



We the Future TED Talk

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English Transcript

Here's something you may not know:

In the last decade, 5 million people lost their homes and over 500,000 died in earthquakes and hurricanes.

The 2017 hurricane season hit the GDP of Caribbean Island nations harder than the Ebola crisis hit West Africa. Most of the infrastructure losses were in housing.

Why? We could blame the earth, or climate change, but the reality is these disasters are largely man-made, and completely preventable. Earthquakes don't kill people, poorly built buildings do.

Imagine you live in rural Colombia in the 1980's. Like many of your countrymen, you flee the countryside to escape the drug war and in search of a better job. You build a single story house on a hillside in an informal neighborhood in Medellin using your own strength, the help of your neighbors and the bricks and mortar you can buy from the local shop. A decade goes by, your family grows and more of your relatives move to the city, you build a second story, add a kitchen and toilet, and not everyone has to sleep in the same room. But city government is consumed with fighting crime and there are no building inspectors to be seen, no engineering support to be had. Another decade goes by and you see an economic opportunity: you build a third floor to rent out. And then, because you don't trust the banks, and it's not safe to keep your money under your mattress, you invest in a fourth floor. And in 2020, when you finally feel safe, and secure, your three beautiful granddaughters can finally walk to school without any fear of violence or gangs, an earthquake strikes, your house collapses, and everything, and everyone you love, is gone.

Vulnerability, like economic progress, takes years to build. It only takes a minute for an earthquake, or a flood, to take advantage of that vulnerability, destroy tens of thousands of lives, and erase decades of economic gains.

By 2030, 3 billion people will be living in substandard housing. 3 billion people. That's over a third of the global population.

HOUSING SHOULD BE SAFE. We have the knowledge, we have the technology, and we can mobilize the financing.

So how do we make that happen? How do we make housing more resilient, everywhere?



I grew up in a small town outside of Chicago, neither of my parents went to college. My dad worked for 50 years building houses, he's a brick mason. So I learned the bricklaying trade from my dad. One of the first things he taught me is that you can't lay bricks with gloves on.

You have to feel the brick, feel the mortar, the glue that sticks the bricks together, feel the wall, feel it all, bricklaying is an art that takes finesse, not brute force.

In the early days, donors, NGOs driven by numbers would say to us after an earthquake, go train as many builders as you can, just give them a week long demonstration, show them how to do it, and that's enough.

But you can't teach a builder how to lay bricks by just showing him or her. You've got to do it, feel it. You've got to take the gloves off. So we have to create an environment where on-the-job training is the norm. Where builders can learn by building a disaster-resilient home.

Giving local builders and construction workers – men and women – the opportunity to learn a skill on the job leads to not only more resilient housing, but also more resilient economies.

So, that's the first principle: **teach people how to build.**

The second is: Use local architecture.

Make small changes to common ways of building which are already proven on the local market, appropriate for the culture and climate and lifestyle. People know best what works for their situation.

15 years ago I spent a year on a Fulbright fellowship, traveling around two very different areas of India hit by earthquakes in 2001 and 1993 – the desert in Kachh, Gujarat, where it hadn't rained in 400 days, and the eastern part of Maharashtra state, inland from Mumbai, soaked with humidity.

In these early days for me resilient housing was very simple, it was an engineering challenge, and it was about social justice, the idea that everyone has the right to a safe house, regardless of income level, gender, age, religion or anything else. HOUSING – SAFE HOUSING – IS A BASIC HUMAN RIGHT.

But as I wandered around villages talking with homeowners I realized that it wasn't that simple, there was this link, this connection between local culture and engineering that had to be respected.

I met families where an architect had designed a house with the toilet inside when the culture was to have it outside. So guess what? People didn't use the toilet.

I found families living in houses designed with the door on a busy street, when the culture was to have the door on the courtyard. So what did they do? They bashed a hole in the wall to change the door location. This is not very good for the structural integrity of the building.

And the saddest story – I met homeowners who still slept outside, 10 years after the earthquake because they didn't trust the quality, they didn't believe the contractor had put enough cement in the concrete. They didn't feel safe. HOUSING SHOULD BE SAFE.

