

CLC LECTURE

Building Social and Environmental Resilience in Cities Through Planning

13 June 2017



The concept of urban resilience is gaining momentum within policy-makers, academics and industries. In this lecture, the impact and role of urban planning on a city's social and environmental resilience will be explored. The international panel will also share personal experiences regarding the challenges and opportunities in implementing urban planning in building up social, environment and climate resilience in their respective cities.

Lecture Segment

Tan Guan Hong
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[For] today's lecture, we are very honoured to have with us three distinguished speakers that will share about building social and environmental resilience in cities through planning. Today's lecture is held in conjunction with the Commonwealth Science Conference 2017, jointly organised by the Royal Society and the National Research Foundation of Singapore. I now have the honour of introducing our speakers.

Our first speaker is Professor Amita Bhides, Professor of School of Habitat Studies at the Tata Institute of Social Science in India. She taught

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at the Tata Institute of Social Science for over 16 years; and as former Faculty Member of the School of Social Work in the Department of Urban and Rural Community Development, she was deeply involved in issues related to urban poor communities, community organisation, housing rights movement and advocacy group.

Our second speaker for today is Professor Barbara Norman, Foundation Chair of the Urban and Regional Planning at the University of Canberra. She's also the Director of Canberra Urban and Regional Futures, and also the Chair of the ACT [Australian Capital Territory] Climate Change Council. Professor Barbara's current research and teaching interests include sustainable cities and regions, coastal planning, climate change adaptation, and urban governance. She advises the public and private sector in Australia and has strong international linkages within Asia, Europe and the United States.

Last but not least, we have Professor Peter Edwards. Professor Edwards is the Director of the Singapore-ETH [Eidgenössische Technische Hochschule] Centre, well-known as the author and editor of numerous books covering a wide range of environmental fields and over 350 refereed scientific papers. Professor Edwards has a strong interest in the application of science and technology for better management.

The format for today's lecture will start off with presentations by the speakers in the order of how I've just introduced them. After which, it will be followed by a Q&A session with the audience. The Q&A [question and answer] session will be moderated by Miss Sophianne Araib, Director at the Centre for Liveable Cities. May I now invite Professor Amita to begin the first lecture. Professor Amita, please.

Amita Bhides
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One of the things that I'm going to talk about is basically from the context of global south, and a global south in which I think all of you are aware, that more than 40% or perhaps half the world—urban world here, is constitutive of something which today is called informality. And it is really from the perspective of that that I'm going to speak [today].

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Let me begin with this picture of where I live and where I worked [for] a long period. And I'm deeply engaged with this particular part of Mumbai which is called M Ward. In Mumbai, we give alphabetical names to different parts of the city. This is basically an administrative division, but this particular ward is like [in] the northeast periphery of Mumbai, in which more than 85% [of the] population stays in slums, 85%. This is also the ward in which my university is located. Okay? So it's a huge challenge in terms of creating the early university–society relationship, and this was really personified in this ward.

This is also [a] ward where besides 85% [of the] people [are] staying in slums, on accounts of health, on accounts of education, on accounts of basic services—you really see a[n] extremely pathetic condition. But on the other hand, you also see here a ward where people, through their multiple organisations: community-based organisations, non-governmental organisations, also show a whole lot of creativity while living with the utmost risk.

Just to give a few illustrations of what kind of risks are we talking about. This is one photograph of a workshop in M Ward. And what you see here is really around six, seven machines; the size of the room is about 10 by 10 square feet and within reach, you are seeing these garments, many of you may perhaps know that this is also part of the overall global commodity chain where export garments are also prepared. So these shirts, which are being prepared, it's one part—tiny link of the entire global commodity chain.

This, again, something which is perhaps very telling in again one of the pockets within M Ward, where in the morning at around four... between seven AM, you see these queues of people who you can see have these kind of... they are carrying these. This is actually a race for water. Okay? So, they are coming to parts of the slum where water is available. They will collect this water and they will sell it to other pockets where there

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is [*sic* are] no water pipe[s]. So [there are] huge infrastructure deficits. Just one picture which kind of illustrates that.

This is something that I wanted to show basically to illustrate that often to the outside world, the slum is like one thing: everywhere there is an infrastructure deficit. But I wanted to illustrate to you basically that slums are also not one. They are extremely heterogeneous, extremely complex realit[ies]. If you see in this picture—which is really showing you different kinds of toilets which are present in one entire area, you will see that that last yellow part, where you see around five to six circles, that's a part which is nearer [to] the road. As you start moving away from the road, the inner-most part which is black, there is no toilet at all. And people are being compelled to go in for open defecation. But understand that the range of deprivation begins to actually differ. And it really is a whole lot. And if we take sanitation as a proxy for other infrastructures and basic services, then this kind of heterogeneity can also be seen in other infrastructures as well.

And I think that at most risk which I think many...very, very few people consider, and which is of a[n] uncertainty of tenure itself. You have the state acts in the name of environmental projects sometimes, in the name of developmental projects sometimes or for infrastructure. And there are these kind of demolitions, which then people have to face again from time to time—often with no compensatory housing or no compensatory package which is given, okay? So, these are the kind[s] of risks that we are talking about.

Concept: Everyday Risk & Resilience

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So, what I wanted to actually talk to you about is introduce the concept of everyday risk. And so, resilience is usually understood as a term which has become extremely salient now—especially when we talk about climate change. But it is always talked about in the context of **larger** risk. A larger risk which is being posed by climate change and development. And then, it is always defined in a techno-centric manner or in terms of

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financial projects. But even when social resilience is accepted, for example if we look at Rockefeller Foundations' definition of resilience, it basically looks at capacities of individuals, communities, institutions [and] systems to adapt, to cope with risk and vulnerability. But even when these social aspects are acknowledged, they're more generally acknowledged in terms of creating a general or a common good.

So, what does this actually mean then? For people, millions of people perhaps in the cities of the global south, who are actually trying to make lives in cities amidst adversity, an adversity which is every day. Flooding is not a matter of rains or it is not a matter of one occurrence or one event. But it is a matter of perhaps a seasonal occurrence—something which occurs once in fifteen days, right? So how do you cope with that kind of risk? How do you give them the strength to cope with their own adversities? And this is where perhaps we need to begin and re-frame our entire understanding of resilience itself. And we need to understand that governmental projects, market-based projects often aggravate the kind of risks which poor communities face.

