Planetary Health, Humanitarian and Equity Implications of Sustainable Development Policies

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Planetary Health, Humanitarian and Equity Implications of Sustainable Development Policies

About the Session

The term Planetary Health only found way into focus of academic and research discourse in 2015 after the publication of the Rockefeller Foundation-Lancet Commission Report on Planetary Health. The Commission's Report—Safeguarding Human Health in the Anthropocene Epoch—assumes a new epoch and connects to political narratives of climate change and global planetary indicators such as biodiversity loss, ocean acidification, land-use, fish stocks, and population growth. The pandemic unveiled unprecedented humanitarian concerns at a scale never witnessed before. Whether it was access to medical care or vaccines, the exacerbated inequalities yet again ousted the myth that 'everyone is in the same boat'. The same is true for individuals when confronting the impacts of air pollution, water pollution and extreme weather events. Unequal access to affordable healthcare, housing, sanitation and clean drinking water exacerbates vulnerabilities to declining planetary health in the Anthropocene and demonstrates the hamartia of dominant economic growth models. The session sought to deliberate on the humanitarian and equity implications of deteriorating planetary health, which needs to be addressed by the international development community, governments, businesses, and civil society?

Speakers

Chair

- Ms Priya Shankar, India Director, Environment and Climate Program, Bloomberg Philanthropies

Science Leadership Address

- Prof Anthony Capon, Professor, Monash Sustainable Development Institute, Melbourne

Leadership Addresses

- Dr Erik Solheim, President Green Belt and Road Institute
- Mr Vidar Helgesen, Executive Director, The Nobel Foundation
- Mr Manish Bapna, President & CEO, Natural Resources Defense Council
- Mr Ranjit Barthakur, Founder & President, Balipara Foundation
- Dr Zhou Jinfeng, Secretary-General, China Biodiversity Conservation and Green Development Foundation

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Actionable Messages

Message 1: Planetary health is about safeguarding the health and well-being of current and future generations through good stewardship of Earth's natural systems, and by rethinking the way we feed, move, house, power, and care for the world. Systems approach which is really critical to put in place the policies that we do know work across sectors. This means that when we make a change in one part of the system there is potentially unintended consequences in other parts of the system.

Message 2: At the heart of much of the problem is our current dominant economic model is our high consumption wasteful model, which needs to transition rapidly to a circular model of the economy, where we focus on reuse, repair, recycling. So we need to get this circularity into our economic thinking.

Message 3: Intergenerational health equity is an important aspect of how we pay attention to health of the planet and health of people. While attention is paid to health inequities in society, not enough is thought about the legacy, that is, what current generation is doing things might mean for the health and well-being of future generations. This is at the heart of sustainable development which needs to be brought into everyday thinking.

Message 4: Indigenous and local knowledge is a trans-disciplinary approach transcending academic disciplines and valuing know-how from people in policy and practice. This needs to be mainstreamed into how we take care of the planet. This also ensure that we leave no one behind as we move ahead with the sustainable development policies.

Message 5: For the green agenda to be successful, one of the biggest drivers is business, not because they have better intentions than government, but they have the resources. Business is driving the world and it is not far behind government. In most nations, the government may not be the most forward-leaning on green development, but some of the business leaders are at the absolute forefront of the green development of the world. Hence, in our green transition, it is important to consider businesses as stakeholders.

Message 6: Many public decision-making processes today in all countries are too slow because we have a serial process starting with research, then public commissions, then parliamentary, and government dealing with the issues and often those processes are too long-winded to actually address the speed with which we need solutions today. Policymakers in politics and businesses need to engage much more systematically with those producing knowledge about where the world is heading, where our ecosystems are heading, and what we can do to address the momentous systemic challenges that we have before us.

Message 7: There is a strong economic imperative to invest in resilience. By investing early to avoid risk oftentimes is much more economically smart than waiting to respond to a disaster that strikes. It is important to invest in early warning systems, in more efficient water management, in mangroves or more resilient infrastructure because those investments pay off easily. Various cost benefit analyses have been done in a variety of different areas; one of them found that we had economic benefits at least four times greater than the investment in resilience.

Making words count @ WSDS 2022

“ Planetary health is about safeguarding the health and well-being of current and future generations through good stewardship of Earth's natural systems, and by rethinking the way we feed, move, house, power, and care for the world. We need to bring planetary consciousness into everyday life and in our socio economic and commercial systems, we need to be conscious of the planet in everything we do every day.

