collected from the roof and outdoor surfaces; polluted water from the lagoon is cleaned.

Project appraisal by Holcim Awards jury Latin America
To explore the role of memory, both in a spiritual and material sense, is at the core of the project – an investigation strongly commended by the jury. Specifically appreciated is the idea to recycle the wood of previous structures on site to build a new house of worship as well as a community center for the region. The design borrows from tradition without copying historically established forms. On the contrary, a new vocabulary is developed, one taking its cues from new methods of construction and assembly, giving due respect to the tectonic sensibility of the local culture.
Den-City
Urban regeneration through densification
Córdoba, Argentina
The low density and lack of public spaces are two major factors that are detrimental to the urban quality of Córdoba in Argentina. Careful analysis of the Güemes neighborhood identified the need to suggest a series of measures to improve current conditions. Adaptable and multipliable buildings for flexible use are proposed, including a range of provisions to reduce the environmental impact of the project: green roofs, rainwater collection, grey water for irrigation, solar energy production, and the use of recycled materials for construction. The initiative is conceived as a public-private partnership creating answers to heal and improve the neighborhood.

Project appraisal by Holcim Awards jury Latin America
Praised by the jury are the proposed strategies to regenerate neighborhoods through the insertion of collective housing in the interstices of the urban fabric. Particularly appreciated is the concept of the “compact city” that the authors explore and the means deployed to sustain a high quality of life in urban contexts, through public space and a range of uses that meet the needs of inhabitants. Most importantly, the project considers the incorporation of infrastructural elements for energy generation and rainwater harvesting into the housing structures – combining technology and architecture in an innovative way.
Plaza Mediateca
Library and media center
San José, Costa Rica
The media library for the people of the Rincon Grande neighborhood in San José, the capital of Costa Rica is designed as a modular raised platform resting on steel pillars covered by a ventilated roof. The orientation of the project takes advantage of natural light and movable façade panels regulate the internal breeze circulation, avoiding the installation of mechanical air conditioning. With a minimal environmental impact, this proposal offers a low cost, integrated and multifunctional solution, based on the commercial building system of the town, using local materials and workforce. Architecture is used as a tool to build social space, strengthen community identity and enhance the social life of the community across different ages, interests, classes and cultures.

Project appraisal by Holcim Awards jury Latin America
The significance of the project, according to jury, lies in its objective to reduce social inequality by furthering resilient forms of education in marginalized communities. The proposed design explores the role of architecture to achieve this aim through the construction of a library for both books and new media in neglected neighborhoods – turning “non-places” into truly habitable and secure “places” for people. The structure – a platform on stilts – hovers over a square, accentuating the representative significance of the building as a public good belonging to all.
Eco-Techno Park
Green building showcase and enterprise hub
Ankara, Turkey
An Eco-Park for sustainable research and technology that will promote small and middle-sized enterprises is planned for Ortadoğu Sanayi ve Ticaret Merkezi (OSTİM), an industrial zone located in Ankara. The project aims to maintain the site’s landscape. Offices, conference and workshop spaces are embedded within the terraced landscape. The building – situated at the edge of the site – constitutes a landmark for the area and connects with the terraces at different levels. Designed to create a pleasant communal space for its users with minimum interference to the natural context, the project incorporates various sustainable features including natural lighting, geothermal heat pumps, green roofs, passive ventilation, water efficiency and irrigation systems.

Project appraisal by Holcim Awards jury
Africa Middle East
The jury greatly appreciated the project’s objective to promote economic growth in the region through innovation in environmental technologies. The building is accordingly conceived as a test bed for sustainable research exploring new techniques pertaining to the use of renewable resources – energy for heating and cooling, rainwater retention, temperature control, daylight, and natural ventilation. At the core of the scheme is the intention to establish a careful balance between the natural and fabricated realm – an objective most clearly expressed in the project’s landscape strategy, which aims to integrate the building in its natural setting.
Evergreen City
Urban pine forest rehabilitation  
Beirut, Lebanon
The Beirut Pine Forest is a green space extending over more than two hectares with a natural ecosystem typical of the Mediterranean region including native tree species, shrubs, and plants. The unique green space known locally as Horsh El Snoubar or Bois de Pins is located in the middle of the capital and considered the largest botanical garden in Lebanon. “Horsh El Snoubar” is a unique green space in Beirut that was re-developed in 1992 through a project commissioned by the Municipality of Beirut with the help of Region Ile-de-France; a team of French and Lebanese architects and landscape architects (from France: Jacques Sgard, France Trébucq, Ivy Papadakis, Jean-Claude Hardy; from Lebanon: Pierre Neema and Frederic Francis) proposed a new layout for the forest. A rehabilitation plan has been proposed to develop the facilities and services needed in the park for opening it to the public and promoting it for cultural, social, sports, and environmental activities – while at the same time maintaining and conserving the park’s natural habitats. Environmental standards and urban needs will be integrated in a seamless way, enhancing the sense of belonging to the wider community.