Consequentially, what we see is cities in India and global south in general produc[ing] some successful projects, which may also be leading towards a general resilience of cities. But these co-exist with a significant population at risk with very high levels of poverty, and cities then get locked into patterns of overall environmental degradation. And which [*sic* this] means that we create highly risky cities for all.

One very interesting example of this [is what] we have seen in the case of flooding occurrences in all of these different cities in July 2005 in Mumbai, 2015 in Bangalore, 2016 in Chennai. And in all of these cases, these are days on which these cities have received excess rainfall, there has been severe flooding, lives have been lost, properties have been damaged, rivers have been clogged, nalas—which are like small drains—have overflowed, streets have become vehicles for water as there is inadequate place for groundwater recharge...ground recharge and

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absorption of the water. And disaster management systems and institutions in the cities have struggled to **cope** with all of this.

But with all of this, which is usually the way resilience—this is the context of understanding resilience—what we see is these pictures. A risk for everybody, which that picture shows, okay? And the second picture where you see that the poor in the city have **especially** suffered, okay? But what has helped really is this. In this picture, it's not very clear but there is a rope which has been tied. A[n] innovation which has been thought of by the people on the ground **itself** where institutions have struggled to reach. And they're helping people to manoeuvre and navigate through the floodwaters. And this perhaps, is the basis of what we should begin to think of resilience—that human element which is actually struggling to cope with adversity. That's the basis of resilience, is what I would like to argue.

So, can we build on this? Can we create a city that is good for all using the terms which are being used by John Friedman? But in particular, [we need terms that] recognises the risks which are being faced by the poor and informal settlements. If we recognise this, then we need to begin with an acknowledgement of rights and entitlements with due resources. We need to build them on the diverse knowledges of settlement creation. One coming from the top, but also those which are coming from the ground—from the bottom up. We need to recognise traditional knowledges and we need to recognise modern knowledges as well, and then begin to reframe resilience from below.

We need to then also approach resilience not as an absolute term, not as an absolute concept, but something which is negotiated. Negotiated, and then it offers opportunities. And when I talk about negotiation, I'm talking of [*sic* about] both a procedural approach, but I'm also talking of [*sic* about] a substantive definition of negotiation. And therefore, we need to then begin to engage with resilience as a socially-mediated process, and not a techno-financial one. So, this is just one small

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illustration with which I will end. I know I don't have much time. But where...

We began an exercise where [we did] development planning in Mumbai, which is like a once in 20 years exercise. Usually [it] is a very top-down exercise, which determines and freezes land use. We decided, and we engaged [everyone] in a process where we started this planning from below. We started from this M Ward and the various communities in M Ward. What you can see here is people discussing maps, discussing proposals. Today, we have a whole lot of people who begin to draw maps of their own communities; [who] begin to identify opportunities which are possible, also the risks which are prevalent—what are their priority needs. And I think that's a very important aspect.

Finally, therefore to conclude, what does this reframing of the discourse actually mean? We need to recognise that resilience is a[n] ambiguous term. And [it is] so ambiguous that often it may be very, very vulnerable to capture—capture by vested interest. And therefore, we need to give it a political content. And so, if we give it a political content, then resilience can also be used as a mobilisational term. And when I talk about mobilisation, mobilisation means something which can be worked towards—and we may not then see it as a defensive term.

Why do we need to see it as a mobilisational term? Because if we really want to address extremely complex and interconnected issues that cities of the south face, I think it's a very critical aspect of establishing resilience. And finally, [we need] to also establish principles and unleash the creativity to move towards resolution of issues which are otherwise being seen as vexed. Thank you.

Barbara Norman
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I come from Australia, I come from a much smaller city—Canberra, our national capital which is less than half a million [in population]. So [we are] very, very different, but then I think even though we focus on global cities often, and necessarily, we need to remember that according to the UN [United Nations] that more than half of our global population

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still lives in cities of less than one million people, in small- to medium-sized cities. So, we need to look at the whole urban hierarchy in trying to meet these challenges.

I've got ten minutes, so I have ten slides—I thought that was the easiest way to do that. It's a bit of a summary but let's have that discussion. So, I had the privilege of attending the UN Habitat conference last year in Quito. And this really followed the United Nations Sustainable Development Goals [SDG] meeting, and tried to take goal eleven on cities and translate that into more meaningful action, through the national and to the local level. How well it did that, we can discuss in the question [and answer] time, but at least it was an attempt to drive the agenda forward—which I thought was very good. And importantly, and you'll see in that title there, there was a long, long lead-up to this meeting and [it was] a very... a great opportunity for people to be engaged. So that was great thing.

Cities, they concluded absolutely, are part of our future, our sustainable future. And as the former head of the UN said many times, if we can solve the problems of the cities, then we'll solve the problems of the world. Now, I don't necessarily agree with all of that, but I clearly that's where most people will be living—are already and will continue to in the future.

So, what is it that we're actually trying to achieve? My background, I'm an urban planner, so I'm always trying to translate these global agreements. And we've had some fantastic global agreements in very short time: the Paris agreement, although there's some issues right now, we don't have to discuss that immediately; and then with the Sustainable Development Goals agreement, and it was actually a raft of four or five really significant agreements in a very short time globally. And they all have fantastic objectives, but how do we translate those to action on the ground? And it's great to give this talk in Singapore, because I happen to think that you are doing some fabulous work here.

Local Level Integration: Wide Range of Issues

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And here I've got a slide about what it [*sic* these objectives] actually mean is integrating all this at the local level—right to the neighbourhood level. And I think we're consistent in that the message of the last speaker was [that] what we really need to be doing is planning with neighbourhoods and planning at the local level. But we can't do that alone. We also need the support of sub-national governments and national governments. And that's a really clear message from organisations like the OECD [Organization for Economic Cooperation and Development] [with] a very consistent message saying, "Yes, we can do many innovative things at the local level, but we can do **so much more** if it's supported by the state, province or the national governments as well." It's [*sic* There are] very few examples around the world, and I'd be very happy for you to share them with me, where I find that that's all happening at once. Very few. And to get that horizontal and vertical integration and integration at the local level [is very rare].

