ELLA
Evidence and lessons from Latin America

This discussion encouraged participants to share examples of laws, programmes and projects that have improved the resilience of commercial and residential buildings to climate change. In particular, participants discussed the concept of green building, urban upgrading in informal settlements and green roofing.

CLIMATE RESILIENT BUILDINGS AND URBAN UPGRADING

SUMMARY

Experts from Africa, Asia and Latin America discussed programmes to improve climate resilience in commercial buildings and informal housing, or the lack thereof. In many cases, the existence of laws has not yet resulted in any significant improvement in terms of building standards, due in part to a lack of local capacity. Two cases of reducing climate vulnerability in informal settlements in Latin American cities were shared – one a government-funded programme, and the other led by an NGO. Participants considered these two approaches and whether they might be adapted their local contexts.

Key Conclusions

The learning space discussions pointed to the following broad conclusions:

- Insufficient action is being taken to upgrade existing building to the point of making them more resilient to the changing climate or to mitigate emissions
- In many countries, laws are being passed to improve building standards, develop more green spaces, and promote more efficient energy and water use; however in some cases these have had little impact due in part to limited local capacity
- Programmes to improve the resilience of informal settlements seem more likely to succeed with the involvement and buy-in of local community members
- Many initiatives to improve buildings in cities across Africa and Asia focus on improving energy efficiency and employment of renewable energy sources, as well as rainwater harvesting

CONTENT

Discussion: Climate Resilient Buildings and Urban Upgrading

Learning Focus

This week's discussion looked at how improvements in building standards can increase urban resilience to climate change. There are various measures that might be taken to make buildings more sustainable. Some actions involve upgrading existing structures to improve resilience or reduce (mitigate) greenhouse gas (GHGs) emissions, while other actions focus on innovative designs for new 'green' buildings that use natural resources (such as water and energy) more efficiently and reduce harmful emissions. Participants were encouraged to share case studies from cities in their countries related to commercial buildings and informal housing, and to identify key success factors and barriers.

Discussion 8 was guided by the following two questions:

1. Are you aware of actions in your city that are improving the climate resilience of buildings? If so, how do you think that such actions might be successfully adapted to other urban realities?
2. Do you think that the approaches employed in the Latin American case studies might be adapted to informal settlements in your cities?

Latin American Case Studies

Due to the fact that the Learning Alliance was largely focused on how the changing climate affects vulnerable communities, the two Latin American case studies shared for this discussion focused on urban upgrading in informal settlements. An interview was carried out with Mariana Estevão, the founder of an NGO that provides architectural and engineering expertise to improve informal housing, along with a scheme for low-income families living in a slum in the city of Niteroi, Brazil, to purchase building materials. This grassroots project helps families to upgrade their homes in order to reduce health risks, including raising the height of roofs to increase ventilation and thus reduce internal temperatures, sealing walls so as to reduce humidity and improving roofing to reduce leakages. In order to purchase building supplies, inhabitants exchange used TetraPak cartons for credits, thus reducing waste and raising the profile of recycling. The other case study was from the informal settlement known as Villa Tranquila in Argentina. The upgrading programme in this community was highly participative, involving multiple-stakeholders throughout the whole process. The upgrading in Villa Tranquila included improving access to infrastructure, improving the standard of houses in some sectors and building new houses in others. Aside from the impacts on the built environment, this top-down, government-backed initiative improved complicated social relations within what was a once divided and fearful community. Links to these materials are provided in this document.

Discussion Participation

Twelve countries were represented in this discussion, with contributions from 22 participants in total. South Asia and Sub-Saharan Africa were the most represented regions.

Summary

On the whole, it was felt that not enough is being done to improve the resilience of buildings in cities across African, Asian and Latin American countries. Participants' contributions were focused on building codes and laws related to new buildings and efforts to upgrade informal settlements.

Participants from Mozambique, Peru, Zambia and Zimbabwe felt that there were no meaningful efforts being made in their cities - or in their countries as a whole - in relation to green buildings, upgrading informal housing or increasing vegetation. In the case of Zambia, Willem Colenbrander mentioned that in some cases recycled material is being used for construction, but with no mention of any specific programme to incentivise this practice.

