

The business view: the contribution of businesses to disaster resilience

Interviewer: [Gareth Byatt](#) – Principal Consultant, [Risk Insight Consulting](#)
Interviewee: [Hayley Gryc](#) – Associate Director, [Arup](#)

December 2024

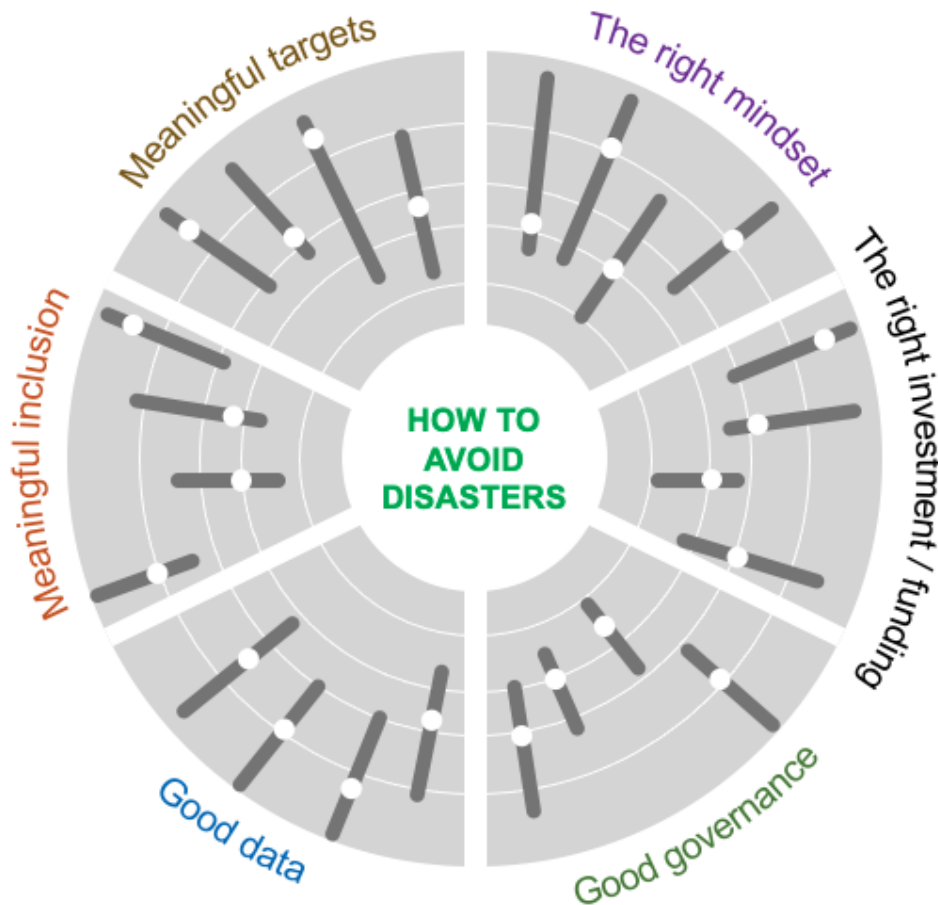


New school in Peru, part of an International Development project
Source: Arup

Hayley,

Thank you for making the time to talk with me about the activities of Arup including the support your team provides towards disaster resilience and urban resilience around the world. It would be great also to discuss your thoughts on how businesses of all sizes and sectors can contribute, in different ways, towards helping the world be more resilient in the face of disaster hazards.

During our conversation I will refer to the [Disasters Avoided initiative](#) that Ilan Kelman, Ana Prados and I work on. This initiative focuses on *how we can prevent disasters from happening*. We have developed a [six-point model](#) to support our work in this field, which links to a model I use for urban resilience and also how businesses of all types and sizes can meaningfully contribute towards aspects of resilience that are broader than their own operations and activities.



[The Disasters Avoided model](#): G Byatt, I Kelman & A Prados

Could we start with some general context about the services Arup provides, how these services support disaster resilience and urban resilience, and your role and background at the company? I appreciate the history and the breadth of services offered by Arup, as a global collective that is dedicated to sustainable development.

Hayley: *It's a pleasure to be here. I am an Associate Director at Arup within a specialist team that works in [International Development](#) on behalf of development clients. We support development clients in various ways, which I look forward to discussing shortly.*

When this team was first established many of our clients were International Non-Governmental Organisation (INGOs). Whist INGOs are still very much part of our client base, today we also work with bilateral and multilateral organisations such as development banks, bilateral donors and UN agencies. Our work facilitates support by Arup to development clients globally in various ways. Our International Development team has specialist expertise and experience in development and humanitarian work, and when appropriate we leverage a global pool of some 18,000 Arup members worldwide with a diverse range of design, engineering and technical expertise. In this way, we have supported other parts of Arup to work on a range of projects that support development and resilience. This includes acting as a catalyst too, for example, incorporate working in new geographies associated with this type of work.