So, what does it mean at the local level, integrated green precincts? Well it means dealing with a whole range of issues. And I like to think that planners, we're almost the glue that goes across [and] tries to link the disciplinary interests. And health, low carbon and healthy cities, I think are very core to what we're trying to achieve. [Refers to slides] And that shouldn't have just flicked so quickly but somehow a timing thing's in there, I see. Low carbon and healthy cities, and the UN and the World Bank are really pushing this agenda. Because it's all, you know, we can have a very green city, but it's also about our human health. And nothing drives action [better] than self-interest, I suspect. I hate to think it, but it's shown to me many times that this is the case—that if it's actually going to be a risk to our human health, we're going to die, then maybe we need to take some interest in these issues.

And so, heat, a hotter environment, a warmer global environment, there are limits to our human health. So, this is actually a very important

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message. We need to take action on the ground, to be cooling our environment through landscape and greenery as Singapore—it's extraordinary what you've done here in fact. Great example to the world, where you've increased your density by 40% I think, and also your biophilia, your green, your landscape by nearly 25% as well. Very few examples in the world, so congratulations to [sic on] that.

But we also have to have healthy communities and also in really zero carbon now—and some people are talking about net-positive carbon, in fact. So, health is a critical thing. So, how do we make our cities climate ready? And the reason I mentioned human health to start with is often we say we can adapt to environmental change. But in fact, there are limits to adaptation and that's a very important concept. Limits to how much we can adapt, which is why when I talk to my science friends they say, "That's very interesting, Barbara, but we have to get the emissions down. That's the first thing we have to do." Because we already have a big change coming, it's already locked in and we have limits to adaptation. We can only live in so hot an environment.

And I'm doing a press thing tomorrow for [sic as] part of this conference on a city we have which is completely underground in Australia, called Coober Pedy. Because the environment is so hot but the opal, it generates 70% of the opals in the world, so there's a reason to be there. But then, they found their own solution. But do we all want to live underground in the future? I don't think so. But people are already experimenting and dealing with these adverse environments.

So, [about] Climate Ready Cities, I'm the author off these national guidelines for Australia so I'll just briefly share them with you. They were released at the end of last year. But they were also released with an organisation called our National Climate [Change] Adaptation Research Facility [NCCARF]. And I think this is another key message in this very short talk, that we have to be working together. So national research and national research scientific organisation here, and this conference

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is a very good example [of] working with practitioners and working with the community—working together to solve these problems. And these Climate Ready Cities [Guidelines which] you can find on the web, is an example of that.

So [we have] Climate Ready Cities, policies for national critical infrastructure at the national level, linked very carefully with capital city plans, linked very carefully with climate-smart precincts—or sometimes I talk about climate sensitive urban design. But getting that to **all** work together in partnership, and that is challenging even in my country where the funding, because of politics at our national level, has just been stopped for this National Climate Change Adaptation Research Facility. So that doesn't mean...we've seen what's happening in the US [United States] that the action at the sub-national, local levels [is] getting even stronger in many ways. But we have some challenges.

I put this up as a positive story because we can all get a bit depressed by all the challenges that we have to face. And I chair the Climate Change Council in my town in Canberra, and we set a target in 2012—what I would call a stretch target. We're not quite sure whether we believed in it, but we thought we should set this and we had a press conference and said—myself and the minister and others—said, “We'll reach 100% renewable energy, or electricity really, by 2020.” And in fact, we're going to achieve that now. We're very proud of that, it is a small city, but it's an example of 100% renewable electricity for a city that's nearly half a million people [strong].

And that's experience that can be shared as a tangible example right around the world. And in fact, this one action is attracting quite a lot of international interest in how we've achieved that. And within our community now, we've just had a highly contested local election, and they totally support this agenda. Because they can see it's been achieved and it will happen.

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Finally, collaborative research. Now when we talk about collaboration, we often talk about, or I often talk about scientists, urban planners and local communities. But in fact, just in the last couple of minutes, and I can see our organiser here, I want to share a very short story here. So, we won the national award for urban research by a national planning institute for this, for cutting edge research. And yes, we had a great team and it was working on climate change in a coastal environment. Yes, that was good research; yes, it was collaboration; yes, it was collaboration with local councils—but I think we actually won it because we worked with cultural practitioners; and we worked with them over a period of six months at the local level, involving the high schools, involving the students, involving the local people in the communities, which led to an exhibition, an art exhibition and lots of talks in these particular communities. I think we won it because we used a **different medium of communication** than just putting up a lot of graphs and a lot of slides. So, I just [wanted to] share that quickly as a success story.

So, a couple of success stories and then finally some conclusions. So just to conclude, what we are absolutely in need of are nationally sustainable development strategies. We went through a period of this in the 1990s, I think we have to revisit this again, because they seem to have disappeared from the landscape in lots of countries. And [we also need] to implement the new urban agenda in partnership with cities and towns. We need regional partnerships, a bit like what I've just been discussing and [*sic to*] bring different parties together. But we also need the governance that brings the data, and managing an informal sector is a classic challenge—on thousands of people, 26,000 people in that small community you showed us, on what their needs are and finding out how to respond.

Investing—and I think we're all doing very well in this respect, investing in a transition to a renewable future. And then finally, collaboration through innovative platforms. And I happen to be a Director of one, CURF, Canberra Urban Regional Futures and there's my Vice-Chancellor,

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Deep sani, from India as well and [we were] just discussing here, there, [CURF] was discussing [what] we called the edible city—another way of looking at the city. So, thank you for listening and just a few messages. Thank you.

Peter Edwards

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I'm going to talk to you about what I think is a paradigm change which is occurring in how we organise cities—and particularly the sort of ecological functions of the cities. And I should say that I only very recently have come to think about cities. I spent most of my life as an ecologist, keeping as far away from cities as possible. And I started off by studying the tropical rainforest, and I get inspiration from a tropical rainforest. That is an ecosystem. Ecosystems like that have been around for 60 million years. It's resilient! Rainforests have withstood periods of climate change in the past, of extreme droughts, of fire. They regulate their environment, so that they produce remarkably constant temperatures. Very little flooding occurs in rainforest[s]. So, if you want a picture of a resilient system, think about a rainforest.