So designers – architects, engineers, contractors, policy makers, NGO workers, building inspectors, homeowners – need to work together to address all hazards: heat, rain, wind, floods, earthquakes, and light, and ventilation, access, privacy, security, trust – to make housing resilient.

So it's time for us to have the grit to resist the next shiny trendy architectural solution – the paper roll house, the recycled bottle house, the 3D printed house. People don't want to live in these houses. And these solutions only partially solve the problem of resilient housing. They don't solve the financing part and they don't create political will and they don't scale. Even if they *do* look good in photos.

Third: Put the Power in the Hands of the Homeowner.

It's time to move away from looking at the persons who will live in these homes as victims, or a beneficiary of charity, and put instead the decision-making power in their hands, in the hands of the homeowner because when we do that – especially with women head of households – amazing things, including resilience, happen.

Xing Dayan lost her home and her mother in the 2008 earthquake in Wenchuan, China. When we met her, she had already started rebuilding. She had one wall going up out of plumb, and the back wall with large window and door together. With masonry – which is the preferred building material throughout the emerging world – you need sturdy, consistent walls. So we advised her to tear down and replace the tilted wall and put reinforcement over her window and door. Because you can't just say to eliminate the window and door. She talked to her contractor, who replaced the tilting wall and reinforced the openings, and then she told us that all her neighbors wanted reinforcement over their windows and doors as well.

Next, we have to provide access to financing.

Build Change has helped to shift an entire global industry away from giving away houses to instead giving cash plus technical assistance, and putting the power back in the hands of the homeowner.

Governments, NGOs and development banks have largely adopted this model in post-disaster reconstructions. We're operating in environments where building codes aren't enforced, so the conditional cash subsidy serves as a mechanism for enforcing building standards – you need to build in a certain way in order to receive the next installment. This is a proven model and it works.

But what if there is no subsidy available? Will homeowners go in to debt, take a loan to strengthen their home? There is a segment of the population that will, with the right combination of savings and credit, the right loan terms, technical assistance, and opportunities for expansion.



5, Now, wouldn't it be great if we could prevent the disaster? If we could strengthen housing before the next earthquake or hurricane?

Strengthening and improving these buildings will cost 20-30% of the cost of replacing the buildings after a disaster, and will save tens of thousands of lives.

World Bank says 3 billion people will be living in substandard housing by 2030. We, as a global community, are making such great progress reducing poverty, curing and preventing diseases, but by all accounts, global housing indicators are sliding backwards.

It's time we look at unsafe housing as the global epidemic it is, threatening 1/3 of the global population. It's time we strengthen every home, just like we would vaccinate every child in a public health emergency.

To do this we have to change policy. We can't make change at scale without changing policy.

We need homeowners and governments and aid agencies and funders to recognize that it's worth investing \$3,000 to retrofit a home that would cost \$20,000 to replace. It's worth *preserving* that asset and saving those lives.

But to go to the next huge stage of scale we also need to leverage **(#6)** the best technology we have now available. For instance, we're using VR to help homeowners visualize their strengthened home. We're using AI to rapidly assess entire neighborhoods and to learn to identify and categorize vulnerable buildings. We can rapidly compare the cost of retrofitting buildings with the cost of doing nothing, in dollars and lives lost and in people homeless, so that governments and donors have the data to make the right decision. And the innovations we've implemented with our partner Autodesk have cut the time to produce an engineering design and building permit application by 97%. 97%!

Reality is, hurricanes are going to continue to pound Caribbean islands. Typhoons will whip through the Pacific islands. And earthquakes will jolt the Pacific Rim and so many other parts of the earth.

We have an opportunity to prevent disaster. To prevent people from dying in an earthquake. To prevent people from losing their family's one and only asset in a hurricane. But we have to take the gloves off. We have to bring the financing, the engineering, the supply chain innovations, the technology, the political will and the homeowners to the table.

It's time to go beyond building back better, and strengthen buildings the first time.

Thank you.