Habitat for Humanity

Report 2022

A deep dive into how the Wazoku Crowd supercharged the aims of a humanitarian organization.

wazoku

Habitat for Humanity®

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Contents

Letter from Bea Schofield

What does housing mean to you? Safety, shelter, home, or something more? For far too many people, their housing doesn't yet prove sufficient for all their needs. Through the Terwilliger Center for Innovation in Shelter, Habitat for Humanity strives to find workable, accessible, and affordable solutions to improve shelter across the globe. Open innovation can help bring leaders in housing markets together with teams on the ground to expand services, products, and financing. Wazoku can offer this open innovation capability, bringing the connections and ideas that ensure that every household has the means to improve where they live.

In November 2020, we launched a series of Challenges with Habitat for Humanity. This is not the first time that a Wazoku customer has run a number of open innovation Challenges simultaneously, but this marks the most remarkable effort of its kind to-date. Four of the Terwilliger Center's Shelter Venture labs from around the world decided on what their biggest existing crisis was that they could use open talent to help develop solutions around.

The true marvel of this series wasn't only in its outputs, but in the way that our community of Change Makers engaged with and took real interest in solving these Challenges. In a lot of these cases, awarded Solvers didn't even live on the same continent as the problem they were solving - the care and attention shone through in their responses from across the globe.

This capability to change the world hasn't been possible at this pace throughout all of human history. At Wazoku, we're excited to be leading the charge on connecting ideas to impacts that can deliver astonishing outcomes in a matter of months.

In this report, you'll read about global Solvers who designed prototypes that were tested in the field and about on-the-ground teams that partnered with local communities. We feel immensely proud to have played a part in the successes featured in this report.

Bea Schofield
Director of Customer Innovation, Wazoku

Letter from Harry Sangree

What humanitarian organization wouldn't want partners to help with their mission? Even better if there are hundreds of self-selected partners with appropriate skills to solve a specific problem defined by the organization. It's even better still if the answers can arrive in 90 days. This is the power of the 'Humanitarian Crowd-Solving' project that my organization, SeaFreight Labs, facilitated for Habitat for Humanity in 2020 and 2021.

In the midst of a global pandemic, Habitat's Terwilliger Center for Innovation engaged four different regions of the world to identify local unsolved housing-related problems that were difficult to fix and would have a huge impact if a cost-effective solution could be uncovered. For each project, Habitat's local leadership selected and defined their problem and later recruited external stakeholders to help run the evaluation and field testing of submissions. Throughout the process, we partnered with Wazoku and engaged with over 1,000 individuals from around the world to generate four promising solutions to the published problems.

I am in awe of the elegance of the entire process. Problem statements created by the joint efforts of Habitat, Wazoku and SeaFreight Labs turned out to be top notch for attracting solver interest. **The scale and diversity of the crowd of innovators for each of the Habitat open innovation Challenges was extraordinary.** Hundreds of individuals and groups participated in each Challenge and eventually submitted scores of quality proposals. The multi-phase judging process, often with field testing and always with the involvement of skilled outside volunteer experts, helped to winnow a set of strong submissions down to even stronger finalists and then onto winners.

I have been involved with Habitat for Humanity as a volunteer since 1979, when I worked in Zaire on local projects. I believe in their mission. I support their work. They prioritize volunteer involvement and are willing to take calculated risks to further their work. This project is a direct result of these overarching mission strategies. You will read of participation by countless people from all over the world in planning, promoting, solving, testing and judging the four Challenges. Through this effort, we learned that a 'crowd' includes both strangers and like-minded partners who become friends.

At least two of the innovations are now actively engaged in field testing to further validate their efficacy and cost-effectiveness as a solution. The crowdsourcing of innovation, which I call "Crowd-Solving" truly works! Read about each project in the upcoming pages.

Harry Sangree
Founder and President of SeaFreight Labs

Philippines

In this Challenge, the Philippines Shelter Venture Lab wanted to find a way of making houses more resistant to natural disasters. What they found was a solution that could revolutionize low-income housing for hundreds of millions of people worldwide.

The main danger for houses that exist in hotspots for natural disasters such as hurricanes, typhoons, and earthquakes is not the volatile nature of the world around them. It is that these areas are often ones of low income, meaning that costs are minimized and key safety features – such as functioning foundations – are often done without.

As part of the work it does to improve the lives of people in these areas, Habitat for Humanity Philippines in conjunction with Terwilliger Center for Innovation in Shelter, Wazoku, and SeaFreight Labs launched an open innovation Challenge. The purpose of this Challenge was to find a solution to the problem of homes with no foundations. It needed to be **cheap to construct, easy to fit, and acceptable to the local communities** that would benefit from its installation.

Though the Challenge owners started with those three criteria, it soon became apparent that another, more practical test was needed.

This lengthened the process of the Challenge considerably, with some estimations that it doubled both the time and capital required.

Jessan: "If the solution was viable but unaffordable, then families would never see the benefit of it. Similarly, if it was cheap but didn't work, we'd all be wasting our time."

