TYLER PRIZE 2022 LAUREATE CONVERSATION WITH SIR ANDY HAINES: TRANSCRIPT

JAYDE LOVELL, TYLER PRIZE HOST
Hello, and welcome to the 2022 Tyler Prize for Environmental Achievement, considered the 'Nobel Prize for the Environment', and to this conversation on Planetary Health. We're joined here in New York by the Tyler Prize Executive Committee, and by our 2022 Laureate Sir Andy Haines in London.

Now, if you have any questions that we can ask to Sir Andy, please add them here in YouTube in the comments section, or by tagging us on Twitter, @TylerPrize.
Now, before we get into the Q&A, we're going to start with a short lecture from Sir Andy himself. Take it away, Sir Andy.

SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
Thank you so much for the award of the Tyler Prize. It really is an enormous privilege.
I thought what I would do is to provide an overview of how climate change in particular is impacting on human health and will indeed increasingly do so in the future, but also focus on the need for action for health. But before I get into climate change, I want to say a few words about the overarching concept of planetary health.

Planetary health is a concept which links human health with the changes in the natural environment. And put very, very simply, planetary health is the health of human civilization and the state of the natural systems on which the health of civilization ultimately depends. So, what we do know is that human activities are disrupting natural systems. And this concept of planetary boundaries that was advanced by Johan Rockström Will Steffen and colleagues some years ago, tells us that we live within these planetary boundaries on a small planet. These planetary boundaries, there are nine of them, including climate change, but also biodiversity loss, land use change, freshwater depletion, aerosol loading, air pollution, and a range of other planetary boundaries. And as we transgress those boundaries, we will increasingly undermine the very real progress that we have seen over recent decades and in human health. This progress has come at a great cost, not just in terms of inequities, because some parts of the world benefit and others haven't, but also because many of the ways in which we've advanced human progress have involved unsustainable economic activities, particularly the burning of fossil fuels. So increasingly then, we need to act and we need to act quickly. And we need to be aware that these various pathways are undermining health in a range of ways.

One example would be undernutrition. So, undernutrition is being propagated through a range of different pathways, not just climate change, which is affecting crop yields and crop nutritional quality, but also loss of biodiversity, for example, loss of pollinators. And the food system is already dysfunctional, because we know hundreds of millions of people suffer from malnutrition now, and over 2 billion people are either overweight or obese. And this all ends up as impacting on human health. So having given you that broad overview and setting the wider context, let me focus now on climate change and health. And this slide just tries to summarize some of the interrelationships between the emissions of greenhouse gases, which are responsible for climate change, and a number of other climate related pollutants.

So, these are causing increasing temperature, up to now about 1.2 degrees global average increase in temperature. And these in turn through a range of pathways are impacting on human health. The obvious one is the direct effects of heat, for example, increasing death rates, particularly amongst the elderly, difficulty in working as temperatures go up. Also increasing wildfires, and the smoke that we breathe in from wildfires we know is particularly damaging to human health. Effects on a range of different infectious diseases. And then the effects that are mediated through social and economic systems, which are more difficult to quantify, because they're very indirect, increasing poverty, for example, migration, displacement of populations, and perhaps increased conflict as well.

So, you can see that physical and mental health are affected in a wide range of ways through the impacts of climate change. This slide looks at data from over 730 sites in 43 countries around the world, and documents how climate change is already responsible for more than a third of the total heat related deaths from 1990 to 2018. You can see the difference between the temperature if we had not been emitting greenhouse gases, which is the lighter line at the bottom, and the temperature which is actually occurring shows you how that's going up steeply and it's now about 1.2 degrees global average. The next slide shows us that as you increase the temperature, it becomes increasingly difficult to work. And that's because that exceeds the human physiological limits of tolerance to extreme heat stress.

And the yellow area on the maps shows you that as you increase the temperature with climate change, then the area which it becomes increasingly difficult to work expands, particularly in Sub Saharan Africa, in Latin America, and much of Asia as well. And when we reach over 2.5 degrees of global average heating, which could occur later this century in the absence of decisive action, then about a billion people are exposed to such extreme heat that they're unable to work safely in the hottest month of the year, even in the shade. We also know that some groups are particularly vulnerable, for example, pregnant women. By monitoring the level of extreme heat exposure to which these pregnant women are exposed, they've shown that some of them are already working at such extreme levels of heat exposure, if they were Olympic athletes, for example, they'd be told that they couldn't compete, that they would need to rest that they couldn't actually physically exercise to that degree, because of the extreme heat exposure. And yet, these are pregnant women, sometimes in the advanced stages of pregnancy who are forced to work because they have to provide for their families. So, we're documenting the impacts of extreme heat stress on maternal and fetal health. But we also know that climate change has an impact on a range of other diseases.