Prof Anthony Capon,
Professor, Monash Sustainable Development Institute, Melbourne

“ We really need science to get its hands dirtier and engaging with politics and we need policymakers in politics and businesses to engage much more systematically with those producing knowledge about how where the world is heading where our ecosystems are heading and what we can do to address the momentous systemic challenges that we have before us.

Mr Vidar Helgesen,
Executive Director, The Nobel Foundation

“ We needed a revolution in planning we needed to improve how policy and investment decisions are made, we needed to integrate or mainstream risk into both public and private sector decision making across the entire planning process from upstream economic analysis, to risk screening, to environmental and social impact assessments, to budgeting to permitting, to project design and implementation, a need to integrate risk into our planning processes.

Mr Manish Bapna,
President & CEO, Natural Resources Defense Council

“ We believe all the troubles are caused by human and the only human-based solution is the only solution. Yes, we need globalization, but today we also need localization for local food, for the many ways we need to change. We need to welcome a new civilization to change our way of life, to change our way of production that is only human based solution is the only solution to tackle our emergence today.

Dr Zhou Jinfeng,
Secretary-General, China Biodiversity Conservation and Green Development Foundation

“ Air pollution is one of the leading causes for the global burden of disease and impacts on human health, and many of the causes that lead to climate change are similar to the causes and sources that lead to air pollution.

Ms Priya Shankar,
India Director, Environment and Climate Program, Bloomberg Philanthropies

“ We need a new economic paradigm centring around nature capital and securing natural assets for sustainable community future. The valuation is a must to pay the rate for social integration. This capturing of ecosystem goods and services to drive delivery of universal basic assets, healthcare, education, and indigenous rural communities will stir our natural asset.

Mr Ranjit Barthakur,
Founder & President, Balipara Foundation

“ Global equity of fairness is needed and that is happening now because the new model makes it possible for developing nations to benefit from the green shift both economically and when it comes to the ecology. The green transition needs to be fair, because we all want fairness. I think that is in the DNA of most of us. Better transition also needs to be fair to be effective because if it is not fair, there will be so much opposition to the transition, that it simply cannot work.

Dr Erik Solheim,
President, Green Belt and Road Institute

Narrative

Chair
Ms Priya Shankar, India Director, Environment and Climate Program, Bloomberg Philanthropies

Welcome everyone to this session on planetary health humanitarian and equity implications of sustainable development policies. We have a really stellar panel here today with experience across government, academia, civil society bringing perspectives from a variety of regions. I think just to kind of unpack at the start a little bit what we will be talking about before I invite some of the speakers to join us. I think we all are experiencing an unprecedented and unimaginable last couple of years with the COVID pandemic and now that we are starting to recover out of that it has really brought home a few factors. I think one is how interconnected the planet is and how what happens in one part of the world can be deeply linked with other parts of the world and no part can really be isolated from the challenges that face us, that can spread. The second is how fragile our systems are in terms of coping with some of these shocks. The third is also around the inequity that has emerged which we can see in areas which have had access to the vaccine and not. On a hopeful note, the fourth is also how we can resolve these issues I think where we are starting to see some progress some compared to when the pandemic first hit and we did not know what would be the way out of it, we are beginning to see some light at the end of the tunnel. If we work together and are able to bring a strong collaborative spirit to the challenges we face, we are also able to navigate through them. I think this is particularly relevant to this topic of planetary health because we know that 60% of known infectious diseases are zoonotic and 75% of emerging infectious diseases are zoonotic, and biodiversity loss is also associated with the emergence of new zoonotic diseases and climate change is only likely to exacerbate this.

Another area where we see the strong linkages between climate change and health playing out is also through air pollution. Air pollution is really one of the leading causes for the global burden of disease and impacts on human health and many of the causes that lead to climate change are similar to the causes and sources that lead to air pollution. I think there are great linkages between climate and health, and also not just climate, but biodiversity and sustainable development and equity. We really need to start seeing the interplay between these issues and how they integrate with each other and how we can tackle some of the challenges we face in a much more systematic and integrated way.

Science Leadership Address
Prof Anthony Capon, Professor, Monash Sustainable Development Institute, Melbourne

I am going to give just in eight or nine minutes a brief overview of this concept of planetary health. I just really want to do three things: I want to pick out some highlights from the Rockefeller Foundation Lancet Commission on Planetary Health, then reflect on the importance of thinking ecologically about human health, particularly in the context of the pandemic of course and then so what why is this important.