Project appraisal by Holcim Awards jury Africa Middle East
The project’s bold intention to open up a territory – located in the midst of the city’s “concrete jungle” and essentially suppressed and forgotten in the collective memory – to the public at large was strongly commended by the jury. The city of Beirut, under constant pressure by private development to use every piece of available land for more and more expansion, must rehabilitate its green spaces and make them accessible to the public – a restoration not only of its natural habitat but most importantly of the very ideal of the city as collective body – Beirut’s civitas.
Incremental Construction
Low-cost modular housing scheme  Addis Ababa, Ethiopia
The research project Sustainable Incremental Construction Unit (SICU) is a response to the housing challenge in the rapidly-urbanizing capital of Ethiopia, Addis Ababa. The project is process-oriented and aims to both explore and implement specific construction techniques to tangibly upgrade the city’s housing stock. Whereas the first phase of the process was framed by collaboration between academia, local administration, and inhabitants, the second phase is specifically focused on the development of a prototype – a purposefully incomplete structure that is both affordable and rapid to assemble. Close to 90% of the building components including prefabricated concrete elements and lightweight eucalyptus frames are prefabricated and produced by micro and small-scale enterprises, creating the opportunity for skilled employment and capacity building. The housing unit is a “half-ready construction” where the homeowners will be able to finish the construction themselves, installing building components and finishes according to their needs.

The project incorporates a series of features that promote the concept of sustainability beyond the common understanding of the term. The jury greatly valued the role of the university as a critical player in advancing the constructive framework of the city, engaging a series of stakeholders: city officials, local inhabitants, craftsmen, etc. in the very formation of the urban habitat. While the project offers strategies for formalizing the informal, at the same time it learns from local construction practices and social customs to produce a new form of urban vernacular – a strategy that essentially informals the formal.
Adaptive Re-Use
Women’s center and playground
Beit Iksa, Palestine
Part of a larger scheme to revive the historic center of Beit Iksa, a small Palestinian village of 1,600 people near Jerusalem, the project offers a response to the village’s isolation and limited resources. In a first step, two abandoned buildings will be adapted for reuse as working spaces with an eco-kitchen for the local women’s association, followed by the rehabilitation of surrounding spaces. The new facilities will include interactive educational playgrounds for children, winter and summer seating areas, and a protected bird habitat. It is an effort to bring life back to this abandoned site by combining design, planning, restoration, landscaping, and infrastructure, thus improving local living conditions and biodiversity, while adding to the aesthetic quality of Beit Iksa.

Project appraisal by Holcim Awards jury
Africa Middle East
The jury greatly appreciates the project’s social and spatial initiatives to strengthen communities and their environment in a politically troubled region of the world. Specifically valued is the intention to rehabilitate a historic site with minimal means and to revitalize a community through the provision of facilities for important daily activities – cooking, playing, gardening, etc. At the core of the project is the build-up of social and physical infrastructure – understood as a conduit to empower local stakeholders and, most importantly, families and women of all ages.
Chicoco Radio
Community building
designed for urban flooding
Port Harcourt, Nigeria
Chicoco Radio is a floating media platform that will be built with and for the residents of the waterfront slum communities of Port Harcourt in Nigeria. The structure is conceived as a linear public space connecting land and water. The design is part of the “African Water Cities” project, which investigates the challenges and opportunities at the intersection of rapid urbanization and climate change in African coastal cities. A participatory venture using locally produced materials, Chicoco Radio will be the community’s voice and will include recording studios, a computer center, meeting rooms, cinema, and an amphitheater.