Building Codes

Participants from Ghana indicated that considerable progress has been made in terms of building codes and measures to improve energy efficiency in new constructions. Additionally, in late 2011 Ghana launched the Ghana Green Building Council (GHGBC) and joined the Global Green Building Councils as the 86th member, an indication of government commitment and support for these activities. However, it was felt that as of yet building codes are not strictly adhered to, and that new builds are often approved without long-term sustainability considerations having been taken into account. It was suggested that this might be because of a lack of local capacity.

> *"In addition to the revision of building codes to ensure the resilience of buildings and other structures, the land use and planning laws are also being amended and harmonized with the building codes/regulations. The amended law will also address the issue of the enforcement of the planning law and Building regulations. Local administrations have been responsible for the enforcement, which they could not carry out well because of capacity constraints. Besides the planning law and building regulations, there is also a new urban policy and settlements policy framework that contains guidelines on how to integrate CC and DRR. The above are national actions that need to be implemented and enforced."*
>
> *- Samuel Adobe, Ghana Government*

Aside from these building codes, participants from Ghana explained that plans also exist to encourage efficient water and energy use in new estates. The practices of improving energy efficiency and increasingly using renewable energy sources is also happening in cities across Bangladesh, India, South Africa, Trinidad & Tobago and Vietnam, with varying success rates. In the case of Trinidad and Tobago, Daana Kanhi explained that while laws were passed in 2011, no visible action has been taken to date. India, on the other hand, seems to have taken some very progressive steps:

> *"The Bureau of Energy Efficiency (BEE), the nodal agency of the state, launched the Energy Conservation Building Code (ECBC) in May 2007. The ECBC sets minimum energy standards for new commercial buildings having a connected load of 100 kW or contract demand of 120 kVA. Presently the BEE is promoting the implementation of energy efficiency measures in existing buildings through Energy Service Companies (ESCOs) which provide an*

innovative business model through which the energy-saving potential in existing building can be captured and the risk faced by building owner can also be addressed."

- Jyotiraj Patra, India
Non-governmental Organisation

Without detracting from the success of such initiatives, one participant from Bangladesh suggested that perhaps government intentions are not necessarily to improve the resilience of buildings or their inhabitants.

"Government has few initiatives regarding using renewable energy for housing...[but in reality this] is not for sustainable building infrastructure, but for reducing the pressure on the existing electricity supply."

- Md Abdul Awal Sarker, Bangladesh
Government

Upgrading Informal Settlements

When specifically considering the upgrading of informal settlements in order to increase the adaptive capacity of residents, we heard of a very progressive and inclusive programme in Pune, India.

"The NGO Shelter Associates is working with slum communities to use satellite imagery and field surveys together to negotiate for slum improvement. Very High Resolution (VHR) images from Google Earth are used to digitise slum boundaries and attach information on households, dwellings, and site characteristics from field surveys collected by slum residents. Settlements are mapped by professional agencies using plane table methods that show plot boundaries. Spatial and socioeconomic data are entered into a GIS database and accessed by the community to prepare upgrading plans. Working with slum residents, Shelter Associates compelled the local government to legitimise migrants and initiate city planning to improve slum settlements by widening roads, installing flood protection, and building new infrastructure. The Pune slum census covered over 100,000 households in over 200 pockets throughout the city. The residents gained skills in data collection, a better understanding of their collective community problems, and opportunities to negotiate with the local government in the planning process."

- Manas Dwivedi, India
Non-governmental Organisation

We also heard that in certain regions in South Africa, the government would prefer to move informal settlements further away from the centres where inhabitants make their livelihoods. The authorities promise formal housing to slum dwellers, and more than 3 million such homes have been built in recent years, but the demand far outweighs supply, and inhabitants do not want to move further away from employment opportunities. Riaz Jogiat explained that the result of this has been conflict, and in many cases even NGOs have not stepped in to help build bridges, because they do not wish to get involved in projects that contradict government policy. We did hear that

one South African NGO, SouthSouthNorth, has developed a programme to build energy efficient, climate-resilient housing for those in informal settlements.