In 2014 Richard Horton the editor-in-chief of the *Lancet Medical Journal* established a commission on planetary health with support from the Rockefeller Foundation, and a year later, we published the report of that Commission safeguarding human health and the Anthropocene epoch. I was one of the commissioners at that time I was directing the global health institute for United Nations University. The commissioners came from a range of disciplinary backgrounds and from various regions of the world, so we were not all medical doctors. Importantly the bottom line was the work we did very much built on other work, including the Brundtland Commission. Back in the 1980s, the report *Our Common Future* the report of the world commission on environment and development chaired by Dr Gro Brundtland who was trained as a medical doctor in Norway, before she went on to be Prime Minister of that country, to chair that commission, and later led the World Health Organization. The concept of sustainable development really has at its heart, concerns about the health and well-being of people, current generations, and future generations.

But we can go further back in the medical profession, Hippocrates for example, in ancient Greece more than 2000 years ago was writing books like this on airs, waters, and places. He was talking to his patients he was thinking ecologically about how they lived, where they lived, and what that meant for their health and well-being. So, this kind of thinking has been with us for millennia, but we have left it behind in the way we have modernized medicine in many ways. We can go even further back to indigenous perspectives on health and well-being. Waiora is a Maori word for well-being and healthy waters and it was the theme for the international health promotion conference convened in New Zealand in 2019, the most recent one of the series focused on promoting planetary health and

sustainable development for all, because while planetary health is a new term in public policy and research, it is not a new idea for indigenous people. These connections between the health of people, the health of natural systems, foundational understandings for indigenous people.

So, what do we find in the commission; firstly, by almost any measure the human population is healthier now than ever before. Here we have got life expectancy data from the World Bank 1960 on the left through to 2010, and this black line in the middle of the chart showing that world average life expectancy rose from the low 50s in 1960 through to the high 60s in 2010 and it is now more than 70. You can see that this was true for all regions of the world we have seen rises in life expectancy, but as Priya said significant inequities in health outcomes, particularly in Africa and South, Central and West Asia. But in achieving those health gains, we have exploited the planet at an unprecedented rate, escalating carbon dioxide emissions, ocean acidification, escalating energy use, global deforestation, water use fertilizer use, and the list could go on.

So, what is planetary health? "Put simply planetary health is the health of human civilization and the state of the natural systems on which it depends". Here is a schema from the millennium ecosystem assessment. Now, 17 years ago, the links between environmental change and health, on the left escalating human pressures on the global environment, in the middle a list of environmental changes and ecosystem impairments, climate change ozone depletion, forest clearance, wetland loss, biodiversity loss, fresh water depletion, urbanization, damage to coral reefs, and ecosystems. On the right, three categories of health effects the direct health effects of extreme weather events for example, ecosystem mediated health effects where we see this spill over of these novel pathogens like the coronavirus, for example, and then the indirect deferred and displaced health effects where we see loss of livelihoods in the context of climate change, for example, displacement of people, delta cities in south Asia, many people at risk conflict as well so a range of health effects from these environmental changes.

As Priya said, air pollution a critical issue estimates of air pollution deaths here from the World Health Organization, every year more than three million deaths from ambient pollution in cities, and more than four million deaths from the household burning of fossil fuels of solid fuels for heating and cooking for example. So, a total around the world more than 7 million premature deaths every year from air pollution, and then these emerging diseases like the current pandemic we have seen accelerating spill over in recent decades. In the context of these environmental and social changes whether it was H5N1 and SARS here in the Asian region, Ebola in west Africa, Zika in the Americas, or of course the COVID19 pandemic now. This emergence this spill over of novel pathogens from wild animals, through domestic animals, to people happens in the context of environmental and social change whether that is forest clearance, urbanization, and climate change itself, new opportunities for contact between animals and people.

Importantly our Commission Report spent about half of the report on what we can do about these things. We were not just describing the problems, we talked about meeting the challenges. There is much we already know we need to get on with it and at the heart of much of the problem is our current dominant economic model, our high consumption wasteful model needs to transition rapidly to a circular model of the economy, where we focus on reuse, repair, recycling. Perhaps we do not even talk about waste anymore, because we understand that all of these materials, their resources and the by-product; one process is potentially an input for another process, so we need to get this circularity into our economic thinking. Here is a link to the Lancet Commission Report well with a look there is the long 50-page report, but the shorter pieces of writing video material and other infographics.