However, this also meant that the judging panel were more confident in rewarding a submission that could develop into a workable solution.

Adding this stage to the evaluation process ensured that greater detail was needed on the original three criteria as well.

Jessan: "We found that about half of the judging panel were sceptical of this and a way to move forward was to do a mock-up of a solution and find out the cost estimates for manufacture and implementation would be. This ensured that the winning solution wasn't one that was pulling cost estimates out of thin air."

Habitat staff oversee the construction of test structures

278 Active Solvers

81 solutions

1 Awarded Solution received $25,000

Solutions submitted from 6 continents: prominently from regions of C. America, Europe, Asia

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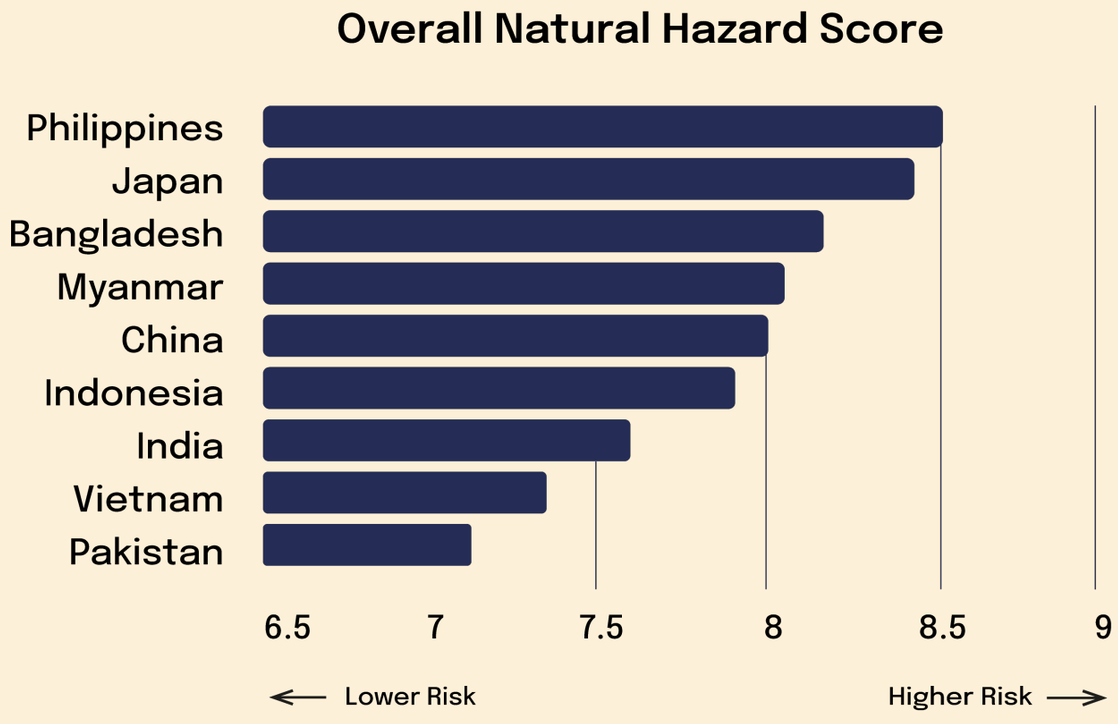
If the solution was viable but unaffordable, then families would never see the benefit of it. Similarly, if it was cheap but didn’t work, we’d all be wasting our time.

Jessan Catre
Philippines Country Director,
Terwilliger Center for Innovation in Shelter

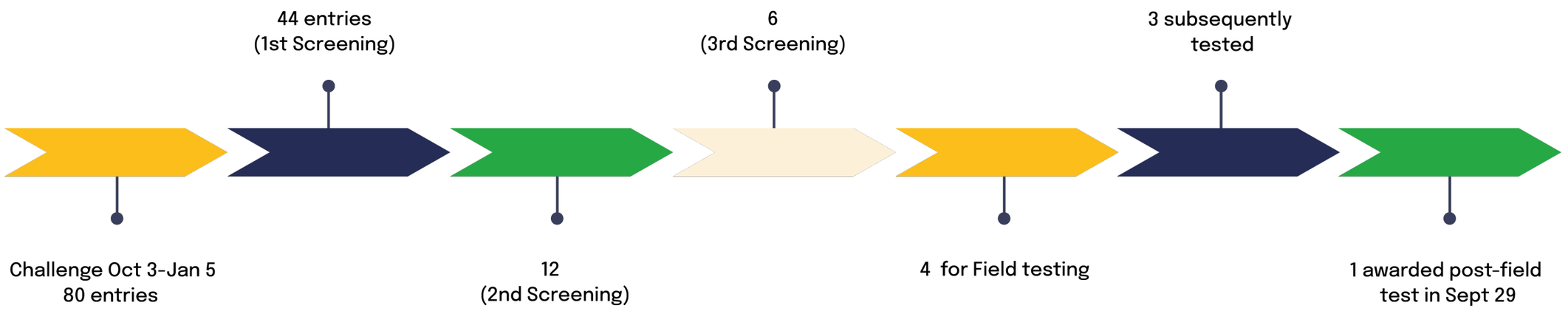
Did you know...