Project appraisal by Holcim Awards jury Africa Middle East
The jury acknowledges the project’s objective to establish linkages both locally and across the region. Architecture merges here with new media to become a platform for modern communication and participation – a civic tool to strengthen local and regional identity. Located at the threshold between land and water, the structure furthermore encapsulates the effects of climate change on coastal communities in Africa. The use of indigenous materials such as bamboo to create a media center offers the opportunity to create an architecture that goes beyond tradition, while respecting the past.
Co-op Capacity Building
Community farming and market hub
Kigali, Rwanda
The master plan focuses on the rapid urban growth in Kigali in Rwanda and responds to the needs of the predominantly young population. The project establishes participatory processes with local cooperatives and stakeholders. Working with, rather than against, the topography, the scheme includes a collective hill-farming program, community buildings, and a market. Existing wetlands will be improved with aquatic macrophyte plants and intercepted with a network of pedestrian bridges and pathways. Using local materials as well as empowering the local labor force, the Co-op Capacity Building offers cost-effective, re-applicable solutions that respect the Rwandan tradition, improved by a contemporary sense of public space aesthetics.

Project appraisal by Holcim Awards jury Africa Middle East
The jury was impressed by the idea of strengthening communities involved in food production through cooperative capacity building, combining social and economic programs in the very make-up of the community. The masterplan thus goes beyond the implementation of physical infrastructures, spaces, and buildings to include a range of measures to reinforce social interconnectedness – through communication and participation. The project is a small but nonetheless important step in nation building, in a country troubled by its past.
Weaving Publicness
Socially-integrated office building with sustainable façade

Addis Ababa, Ethiopia
The winning entry of the architectural design competition for the headquarters of the Addis Ababa Chamber of Commerce & Sectoral Associations (AACCSCA) in Ethiopia aims to contribute to the spatial improvement of the urban environment, and to create an architectural dialog engaged in a global context with a strong local identity. It does so by integrating public spaces at ground level, continuing the “busy-ness” of the street within the building. A façade made of “woven” locally-quarried trachyte stone – reminiscent of Ethiopian stone architecture and ancient textile techniques – regulates ventilation as well as sunlight.

Pictured project authors: Wes Degreef, BC architects, Brussels, Belgium; Adiyabebe Tadesse Hailemariam, ABBA architects, Addis Ababa, Ethiopia; Ken De Cooman, BC architects.

Project appraisal by Holcim Awards jury Africa Middle East
The jury acknowledges the architectural and spatial qualities of the building – a carefully crafted piece of architecture within the city fabric of Addis Ababa. Of particular importance is the sequence of public spaces “weaving” the hustle and bustle of the city streetscape deep into the new facilities of the Chamber of Commerce. Trade – as a form of interaction and key activity of civic life – evolves as the central theme of the design proposition. Additionally, the jury valued the façade structure and its composition as a fresh alternative to the outlandish curtain walls that clad high-rise building throughout the city.
White Canvas
Health center and school in refugee camp
Bassikounou, Mauritania
The project takes on the difficult task to provide public amenities in refugee camps. The submitted proposal for a health center and school was specifically developed for the Mbera refugee camp in southeast Mauritania of more than 70,000 people, near the border with Mali. Foldable and easily-erectable tent structures form the basic units for the school and health center facilities. Phase Change Material (PCM) accumulators are used for air-conditioning, taking advantage of the temperature differential between day and night for creating livable and safe conditions without additional energy requirements – the colder air at night cools the hot air during the day. The use of this simple but effective technology in semi-desert or desert areas helps to improve living conditions in the camps, upholding the human dignity of the refugees and enhancing their chances for stability and self-reliance.

Project appraisal by Holcim Awards jury Africa Middle East
The jury praised the basic premise of the design proposal that combines the intelligent deployment of technology with social objectives. Two technical aspects were specifically praised. First, the sophisticated light-weight system for the tent structures was considered a highly appropriate solution for satisfying the specific needs of instant construction. Second, the use of PCM accumulators as an environmental control system to cool or heat the air was deemed a brilliant answer for improving comfort levels. Here technology is put to work for enhancing the living conditions of uprooted political refugees.

