

# ChemEng Evolution Transcript Summary

## Adeeba Kamarulzaman talks to Past President, John McGagh

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Prof. Adeeba Kamarulzaman (MBBS 1987) was Dean of the Faculty of Medicine and Professor of Medicine and Infectious Diseases at the University of Malaya in Kuala Lumpur, Malaysia from 2011 to 2019. Dr. Kamarulzaman has dedicated her career to the prevention, treatment and research of infectious diseases and HIV/AIDS. She is also a strong advocate for HIV prevention, treatment, and care programs in marginalized communities. In 2007, Dr. Kamarulzaman established the Centre of Excellence for Research in AIDS (CERiA) at the University of Malaya, one of the few dedicated HIV research centres in the region. She has been a Yale-affiliated faculty member since 2012.



### Key messages/themes

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- Climate changes is the biggest threat we face today, it is very frightening
- Inundation of coastal cities and change in climate patterns will drive humans into hitherto pristine natural habitat, this is where mixing with animal life happens, and pandemics will come from this mixing.
- Another factor to consider is poverty and inequality feeding into this cycle, it will exacerbate the threat for humankind.
- Climate change is a real existential threat that puts Covid-19 in context which is (was) not an existential threat
- Covid-19 is a symptom, the natural world is trying to tell us something and we should be listening. The virus developed inside the Bat population and found an animal-vector to jump into the human population, the more pressure we put on the natural world the more this will happen.
- Consumerism has led to an acceleration of the pressure we are putting onto the natural world; we can all help curb consumerism.
- In my family we have deliberately curbed consumerism, my family and I have tried to reduce our meat intake, this all helps if large number of people try to curb consumerism.
- We can modify our urban environment to have a much lower impact on nature. Architects, Engineers, Government Policy makers and the Public Health community can work together to help deliver a lower impact and healthier urban environment better aligned to the specific location/environment it sits within.
- Covid-19 may be a trigger point to rethink how we live, how we consume and how people and governments think about infrastructure impact on nature. We may have an opportunity because

the Covid-19 pandemic is Global – “everyone” knows about it and has been impacted; think of this in context of the Great World Wars, they did not affect the entire planet, right?

## Narrative – abridged from original digital transcript

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I think the major challenge we are all facing is climate change, I am guessing you would have thought I would have said pandemics as this is my field. Did you think I was going to say another pandemic?

The obvious answer is, of course, unless we do something about climate change, we're going to see a very different world, right?

If you look at climate challenges, we face now it shapes the context. More recently just consider the fire storms seen in Australia in the US, it's frightening; the forest fires are just very, very scary. Combined with the flooding events and the melting of the glaciers and ice? I find this personally very terrifying because it is so hard to stop. Once it happens even Covid-19 is not going to compare once you this irreversible climate change.

So, I believe that climate change is number one, so unless and until we do something about it, we're going to have Civilization challenges that is going to impact all countries. Some countries will cease to exist for instance look at the Maldives.

We have seen in Malaysia coastal erosion threatening the living and livelihood of large populations on the East Coast, this includes the disappearance of beaches and landmass.

I suppose before real climate impact happens that there will be a movement of people into inland areas away from where coastal catastrophes are happening. This movement of people will happen as we see the disappearance of coastal cities and towns caused by rising sea levels driven by climate change. I do not know much about the deep science behind climate change, but I think that's probably going to be the largest impact.

Because of the climate change we are likely to see increased human encroachment into what once were pristine forests and this was the likely source of Covid-19, we need to learn from this because there will be more pandemics as this human mixing with nature takes place.

If we don't learn from Covid-19, then it's very sad because I am a great believer that nature is trying to tell us something and I'm not sure that the world is listening to the message, as a result we are now so caught up in trying to control the pandemic that we probably caused, our encroachment will cause more pandemics.

We need to wake up to the consequences of this message, I believe it nature trying to tell us to live more simply and think about stopping ever increasing consumerism; be one with nature again. Oh, I sound like a tree hugger, but I am not, I am observing a set of changes and underpinning drivers and do believe we need to react quickly.

One of the key drivers is inequality, unless we learn from Covid-19 and try to redress inequality we will set the scene for the next pandemic which could be even larger and bring a new set of problems.