Resilient Ecosystems: Rainforests against Cities

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And of course, Singapore was a rainforest until about 200 years ago. And now we have another ecosystem, a very new ecosystem. Ecosystems like that, at that intensity have existed on our planet for probably about 50 years or so. I know there have been cities for much longer, but not at that kind of intensity of use of resources. So, they existed for about 50 years. We already know that they are not resilient. They're not sustainable, and increasingly we're discovering the problems associated with this style of life.

For example, we know that cities get warmer [as a result of] the urban heat island effect. In Singapore that, typically in the evening in many parts of Singapore is seven or eight degrees warmer than when it was as a rainforest. And as we've heard that brings problems: it brings problems to do with health, to do with the quality of air; it brings problems to do with liveability, people won't want to walk or cycle if the temperatures are too high—and it's a problem which will only get

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worse. And the standard solution to it, of course, is air-conditioning, so that we improve our own thermal comfort. But actually, we make the urban heat island problem worse, because we generate heat.

And then another problem [is that] by sealing over surfaces we make them extremely vulnerable to flash floods. And add to that the fact urban heat island effect increases the intensity of the heaviest rains and therefore, the flood protection schemes constantly having [*sic* have] to be improved to keep going with the problem. So, cities as they're now conceived are **not sustainable** and they are **not resilient**. And the question is, what can we do about it?

And, as far as possible I think, we want to reintroduce natural regulatory processes. And a tree is a wonderful thing! A tree holds on, it intercepts a lot of water, so it doesn't go rushing into the drains. It evaporates a lot of water, it brings benefits of cooling and so on. And it's an example of the decentralised, distributed kind of regulation and environmental processes which tends to make the rainforest a resilient system. And it's the opposite of what happens in our built environment.

In fact, what we do in our built environment is that we create environmental problems. We put up a big building, it uses a huge amount of energy, it absorbs on to energy, it becomes very hot, it radiates heat. So, it contributes to the urban heat island. It doesn't retain water, so it contributes to the problem of flash flooding. Many of the problems that we have in cities, we have created through the way in which we built our cities. And we need to **reverse** that process. So, a lot of our infrastructure is merely aimed at solving problems that we, ourselves, have created. And this is happening.

I mean the agency in Singapore which manages water, PUB [Public Utilities Board] has a new scheme for storm water management which goes **exactly** in the right direction. It's saying rather than [to] simply solve the symptoms of the problem by building bigger drains, let's also think

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about the source! Let's see if we can make the whole system more retentive of water, so that we reduce the nature of the flooding problem. So, they're looking at source solutions. And so, [there are] all kinds of different ways in which you can prevent the water running into the channels; and the buildings become more retentive. So we're making them a bit more like the trees in a tropical rainforest. And the buildings instead of being the cause of the problem, become part of the solution.

And that is, I think, the paradigm change that needs to happen. In the past, we have created problems and we have found large centralised solutions to them. And what we are increasingly doing, is finding decentralised, distributed solutions—which is part of the secret of the tropical rainforest and its resilience. So, one of the things, again, which we can do, and is extremely effective and relatively low cost, is green roofs. It increase[s] the retentiveness of the buildings [and] it provides benefits in terms of cooling.

There have been a number of published studies, I'm not aware of any from Singapore yet, but in other countries it is reported that green roofs can reduce the ambient air temperatures by as much as five degrees centigrade; they can reduce domestic electricity costs by as much as 50%; they can reduce storm run-off enormously and so on. So, we can solve these problems without having to construct infrastructure and the Housing and Development Board [HDB] in Singapore has introduced a very nice system of easily or cheap...easily constructible instant green roofs. So that we can very easily retrofit these. And this I'm sure is going in the right direction.

And as I said, I think this is part of a larger paradigm change, which is the theme of this talk. It's not really about flooding or the urban heat island effect—it is a **different** way of thinking about our infrastructure. And here is my sort of biologist's summary of it. Up until now, I think we have tended to build our cities in a rather centralised way. We've constructed

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organ systems, very similar in fact. We've got waterworks, and we've got a power system; and we've got waste processing plants, just like the human body has. And those systems have become increasingly large, increasingly centralised and of course, we have lost resilience as a consequence.

If you have massive liver failure, that's not good! That's the end of you. You are not resilient. And it's **completely** different from the way that an ecosystem works, which consists of many different organisms. An individual tree can die, but it in no way effects the continued functioning of the ecosystem. As cities have developed over the last 200 years, they have developed rather, like a system of organs. And now we're discovering [that] if we want resilience and sustainability, we have to make them more like the rainforest with the distributed functions. And we live at a time when this has **suddenly** become possible because of technology.

Until now, we've had the logic of centralisation. Economies of scale meant that it was better to have bigger and bigger and bigger power stations. And then a huge grid system to distribute the electricity. So, the traditional infrastructure was massive and centralised. They've just announced they're going to rebuild the Hinkley Point power station in Great Britain, a nuclear power station. 50 billion pounds. 50 billion pounds! In my opinion, [this is] a step in the wrong direction—it's going back in history rather than looking forwards. A huge massive, centralised, extremely expensive, long planning times, long lifetimes, over-designed because they mustn't fail. Low resilience—a power station like this has to be guarded like Fort Knox. Nothing can happen to it. It promotes these. But it is nonetheless, vulnerable to catastrophic failure. It promotes. arguably promotes resource consumption. We simply have huge centralised plants providing water or power or whatever, and therefore, [there is] very little incentive to restrict consumption.

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And arguably, [this] has also promoted the trend we see around the world, [moving] to large cities. Because people will tend to move in to areas where you have this massive infrastructure. And what is changing now, thanks to great improvements in technology, is that we can now provide the same qualities with greatly decentralised technologies. And partly these are things like windmills and photo-voltaics, and small-scale waste processing plants and roofs which trap water and can clean it and so on.

But most important of all, it is the internet of things and networking. Because then you can have the benefits of decentralisation and the security provided by networking of relatively autonomous systems. And so that is good for cities, advanced cities such as Singapore. And it's very good news, I would say, for the developing world in which you don't have to leapfrog to huge facilities, but you can get the benefits. And so, we're now facing the logic of decentralisation. The buildings are the infrastructure, so we can imagine large buildings which are essentially independent of large infrastructure systems.