In terms of whether or not the approaches described in the Latin American case studies might be adapted to different contexts, participants overwhelming felt that in principal they could, and that efforts should be made to replicate such programmes. It was felt by many that the dedication of the government, as seen in the case of Villa Tranquila, Argentina, is key to successful upgrading programmes. While in other cases, participants felt that the approach adopted by the NGO in Niteroi, Brazil, might be replicated because this project involved collaboration between public and private actors. Both cases were very inclusive, and online participants agreed that this is truly important to the success of urban upgrading projects in informal settlements.

> *"Participatory Vulnerability Risk Mapping with the community would help local inhabitants to take responsibility for waste disposal for example, and this would be a great stride in Harare. This is because residents think it is solely the responsibility of the municipality and there is litter everywhere."*
>
> *- Peter Murkarumbwa, Zimbabwe Civil Society*

Key Lessons:

- In cities across Africa, Asia and Latin America, insufficient action is being taken to upgrade existing buildings or build new efficient buildings to be better prepared for challenges posed by the changing climate and to mitigate emissions that essentially add to the growing problem
- In countries across the three regions, it is increasingly common to see improved building codes, which call for more sustainable building practices, more green spaces and more efficient use of water and electricity; the next big hurdle is to put these codes and laws into practice by building local capacity and ensuring that there is sufficient monitoring
- Upgrading informal settlements is particularly challenging, and in order to change communities as a whole, rather than small pockets or individual houses, government commitment is particularly important
- Community members should be involved in the planning and implementation of urban upgrading schemes, and this will instil inhabitants with a sense of ownership and responsibility to conserve the environment in which they live

Supplementary Materials

Participants were provided with the following resources in preparation for the discussion:

- Video: Interview with Mariana Estevão
- ELLA Brief: Urban Upgrading With Social Inclusion: The Case of Villa Tranquila
- Green Roofing: Learning Alliance Brief: Green Building in Latin America

During the exchange participants shared additional materials:

- Energy Efficiency in Buildings: India
- Handbook for Green Housing: Ho Chi Min City, Vietnam
- Sustainable Settlements Facility: South Africa

URBAN UPGRADING IN INFORMAL HOUSING IN NITEROI, BRAZIL

Interview with
Mariana Estevão

By Emily Trainor and Carla Shah

Mariana Estevão *is an Architect and Urban Specialist with a Masters in Urban Management. In 2001 she created the first draft of Projeto Arquiteto de Família, a project which gives technical assistance to houseowners living in informal settlements. She is now founder and director of Organização Soluções Urbanas which runs Projeto Arquiteto de Família in the city of Niteroi, Rio de Janeiro State*

In general, why is it so important to improve the infrastructure of informal urban settlements in cities?

It is important for these communities to have the same quality of life as those who live in the formal city. Over the years, the lack of urban planning and lack of resources for these communities (such as local amenities, public services, proximity to work) led to the occupation of vulnerable areas. Where it is possible for these people to remain in these locations, it is important that they have access to basic infrastructure that guarantees a better quality of life and security.

What are the main risks (linked to climate) for these communities who live in informal settlements?

The lack of slope retention in hills is what often provokes the landslides which bury these settlements. Our NGO Soluções Urbanas and project Arquitetura da Família addresses risks that directly affect the houses of these informal settlements. Intense rainfall and heat often makes these houses uncomfortable and can lead to serious health problems. These conditions can also deteriorate the house and cause diseases that end up affecting the inhabitant's health as well as their environment.

What led your NGO to start this project?

For some time I worked on a programme with the Municipality of Rio de Janeiro in the Department of Architecture. We were doing a project on the urbanisation of slums (favelas) called Favela Bairro. My participation in this project made me realise that, yes, intervention in these houses is essential but the programmes only addressed structure upgrading and did not consider the broader needs of the families. I realised that to have a real impact attention needed to be paid to the living conditions of the families in these communities. Access to infrastructure services is essential but if you don't also pay attention to the household members then upgrading efforts are incomplete. That is how I became interested in working with low income families. In 2008, a federal law was introduced that guarantees low-income families professional help from architects in the construction of their houses. Despite this law, there are very few municipalities in Brazil that actually offer this service.

What is the aim of this project?

The aim of this project is to reform and improve the living conditions of houses that have been built in favelas. We do this by giving technical, architectural and social assistance. Our main objective is to eliminate health risks (related to poor living conditions) and to promote healthy living.

What are the specific activities that are involved in this project?