We aim to bring best international industry practice to our projects, whilst being respectful of the context along with focusing on building capability and capacity with local partners and stakeholders and working with our own offices where and when relevant. We build local knowledge and capacity to ensure that activities are sustainable for the long-term, rather than take a fly-in fly-out type of approach.

My work in this space has included leading projects related to regulatory reform including the development of building regulatory documents, guidelines and manuals to improve infrastructure quality. I have led large-scale social-infrastructure and disaster risk reduction programmes. I have specific expertise working in the education sector with a specialism of the delivery of safer, resilient inclusive and sustainable educational facilities.

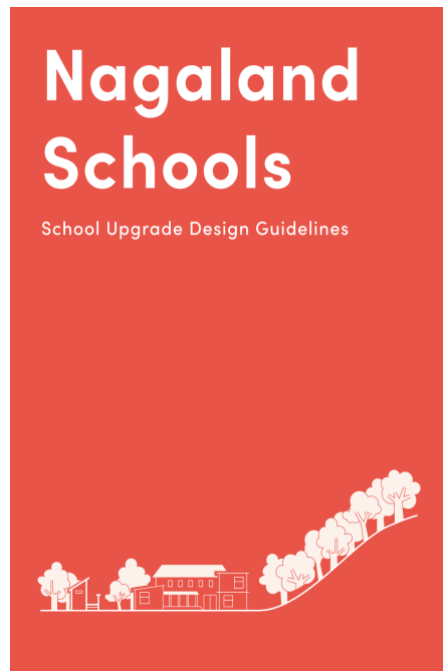
Gareth: Thanks for this overview of your work for Arup, Hayley. I appreciate the ethos that drives Arup as an organisation and how it guides your approach to projects and activities for your wide range of clients globally, including for international development (indeed, I know [the key speech that Ove Arup delivered in 1970](#) remains an important part of the company's ethos).

In the International Development part of the Arup organisation, what projects and initiatives have you recently been, and are you still, working on that relate to disaster and urban resilience?

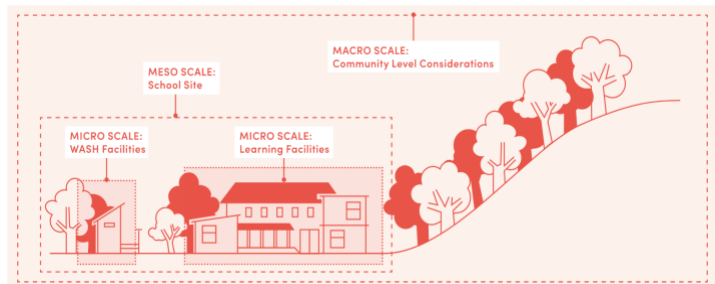
Hayley: *I think it's worth reiterating that the International Development team represents the whole of Arup.*

Our infrastructure work within the International Development team covers a wide range of activities. My primary focus is on social infrastructure. Education is part of this, where we work on schools programmes to support better quality education infrastructure, usually at scale.

For example, we recently carried out some work in [Nagaland](#), one of the Sister states in India. On behalf of GFDRR and their Global Program for Safer Schools (The World Bank), we developed a prioritised investment plan to improve the quality of school infrastructure for the short and long-term across over 2,000 schools statewide, many of which are remote. This included improving the performance of the learning environment, its resilience to hazards, water sanitation and hygiene ([WASH](#)) and other aspects. This was informed by the community's point of view as to what their problems and challenges are. Along with investments that require technical expertise, we sought to discover with communities which simple interventions, perhaps by the community directly, could be most impactful and what the outcomes of these interventions would be in terms of education access, function, resilience and sustainability. With this analysis and data we collected we were able to equip local government with the ability to make risk-informed decisions. This is an example of the type of work we do at scale, and of our focus of working with local partners and people to achieve meaningful inclusion (to use one of the points in your model).