According to an IEP report from 2019, the Philippines is the country **most at risk from the effects of the climate crisis**, ahead of countries such as Japan, Bangladesh, and Vietnam.



Source: INFORM Global Risk Index 2019: IEP calculations

Challenge Timeline



This scepticism surrounded the lack of data supporting the need for a solution in the first place. Where this vacuum of reliable information once was, Habitat stepped in to help discover the truth.

Jessan: "Proving that there was a need for this solution through data would be difficult: as much of the population we'd be helping are invisible, under-served, and ignored by the state. Our calculations came back estimating that about one million families needed this solution."

With the need for a solution established, the desire to ensure any awarded solution had what it took to drive positive change was increased. The network of Habitat employees and volunteers spurred into action.

Jerick: "The effort needed to mobilize people on the ground is enormous. Even during the prototyping phase, people forget that building the solution is not the only delaying factor. Testing the feasibility and availability of materials could have held us back even further than it did. Fortunately, the solution we awarded was accepted by the community almost immediately."

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The effort needed to mobilize people on the ground is enormous.

Jerrick Axalan

Market Systems and Entrepreneurship Specialist, Habitat for Humanity International

Following a field test, the Challenge panel awarded Team Monolith – a team of Solvers from the Civil Engineering Department at the University of the Philippines – with the full award amount of $25,000. The team that comprised of Dean Ashton Plamenco, Diocel Harold Aquino, Fernando Germar, and Ammiel Barros had their prototype fitted to partial homes that were constructed specifically for the field test.

An earthquake and typhoon were then simulated, ensuring that the idea worked in practice. This came after establishing that the solution fulfilled the cost, community acceptance, and ease of implementation criteria set out in the Challenge. By producing communications during the Challenge that spoke to the cultural specificity, Habitat for Humanity Philippines ensured that the awarded solution has the best possible chance of succeeding in real communities, outside of test environments.

In many ways, the Challenge represents the first part of solving this humanitarian need. Tasks that now face the team is building a pathway to scaling production and retrofitting efforts, something that they are already heading towards.

Jessan: "We have a partner already in mind in Holcin, but another partner will be vital in realizing that aim of reaching half a million+ households."

As they reflect on the experience, Jessan and Jerrick are optimistic about the eventual success of the solution delivered by the Challenge, and the opportunities to use crowdsourcing in the future.

Jerrick: "I am confident in saying that we would definitely do this again. In fact, there are some discussions already happening about running a crowdsourced idea Challenge that focuses on house design for similar reasons of natural weather disasters."

Jessan: "Crowdsourcing is an approach that, to me, has proven effective. So much so that we're actively looking for opportunities to use it again. I know we've spoken a lot about the fact that the solution we've found here still has work to be done in terms of testing and manufacturing but make no mistake: it has already had an impact."

The opportunities that can arise out of the work done here by Habitat for Humanity Philippines are astounding. The Philippines is not the only part of the world that suffers from the mixture of insufficient structure in housing for low-income areas and regular weather disasters. Sea-Freight Labs founder Harry Sangree is hopeful that this solution – once approved and scaled – can be used around the world in South America, Africa, and other extreme weather hotspots, **eventually helping hundreds of millions of families globally.**

The Terwilliger Center for Innovation in Shelter (TCIS) has mobilized over **$780,000,000 USD** of capital to contribute to research in housing market systems and take that down to market to construction service providers. The Shelter Venture Labs in Peru, Kenya, India, Mexico, and the Philippines conduct and apply the results of their research to move towards incremental builders and affordable housing.

At a glance...

- The Philippines is the most 'at risk' country on earth from the effects of the climate crisis
- Over 1 million households are in need of foundations on their houses
- Awarded solution already accepted by local communities as viable
- Expected to roll out to other continents to help similar struggles globally

Mexico

In this Challenge, the Mexico Shelter Venture Lab hoped to find a solution to the crisis of available drinking water in low-income areas. What they found was a solution which, if rolled out worldwide, could improve the lives of 750 million+ people.

The crisis in many parts of the world concerning a lack of available drinking water is getting worse. Estimates show that, globally, more than 768 million people do not have access to this fundamental resource. As the effects of climate change worsen, and global pollution continues to increase, this figure is likely to keep growing.

It was believed that an open innovation Challenge could unlock an answer to the question of providing clean drinking water in low-income areas. It had to use low-cost technology, require simple installation, be capable of providing adequate storage capacity for the average Mexican household, and enable access to clean, safe drinking water.

From the beginning, it was clear that a theoretical submission would not be enough. In order to accurately decide if a submission was viable or not, a prototype of the submission needed to be made to see how effective it proved in the real world.