Pictured project authors: Attila Szabadics and Mónica Rácz, ArchSus Group, Pécs, Hungary.
Bio-Mimicry
Water research center
Fika Patso Dam, South Africa
The concept driving the design of the Water Research Center of the University of the Free State in South Africa is known as bio-mimicry, learning from nature’s regulating processes to inspire an understanding of architecture in sync with the environment. Architecture, according to the project’s author, can mimic the mechanisms at work in nature to produce architectural structures that sustain themselves, while in symbiosis with nature. The project aims to amalgamate the land mass and bodies of water with a dam constructed on existing pillars to form a hybrid landscape. The building evolves into a kind of living creature or organism with a roof-like structure opening or closing according to the seasonal rainfall.

Project appraisal by Holcim Awards jury Africa Middle East
The jury greatly appreciated the project’s bold visionary stance. The design proposition – a manifesto in its own right – frames a discourse on possible forms of relationships between the built and natural environments, offering strategies for perceiving architecture as a form of action in a symbiotic rapport with nature, without succumbing to romantic notions of nature. Commended is the understanding of architectural design as a research platform to explore and discover yet uncharted terrain.
Destroyed City Told
Earthquake memorial and archaeological museum
Agadir, Morocco
The town of Agadir in Morocco was hit by a devastating earthquake in 1960. The “kasbah” or fortified town on the hill was entirely destroyed and the site abandoned. This dramatic event in the history of the town establishes the very narrative of the submitted project: the creation of a place of contemplation in memory of the 15,000 residents who died in the earthquake. The scheme incorporates a memorial on the site and an archaeological museum retracing the history of the city. The building, for example, integrates the ruins of the fortification wall, establishing a dialog between the old and the new, between the past and the present.

Project appraisal by Holcim Awards jury Africa Middle East
The jury was captivated by the clarity and beauty of the models and drawings featured in the submission. Here, architecture in its purest disciplinary form is brought to the fore to create a magnificent ensemble, one touching the senses and foregrounding aesthetics as a key tenet of sustainable development. The scheme merges tradition with a contemporary understanding of architecture without mimicking the past or succumbing to the pitfalls of orthodox historic reinstatements. The proposed structure tells a story, one told in the present, while recalling a past and pointing to a potential future.
Machinarium
Regenerative urban catalyst and textile production  Pretoria, South Africa
The 21st century, frequently termed the post-industrial era, is marked by the devastating consequences of unsustainable industrial production, unlimited consumption, and boundless waste. The proposed scheme from Pretoria redefines understandings of industry by proposing a new system of resource exchanges between specific production processes. The submitted design, for example, explores synergies between a textile manufacturing facility, agricultural fields, and a sewage treatment plant to create what the author calls a “Machinarium” of mutually interrelated systems and subsystems, all working together to create a sustainable environment. The project thereby explores new architectural typologies which may transform the future of cities. Industry becomes a regenerative urban catalyst that blurs present-day distinctions between social, productive, and natural space.

Project appraisal by Holcim Awards jury Africa Middle East
The jury admired the freshness of the scheme’s underlying hypothesis as well as its translation into architecture. Particularly valued was the project’s bold proposition to understand the city as a type of “self-sustaining” machine in which one component feeds the other – a collection of superimposed ecosystems in a state of equilibrium. Notwithstanding its utopian facets, the design proposal frames a valuable discussion on potential forms of relationship between the constructed and natural environment, offering the grounds for understanding the art of building as a practice in symbiotic relation with nature.
Waste to Energy
Urban energy recovery and development concept

Beirut, Lebanon
The Bouchrieh industrial quarter located on the outskirts of Beirut currently suffers from an overflow of waste, recurrent power outages, and a lack of skilled labor. The city’s overflowing landfill is in dire need of an emergency waste plan. Addressing the problem at hand, the project offers a set of sustainable solutions for reactivating the area, transforming waste into energy, and reinstating local craftsmanship. The project combines a waste-to-energy plant with public facilities – workshop and exhibition spaces – aimed at raising public awareness regarding Beirut’s unsustainable condition. Making the problem an integral part of the solution, the plant is conceived as a pioneering model that can be implemented in other parts of the country.