My profession lets me see all the issues of diseases and the relationship with inequality, poverty and lack of education and you know this will continue, pandemics are formed from these forces and as we have seen they impact us all. Climate change will drive the cycle and it could be worse next time unless we enable deep changes, consumerism is one change we can make.

Think about the distribution of wealth, ask how much Jeff Bezos made this year, he is now the second richest man in the world and then look this through the lens of inequality.

So, there are the three big picture things, climate change causing humankind to spread into pristine areas combined with inequality resulting in driving the threat of global pandemics; these are all interrelated.

Covid 19 is first incubated in bats, this is well understood as they are a host to many exotic virus strains. The Covid-19 virus was able to jump from Bats to humans through a species of animal that humans eventually either ate or interacted with. This drove the Covid-19 outbreak which drove the global epidemic. As we encroach into virgin forest and pristine wilderness, we're going to see unusual viruses that live in animals jump species and end up in humans.

There are some of the things that might be able to help us mitigate, clearly more investment and use of technology to inform and educate populations, this requires broadband. Also, technology that helps us develop protections.

Food security will be a significant matter for all of us as populations continue to increase against the backdrop of a deteriorating climate, absent interventions this is going to get worse and we can look to a significant impact on crops and farming across the globe, this is a big-ticket item for all of us.

I am on the national Commission on public health. I'm just as guilty as everyone else because I've been more focused on controlling the epidemic, I guess rightly so focussing on managing patients, but am now thinking more about the key causes of the epidemic. I have not seen much debate about key causes in the general literature.

In in the sense Covid-19 is a wakeup call that is impacting all the globe.

To take the pressure off nature we can address our ever-increasing consumerism, we all have a part to play. Recently I have gone vegetarian for myself and my children. They are not completely there they still have their red meat, but they try to be vegetarian as much as they can, and this has an impact on my family consumerism and impact on nature.

I observe that maybe the younger generation are much more aware of these challenges and what they can do to help. The young Swedish girl (Greta Thunberg) has been proactive in raising the awareness, the modern media/interconnected world has helped her get the message out and this is a good thing. My boys are much more aware of this than I am of, you know, so there is some reason for optimism in the new generation because they're the ones who are going to inherit it, aren't they?

We as adults right now will need to put place what is required to make sure that we're addressing this. But, unfortunately, like with everything about the world associated with consumerism and greed or (Trumpism) drives short-term thinking.

What can the stock market do drive the change, it cannot simply be short term earnings because we need investment money to develop a plan over the long-term for the next generation.

I think the interdisciplinary approach can help, new approaches to cities and how we live can help. For instance, can the engineers and architects designing the new cities work together to talk about ventilation Covid-19 was able to spread because of poor ventilation. This is just one example of designing habitation for humanity to live with less impact on nature. This will apply to offices, workplaces, places of education and transportation networks all making better use of the environment and lowering the impact on the natural landscape whilst providing a better place for people to live in. This is something we can do.

By way of example our cities in Malaysia take many design ideas from Europe and the US, but we have a different environment, A little bit like Australia we have sun and a generally warmer climate with less extremes. We can look to designing more outdoor connections with our modern buildings, we don't have to ventilate closed loops where virus and bacteria can thrive. We can lower the use of air-conditioning by employing more fans, this was what was done in the past, and it worked very well, lower the consumption of electricity, and provide better ventilation which provides an important pandemic control!

For example, we have a dengue fever problem in Malaysia, it is a significant killer that can be effectively controlled by employing better water control in our cities, fix the root cause and we do not have to expend resources to treat the resulting disease. This challenge is for engineers, architects, urban planners, and the medical profession; working together we can start to address these problems. We tackle this problem today with mass use of insecticides, the insects develop resistance so better cure the root problem

Similar impact can be had by better urban planning to lower transportation. Covid-19 has allowed many to work from home which has also taken the pressure of transportation. Can we take these learnings and build into a better design for the urban landscape and create a lower consumerism less nature-impactful healthier way to live?

To make these types of changes it will take time but perhaps it must happen. Perhaps I am being too pessimistic in terms of the drivers that might deepen inequality, but I believe this is an imperative.

Covid-19 may be a trigger point to rethink how we live, how we consume and how people and governments think about infrastructure impact on nature. We may have an opportunity because the Covid-19 pandemic is Global – “everyone” knows about it and has been impacted, think of this in context of the Great World Wars, they did not affect the entire planet, right?