In practice, of course, we won't get rid of them. But we'll have a mix of centralised and distributed systems: we will have gains in efficiency, better use of resources, all kinds of opportunities for synergies, lower capital costs, hope for developing countries—and I believe, increased resilience because we're **not** dependent on these very large, centralised facilities. So that's my vision, that we work towards cities which essentially regulate their environment, taking advantage of decentralised systems. Rather than simply picking up and coping with the problems which have been generated. An ecosystem approach rather than a systems of organ approach. Thank you.

Panel and Q&A Segment

Sophianne Araib
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So, the common thread[s] [in] today's presentation is really about looking at reframing the way we look at risk and resilience. I mean resilience is a big term. Many struggle with it because it really is quite nebulous and subject to capture, as Amita has talked about. So maybe you could share a little bit more. **That concept and thread about planning from below and involving the community came out very strongly in all of the three of your presentations, about a socially mediated process. Perhaps you could tell us a little bit more? Because today, oftentimes in the era of climate change and the era of the SDGs, a large part of the narrative is still captured by governments, for example. How do you communicate this? How then do you get the people involved?**

Amita Bhides
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Let me take inspiration from Peter. I'll talk not really about the rainforest, but there are several small towns and now emerging cities in India which have **extremely vibrant and sustainable** ecosystems. Because I would feel that any insertion of a built environment, [even just] one, is already intervening in nature. And I think surely our anthropogenic activities of various kind[s], including in the formation of villages itself, not just cities [will cause that]. What I would see today [is] that even in villages in India, the lifestyle we have is something which is highly urban, or trying to be urban. And there is a huge deviation from the...I would say, traditional wisdoms. A small example: the city of Udaipur, right in 1960, it's a very popular tourist city in India. But the city of Udaipur, until 1960 had a well-functioning...there was a system of about hundred lakes which were interconnected, and to which different localities and different communities contributed to their maintenance. This was a natural lake system.

After 1960, the city went on to a centralised piped water system. All of these lakes today, if you see, they are polluted. Of the hundred lakes, there are barely 20 lakes which are alive. The largest of them, the Lake Pichola is kept alive because the want to keep the interest in Udaipur as

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a tourist destination line—and this is where I think my framing of everyday risk **actually** comes in. Because in [the] creation of all of these centralised systems, you have the pollution of that lake; you have several communities who are today not getting water **at all**, and their access to the lake then, is also stopped. Because you want to beautify the lake. So this becomes the green agenda.

The green agenda is beautification of the lake, okay? But it is not restoring the life function of that lake and the kind of overall social and natural ecosystem that that lake was a part of—which was the system of the hundred lakes, which fed into the lake and then also formed the recharge and overflow system of the lake. So, when you close **that** off and you only want to beautify the lake, what begins to happen is that this is accompanied with social injustices also—and I think we need to couple both of these.

And which is why I'm saying that planning from below is very much required. It may not restore what things were 60 years ago. Okay? That seems to be a very, very difficult task. But minimally, that seems to be a scale which is required, manageable and responds to these people who are living their lives, really, at the brink of disaster. Okay? And I think it makes more sense to them. And hence, we need to talk about it.

Barbara Norman

00:42:13

Because I work in climate change and coasts, and cities in climate change, I'm thinking very much why does one coastal community take action and another community not take action in, for example, planning for sea level rise and storms. Or why does one community respond in a resilient way after an extreme event, and another community not? And it's complex! And there are institutional reasons and business-as-usual reasons as to why this happens so. Let me illustrate my point very quickly.

So, there's a town in Queensland, in Australia, on the northern part called Grantham. And it was flooded three times in three years. Because

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the funding to rebuild the bridges and the town came from the national level, and the national level funding arrangement with the sub-national—the state government in my country—required only providing funding for replacement. Not betterment. Not different, but for replacing **exactly** the same bridges and exactly the same infrastructure. Well what happened the next time a flood came? Same thing again. And what happened the next time a flood came? Same thing again. This is silly. But this happens, it's a very small example.

So, the community in this context, said, “This is ridiculous,” to the government. And so, they started to meet and they had a conversation. And then the sub-national government said, “This is ridiculous,” to the national government and then they started to support that community. And then finally, a change had actually gone through the national government. But the community also decided, very unusually, to move. So, they were subject to flooding three times in three years and they realised that this was not a sustainable solution. And they did... but they decided to move. And the reason why it's been very successful is [because] it came from them. It came from the bottom up. But not only did it lead to change for their community, it led to institutional change, change to funding arrangements **right through** to the national government. So local action can actually be very powerful.

Peter Edwards
00:44:35

Thank you. I mean one of the fascinating things I got out of both presentations, when I link it with what I was saying, I was talking about essentially infrastructure systems—technical systems to influence the quality of the environment. But there is a very close link, I think, between social involvement, decision making, governance on the one hand, and the kind of city and the kind of structure that you have [on the other]. And to some extent these scale up with size. I'm deeply alarmed, I must say in Asia, at the emergence of these enormous cities with ten million people, twenty million people. I think over forty million people in the Pearl River Delta.

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That is on the one hand, exactly the kind of place where this vast, centralised infrastructure is likely to develop and to encourage and become the norm. And on the other hand, when you have infrastructure and facilities of that sort of scale, you are also talking about governance operating at a very large impersonal kind of scale. And so, a lot of the benefits, exactly the kind of city that Amita was talking about, very sort of, small communities which have a sense of ownership [and] can make the right decisions, both socially and environmentally and economically for itself—it can't happen. And so there really is a very strong leak in my opinion, between the environmental resilience which was what is interesting to me, and the other one is the sort of decision-making and policy, governance type of resilience—which is so important.

And in many of these things, I think the decentralised infrastructure is important. But perhaps even more important, is the decentralised decision-making. As far as that is possible. Decentralised decision making by people who have a very strong sense of identity with their community, and are known by everyone and so on. And so, this tendency for everything to get larger, whether it's the numbers of people in cities, or whether it's the size of the power station or the size of the drain—they're all in some way related to each other. And I think that as these systems become larger, they become inherently less resilient.