Project appraisal by Holcim Awards jury Africa Middle East

The jury commends the student’s ethical posture and their courage to engage with a citywide challenge. The very problem is perceived as an opportunity to not only produce refuse as a valuable power resource but to also create a series of exciting public spaces – a wasteland is transformed into a place and center of communal activities. The most promising feature of the project is the promising idea to empower local craftsmen, through education and vocational training programs with a focus on reuse, recycling, and reducing material flows.
Protective Wing
Bird sanctuary  
Chiang Mai, Thailand
Each year, thousands of birds are smuggled in and out of Thailand for their exotic colors and bird calls, to be sold on the world’s growing black market. Rescued birds usually die in confinement because they are retained in cages for up to five years as evidence during prosecution of smugglers. The Bird Sanctuary in Chiang Mai in northern Thailand serves as both an educational facility and a bird rehabilitation center including a small hotel and bird viewing tower, in a site that simulates the natural habitat. Palm fiber, an agricultural waste, is used as a construction material for the building enclosure – the façade as habitat and food source for all birds in the area.

Project appraisal by Holcim Awards jury Asia Pacific
The jury greatly values the project’s political message concerning the devastating effects of bird trafficking on the survival of endangered wildlife. The author’s ideological stance aligns with the principles advocated by the International Union for Conservation of Nature (IUCN), especially its “Red List of Threatened Species” – an eminent document guiding worldwide conservation policy and action. Considering architecture as an instrument of “action,” the project literally establishes the link between political activism and building practice, combining architectural qualities with conservation, education, research and ecotourism in a complete and convincing way.
Children’s Ziggurat
Locally-adapted orphanage and library
Kathmandu, Nepal
The Lali Gurans orphanage and library in Kathmandu addresses the needs of an under-served rural population. In a context lacking basic infrastructure, the new facility utilizes low-technology renewable energy and material resources, thus significantly reducing operating costs. Using local construction techniques and materials, the design invests in indigenous workmanship. Vertical gardens and permaculture provide thermal insulation as well as food for cooking. Aiming to overcome the image of “the orphanage” as institution, the project addresses the needs of the nearby communities by offering a library accessible to the public and a seismically stable refuge area during earthquakes.

Project appraisal by Holcim Awards jury Asia Pacific
The jury appreciated the simplicity and robustness of the structure, a reinforced fly-ash concrete frame establishing a three-dimensional matrix for manifold functions, including a range of public amenities. Specific spatial qualities are introduced within the structure, offering children the opportunity to discover, not unlike “Alice in Wonderland,” spaces full of surprise and mystery – rooftop terraces, hanging gardens, majestic halls and hidden chambers. The building ultimately manages to combine a social framework with a physical one in a seemingly seamless way.
Post-War Collective
Community library and social recuperation
Ambepussa, Sri Lanka
The project in the rural town of Ambepussa near the capital city Colombo, aims to reintegrate former soldiers into post-civil war Sri Lankan society. Coming from underprivileged socio-economic backgrounds, young men are trained in building techniques through their involvement in the construction of public buildings – as for example in the realization of the Community Library in Ambepussa. Respecting existing trees, the slender building sits lightly in the landscape and wraps around an inner courtyard, taking full advantage of cross ventilation and daylight use. Rammed-earth walls and recycled materials reduce the building’s ecological footprint.

Project appraisal by Holcim Awards jury Asia Pacific
The jury commends the intention of the project to focus as much on the building process as on the building as physical artifact. The combination of two objectives, pertaining to the term “building” both as verb and noun, celebrates a specific understanding of architecture, one derived from the very structure of its making. Greatly appreciated is the project’s vocational training aspect, which will contribute – beyond the immediate task at hand – to “capacity building” in a broader sense: the project would potentially heal collective wounds, build labor workforces, disseminate knowledge, foster sustainable development and strengthen social relations.