As a 'Reduction to Practice' Challenge, Wazoku ensured that this element of the submission was understood from the beginning.

With this type of Challenge, the activity trends reflected the level of detail needed, with high volumes of sign ups early on and submissions in the closing stages. This shows that Solvers took every element of the Challenge criteria into account, giving due consideration to the nuances such as price and community acceptability.

Accessing clean water in Mexico is difficult for many people. It is hoped that this Challenge will pave the way for a national overhaul of water accessibility, particularly among the poorest and most remote areas of the country.

Habitat for Humanity felt that the winning proposal was the most impressive and best met the four criteria it set out for awarded solutions:

- Uses low-cost technology
- Installation is simple
- Grants easy access to clean water
- Provides adequate storage capacity for an urban Mexican family

278 Active Solvers

55 solutions

1 Awarded Solution received $25,000 USD

Solutions submitted from 6 continents: prominently from regions of Europe, Latin America and India

Did you know...

The increase in clean water access in Mexico from 2018-2020 is at a 20 year low. Challenges like this could be the solution to reversing this trend.

Following extensive field testing, the Challenge panel awarded Jesus Chico Fernandez the full award amount of $25,000. A resident of Madrid, Spain but a Mexican native, Fernandez used his local and cultural knowledge together with his background in engineering to come up with a winning solution.

Jesus: "When I was iterating, making sure that all the restrictions of the Challenge were allowed for, I had in mind that project was for the people of Mexico. I am Mexican and so I know how people tend to resolve problems with limited resources there. I mixed all the specific technical knowledge I gathered in my Master's in Hydraulics with Mexican-specific pragmatism."

Youngs boys helped by Habitat for Humanity

Fernandez became aware of the Wazoku Crowd thanks to the inquisitive mind of his mother. His passion for c**hanging the world, one idea at a time makes him the epitome of what the Wazoku Crowd is all about.**

Jesus: "I had heard of Habitat for Humanity through my mother, as she is always researching information in the web about people who are out in the world trying to make a difference. I would love to suggest more solutions to Challenges in this area, whether they are run by Habitat for Humanity or someone else."

His reason for getting involved with the project is also a reminder of how well crowdsourcing fits into the modern world of work. When asked what brought him to the crowdsourcing space in the first place, he replied:

Jesus: "The prize money. Even with a good engineering background, all the good intentions I have, and the head full of ideas; it's hard to find sponsors, employers, or a platform to develop an idea and get paid for it at the same time. Habitat ensured that good work could be done while supporting idea creators."

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I would love to suggest more solutions to Challenges in this area, whether they are run by Habitat for Humanity or someone else.

Jesus Chico Fernandez
Winning Solver for the Mexico Habitat for Humanity Challenge

Fernandez's solution – which is a system for collecting, cleaning, and storing rainwater in a way that makes it safe for human consumption – uses Ultraviolet Light and a Carbon filter in order to identify and sift out impurities. When he heard the news that his solution had been awarded the full prize money, he was overjoyed. When asked to explain what this meant to him, he said:

Jesus: "One word: Validation. Before working with Wazoku and Habitat for Humanity, I didn't know the real value of my work or knowledge. I thought I had interesting ideas, but I was unaware that I could solve problems and earn something by doing it."

Habitat for Humanity Mexico now have a solution that can work to help low-income families across the country. If rolled out successfully here, it's the hope that this technology can be used to help populations around the world. The magnitude of the potential for his solution isn't lost on Fernandez:

Jesus: "I really can't believe one of my ideas could have a positive impact on the lives of many families in Mexico. I think the day I see it in situ, I truly will feel overwhelmed with joy."

The discovery of Fernandez's winning solution really illustrates the value of crowdsourcing in a global way. Every citizen of every country in the world has a different background, life experience, and take on the world. **Harnessing this diversity of thought is something that all companies can benefit from and, as we've seen in this report, can lead to drastic progress in pursuit of real, tangible change.**

A beneficiary family from Mexico

A house in Mexico

At a glance...

- Over three-quarters of a billion people have limited or no access to clean water worldwide
- Winning Solver lives on a different continent from the Challenge base, but brought first-hand contextual knowledge
- If successful, the field testing will lead to a potentially worldwide roll out

India

In this Challenge, the India Shelter Venture Lab sought a way of reducing the scale of a problem that engulfs a global industry. What they found was a sustainable, scalable solution that could convert billions of tons of waste material into a resource for building strong and safe houses for the poorest in society.

A local woman who may benefit from the Challenge

As an unfortunate biproduct of its work, the construction industry produces an enormous amount of Construction and Demolition ("C&D") debris. Habitat for Humanity believes that the waste currently generated by the sector could also be a huge untapped source of necessary building materials that could be repurposed and recycled for future use.

As a country that contributes a significant amount of C&D waste due to its growth, India was a suitable host for this Challenge.

