

Plenary & Panel #3: Climate Change and Humanitarian Crises

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Climate change and adaptation

It is widely accepted that we are in uncharted waters with CO₂ levels in the earth's atmosphere. Global temperatures have been rising along with CO₂ gas emissions and the consequences have proven almost as predicted – more trapped energy is leading to rising sea levels, ice melt and more extreme hazard events to name but a few.

Industrialised countries have dominated the CO₂ emission landscape for the last two decades, with a large growth in coal consumption in Asia since 2000, as fossil fuels have remained the primary engine of economic development. There has however, emerged a rapid growth in renewables, meaning that emissions have declined slightly more recently. The UK for example, has halved emissions since 1990 and has undergone the radical transformation from “an island of coal in a sea of oil and gas”.

The “solar revolution” saw solar power emerge as the cheapest, widespread high-grade energy source in human history. It is only six or seven years since solar energy seemed untenable due to the expense involved, but we have seen rapid installation projects that have brought huge energy cost savings.

Long before the worst global impacts are felt, distribution changes that occur hit hardest the countries that are often among the world's poorest. Food supplies and fisheries in coastal regions are disrupted and destroyed as sea levels rise, and severe rural and urban impacts are felt at the hands of increasingly extreme events.

It is likely that a changing climate will increase the occurrence of extreme events around the world. The Intergovernmental Panel on Climate Change (IPCC) states the key, foremost parameters for concern, demonstrating where we stand on the indices for current temperature levels. And while the Paris Agreement on climate change stresses key system-based and planning adaptations, these can only help so much – the emissions challenge needs addressing at a fundamental level.

The more carbon we continue to emit, the more global temperatures rise. At present, we have roughly a quarter of a century of emissions left, and so the imperative to rapidly reform energy systems is incredibly strong. A transition to zero net emissions by 2050 is vital, but thus far, there has not been a price on carbon emissions that has

adequately reflected the damage that it causes. The issue progresses beyond economics and is now a deeply moral dilemma, where those who continue to create the problem are not generally those who are affected by its consequences. An emphasis now lies on conservation for future generations and no room exists for a blame game. We are all very much in it together.

As a result, we are facing a “Super Wicked” problem, where the magnitude and complexity of changing the systems that have driven industrial development over last two centuries becomes almost incomprehensible and often overwhelming. It is difficult psychologically to tackle an issue of such enormity, so that we can effectively harness political systems and provoke the behaviour change that will legitimately address the way we produce and consume energy.

Globally, there are visions for Integrated systems that combine renewable energy sources and connect across international borders. But this requires a major shift in global energy investment away from oil and towards clean power. While there has been a collapse in investment in fossil fuels, there has not yet been enough investment in renewables.

Disaster preparedness and response in Bangladesh

Super cyclone Amphan in May 2020 intensified before making landfall in Bangladesh due to higher recorded sea temperatures in the Bay of Bengal. Cyclones are normal in Bangladesh, but super cyclones are not, however 2.5 million people received a storm warning and sought safety, keeping the death toll low. Nevertheless, damage to the environment and to infrastructure was considerable. The elevated sea temperatures leading to stronger cyclones have been attributed to human activity.

The added complexity brought about by the Coronavirus pandemic meant that social distancing was compromised in emergency shelters and highlighted how customary responses are affected when emergencies merge. Now an environmental crisis was occurring alongside a health crisis, and a “new normal” emerged to teach us all new lessons.

Bangladesh’s cyclone preparedness efforts serve as a good example of what can be achieved when people are given the right information and understand how to protect themselves. However, it is vital that we continue to investigate how to most effectively make it normative to provide urban, rural and all populations with the most effective ways to help themselves and those around them. Providing opportunities for displaced populations to resettle, benefit from education, take up employment and relocate their families to safer, more economically viable environments relieved the pressure on major cities such as Dhaka, and affords people enhanced quality of life prospects.