And this is some work we did some years ago, looking at the El Nino, which is a natural climate phenomenon occurs every two to seven years. It involves heating of the ocean of the coast of Latin America, and it becomes a global phenomenon. We show that it affects malaria, for example, in Colombia, Venezuela, Guyana, Suriname, and in South America Dengue in the South Pacific and other locations, cholera in Bangladesh, forest fires in Indonesia and Brazil. And on a global scale, it affects the number of people exposed to drought. And drought, of course, has a range of implications for human health. And this is likely to get worse, of course, in decades to come. And then I mentioned briefly that the impacts of climate change on mental health, not just climate anxiety that many young people are experiencing right now because of the uncertain and potentially hazardous future, but also the impacts of climate change through wildfires, droughts and floods.

So, what do we need to do? Well, we need to take two broad types of action. One is we need to adapt to climate change, because we can't prevent all the climate change, but we also need to cut emissions. Because we don't cut emissions, it will become increasingly difficult, indeed impossible to adapt to climate change. Mitigation means reducing our dependence on fossil fuels moving towards clean renewable energy, more sustainable transport systems, and more sustainable food systems as well. So let me give you a few examples. And I'm going to focus on mitigation, on cutting emissions and the benefits of cutting emissions. The benefits of cutting emissions are not just reducing the risks of dangerous climate change, but also the near-term benefits of moving towards a more sustainable economy. And one example is the reductions in air pollution related deaths if we stop burning fossil fuels. When we burn fossil fuels, we create carbon dioxide but we also create air pollution, notably fine particulate matter, which gets deep into our lungs and causes a range of health effects. And the map shows you where the air pollution from fossil fuels is experienced.

So, there's a lot of benefits that we can have by reducing, phasing out fossil fuels, both in terms of climate change and health in the near term. But also moving towards more sustainable diets. And even fairly modest changes like adhering to WHO dietary recommendations would result in a substantial reduction in greenhouse gas emissions, somewhat over 10%, and also reductions in land use, of course, driving biodiversity loss, and water use as well. And moving towards a vegetarian diet reduces the greenhouse gas emissions even more and the land use requirements even more as well.

If we could move towards WHO nutritional guidelines in the UK in the population. And this will be accompanied by an increase in life expectancy of about eight months, something of that order, largely from reduction in heart disease.

So that's a diet which involves consuming more fruits and vegetables, nuts and seeds, and less consumption of red meat. But there's a great deal of work that also needs to be done in cities because cities are where population growth is occurring in the most pronounced way, particularly in Asia and Africa. There's a great deal that can be done through urban leadership for health and sustainability, efficient and accessible public transport systems., for example, universal access for clean, low carbon energy, particularly in low income populations that are often burning solid fuels, causing a lot of household air pollution, safe access to green spaces, various ecosystem strategies, protecting watersheds and so on, for resilience, but also housing improvements, more energy efficient housing, less polluting energy, and more resilient water supply to houses as well as. This is some works we've done on the health benefits of increased active travel. We've demonstrated big benefits to human health, not just through reduced air pollution, but importantly, through increased physical activity.

This slide shows how there will be major benefits to the National Health Service in England and Wales if we were able to get the population of our country walking and cycling, like the population of Copenhagen, and those benefits would accrue from reduced diabetes, heart disease, stroke and other conditions and amount to something like in dollar terms, about $25 billion over a 20-year period. And then finally, nature-based solutions. There's a growing interest now in the whole role of nature-based solutions that can help us to adapt to climate change, but also lock in carbon by fostering the growth of trees, protecting wetlands, and so on. If well designed, they can, for example, help to cool cities, through green space, they can help to lock in carbon, they can help to reduce air pollution, they can help to provide livelihoods, for example, through agroforestry. But they have to be implemented in a way which is equitable, which recognizes the rights of indigenous communities that are often the custodians of many of these natural spaces.