SCALE	OUTCOMES BY THEME	TYPE OF INTERVENTION
CATEGORIES	CATEGORIES	CATEGORIES
<ul style="list-style-type: none"> Community (MACRO) Site (MESO) Building (MICRO) 	<ul style="list-style-type: none"> Human Experience Safety and Security Planetary Health 	<ul style="list-style-type: none"> Repairs and Basic Improvements Advanced Retrofit Replacement



Another example is our work on two programmes spanning a four-year period in Peru. One programme was a [reconstruction programme](#) that was instigated following the impacts of the El Niño phenomenon that occurred in 2018, which caused widespread devastation across large parts of the country (including flooding and landslides). It was formed as a “government to government” programme which covered work for a UK design team (UKDT) made up of Arup, Mace and Gleeds to support the Peruvian government to undertake a large reconstruction programme including health infrastructure, education infrastructure and integrated solutions including urban flood resilience and early warning systems. I led the education technical work package, to retrofit and reconstruct 75 schools across Peru. Arup’s role was to provide technical assistance to the government so that they could undertake the work and scale it up across the country. This included developing model school designs to suit the local context and to embed quality principles across the life cycle (planning, design, procurement, construction and operations and maintenance), with this last part of O&M considered right from the start (good O&M is often a big challenge and is vital for maintaining infrastructure over the long-term). The second programme which was called the Bicentennial was for another 75 schools.

Other examples of work we have been [doing include supporting countries to review their regulatory frameworks](#) and undertaking a building regulatory capacity assessments, much of which has been through [The World Bank’s Building Regulation for Resilience programme](#). Through this work, we undertake a holistic assessment for a city or a country (we do both), looking at their regulatory framework and institutional capacity to enforce it. This includes looking at where there are gaps in regulations, and where enforcement can be implemented and strengthened, including capacity-building for the construction industry to ensure regulations can be actively applied. This work is directly linked to our support for urban and infrastructure resilience.

Gareth: Thanks for these examples, Hayley. I can see the clear linkages to disaster resilience, and urban resilience. We know ([as UNDRR continue to make clear](#)) that investment in infrastructure around the world is critical as part of improving disaster and urban resilience, and to avoiding disasters.

The way you have described your work makes me think of the six factors in our DA model. For example, good governance requires the right mindset. Meaningful inclusion of communities helps capture good data. Good data informs good decision-making for meaningful targets and benefits, linked to the right investment plans.

I wonder if it is reasonable to say that, in general (perhaps there may be exceptions) it is good business for the private sector to support disaster and urban resilience, in a way that suits each business' context. No business is an island, we could say (from industrial manufacturing to retail and many others). Perhaps this is obvious for some businesses and more challenging for others? You gave an example of your work in Peru, and I know that the mining industry has a big presence there (it is a sector I do some consulting in). I am thinking for example of how mining companies can perhaps support local water resilience action, given their expertise in water management and hydrology amongst other things.

Another example I often use for the private sector is how so many businesses around the world played a crucial role in supporting communities during the COVID-19 pandemic (I saw it first-hand in the retail sector at the time).

Regarding the example of Arup, given your sectors and your global ethos I can see how work that supports disaster resilience fits your business. When I think about your work to support schools infrastructure I also think (applying a “systems lens”) about tech businesses that support schools with equipment, businesses that provide school meals, insurance of schools and other aspects.

For some context to this point, one of the findings of [the UNDRR Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015-2030](#) which I discussed with the former Head of UNDRR in November 2023, Ms Mami Mizutori, is that the private sector still largely sees its resilience building and targets as being the public sector's agenda.¹ The need for the public and private sectors to work together is raised in the UNDRR's [Global Assessment Report \(GAR\) Special Report 2024](#).²

***Hayley:** It is an interesting question. In my view, the private sector can truly help to create a step change in disaster and urban resilience around the world. I do think businesses of all types and sizes have a major role in building the resilience of cities and countries. We know that the public sector around the world is stretched in many ways, and their engagement with the private sector can help to address this challenge. We can provide skills and capacity, and perhaps thought leadership where relevant. For an urban resilience example, [the City Resilience Index](#) has proven to be successful globally and was private sector led (with Arup playing a key role). In our case, we genuinely appreciate and see value in working with other businesses, NGOs, think tanks, the public sector and other networks to contribute to the greater good.*

¹ [Disasters Avoided interview with ex-UNDRR Head, Ms Mizutori](#)

² [Global Assessment Report \(GAR\) Special Report 2024](#)

Being employee-owned rather than owned by external shareholders, and also global in reach, I appreciate that Arup has a very specific organisational structure. We have our commercial drivers, and we invest most of our profit back into the business in order for us to focus on organisational development, partnerships, thought leadership and community work. This is an important part of the foundation of Arup, [to Shape a Better World](#), and it is part of why people choose to join Arup (indeed, it goes back to the key speech that Ove Arup made decades ago which you mentioned earlier).