Pictured project authors: Ganga Ratnayake and Milinda Pathiraja, Robust Architecture Workshop, Colombo, Sri Lanka.
Between Walls
Community medical center and school
Tatiba Baraibura, India
The community center in Tatiba Baraibura, in the Indian state of Jharkhand, is comprised of a residential school for 400 students, vocational training program and medical center for 14 villages in the West Singhbhum district. The project is financed by a mining company as part of its social responsibility program. Local rough laterite stone is used as the main building material of the four parallel walls that comprise the building’s load bearing structure. A light roof with substantial overhang made of industrialized steel ensures shading and natural ventilation. The low cost structure combines local materials and traditional craftsmanship with modern technology.

Project appraisal by Holcim Awards jury Asia Pacific

The jury was highly impressed by the elegance of the proposed structure – a building of unassuming poetic expression. Straightforward means are put to work to form a highly adaptable system of walls, openings, access routes, open courts and indoor as well as outdoor spaces. These elements are all assembled according to the rules of time-honored architectural principles – a building both traditional in the way it is made and modern in its appearance. Notwithstanding the design’s aesthetic quality, the project adheres to most criteria elucidated in the “target issues” for sustainable construction, merging economic, social, contextual, and environmental aspects into a simple yet sophisticated building.
High-Tech Low-Tech
Sustainable research center featuring traditional woodworking methods
Kyoto, Japan
The French School of Asian Studies – École Française d’Extrême-Orient (EFEO) – holds an extensive library housed in a new building in Kyoto. The narrow site is surrounded by neighboring buildings on three sides. Equipped with the most advanced technological features (electrochromic glass, ecological glasswool insulation, geothermal heat storage, solar panels, etc.), the structure offers a prime example of sustainable development in modern construction. At the same time, time-honored Japanese woodworking methods were deployed, allowing the building to be erected rapidly.

Pictured project authors: Benoît Jacquet, EFEO, Kyoto, Japan; Manuel Tardits, Mikan, Yokohama, Japan. Not pictured: Kiwako Kamo, Masashi Sogabe and Masayoshi Takeuchi, Mikan.

Project appraisal by Holcim Awards jury Asia Pacific
The jury considers the project to be an ideal example of how to combine high-tech and low-tech construction in contemporary building practice. The structure – a manifesto in its own right – merges modern state-of-the-art technology with traditional artisanship. Bringing the “old” and the “new” together requires a specific sensibility, one based on an understanding of architecture as a form of research. While looking at history, future solutions are sought, as an approach adhering to the fundamental mandate of the institution as a research center.
In-Situ Network
Palm tree branches for coastal protection
Tarawa Atoll, Kiribati
Palm tree branches are used as a simple measure to respond to the imminent threat of coastal erosion – due to rising waters and habitat destruction – on Tarawa Atoll in Kiribati. Inserted into the sand, the spoon-shaped branches constitute an ideal barrier, causing sea currents to slow down and deposit sand material into the concave inner surface of the leaf branch. Sand mounds are thus created which gradually elevate coastline embankments, allowing aquatic plants such as mangroves to grow and secure the beach.

Project appraisal by Holcim Awards jury Asia Pacific
The jury enjoyed the ingenuity and simplicity of the proposal, an ostensibly common solution for the restoration of sandbanks susceptible to the detrimental effects of climate change – a small-scale solution for a large-scale problem. Commended is the intelligent deployment of parametric design to increase the performance of individual branches when combined into groups or swarms of branches, where the whole is greater than the sum of its parts. Furthermore, what was appreciated were the beautiful drawings showing stunning geometric patterns of branch network assemblies, generated from scientific data.
Megacity Skeleton
Stakeholder participation for urban up-grading
Jakarta, Indonesia
The Megacity Skeleton project in Jakarta is a two-step micro intervention to upgrade informal settlements in megacities and avoid slum-clearance by authorities due to the lack of hygienic living conditions. Planned first as a participatory initiative—as opposed to top-down government approaches—narrow spatial “voids” are introduced within high-density residential areas to bring air and light into the building fabric of the neighborhood. In a second step, a flexible and temporary wooden envelope structure or “skin” is added to the house, which residents can freely customize.