So let me then conclude by saying a few words about what we're doing at the moment. And one of my key focal points at the moment is on this initiative called the Pathfinder Initiative. So, the Pathfinder Initiative aims to build links with a range of key partner institutions, many eminent colleagues from around the world. So, we're reviewing the whole of the world literature on climate change mitigation and human health, capturing the benefits, and we're also capturing case studies of implemented solutions around the world where individuals, entities, institutions in different countries have implemented policies to take us towards a net zero economy. And finally, we're drawing together the evidence we have about what kind of economic and regulatory instruments can help to drive us towards a net zero economy.

How can we, for example, develop carbon pricing, which also benefits human health and improves equity and doesn't disadvantage the poor. And, we will be publishing our report in coming months in the Lancet medical journal and we'll be aiming to make all this knowledge freely available to the scientific and the policy communities as we move forward. So, in conclusion, then what I've tried to do is to illustrate the burgeoning impacts of climate change on human health, and how humanity needs to react very quickly. Because we don't have long, we only have a decade or two, in order to rapidly reduce greenhouse gas emissions. Unfortunately, I believe that the 1.5-degree target is receding very rapidly from our grasp. But we can still keep well below two degrees if we implement many of the actions that are shown in this slide and making clear and making public the health benefits of these actions will, we believe, help to motivate much greater appetite and ambition for rapid reductions in greenhouse gas emissions, which will help to set humanity on a much safer course than it is at present. Thank you very much.

JAYDE LOVELL, TYLER PRIZE HOST
Well, that's definitely given us a lot to think about. So, to kick off the Q&A with the first question, I'll hand over to Julia Matan LeFevre, chair of the Tyler Prize Executive Committee. Take it away, Julia.

JULIA MARTON-LEFÈVRE, TYLER PRIZE COMMITTEE, CHAIR
So, my question is, what advice would you give to promote interdisciplinary thinking among young students?

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SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
I think the problem is not so much with their younger colleagues, I think it's probably with us: established academics or policy makers because we've been brought up in silos. I do think we need to cultivate the generalists alongside the specialists. One of the problems we have is most of our research funding is also constructed in silos. And then this new era of the Anthropocene, we need a different way of doing research, we need to actually start off with the big problems and then try to work out how to address them. And that often means bringing a lot of new disciplines that we're not familiar with around the table. So now I work with everyone from Earth System scientists, to economists to various social scientists, as well as, obviously, the traditional public health disciplines. Discipline hopping is really helpful, so I think we should support people who want to switch discipline.

JULIA CARABIAS, TYLER PRIZE COMMITTEE MEMBER
Russia plays a very important role for the targets of the Paris Agreement. What do you think will be the impact of this Ukrainian conflict to achieve and to make progress in the international cooperation, and especially to the multilateral environmental agreements?

SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
I really worry about the isolation of Russia because it does control so many environmental assets, enormous biodiversity as well as of course, vast fossil fuel reserves, so having them excluded from the global system is, of course, extremely dangerous. And whilst I understand and share much of the revulsion to the violence in Ukraine, I think it's important to recognize that this military confrontation is not engineered by the Russian people, it comes from the Russian government. We need to try to keep open those channels of communications, as far as it's possible. This situation does offer some opportunities: the fact that Russia is going to be increasingly excluded from providing fossil fuels to much of Europe strengthens the argument for more renewable energy, but I hope they'll also use the opportunity to rapidly scale up their investment in renewable energy and importantly, energy efficiency and demand limitation.

AMBER BROWN, TYLER PRIZE ADMINISTRATOR
So, Sir Andy, what are the greatest lessons that have emerged from the COVID pandemic for achieving sustainability and equity around the globe?

SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
COVID showed that us international scientific collaboration is vital to address these global health challenges but this potential for collaboration often falls short of what's really needed. For example, in the delayed vaccine rollout, and the inequities in vaccine coverage have profound echoes with the current climate injustice. There will of course, be no vaccine for climate change but there are many technologies, policies and actions that can make a real difference, either by helping us to adapt to that climate change that we can't prevent, or to mitigate, to cut greenhouse gas emissions as rapidly as possible. Something we also found with COVID is that systems approaches are needed. If you just have a very narrow, focus on health, you can have unintended adverse effects such as, for example, worsening income inequalities. One of the other lessons we found from COVID was that countries that appear to have robust health systems on paper didn't always perform as well as others, that on paper appeared much weaker. Some of these deficiencies could apply to climate change. So, for example, high income countries can't assume that they won't be affected severely by climate change. We also saw that research was often very narrowly focused on technological interventions like vaccine, but often the research neglected health care and social support systems, as well as evaluating effective public health interventions.