In 2017, [Arup made a commitment to properly embed the Sustainable Development Goals \(SDGs\) into our Sustainability Policy](#), which was a big move for us at the time and it remains an important focus for us today and was quite an undertaking, which led within Arup. The Arup strategy guides how we undertake our work and how our projects are assessed and measured. Our processes include consideration of the SDGs. When this commitment was introduced it was relatively straightforward for the International Development team to take on board, since our clients such as development banks and city teams work with the SDGs. For other parts of Arup, it required a focused effort to review and understand the meaning of the SDGs and work out how to embed them in their context. We focused on building up the knowledge and embedding the SDGs into our decision-making.

Our work with the public sector is varied, whether it is with a government as a direct or indirect stakeholder. For resilience to be embedded, there has to be good collaboration – meaningful inclusion and good governance, to quote two elements of your Disasters Avoided model. It requires systems thinking for resilience, and part of the system is the private sector.

I would say that every industry has a role to play to support disaster and urban resilience. In infrastructure we touch on many other industries. You mentioned the retail and industrial sectors earlier. We have undertaken retail garment / clothing factory resilience assessments to review opportunities to provide better working spaces for people who work in them. When we started work in Bangladesh some ten years ago to support the government on improvements to make, there was the Alliance and the Accord approach for US and European-owned factories, and we also worked with ILO, the UN agency that worked with government-owned factories. This is an example of the public and private sector coming together, which started with the private sector initiating work with the Alliance and the Accord, which wanted to ensure they focused on improving social and safety matters. We are now working in other countries in this sphere. Everyone has a role to play in supporting resilience in all its forms.

Gareth: It's interesting that you mention your work to embed the SDGs into what you do and how you work from 2017, which was just two years from when they were launched, in 2015. I'm a supporter of using the SDGs. I know there are some schools of thought that advocate focusing on a few of them in particular. I focus on stitching all the SDGs into my activities, for example in urban resilience. You mentioned systems thinking just now as well, which I am an advocate of using.

As part of your work with governments both directly and indirectly (for example with and through The World Bank), what kind of work do you do with UN agencies and multi-party alliances?

Hayley: *One of my connections is through the Global Alliance for Disaster Risk Reduction & Resilience in the Education Sector ([GADRRRES](#)). We are a key private sector organisation in the alliance. GADRRRES was set up in 2013 to support disaster resilience in education (which links of course to [SDG 4 – Quality Education](#)). Our role in GADRRRES is to co-lead their school infrastructure activities, which spans across the whole education system. UNICEF and UNESCO chair the alliance, and UNDRR work with them. We have had a long global partnership with UNOPS supporting them across their infrastructure implementation and advocacy work. , This includes acting as a third-party technical reviewer; developing a global Circular Economy toolkit for cities, (which was [launched at COP 29](#)) and we have also supported them develop a series of publications promoting and providing guidance to ensure infrastructure is Inclusive and accessible to all [Good health and well-being for all requires inclusive... | UNOPS](#).*

Gareth: it's interesting to hear about your involvement in GADRRRES, which makes me wonder about whether other businesses can benefit from supporting and working as part of similar types of cross-organisational alliances that support disaster and urban resilience.

Have you been involved in any way with how things work in Japan, including their financing of disaster resilience work in Japan and further afield, and their approach to the public and private sector working collaboratively for disaster resilience (I have found it very interesting to learn from people in Japan about this)?

Hayley: *It's interesting that you raise this point. [Arup opened our Tokyo office in 1989](#). A reasonable amount of our International Development work is funded by the Japanese government, often indirectly. The Japan International Cooperation Agency ([JICA](#)) and the government of Japan are key funders of disaster resilience activities around the world. When we undertake work for The World Bank and the Asian Development Bank ([the ADB](#)), Japan is often a major funder and investor. The Nagaland project I mentioned earlier incorporated funding from Japan through The World Bank.*

With regard to The World Bank, one of the things we are involved in, as part of being on a framework, is support to The World Bank and their work on Emergency Response Assessments. The World Bank have an assessment framework called [Ready2 Respond](#) which is used to review how well a city or a country can respond to an emergency situation, which includes the capabilities of the private sector in the area being reviewed. When we support diagnostic reviews, for DRR or a regulatory capacity, the private sector is always a key consideration.

As of November 2024, we are working on a World Bank (with funding from Japan) initiative in Ethiopia to support an assessment of infrastructure in secondary cities across the country.