The unprecedented additional challenge of a pre-existing crisis such as the COVID pandemic makes this objective even more imperative. In the face of the imposed lockdown measures, many migrated out of the cities to return home due to loss of employment and housing. Supporting the most vulnerable at such times therefore remains one of the best investments that can be made, and empowering people to take safe actions themselves through methods that prioritise local-led solutions is more

important now than ever. Many of the world's most vulnerable populations to the effects of climate change and environmental damage are not the perpetrators of that damage, but disproportionately suffer the impacts. They are not targets or beneficiaries, but partners in their own resilience requirements and processes.

One important initiative in promoting indigenous capacity building in face of climate change is the [Least Developed Countries \(LDC\) Universities Consortium on Climate Change \(LUCCC\)](#). With the aim of enabling all 48 member LDCs to adapt effectively to the adverse impacts of climate change, it intends to develop a South-South and South-South-North knowledge sharing and capacity development programme on adaptation to climate change in universities across its member countries.

Flood mitigation in Malaysia

The latest Intergovernmental Panel on Climate Change (IPCC) report shows extreme temperatures and precipitation, rising sea levels and damaging cyclones as some of the major risks we currently face. It also suggests that the associated adaptations for these risks may prove effective in the short term but less so into the long term, and while we can observe and understand the tangible impacts on infrastructure and the environment, we know much less on the long term impacts of poverty and health and the implications of this over the next 50 years.

The Department of Civil, Environmental and Geomatic Engineering at UCL have been undertaking research that investigates flood risk in Malaysia as a result of the rise in urbanisation and changes in land use that have led to warmer air, heavier precipitation, more impervious surfaces and as a result, greater risk of flooding. The area of interest, Kampung Baru, has seen a marked rise in the number of floods experienced over last 10 years. Despite investment in the large-scale engineering of flood defences in Kuala Lumpur, it has not been sufficient to mitigate flood damage in all areas, and local knowledge and community engagement are required for more widespread flood mitigation success.

The project produced indicators to assess the flood vulnerability of a sample of chosen buildings, enabling researchers to develop hazard risk mapping for the area. City-scale vulnerability mapping can enable the rapid determination of resources needed for informing how areas can be protected both now and in future urban planning processes that can minimise flood risk further and more permanently.

Malaysia experiences a number of natural hazards that often translate into disasters, experiencing flooding and landslides regularly. Further case study-based research has been focussing on three principle areas: meteorological forecasting, hazard modelling and multi-hazard forecasting with wider applications for resilience planning, identifying and monitoring vulnerable areas, developing advanced warnings ahead of hazards and the impacts of climate change. This study aimed to examine the impact of combined extreme temperatures and high humidity on high rise areas, as well as how green spaces and urban parks are managed, including the types and intensity of vegetation present.

Discussion

Impacts of lockdown on climate change:

- In London - bluer skies and better air – immediate beneficial consequences of lower traffic levels.
- Lots of opportunities from scientific perspective to collect and examine data and better understand how impacts can enable fine tuning of models for future crisis scenarios.

How to stop progress made during lockdown being reversed:

- Not optimistic that progress can continue with lockdown easing.
- Answer to social distancing is using private transport – cycling, cars, working from home possibilities but this has an impact on the economy.
- Assumptions around work practices etc. have been challenged.
- Although there is recognition of a need for change, it will still be a long, difficult and slow process to activate.

Making green energy more affordable:

- We have seen the dramatic rise of renewables in developing nations but the politics of how energy is distributed is key, not so much the infrastructure.
- There is also associated pollution with the rise of new and developing technology such as solar panels, wind farms etc.
- There is an awareness of a need to meet face to face but also of being conscious of mass attendance at global events.
- In Bangladesh - people are being forced to move as salinity invading water sources. Many are moving to Dhaka (rural - urban migration of displaced). Projected numbers of climate migrants estimated at 10+ million.
- As a result, “climate resilient migrant friendly towns” are being developed providing education, housing, employment and support – started in two or three towns currently but looking to scale as showing promise. It is enabling migration rather than forcing it.
- Migration influx seen in these towns is viewed as a good thing to ease the pressure on Dhaka and people living in slums.