Project appraisal by Holcim Awards jury Asia Pacific

The jury commends the dual approach to upgrading informal settlements. Whereas the first step falls in the domain of the collective, establishing a primary urban framework of alleys for light and air within a quarter, the second step addresses individuals and their specific needs. Recalling Le Corbusier’s Dom-ino open plan frame, the Megacity Skeleton project explores an extension of the model’s evolution, adapting the formalized Corbusian structure to the needs of informal communities, with a particular emphasis on stakeholder participation as a fundamental principle of collective living.
Resurrected Canals

Urban water transport system  
Bangkok, Thailand
The Resurrected Canals concept offers an answer to the notoriously congested traffic conditions in Bangkok. The project proposes to revive the ancient canals of the city to create a modern network of waterways and supplement the existing Metropolitan Rapid Transit systems. A train-to-boat transfer station and pier will be built as a prototype, to be positioned along various intersections of canal lines and rail stations. The development of water transport will not only reduce commuting time for residents, but also provide social services at key locations. This major infrastructure project will also introduce flood control and pollution reduction measures.

Project appraisal by Holcim Awards jury Asia Pacific
The jury applauds the bold vision of the project, particularly its aim to rehabilitate a historic city network, which – though crucial for the definition of the urban fabric – was unfortunately compromised due to both formal and informal growth over time. Furthermore, the idea to combine technical exigencies with social needs is an excellent feature of the planning proposal, one that reclaims infrastructure as residing in the public domain and being truly important matter of concern for society at large.
Panda-Watching
Historic village reconstruction  Xueshan, China
The design proposes a post-earthquake reconstruction of Xueshan in the Chinese province of Sichuan, a historic village known as the hometown of the panda. Focusing on the unique local characteristics of the site, the project uses bamboo as the main building material and revives traditional construction techniques. Approximately 50 houses will be rebuilt and a small number of new structures erected, including a hotel, panda museum, memorial hall and raised platforms for panda watching.

Pictured project authors: Zhang Qu, Tsinghua University, Beijing, China; Zhe Peng, Harvard Graduate School of Design, Cambridge, USA.
Not pictured: Zhenru Zhou, Princeton University, USA.

Project appraisal by Holcim Awards jury Asia Pacific

Is history a construct? What measures must be taken when dealing with historic preservation? To what degree can contemporary architecture refer to the past? These are some of the questions wisely posed by the project, both conceptually as well as through design. The proposal aims at a subtle balance between "the old" and "the new," at times adhering to pure historic reconstruction based on the study of archival material, while at other moments taking greater liberties when interpreting vernacular form. The jury praises the clarity and beauty of the submitted drawings which intelligently refer to the tradition of classical Chinese painting, while acknowledging the present.
Adaptable Portable
Modular housing for urban poor
Dhaka, Bangladesh
Taking on the challenge of how to house the urban poor, the project proposes a modular system of dwelling units for marginalized neighborhoods in the rapidly-growing city of Dhaka. The dwellings can easily adapt to the changing needs of their inhabitants and either grow or reduce according to the size of the family at a certain point in time. Moreover, the units can be dismantled when slum dwellers are evicted and reassembled in a new location. Made of bamboo and recycled materials, the dwelling’s modular components and panels are sufficiently light to be easily transported.

Project appraisal by Holcim Awards jury Asia Pacific
The jury applauds the author for her courage to take on one of the most difficult contemporary problems in city planning and urban design – the question of how to house the underprivileged masses in an age marked by growing discrepancies between rich and poor. Whereas many contemporary solutions exist, the submitted scheme incorporates the issues of impending eviction and eradication of informal settlements by offering a system that is both “adaptable” and “portable.”

Pictured project author: Nusrat Jahan Mim, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh.
Social Design

Urban neighborhood remediation

Bandung, Indonesia
The design aims to improve the deteriorating physical and social conditions of the Bukit Jarian Kampong in Bandung. Two mutually-dependent measures are initiated. First, the scheme introduces a sanitation hub as public space in the center of the slum. Second, the project’s objective is to restore the polluted river, which has been used for an extensive period as a garbage dump. Designed in a square pattern of bridges, buildings and platforms over a landfill bordering the river, the proposed hub is accessible from several sides, opening connections to the neighborhood while providing a range of public amenities, such as public toilets, a recycling facility and a learning center.