The World Bank and Japanese government have a partnership to called [Quality Infrastructure Investment \(QII\) Partnership](#) to promote quality principles into infrastructure. A team from Ethiopia government visited Japan and were trained in quality infrastructure principles, and we are now helping them think through how they can make these principles work on the ground in their local context. The World Bank are about to embark on the 2nd phase of large infrastructure programme in Ethiopian secondary cities and want to ensure the infrastructure implemented is good quality.

The focus of our support is to understand why infrastructure may be failing as a general review, with resilience being a particular thread. We are developing an assessment methodology to assess the construction industry capacity to implement quality infrastructure by adapting the [Construction-Capacity framework](#) we developed on behalf of the ICED facility (established by DfID as FCDO was then). Using this methodology, we can understand where are the gaps and weaknesses in the system in order to provide the world bank and the government recommendations for investment and capacity strengthening. We are consulting with different parts of the national and local government, academia and the private sector. The private sector has a large role to play in the quality of infrastructure. Ultimately, this programme is receiving funding by the Japanese government.

When we consider this and other examples we have discussed, I look at the work we do and what we touch upon as an iceberg. Achieving good quality outputs is the tip of the iceberg. Having the capacity, the social, economic and governance drivers are all underneath supporting it. It's not just technical infrastructure. Governance, financials, business economics are all key. We look at all of it, it's not just technical design and construction.

Gareth: Thanks for explaining the linkages of working with multiple parties, and again to point towards examples that focus on upskilling and supporting local people to manage actions over the long term. Your point about working with secondary cities reminds me of [the UNDP Urban Risk Management and Resilience Strategy](#), which was published in 2021 and which includes this type of urban scale focus (I was delighted to support the UNDP team with the creation of this Strategy).

Hayley: Good that you mention UNDP. We work with them in various ways on some of our programmes. For example, we have been working with them across Central Asia on a programme in Azerbaijan, Armenia and Georgia. We have been working with the mayors to develop a learning programme in urban resilience for different cities.

Gareth: I appreciate the additional examples of supporting cities with resilience. To continue the thread of urban resilience, I know that Arup, including the International Development team, carries out various activities in urban environments that are for and / or connected to municipal (city) and local authorities around the world.

Indeed, I have seen in my activities with municipal authorities how Arup tools such as the “[dimensions of resilience of an urban water system](#)” are used in various ways by them. For the Arup tools I see, including the urban water system, the [City Resilience Index](#) and [the Universal Taxonomy for Natural Hazard and Climate Risk and Resilience Assessments](#), there is a clear focus on adopting a systems-based approach. Is it fair to say that systems thinking is a key part of what you do?

Hayley: I think that is fair to say. The examples you provided are all based on systems thinking. As it happens, The [City Resilience Framework](#) (CRF) has just been relaunched after 10 years taking on board feedback. As you mentioned, we have the City Water Resilience Framework (CWRf) as well, which is being used globally to help cities evaluate the current areas of strength and weakness in their own urban water systems. The CWRf helps guide cities to build resilience in four dimensions—leadership and strategy, planning and finance, infrastructure and ecosystems, and health and well-being, . In addition, The City Water Resilience Approach, which Arup collaboratively developed to help cities grow their capacity to provide high quality water resources for all residents and protect them from water-related hazards, incorporated an end-to-end outlook.

Gareth: Thanks for these points as examples of systems thinking in action.

I would like to get your thoughts on the needs of small islands, if I may. Ilan and I work in this space. One of our collaborations in 2024 was as part of a [SIDS Future Forum in March 2024](#), Ilan’s focus was on data, mine was on urban resilience.

Hayley: My work on SIDS has been around the policy and regulatory reform and social infrastructure. Arup does quite a lot in SIDS.

A lot of our work is on climate adaptation and mitigation. I have done a lot on regulatory reform, the need for which has sometimes come about because a disaster has highlighted that there are lack of and gaps in regulations occurred. For example, in 2012 I led a team to write the building code for [the government of the Turks & Caicos islands](#), for a construction programme for houses required after Hurricane Ike wreaked havoc.

A key lesson from that disaster was that regulations were insufficient. A condition of EU funding for the reconstruction programme was that regulations and the building code had to be in place and the new code had to be shown to be adhered to in construction.

One thing I distinctly remember was that across all the islands of the Turks & Caicos, there were only five (well qualified and experienced) engineers and architects to serve the population of some 35,000 across them all. Across the SIDS globally there is a lot of property development to cater for tourism of course. Whilst the Turks & Caicos is a British Overseas Territory, they were closely linked to the US (given their location). Most materials supplies came from the US for example. Their new building code at the time was developed in line with the International Building Code ([the IBC](#)) and US requirements.



[City Resilience Framework](#) (developed by Arup in a collaboration with others)