Sophianne Araib
00:46:55

So, Peter you talked about the tendency for cities, especially in the developing world, they're getting larger. **The urbanisation is taking place at very much faster rate and the tendency for governments and governance is to come up with these kinds of big solutions. How then do we kind of like guard against that? How do policy makers and decision makers kind of like have a framing or decision-making matrix to kind of decide and help them with some of these solutions?**

Peter Edwards
00:47:25

Well, that is a very deep and difficult question. Now I'll simply give you my take on it. But I don't feel very expert to answer it. First of all, I would like to just emphasise this rate of growth of cities which is truly astonishing. This is of historical, epochal proportions—the process of

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urbanisation which is occurring now in Asia. And according to United Nations, I think something like another 1.4 billion people in Asia will move in to cities by 2050. It's, you know, I always say well what is 1.4 billion? You can't imagine it. Just take all the people in Europe and all the people in North America, multiply it by two and then you have that number. And those are the people moving into cities. So, it is an extraordinary process and there seems to be very little attempt to somehow guide whether that happens in terms of very, very large cities or much, much smaller cities.

And maybe it cannot be guided because it's driven by economics. But my feeling is that people to some extent...and people are pulled, because of the opportunities, the quality of life that a city can provide, and they're pushed by economic reasons in rural areas and smaller cities. So, it is a very complicated reason of why big cities fall.

But my feeling is that if only we can provide the same opportunities and the same quality of life in rural areas and in small towns and small cities, that will enormously reduce this tendency to form very large cities—which I believe are a profoundly very bad thing. And so how can you do that? Because the smaller cities and towns have so much going for them, in terms of community, support for each [other], mutual support for people, an ability to have a voice in the decisions they're making. It seems to me [that] there are so many advantages. But also, very often they suffer from poverty and poor infrastructure and so on.

And that's why I come down to say, let us **really** take advantage of this era of the internet and of greatly improved facilities for decentralised technology to invest in these smaller cities and towns, and provide them with **exactly** the same quality of facilities that you have in large towns. I was very struck for example that in Vietnam, they took a policy decision for the next five years that the priority for internet was going to be in rural areas and small towns—and not in the big cities. And that I think is a very, very sound move.

Sophianne Araib
00:50:09

That's interesting because Prof Amita was just sharing with me a little nugget about the rate of urbanisation in India is not as fast as I would have imagined. It's at 31%. Yeah. I mean most people would have the perception that India would be urbanising at a much, much faster rate. And of course, Barbara you talked about how cities really, not every city is a megalopolis—10, 20 million. There are many cities that are of size of a million, five million and all that. So really this resonates with that titbit.

Mark Thomas
00:50:37

Maybe to Professor Norman. **Out of [UN] Habitat III, did we get more consensus about how to measure progress in this area? Specifically resilience and of course, Professor Bhides talked about the dissonance we've had with how to measure resilience. But we can only be certain of making global progress if we have agreed global measures, and a strategy. So, just some comments about how well we're going measuring the progress that these large cities are making or not making.**

Barbara Norman
00:51:04

I think it's an excellent question. In summary, I don't think we're doing a very good job. And if you think about in your own budget, whether you're in a company or a government or a university. What's the first item that gets cut when the resources are short? Something called monitoring and valuation. Usually, that's the really easy item. Yet, it is **so important** to be learning from our mistakes or our successes. And to be able to...

In terms of UN Habitat III, I think there was a lot of progress made in terms of targets. And when I think targets, clear targets are essential, and that's what we've learnt in our own city. If you set even just one clear target, work together and achieve it, it can make a big difference.

But I think there was also a criticism that... it's hard to get this trade-off right. There was a criticism with UN Habitat that so many people involved and so many targets that it was, almost became too big and unmanageable. But I have to say, on the other hand, it was very inclusive. So, you know these are the trade-offs that we... it's hard, it is hard to get right.

00:52:11

In terms of how we're going. Well I'm in the area of climate change so... So globally, we are not tracking very well at the moment, just because of global politics. But if you look, you have to be heartened by the response in the US in the last couple of weeks. The response at the local level, the alliance between cities and governors has been so strong. And the question is, and the scientists needs to look at this and I'm sure they already are, could America reach it's Paris agreement commitment irrespective of the national government? Could it achieve that by city action, a local action and support of the governors? And I suspect that possibly it's true. Certainly some of the leading governors and past governors are arguing that case. They're doing it for political reasons as well but the action is very heartening.

So, on the grounds at the local level, we're doing great things. Are we monitoring things well? No. But we on a good path. The opportunity is there, is what I would say.

Amita Bhides

00:53:23

I was also at [UN] Habitat III and wrote a blog. And I think one of the most interesting facts that I found about [UN] Habitat III was that this was one event that was attended by over 20,000 people—but only two had sort of stayed. And to me this is a very, very interesting dynamic which perhaps goes to strengthen what Barbara has suggested. But I think we need to also examine the local context in all countries, and whether local action really has that agency in order to act. When does it begin to act? And I think those are also conditions that we need to think of as we [move forward]. Because there are so many complex layers to this.

Joe

00:54:17

One of the themes probably that I gather[ed] is that perhaps we need to go to the local communit[ies]. And hearing that there are lots of voices, choices...and at the end, resilience and all. But I thought... I'd like to share and probably I'd like to also hear from the speakers, when we deal with the community, [it is] very much likely [that] the item of voices right, they're quite heterogeneous voices. **How should we go about ensuring that the voices from all aspects and all levels would be actually**

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heard, and then come in to form the agenda and also the outcome of the planning process? Thanks.

Barbara Norman
00:55:02

Thank you. I have to declare that Joe's one of my PhD students who has just successfully completed his PhD, so well done. And [he] looked at public housing in Singapore and community engagement. So look, I just think that's an excellent question. I've worked in planning for far too many decades and I still don't know the answer. It's... you can use a whole myriad of ways of communication and still not get all the people involved.

I think that at the forefront of your mind should always be the most important thing—the most important thing is to understand the communities there. To understand, because the biggest planning mistakes that have happened around the world were what we call windscreen surveys. Sort of, “Oh that's what that community... Oh, that's a wealthy community and therefore that's what we do.” When in fact, you know there's actually underlying poverty that you don't know about, or there's a whole range of groups that you don't know about.