Now at the same time as we were doing at that lancet commission report we were variously working with colleagues around the world on shaping the sustainable development goals (SDGs). Now the World Health Organization uses this infographic with SDG 3, the health SDG at the centre showing that the other 16 SDGs are all potentially determinants of health, foundations of health. UNDP has framed planetary health in this issue brief four years ago now and made clear that this new field, this new approach can be useful in the implementation of the SDGs avoiding us going down silos of implementation and thinking more integrative.

Now I want to make some general remarks too, about the importance of human ecological thinking as a way of understanding patterns of human health alongside epidemiological thinking in our research education policy and practice. I refer for example to the work of the eminent human ecologist Stephen Boyden one of his books here on the right the *Biology of Civilization Understanding Human Culture as a Force in Nature*.

When from a human ecological point of view, we think about human activities, the things that people are doing every day on earth, there is a range of implications from the things that we do for our health, positive and negative potentially. In public health, we talk about behavioural risk factors, for example, a lack of physical activity, an

unhealthy diet, we also talk about the social determinants of health, the foundations of health, the safety nets we provide in society, for example. Notably health people do not always think about the environmental impacts of the things people are doing on earth and what that means for the health of the planet, and the flow on impacts from changes to the health of the planet, climate change for example, biodiversity loss, what that means for health in the future including spill-over of novel pathogens. These are now called ecological determinants of health; it is a new term introduced from Canada and being taken up around the world. The final slide in this sequence has the arrows going in the opposite direction to remind us of the importance of systems thinking and the fact that when we make a change in one part of the system, there is potentially unintended consequences in other parts of the system. This is called the Boyden bio-sensitivity triangle, from that human ecologist Stephen Boyden, and today we are particularly interested in what sustainable development policies might mean here, in terms of shaping human activities and potentially safeguarding health of people and planet. Here is a link at the top of this slide to where you can download a free book on this topic.

So, two final slides here in info-graphic explaining what we mean by the term planetary health. We understand it as a cultural transformation. Planetary health is about safeguarding the health and well-being of current and future generations through good stewardship of Earth's natural systems, and by rethinking the way we feed, move, house, power, and care for the world. So here on the top right you can see Boyden's bio- sensitivity triangle, the things we do, what that means for the health of people and the health of the planet. Importantly in the middle of this slide how we manage ourselves to leave no one behind, in the language of the UN, equity considerations, our culture, mindset, values, education, regulation, economic systems. Five examples of big pathways where we need to rethink how we feed the world, how we move the world, how we house the world, how we power the world, and how we care for the world. We need to do these things being mindful of the health of both people and planet, keeping the planet in mind. The bottom line in this infographic: our future depends on the health of our natural world.

Final slide so what why is this important. Firstly, we need an eco-social approach alongside biomedical approaches like vaccines, very important as they are, we need to recognize ecological, economic, and social determinants of health. Second, systems thinking: acknowledging the interdependence of all species on earth; the interdependence of people absolutely, but the interdependence of all species – plants, animals, including healthy microorganisms – which we need every day. Thirdly, intergenerational health equity: we pay attention to health inequities in society, but we do not always think about legacy and what the way we are doing things might mean for the health and well-being of future generations that is at the heart of sustainable development we need to bring it into everyday thinking. Fourthly, indigenous and local knowledge: a trans-disciplinary approach transcending academic disciplines and valuing know-how from people in policy and practice, local know-how, indigenous ways of knowing. Fifthly, a summative point finally, we need to bring planetary consciousness into everyday life and in our socio economic and commercial systems, we need to be conscious of the planet in everything we do every day.

Leadership Addresses
Dr Erik Solheim, President, Green Belt and Road Institute

Good afternoon, Namaste.
Last year the entire focus of the global climate debate tended to be on Glasgow, and there were some progresses in Glasgow on methane, on deforestation, and number of other areas, but of course it was the wrong focus because it is not the diplomatic effort, which is driving the green agenda of the world these days. It is the political economy; decisions made by Prime Minister Modi, President Biden, and President Xi, and many other leaders and it is what is happening in business. I believe the green agenda of the world is now mainly driven by three Bs - it is business, Brussels, and Beijing.

Let me start with business, look to Microsoft what they have doing promising to be carbon neutral by 2030, even compensating for all the emissions in the history of the company, becoming a non-plastic company and involving the Alaska Airlines into reducing emissions from the air industry. No nation has done anything of signalling magnitude like Microsoft. Move to Europe, IKEA is far ahead of the government when it comes to circular economy, very soon when you buy some furniture from IKEA, you will be able to hand it in they will find a new user or they will recycle it into a new IKEA product. For the biodiversity April, the world's biggest paper and pub company Indonesian company their conservation of the rainforest in Sumatra is among the best in the world, why? Not because they have better intentions than government, but they have the resources, they have the five big gates and the and the helicopters to make sure that no one is encroaching and pondering for is protected by April. So business is driving the world and overall business is not far ahead of government in most nations, like Australia which we just heard

from, it is a case in point. The government may not be the most forward-leaning on green driver development when some of the business leaders are at the absolute forefront of the green development of the world.