ROSINA M. BIERBAUM, TYLER PRIZE COMMITTEE MEMBER
How is it that we can advance equity, climate justice and adaptation to climate change simultaneously and quickly?

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SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
The whole issue of loss and damage as part of the Paris Agreement, Warsaw, will be very much center stage at COP 27 in Egypt. Low- and middle-income countries are pushing for adequate financing. So, until recently, it's been difficult to know whether a particular climate event or a trend was due to human induced climate change or whether it was due to natural variability. But increasingly the science is advancing, climate change science colleagues, are increasingly able to say with confidence, say whether a particular event was likely to happen due to climate change or not. This kind of work, linking it to human health impacts is going to be very powerful, I think, in demonstrating that climate change is having a tangible impact. We need to incorporate some indigenous knowledge into adaptation strategies that we can use to adapt to extreme weather events, for example, or environmental change. In addition, we need to integrate climate change mitigation and adaptation into the Sustainable Development Goals, which are still the overarching framework by which we monitor and measure progress towards sustainable development with limited resources. A difficult consideration is, if we accept that there's a limited number of emissions remaining, how do we actually divide those up in an equitable way? My own view is that high income country populations that have benefited the most from burning fossil fuels and unsustainable patterns of consumption must make the commitment to reduce their emissions more quickly than those low-income populations who often contributed so little to the problem.

ALAN COVICH, TYLER PRIZE COMMITTEE MEMBER
How do you think the increase in severe drought will impact the transmission by mosquito vectors of dengue and malaria?

SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
It's a very interesting relationship between drought on the one hand and floods on the other and how they can affect different vector borne diseases. With drought, dengue transmission can increase because the vector mosquitoes can breed in water storage containers, which are often used to store water in urban environments. In designing adaptation strategies for drought, we really need to bear in mind that badly designed adaptation strategies can also have negative effects on health.

JONATHAN PATZ, TYLER PRIZE COMMITTEE MEMBER
In your talk you mentioned nature-based solutions to address climate change, and many nature-based solutions have been implemented by indigenous peoples to protect natural habitats, and manage forests, so how can we apply nature-based solutions on a broader scale to promote sustainability and equity?

SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
We're beginning to realize that nature-based solutions can play an important role. Some assessments suggest they could provide up to 30% or more of mitigation actions. But importantly, nature-based solutions provide an opportunity for both adaptation and mitigation. Now, there are different types of nature-based solutions. There are those that really rely on the protection of existing biodiverse locations, those that rely on the restoration of degraded land. And then there are types which are essentially novel ecosystems. Indigenous communities are natural custodians of much of the world's biodiversity. And very sadly, in many parts of the world, they're being harassed, they're being displaced from their land, they're even being murdered in some cases. There is a real need to make common cause with indigenous community and to listen to some of the knowledge that they have about how to protect the local environment. There are many potential health benefits to nature-based solutions, so for example, access to green space in cities, is good for mental and physical health. It also helps to reduce the urban heat island.

JAN AMEND, USC, TYLER PRIZE COMMITTEE EX OFFICIO
There seems to be a complex and indeed perverse connection between the growth of the meat industry, the degradation of natural ecosystems and human health. So, what do you see as the realistic next steps to achieve a sustainable healthy diet for the world's population?

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SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
We're seeing decreases in meat consumption in some populations, and increases in plant-based food, particularly, for example, amongst the young. We need to accelerate those changes. And one of the key constraints is affordability. And we do know that eating a healthy and diverse, dominantly plant-based diet is expensive in many parts of the world. Approaches to improving affordability, reducing waste are going to be absolutely crucial if we're going to scale up affordable and sustainable diets. Novel foods, insect protein for example, is becoming increasingly available, potentially do have a role in reducing the environmental footprint of the food system and providing nutritious food. Whether they're acceptable, of course, to people is another question, but acceptability can be changeable. The meat industry like any other major industry can be a major barrier to change, but major changes are occurring in people's dietary choices. And of course, other commercial concerns are basing their business model on promoting a sustainable, healthy, more plant-based diet. So, they are counteracting some of the influences of the meat industry.

JIM WATSON, TYLER PRIZE COMMITTEE MEMBER
I wanted to ask you whether you could give them an example of how your work has led to policy change either by governments or by international organizations.

SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
Climate change and health has become increasingly prominent in international discourse. The work of the World Health Organization on climate change and health has really expanded since our Lancet report in 2009. So, I think we have had a tangible impact on the work of WHO. In Wales for example, the work we did on the health benefits of active travel helped to influence the background evidence that was used for the Active Travel Act in Wales, which supports local governments to increase opportunities for walking and cycling. A few years ago, 2019, the UK Parliament's Environmental Audit Committee published a report on planetary health, which I don't think they would have done in the absence of the Rockefeller Lancet Commission on planetary health which was published in 2015. So, some of those concepts are beginning to enter the mainstream. Through the Pathfinder initiative, we're working with partners including OECD, the UN Sustainable Development Solutions Network, the C40 cities, CDP and the Alliance for Health Policy and Systems Research to document really the lessons from the implementation of health enhancing climate change mitigation and policies, we certainly are seeing some progress and climate change and health has a much wider recognition than it did a few years ago.

JIM WATSON, TYLER PRIZE COMMITTEE MEMBER
You mentioned the role of government and role of international organizations and Learned Societies. But where else do you think the agents of change are going to come from?

SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
Social movements are obviously vital and again, working with younger colleagues, including younger people at school is really important. I do see that academia has a really important role in working with NGOs, with more activist and advocacy communities, giving them the evidence that they can use to put pressure on governments, but also to change opinions, values, and actions at the community level. The citizens assemblies, I think, are another very interesting way of moving forward. I do think, working with some of these innovative approaches to change public opinion, and to create a better conduit between government and the public is an important role for science.

JIM WATSON, TYLER PRIZE COMMITTEE MEMBER
What's the most common reason why governments or policymakers might resist some of your messages and try and slow it down or resist change?

SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
Yes, yes. Well, of course, this happens all the time. I mean, obviously, one argument is the cost of change – it's all too expensive.

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A lot of that's based on the fact that we're not actually costing in the full economic cost of the fossil fuel economy and unsustainable food systems. But if you value some of the health care benefits that come from decarbonization, these can help to offset the costs of making the necessary changes. Of course, there are difficulties of making of changing behavior. But in the end, of course, you have to try to bring the majority of the public with you, and to articulate very clearly why it's necessary to make those changes, why it's inevitable, and why the sooner we make those changes, the less costly and disruptive it will be. A lot of the kind of climate disinformation of course, is funded by vested interests. Actual climate change denial, I would say, has decreased to some extent. But what we're seeing now is more a kind of nuanced approach, which says, okay, climate change is here but it's not that bad, and it's costly to do anything. We do need to combat those vested interests, I think, by pointing out the weaknesses in their arguments and to try to combat the kind of political inertia which these vested interests can sometimes engender.

MARGARET CATLEY-CARLSON, TYLER PRIZE COMMITTEE MEMBER
Why do some things actually work? How do we find them? How do we look for them? How do we make them grow?

SIR ANDY HAINES, TYLER PRIZE LAUREATE 2022
This is really the work we're trying to do in the Pathfinder Initiative. What we're trying to do there is not just to model the potential benefits of climate action, but also to capture the lessons from implemented projects. We have found a number of case studies where this has been very well documented, for example, the renewable energy portfolio standards in the US. There's good evidence that they have reduced air pollution related deaths significantly to the tune of several 1000 premature deaths averted over some years. We also know for example, that some countries have been successful in removing fossil fuel subsidies. So, there are some examples, we need to cherish them, we need to document them, we need more examples, but there are examples of actions that have had a really tangible, desired beneficial effects. So, one of the things we're doing at the moment is really to try to develop an inventory of the successful actions, and to also encourage key decision makers to evaluate what they're doing. But there's a big challenge, I think, in accelerating people's ambition, and improving metrics. You know, you actually need to measure change, you can't just guess, you need to measure changes in emissions and changes in health. And that's a big challenge, which many people have ignored. It sounds very boring or very prosaic, but actually, it's really important because it will help us to distinguish between real action and greenwash and also to see whether we're having any unintended adverse consequences as well as the benefits that we hope to see.

JAYDE LOVELL, TYLER PRIZE HOST
Well, that was a very robust Q&A but unfortunately, that's all the time we have today. Thank you so much to our Laureate, Andy Haines, for those fantastic answers and to our Executive Committee for the Tyler price for those fantastic questions. If you'd like to learn more about planetary health, please go to planetary- health.co. And if you'd like to learn more about the Tyler prize, or perhaps nominate a future laureate, go to the website Tylerprize.org. Thank you so much.

Tyler Prize is administered by the University of Southern California.

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