And until you really investigate that community, it's extremely dangerous to make assumptions and make mistakes. How [do] you access that? Public meetings are probably the worst approach. Public meetings are good, but you just hear from the loudest people. And you hear from them again and again. So it's good, it's public and it's part of the equation. But good surveys, internet of things, using smart technology, providing focus groups, inviting...going to where the people are—that's probably the biggest lesson. Make sure you're right in the middle. The most successful consultation I ran recently is where we just set a table up right in the middle and sat down for three days. Just sat there.

Jan Gehl used this in Copenhagen years ago. And [he] just observed and let people come and talk, “What are you doing here?” Chat. It was fantastic. And so sometimes it can be very simple as well.

Amita Bhides
00:57:13

[I] actually would differ with Barbara here to a certain extent. Because to me, one of the terms which I used in my presentation was to have a negotiated package. And where I acknowledge the complexity of moving through different speeds, what happens often when we do these very small surveys on very small concentrations, is that it leaves it up to the experts then to pull the results of everything together and to make decisions. And also, sometimes these experts can then couch everything in techno-financial terms, which creates the kind of projects which are actually having much...I mean they would repeat the kind of trajectory of development that one is talking about—or one is trying to challenge. And therefore, one of the principles which is necessary I think, is to create a very active public discourse and a public realm, okay? And that's **minimally** important. How do all our decision-making processes at the multi-scalar manner create this public realm, which is left open.

Then accompany these with these smaller scale surveys, discussions, indirect methods which stimulate participation—like was done in Denmark and so on and so forth. But both of these are necessary. One last thing that I would like to assert here is for me, beginning with the **most vulnerable**—that's the most key. Because it's usually, whenever one has public forums, it's easy to get the more powerful, the more articulate to voice and say what they want. It is most difficult to get those who are most vulnerable to actually speak and to articulate their demands. And that requires a[n] effort. That can be stimulated, but they need to be also brought onto the negotiating table. It is not okay to ask what are your demands, and then those demands can just be wiped off in a larger decision.

Peter Edwards
00:59:25

My contribution to this question is that whether we like it or not, we're entering a time when the technical possibilities of consulting have just transformed themselves. And I can start off with little example, I was talking to the facilities manager at the United World College not so long ago and he said, "Well we have this problem. We were going to put out some seats for students to sit on, and we didn't know whether to put them over there or put them over there by the building." So, I simply

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sent everybody, put it on Twitter and about two hours later I had 2,500 replies and it was very clear that they wanted to over there.

But it's a nice demonstration of the world that we're now in! That you can, you know you can ask people and you can get an answer. And it's very clear that new tools are appearing. There are public consultation software [systems], there are even...we're developing software systems where people can submit their own designs. You know, if a particular architect or planner is planning something, they can electronically submit their own designs online. So these tools exist. Clearly, it is not a general consultation of the public, it's only people who are equipped and feel so inclined to respond. But more and more people will, simply because they can be asked, will expect to be asked.

And the big challenge I think, will be to establish the institutions. We need somehow, social institutions that will take advantage of these new electronic tools. And we also need to establish planning processes which can respect the input that come in from them. And I really don't know how it can happen, except that I think planners have to experiment. And you know, I know for example URA is setting up effectively experiments where you try new technical tools and find out how they will work.

But I think it involves change in three areas. One is developing the tools; one is developing the social institutions so that there can be a fair and balanced participation; and one is changing the planning processes so that they are a sensitive to them. And all I can say is it will happen but exactly what it will look like I can't tell you.

Sophianne Araib
01:01:47

Indeed, I think that's one of the big challenges.

Barbara Norman
01:01:49

Actually, it's probably for you. For this point, I'm just going to quickly make you said...increasingly people are talking about [this] and there's a couple of examples already: that the environment itself should have a right at the table too. So it's not just the people at the table, but the environment [as well]. And Cape Town I think initiated that water has a

01:02:13

right in itself. And in coastal planning, I'm looking at whether there's a right to a healthy coast. So I just, maybe we need to have...the planet needs to be at the table too.

Sophianne Araib
01:02:25

Once you give the planet a voice, it needs arms and legs to sit at the table and negotiate.

Lim Soon Heng
01:02:30

I'd just like to make some observations. Not so much [of] a question, just some comments. I think the world is in such a situation, because we are pouring CO2 into the atmosphere. And these carbon emissions, if you zero in, it's basically coming from the production of energy. Right? Transportation. I think these two items itself is [*sic* themselves are] making a huge impact on global warming. And really to solve our global warming problem, you need to address these two.

So, Professor Edwards, I was a bit disappointed that you say the Hinkley plant was a step backwards. I mean here, we have in this world something like 440 nuclear plants, and India is coming up with quite a number, China is coming up with another 50 or 60—and I[d] like to applaud them for that. Because with more nuclear plants, we'll have less carbon emissions. And hopefully, one day, a new nuclear fuel will come about. And that will be thorium, hopefully. And with thorium, we will [*sic* would] have solved a huge problem. Because with thorium economy, electricity will be so cheap that it will don't bother to even metre it. **So once we get to a thorium economy, and by extension a hydrogen economy, I think half the world's problem will be solved.** Thank you.

Peter Edwards
01:04:34

Well dear, you know I almost don't like to comment because we could have a debate now which goes on for another hour and a half. In fact, my comment about the Hinkley point was less to do with the nuclear—which is a completely different set of issues, and it was more to do with the very, very large centralised facilities versus the decentralised. And at the moment, [the] technological process[es] in terms of decentralized [facilities] is proceeding so fast. I heard actually, was it yesterday that Britain has now got 50% of its electricity production from renewables, from wind and photovoltaics and so on. And I... Sorry?

Lim Soon Heng
01:05:15

It's impossible.

Peter Edwards
01:05:17

No, it has! It has! I think that's what I...

Lim Soon Heng
01:05:19

It's impossible to have 50% of Britain's energy coming from either wind or sun, or both.

Peter Edwards
01:05:27

I think it's wind, if I read it correctly? I mean it was in the news, I don't want to argue about it because it was just a header. But it was wind and sun and wood chip, I think it was. No, my point was not about the nuclear. I really don't want to go down the nuclear argument, which you know is another debate. It was really the paradigm shift from very large centralised systems which I think carry with them significant problems of resilience, to taking advantage of decentralised systems which I think have many advantages.