We provide technical assistance by diagnosing household risks, developing intervention plans to address these risks, and then helping to carry out the actual reforms. We also use a series of strategies to facilitate access to building materials by these families to carry out the work. One of our main strategies is to get the families involved with our "Exchange Fair". The Fair allows families in our projects to participate by exchanging tetra-pak cartons for building materials. The tetra-pak cartons are exchanged for coupons which represent a certain amount of money. With these coupons they are able to buy building materials at the fair which is held monthly. The tetra-pak cartons that are exchanged in our project are recycled by the tetra-pak industry to make roofs. These roofs are ecological and are used in our project when fixing the roofs of houses. In this way, we work with recycling and also reduce the costs of construction materials.

The idea is to have a variety of strategies that suite the different situations that the community faces. For example, in the community we work in there are families who have different 'social profiles'. Some are able to get financial support while others can't. Or sometimes some families have members who are qualified and able to participate in the structural reforms. So, to provide for this diversity, we need to find different solutions that are adaptable to the different situations the families face. Similarly as differences exist within one community, differences also exist between communities. Thus, when

talking about whether this type of work can be reapplied into other communities it is interesting to combine different strategies that are flexible and which are able to adapt to these different realities.

Where did you get the financial resources for this project?

This project would not have been possible without the help of the Vital Brazil Institute where our offices are now based. We proposed to develop our project in the favela next to the Institute as one of the Institute's Corporate Social Responsibility projects. We also have partnerships with other institutions. Today we have an important partnership with the American Planning Association, an American NGO. We also have a few partnerships with the private sector which provides the building materials for our project. We are also looking for support from construction companies for the donations of building materials

How do you identify vulerability and risks?

We create vulnerability maps for the houses we work in. The map helps create a dialogue between the residents and the architect and increases the architect's awareness of the problems the residents face. We create stickers that represent common problems within the homes. The architect, with the aid of a social worker and the resident, analyses the house and develops a strategy to address the problems within individual rooms, as well as issues relating to the immediate surroundings of the house. The residents also assume responsibilities with the risks that they face. With waste disposal, for example, they see it as their responsibly and will actively participate to make sure rubbish is thrown in the right places. We have also made a map of the community for which community members identified risk prone areas. The map marks out risks related to housing, sanitation and terrain. The community also pointed out certain areas that were more prone to risks than others.

How interested is the community in reducing these risks?

They are very interested in reducing these risks. They are especially interested in reducing infrastructural risks such as water, waste water, sanitation and drainage. So yes, they are very interested in decreasing vulnerability but have very little power without the intervention of the state.

Is the community aware of the challenges caused by climate change?

I would say no. The reality is that the social and environmental problems that the communities face are so big that it would be difficult for them to notice how the impacts of climate change are actually

affecting their lives. Their perception is very much related to their immediate environment, such as their homes. So it would be easier to say that they are much more aware about the lack of adequate infrastructure than the changing climate.

How did you get the community interested in participating in the project?

We use health as our main argument. However, what really gained the interest of the community about our work was the "exchange fair". When the residents realised that they could gain direct access to building materials they started to ask for our help. In fact, they came to us more for access to materials than for the technical assistance that we offer.

What have been the main results of this project?

We have helped residents create better conditions within their homes, for example, by decreasing the humidity (which affects their health). I think these have been the main results of work - increasing the comfort and wellbeing of residents in their homes as well as reducing health risks. Another interesting result is the change in residents' expectations about our work and about their living conditions. Residents are now more willing to change their homes. Before they didn't see it as a necessity or a problem. Therefore, this is an interesting result- that they have become more conscious about the need for these changes. Also, families now feel they have the power to resolve problems related to their homes.

CONTACT SSN

To learn more about the Learning Alliance on Climate Resilient Cities, or any of the specific themes raised in the Learning Alliance Highlights, contact the author and Learning Alliance moderator, Charlotte Olivia Heffer, ELLA Brazil Project Coordinator at the Environmental Laboratory at the Federal University of Rio de Janeiro (UFRJ), at charlotte@lima.coppe.ufrj.br.

FIND OUT MORE FROM ELLA

To learn more about climate change, disaster risk management and governance in Latin America's cities, visit the ELLA website, which has a full list of the knowledge materials available on these topics. To learn more about other development issues, browse other ELLA Themes.

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