Asking the Wazoku Crowd for ideas that address the road-blocks that currently hinder both the recycling of waste or alternate uses in construction, Habitat for Humanity India – along with The Terwilliger Center and SeaFreight Labs – needed to concentrate their open innovation call to stream-line the responses they would receive.

This Challenge focused on the first steps of using waste: the estimation and segregation of waste materials and the initial logistics of how it could be used in the construction supply chain.

It was hoped that the results would help develop this area of sustainability, **to ultimately reduce natural resource use and keep large amounts of C&D waste from entering the environment.**

Did you know...

It is estimated that 100 million metric tons of C&D waste are produced in India each year.

The construction industry is an important part of India's economy: contributing 8% to the country's GDP.

Along with this size, there's an ever-increasing need for new building materials which results in more C&D waste. These estimations are expected to rise exponentially with rapid urbanization and population pressures.

When asked what interested them in taking up this Challenge, Daniele Alves was keen to point to the wider context of the problem.

Daniele: "Civil construction is a huge generator of waste in wider society, and with rapid urbanization this pace has only increased. The improper depositing and environmental damage caused by some waste disposal motivated me to think of solutions that could reuse it instead, especially in low-income communities. It would be great if we could reduce the improper disposal while also creating benefits for communities."

Outside of the global nature of the task at hand, Alves also had personal reasons that motivated their submission.

Daniele: "It meant a lot for me to know that I have helped contribute to sustainable development, with measures to make society more aware, fair, and knowledgeable that natural resources are not endless."

60 seconds with Terwilliger Center India Country Director Anoop Nambiar and Senior Technical Advisor Deepak Visvanathan

Anoop Nambiar (L) and Deepak Visvanathan (R)

Anoop: "Open innovation is an area that we would like to explore more. Wazoku and SeaFreight have been helpful across the whole life cycle of the Challenge, from before launch through to the awards."

Deepak: "Our work in this Venture Lab is a fascinating opportunity to facilitate new ideas for things that haven't been brought to the limelight yet. Bringing together networks of like-minded people in a coalition is effective: mobilizing collective intelligence to overcome our problems."

Anoop: "The team has used incubators and crowdsourcing before, but the global reach of Wazoku's open innovation was critical – we received lots of ideas from all over the world and awarded Solvers from 4 continents!"

Deepak: "Using technology to crowdsource in this way brings down the cost through a novel use of the internet. Habitat India benefited from a diverse audience brought to the Challenge by a significant technological advantage."

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It is great that we could reduce the improper disposal of construction waste, and at the same time reuse them for the benefit of communities.

Daniele Alves
Winner of the Most Innovative
and Creative Solution for this Challenge

Historically, the management of waste from construction and demolition has been neither effective or efficient, with a large portion of unsegregated waste ending up in ad hoc dumping grounds or unauthorized landfills.’

India’s government has made efforts towards turning C&D waste into much-needed materials, but no significant adoption or progress has been made until now. Habitat for Humanity used this Challenge to gather new ideas, concepts, and solutions to overcome these roadblocks: paving the way for a more sustainable and circular future.

Benefits on all sides

The improved management of waste doesn’t just lead to construction benefits. It also delivers on social, economic, and environmental fronts.

Social: improved management of waste would prevent indiscriminate dumping and enhance quality of life in neighborhoods.

Economic: the inclusion of low-income families into the network of considerations for the construction industry would reap benefits of resource efficiency and cost effectiveness through the use of recycled building components.

Environmental: the industry would achieve significant progress in sustainability outcomes and benefit from a measure of circularity.

The team invited solutions from all over the world, in many different formats and levels of research, by using an Ideation Challenge from Wazoku.

Solutions came in across the topic and submissions approached the Challenge in a number of different ways, answering different points, including:

- The estimation of debris
- Its character
- How to segregate it
- How best to transport it
- What the best repurposing process is
- What products can come out of this repurposing

With the variety in these solutions, the scope that Habitat India can research has increased massively.

Habitat’s use of an Ideation Challenge here allowed for the gathering of many diverse solutions. They gain a non-exclusive license to use the solutions, research, and develop them further.

A beneficiary girl from India

House building in India

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Combining the twin issues of sustainability and circularity ensured the ideas collected were good for the environment and good for businesses too.

Deepak Visvanathan
Senior Technical Advisor
Terwilliger Center

It would've been almost impossible for one solution to cover the extent of such a global issue. The multitude of contexts, climates, and resources from a truly global crowd like Wazoku's means that this Challenge could draw in many Solvers and diverse ideas.

As this was the case, and in order to get the most value out of the Challenge, Habitat for Humanity India decided on four winning solutions, between which the overall prize money of $15,000 was split.