Barbara Norman
01:06:07

If you don't mind, I might just give an example. So, I come from a country of extreme events: fire, floods, storms in Australia. And so, this shift from these centralised systems to more decentralised systems is happening anyway, because it's happening in response to those events. Because when we have big fires, what happens with our national electricity system is the fire burns that out, burns the lines and those towns become isolated—so very much at risk. So those smaller townships are now developing their own sustainable, resilient energy systems through renewable wind and solar farms. Obviously, solar farms is something that's becoming increasingly successful in my country.

So from a risk management perspective, and I think that's what you were really arguing, in a hotter environment which has more potential for wildfire—which I happen to think is probably one of our biggest global threats, a wildfire with floods and storms—[is] that we need to have more localised and self-reliant distributive systems rather than national systems. But the owners of those national systems are obviously, clearly understandably extremely reluctant to let that change happen. And that's the vested interest we're dealing with there.

Lim Soon Heng
01:07:32

I mean micro grids is coming, it's the trend to solve some of the problems with brown outs and all that. Right? And there are also micro nuclear plants that are 50 megawatts, and when that comes about you will have micro grids.

AUD1
01:07:50

Hello. I'm sorry this is just a response to the earlier comment about social media and institutions. There's a really good case study of a town in Spain, I think it's called Jun but spelled J-U-N. And basically, the whole town has every kind of municipal service you can think of, right down to the garbage truck set up with a Twitter address. So any time there's any kind of civic issue that arises, you know I want my garbage picked up early or late or whatever, you know, stop doing this on the street—you just send a message through Twitter to that particular function of the government and they can respond directly to you.

So I guess it's kind of going back to your United World College example, but this is at municipality level of scale and I think the community is something like 3,500 people. So [it is] an interesting sort of test bed about how that can be institutionalised.

Peter Edwards
01:08:38

I mean, thank you. I'll just comment on that. I mean I work in a research institute, which is full of geeks and we love gadgets like this and, you know, we're all in favour of them. And of course, United World College if you can imagine [is] a community of people more likely to reply within two hours on Twitter than you know the students at United World College, then tell me what it is. The serious point I would make is that we can't unfortunately rely upon these systems because they could be **exclusive**. They could be excluding very significant parts of the community who for whatever reasons, are most unlikely to respond. And so, as we take advantage of these tools which are very powerful, we have to look and make sure that we are not in some way, excluding people and creating a new problem. And that is the reason why I think we always have to be a little bit careful. But it's a beautiful example.

Sophianne Araib
01:09:34

There are probably planners and some policy makers in the audience here today. **So, maybe just a quick sum, what would you say to some of**

01:09:43

these planners? Because the topic for today after all, is about planning for resilience, and looking at it from the social environment perspective. I think Barbara you put it very nicely in your presentation when you said planners are the glue that actually brings the different parts together. **So maybe just a quick few points? Key points? What would you like to say to planners from the perspective of a researcher, from a perspective of an academic, and from the perspective of someone who works very closely on the ground with the community?**

Barbara Norman
01:10:09

Well, I'm trying to practice what I preach. So I'm an urban planner, I was National President of the Planning Institute of Australia, so a practitioner for a long time, and now a Chair in urban planning, so I'm an academic these days—and I set up this body called Canberra Urban and Regional Futures. And when I started at the university, [it] wasn't a traditional, it is not a traditional institute. So, my university looked at me with deep suspicion. I went to the government and said we want to work with you. They looked at me [with] deep suspicion. Went to the community and of course, they don't trust anybody. So, it was seven years ago [that] I started this journey. Now it's...everybody knows it and it's well accepted, very strong partnership with government now and the community support us actively. So, why am I telling you this story? Because planners need to get involved but also, we need to be working with innovative platforms that can better share this, generate and share knowledge. And I think Peter you were getting to this. We need new institutional arrangements.

So, long gone is the chief engineer running a town, or a town planner running a town. Long gone is just even a town planner and some colleagues. But **we all** are part of this urban governance picture. We all have to be working together, and I think planners should step up and be supportive to create these more dynamic decision-making platforms.

Amita Bhides
01:11:35

In India, I think we have a very complex picture because there are multiple conflicts which are actually happening here. One is the entire conflict of urbanisation itself—we are trying to become urban. And this is a country which already has 8,335 urban areas of multiple scales. And

01:11:56

we define urban as a settlement, besides other parameters, with [a] minimum population of 5,000. So, I think one has to begin to look at this entire range and we're talking of pushing urbanization, which means encouraging more centralisation. And there are multiple [challenges such as] infrastructure deficits, governance challenges, institutional challenges. Within all of this, we begin to see for us [that] it is very difficult to see where does [sic should] one actually invest in.

Planning is not established as a discipline. Planning is something which does not have a[n effect of] what you talked about as the connecting glue. In my country, planning is not the connecting glue. Perhaps if there is a connecting glue that one sees or at least some, what I would say, an area where one could engage with, it is the realm of politics. Minimally because institutions are politicised, so within which one is trying to promote through a[n] academic institution itself, politics which is based on evidence, politics which is based on constructive contribution. And to which, therefore, we are trying to engage with local institutions—municipal institutions, and on the other hand, local communities. And this is what my university is engaged in very, very actively.

Peter Edwards
01:13:28

Thank you. What I would say to the planners, I think, is that resilience is a very important topic and do think about it and the implications in your own work. And it becomes more important in a crowded world. As cities get larger, the number of people increase and on. We're now at the stage in our planet when if something fails catastrophically somewhere in the world, there's nowhere else to go. There's nowhere else to go! And so resilience, the ability to bounce back when things happen becomes very important.

And what it means is...I mean there are a number of elements of resilience, but I think a diversity of systems rather than a single system is part of them—distributed systems, as I've been arguing. And then the third thing which one always has to argue [about] is that very often, there is a trade-off between economic efficiency and resilience. If you want a nice example of it, recently British Airways' computer systems

01:14:22

completely failed. And we were told that the reason was that they'd been pursuing economics rather than the resilience of their computer system. But there are many, many other examples, that if you go for economic efficiency, you may well be sacrificing resilience. And it's a very important topic, and it's here to stay.

[Transcript ends at 01:14:40]

LECTURE INFORMATION

TITLE

Building Social and Environmental Resilience in Cities Through Planning

PANELLISTS

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