Project appraisal by Holcim Awards jury Asia Pacific
The jury greatly appreciates the efforts undertaken by the group of young designers to improve the quality of informal settlements in Indonesia. Particularly valued is the project’s vision to conceive of sanitation concurrently as an architectural, urban and a social project. Infrastructure design is viewed in terms of its physical and societal impact, improving the environment while improving community relations.
Formal-Informal DNA

Urban network upgrading

Tangerang, Indonesia
The quasi-voluntary relocation of informal dwellers triggered by developers offering compensation typically results in the dissolution of communities, long commutes to distant workplaces, cultural disorientation of individuals and families, to mention just a few of the adverse effects of present-day large-scale urban development projects. Countering standard eviction practices, the submitted proposal for a marginalized settlement in Tangerang identifies strategies for a gradual upgrading of physical and social space.

Project appraisal by Holcim Awards jury Asia Pacific
Particularly praised by the jury are the analytical drawings made by the author to understand the “DNA” of the existing urban fabric – its form, street patterns, natural elements, collective spaces and so forth. The drawings establish the armature for a range of architectural interventions that follow and expand upon the genetic code of the settlement. The proposed strategies to regenerate the neighborhood are well-considered and include measures to improve the quality of connections, to enhance income generation and trade within the community and to allow kinship groups to take over ownership of their neighborhood.
Re-Made Fabric

Garment district intervention  
Chittagong, Bangladesh
Re-Made in Bangladesh is a research project investigating – through the deployment of architecture – the relationships in the global garment industry between producer and consumer nations. A catalog of potential architectural interventions is offered to improve working conditions and potentially eliminate practices of labor exploitation in the garment sector, whether in Chittagong or other locations. The project seeks to enable a shift from mass production industries to forms of micro and small enterprises, with workshops distributed throughout the cities rather than confining workforces in isolated factory compounds on the periphery of metropolitan centers.

Project appraisal by Holcim Awards jury Asia Pacific
The jury applauds the rigor of the intellectual investigation, one substantiated by an “ethico-political” position and culminating in an architecture of “ethic-aesthetic” value. Particularly praised is the depth of the dialog and its aim to frame architecture as an inherently political endeavor, without, however, neglecting or undermining architecture’s disciplinary frameworks. The notion of design as “manifesto” – allowing the designer to operate with, against and ultimately for a given condition – was viewed with greatest esteem and considered an essential contribution by a young team to the Holcim Awards competition, and ultimately to the advancement of the field.
“Target issues” for sustainable construction

The Holcim Foundation for Sustainable Construction is committed to the underlying principles of sustainability, which assert that long-term development of the built environment requires a balanced interplay of responsible economic, ecological, and social agendas.

To achieve this objective, the Holcim Foundation and its partner universities have identified five “target issues” that aim to clarify principles for sustaining the human habitat for future generations. These “target issues” serve as criteria for projects submitted for the Holcim Awards and as a road map for other related activities of the Foundation.

Progress
Innovation and transferability
Projects must demonstrate innovative approaches to sustainable development, pushing the envelope of practice and exploring new disciplinary frontiers. Breakthroughs and trend-setting discoveries must be transferable to a range of other applications.

People
Ethical standards and social inclusion
Projects must adhere to the highest ethical standards and promote social inclusion at all stages of construction, from planning and building to use and servicing; to ensure an enduring positive impact on communities. Proposals must demonstrate how they enhance the collective realm.

Planet
Resources and environmental performance
Projects must exhibit a sensible use and management of natural resources throughout their entire life cycle. Long-term environmental concerns, especially pertaining to stocks and flows of material and energy, should be an integral part of the design philosophy.

Prosperity
Economic viability and compatibility
Projects must be economically feasible and able to secure financing – whether from public, commercial, or concessional sources – while having a positive impact on society and the environment. Avoiding the wasteful consumption of material resources, an economy of means in construction is to be promoted.

Place
Contextual and aesthetic impact
Projects must convey a high standard of architectural quality as a prevalent form of cultural expression. With space, form and aesthetic impact of utmost significance, the material manifestation of the design must make a positive and lasting contribution to the physical, human and cultural environment.
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The Holcim Awards are run in close collaboration with the Academic Committee and the partner universities of the Holcim Foundation (see page 108) as well as [phase eins], and Raecke Schreiber, both from Berlin, Germany.