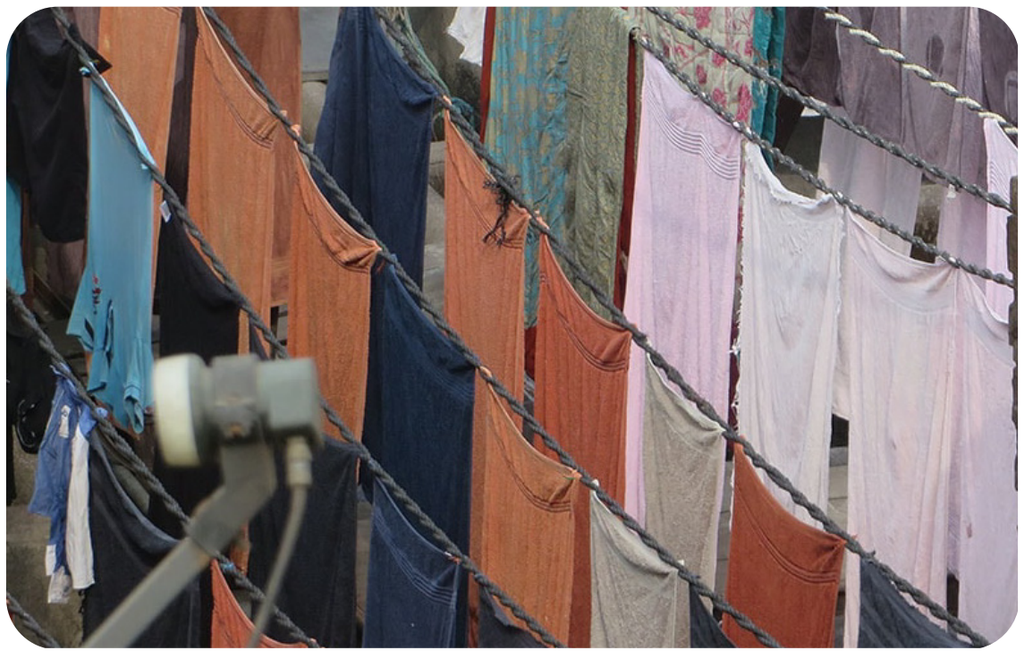
The four successful solutions were selected on the following criteria:

Most Innovative and Creative Solution: This solution suggested a method for turning rubble into usable mortar for bricks. It was submitted by Daniele Pereira of Brazil.

Most Sustainable and/or Socially Contributory: Zaifara Yakshigildina of Russia submitted a solution that showed how rubble can be converted into temporary roads.

Most Technically or Conceptually Feasible: Navneet Samhotra of India submitted a proposal for segregating materials into categories, making the recycling of this waste easier to achieve.

Best Overall Solution: This solution looked at methods for recycling across a number of different substances and materials. It was submitted by a team of five individuals from South Africa: Henry Rothschild, Aksharaa Gupta, Junhyeok Yang, Manuel Maria Miranda de Andrade Veiga, and Xuanxuan Wu.



Examples of lower-income housing in India

At a glance...

- The Challenge was live for 3 months
- Attracted 277 Solvers from nearly 60 countries
- 4 successful solutions awarded

Kenya

In this Challenge, the Kenya Shelter Venture Lab set out to find a solution to the spread of malaria, carried by mosquitoes. What they found was a solution which, if implemented, could prevent hundreds of millions of cases of the disease each year.

Jacob Simwero, Technical Lead for Habitat Kenya, pictured with part of the winning solution.

In March 2021, an open innovation Challenge launched by Habitat for Humanity Kenya hoped to find solutions for retrofitting existing houses across Africa in ways that would reduce the spread of malaria.

Focusing particularly on Kenya, where **around 70% of the population is thought to be at risk of malaria,** the Challenge aimed at finding affordable and sustainable home design solutions to significantly reduce the number of mosquitoes inside the home and reduce the number of mosquito bites, **lowering transmission of malaria and other diseases.**

The awarded solution – submitted by Jayesh Vani – introduced air cavities in homes with no or very small windows that can control the entry of mosquitoes. Having seen the success of field testing across other Challenges it had worked on, the Terwilliger Center ensured that potential solutions were tested in a field structure at the Kenya Medical Research Institute "KEMRI-CGHR" campus in Kisumu, Kenya.

Malaria kills 384,000 people a year on the African continent, 93 percent of whom are under 5 years old. "The Experimental African Houses that Outsmart Malaria", WIRED, June 30, 2021.

55 solutions

Wazoku team screens solutions for completeness, appropriateness, and duplication, then passes on 55 to Habitat for evaluation.

19

Habitat for Humanity International and SeaFreight Labs select 19 high-quality solutions from their preliminary evaluation.

9

Habitat Kenya use detailed criteria to evaluate and scale down a shortlist of 9 to advance.

4

An interdisciplinary expert panel is assembled, including representatives from Habitat International and Kenya, Kenya Medical Research Institute (KEMRI), the Architectural Association of Kenya (AAK), Women in Real Estate (WIRE) and The President's Malaria Initiative, on the practicality of the solutions' implementation and adoption.

1

The solution 'Mosquito-free homes: Air Cavities and Screens' was subjected to testing.

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Mosquitoes physically and mentally impair more humans than probably any other animal or insect species, especially in tropical areas of the world. Even small steps in alleviating some of this impairment is a commendable achievement in itself.

Jayesh Vani
Winner of the Malaria Prevention Challenge

Did you know...

Kenya has an estimated 3.5 million new cases of malaria every year.

The winning idea provided a screened frame that opens outwards as a door opens inwards. Ceiling screens and vents were also included to cover and control every possible way that mosquitoes enter the home.

A key part of the Challenge was that an awarded solution needed to be affordable.

Each modified hut cost Ksh 16,540 ($142.94 USD) for both labor and materials for a two-room house. A three-room house would cost Ksh 24,810 ($214.41): which is still within the threshold set by the Challenge (materials only), as this figure also includes the cost of labor

The house modification **significantly reduced** the re-capture rates of mosquitoes indoors – indicating that the modification works effectively to keep out mosquitoes and could complement current control efforts, such as bed nets and insecticides.

Across different mosquito strains this result was the same, implying that **the solution could be used to keep out all types of mosquitoes across different geographies in Kenya.**

A test home based at the KEMRI Kisumu campus.

Collecting the mosquitos after the test to validate the effectiveness of the solution.

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Based on the findings of our social norms mapping, we chose to focus on retrofitting homes as opposed to new construction.

Home modifications are typically more cost-efficient for homeowners and can be faster to introduce to the market if there is already existing demand.

Patrick Kelley
Global Vice President at the
Terwilliger Center for Innovation in Shelter

When asked about the remarkable outcomes of the field testing, winning solver Jayesh Vani was overjoyed.

Jayesh: "I really feel humbled that my proposed solution could have such a large impact!"

Even though he doesn't come from Kenya, the problem of mosquitoes was something that Vani instantly recognized the scale of.

Jayesh: "Mosquito-related problems are a big issue in all the Tropics - such as in India where I'm from - and I too face this issue regularly. I also really believe in the power of simple and cost-effective solutions to complex problems."

This isn't Vani's first time attempting to solve a Challenge on the Wazoku Crowd and, after his success here, it won't be the last either.

Jayesh: "I have been part of the Wazoku Crowd now for quite some time, and even participated in some of the earlier Habitat Challenges. I'm looking forward to the next one, to see what else I can contribute to the world."

Habitat International and KEMRI are ecstatic about the potential of the Challenge solution.

Using open innovation has provided a simple, affordable, and scalable solution that has the potential to improve the lives of thousands across Kenya and beyond.
Partnering with Wazoku on this Challenge gave Habitat for Humanity a huge range and diversity of insights through the Wazoku Crowd.

Child aided by Habitat for Humanity

Habitat for Humanity Kenya and Wazoku viewed it as essential to include local partners such as the Architectural Association of Kenya (AAK) as part of the evaluation process. Conversing with local stakeholders during open innovation helps with the social acceptability of solutions: a workable solution only has value if it's accepted and validated by the local community that will use them.

Engaging with people and teams who have knowledge of the local contexts helps to overcome this hurdle. For example, working with the Women in Real Estate group (WIRE) made sure that the project evaluation was inclusive.
The testing took place at Kenya Medical Research Institute – Centre for Global Health Research (KEMRI-CGHR) facilities in Kisumu, Kenya. With established field structures for research on mosquitoes, the Kisumu campus and staff were of great assistance to Habitat Kenya staff in conducting the testing.

Four huts were used, with two modified with the solution and two left as controls, and the design was in keeping with local, typical shelter. All research with mosquitoes was guided by the ATSB (Attractive Targeted Sugar Baits) protocols approved by KEMRI's Scientific and Ethics Review Unit (SERU) that safeguards study participants.

By engaging through using story-telling and community-tailored content, Habitat Kenya can inform the local community. Frank and direct conversations are being had about malaria, retrofitting homes, and the applicable methods for solving these issues.

These community engagement methods are multi-channel as well as in-person, to get information to people through methods that don't rely on access to internet or a strong connection.

Habitat's policies of partnering with local organizations and housing system stakeholders give their solutions and innovation in shelter the best chance of success. The evaluation and testing stages of this Challenge meant that the solution was rigorously tested:

- Economically
- From a social acceptability standpoint
- Functionally

Volunteer building in Kenya

The success of the Malaria Prevention through Innovation in Home Design Challenge takes several forms:

- The **productive and valuable partnerships** undertaken both by Habitat Kenya with its local partners (the AAK, WIRE, KEMRI, BOVA) and the Terwilliger Center with Arifu.
- A **ground mobilization** of volunteers, staff, and homeowners for the testing.
- Establishing **an evaluation panel of experts** from across the health, design, construction, and housing sectors to award the solutions.
- The solution's effectiveness: both against mosquitoes generally and also against types of mosquitoes, suggesting it **will be effective across Kenya and also scalable beyond the region.**
- The **affordability and social acceptability** of the solution.

Providing a solution to retrofit homes does automatically mean that local homeowners will use it. The Habitat Kenya team also works with partners like BOVA Network, to identify and promote healthier home design through market-based solutions. The Terwilliger Center is also working with a partner, Arifu, to develop a scalable training program to reach at least 15,000 homeowners in Kenya with information about healthy homes and vector-borne disease.

At a glance...

- **89% reduction in mosquito numbers in houses tested with the solution**
- **Critical value through understanding the local market and community norms**
- **$140 USD to retrofit a typical house and keep families safe from malaria**

Philippines

Mexico

India

Kenya

Challenges at a Glance

The 4 Challenges at a glance

	Philippines	India	Mexico	Kenya
Objective	Earthquake/Typhoon Resilience for < $300 USD	Construction & Demolition Waste Management	Urban Water Harvesting for < $630 USD (installed)	Malaria Reduction for < $200 USD
Type	Reduction-to-Practice	Ideation	Reduction-to-Practice	Reduction-to-Practice
Prize	$25,000 USD	$15,000 USD	$25,000 USD	$20,000 USD
Solver Info	From 49 countries/ 43 quality submissions	From 59 countries/ 37 quality submissions	From 60 countries/ 40 quality submissions	From 56 countries/ 55 quality submissions
Working Prototype?	Yes	No	No	Yes
# of Winning Teams	1	4	1	1
Winner(s) From	Philippines	Brazil, India, Russia, South Africa	Spain	India

- 1,000+ individuals engaged across six continents
- TCIS has mobilized over $780 million USD in capital over its history

In focus:

Terwilliger Center for Innovation in Shelter and SeaFreight Labs

Terwilliger Center for Innovation in Shelter

The Terwilliger Center for Innovation in Shelter:

The scale of the problem that The Terwilliger Center for Innovation in Shelter is trying to combat cannot be overlooked. An estimated 1.6 billion people currently live with inadequate shelter. As an unit of Habitat for Humanity, the TCIS is focused on expanding the access of low-income families globally to innovative housing products, services, and financing.

By building inclusive housing markets through innovative ideas, approaches, and collaborations, TCIS brings together insights from across the housing ecosystem to develop solutions that work for everyone but primarily those who are most in need. Named after Ron Terwilliger, the chairman emeritus of Trammell Crow Residential which itself is the largest developer of multi-family housing in the USA, TCIS brings market-based solutions to low-income families worldwide to improve housing conditions.

TCIS's work – like Habitat for Humanity – doesn't just focus on increasing market size or efficiency. With a focus on making markets work for the end user, TCIS works within the margins of profitability to challenge markets to seek clients with limited resources and connect them with the tools and resources they need to build safe, decent, workable homes.

SEA FREIGHT LABS
Innovate Better

SeaFreight Labs:

SeaFreight Labs is a consultancy delivering crowd-solving services to businesses and non-profits. They serve as 'Project Advisor' on global challenges to cost-effectively deliver breakthrough innovation to intractable problems. A Project Advisor works directly for the Seeker by providing coaching on best-practices for open-innovation. Key areas of support include problem selection, problem definition, challenge promotion, judging, project management, and post-award strategies.

Headed by Harry Sangree, SeaFreight Labs is committed to the Pledge-1% movement: an initiative that sees businesses donate 1% of their product/service/equity to local or global non-profits. This commitment led to SeaFreight Labs' involvement in this project and their focus on humanitarian issues.

Driven by the success of this project, SeaFreight Labs now focuses its charitable efforts on what they call "Humanitarian Crowd-Solving". They invite other global NGOs to engage with them in this effective form of directed innovation.

Innovation in Shelter:

An Ongoing Journey

At its heart, this report highlights one thing above all else: the potential of the human spirit to do good for others. Given the means to connect with people that live in different places, speak different languages, and face different problems than them, Habitat for Humanity has bridged the gap between deep-rooted problems and the people with potentially revolutionary solutions. From the reuse of wasted building materials to the stabilizing of housing structures, the cleaning of a national water supply to the prevention of spreading a deadly disease, these contributions are the blueprints for game-changing progress.

Without the connectivity of the internet, the will power of all the people on location for The Terwilliger Center and Habitat for Humanity, and the brilliance of our Solver community and advisors from SeaFreight Labs, millions of people around the world might be living with lesser security, safety, and a sense of ‘home’. Instead, there are now provable, tangible fixes to problems that have blighted global communities for centuries. Given the right path to market and the right corporate partnerships, the solutions you’ve read about in this report will change lives.

It's our hope that, in twelve months’ time, we’ll be able to return to these stories. As we’ve spoken about above and in our other work too, innovation is very rarely a final destination and more often than not an ongoing journey. Our partnership with Habitat for Humanity and SeaFreight Labs has shined with the successes we’ve included here, and **we cannot wait to see where they go next.**

With new Challenges beckoning, and more than enough problems out there to solve, the opportunities truly are endless in what can be achieved in the future.

wazoku

Habitat for Humanity®

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