Moving on to Brussels the European taxonomy is not driving all environment efforts in Europe. My nation is not even member of the European Union, still Brussels is much more important to us than Oslo for the environment direction, and when it will become much cheaper for finance to finance the green, much more expensive and difficult to finance the brand because we see a huge green shift in European industry for climate and for protection on nature.

Beijing, last year President Xi promised that China would stop all overseas coal investment. Much more important than in the outcome of Glasgow because it will fit the entire machinery or Chinese business behind green hydrogen, solar, wind, electric mobility, all the areas where China is now the number one nation. There is not one single environment-friendly technology the China is not far ahead of any other nation. Not necessarily in the kind of peak of technology, but when it comes to the scale, China is producing 80% of all solar panels in the world. Last year, President Xi also promised that China will plant an area the size of Kingdom of Belgium every year from now to 2030, well that is a massive greening effort of the planet. So, I believe that with these efforts from business, from Brussels, and from Beijing and from many others, we have shifted during the COVID into being on the right path. The train has started, it is moving in the right direction, but you need to speed up and it there is a need for more urgency.

So, what can go wrong? I believe that two global issues which can go wrong; one is geopolitics. When Dr Pachauri came to Oslo for the Nobel peace prize he quoted these beautiful words from the Veda, *the whole world is one family;* that is the spirit we need to be on. If the United States and China, in particular, cannot work together, but if by extension India, Europe, we can all not work together, we will fail. Together as one family, the sky is the limit; divided and in conflict there are huge difficulties. The other difficulty is that the transition needs to be fair, because we all want fairness. I think that is in the DNA of most of us. We believe a fairer world is a better world. Better transition also needs to be fair to be effective because if it is not fair, there will be so much opposition to the transition, that it simply cannot work.

Now two ways that need to be fair: between nations and it need to be fair inside nations. Between nations, I mean look to the craziness of Glasgow, where some people think they are pointing to India saying "you Indians are not on the right path", well US emissions per capita up to today is 25 times Indian emissions per capita after the day. So how can anyone finger pointing to India. Reality is India is now on the right path. Prime Minister Modi has completely changed the debate, from the old, "Do we want to develop or do we want to take care of mother earth?", into "How can Bharat or India move ahead with the win-win solutions; all those who create jobs while at the same time they are good for the environment?" He has launched a Green Hydrogen Mission for India with Mr Ambani and Mr Adani- the two of the richest Indians, where we put massive amounts of money on this it is launched India as a solar nation, very soon I bet India will be the second biggest solar nation in the world behind China and you will see India massively moving ahead on solar. All over, state of Telangana has increased its tree cover by 3%, there are fantastic urban parks in the great tree city of Hyderabad, and Andhra Pradesh is taking global lead on zero budget farming, Maharashtra is taking the lead on making all the buses in the mega city Mumbai electric very soon, and launching an electric mobility plan for Maharashtra. Maharashtra is one and a half times the size of Germany, the second biggest nation in Europe. So, this is of enormous global importance, but the most important here is a new development model. Prime Minister Modi is very much on that path, they have been the model where you have enormous economic gains in jobs while at the same time taking much better care of nature. For the first time this is possible in the 21st century and the old model was first you prioritize economic growth you pollute, and then you start cleaning up. The new model the model of the twenty-first century is the win-win model and India is spearheading that model with China, Europe, and others. Global equity of fairness is needed and that is happening now because the new model makes it possible for developing nations to benefit from the green shift, both economically and when it comes to the ecology.

The second very much needed fairness is inside nations. There are enormous gains for every nation going green; the United States America will benefit tremendously from going green, but that may be easier to understand and see if you are living in California or Arizona than if you are a coal worker in west Virginia or Kentucky. It is exactly the same in China, it is much easier to see the game in the in Guangdong province which has now 42 million base stations for 2G, higher than anything else in the world and it is in the historically coal province or Shanxi. In India, if you are in Tamil Nadu the benefit may be easier to observe than if you are in the coal state, as an example. We need to make this transition fair which means regional programs for those areas which maybe in some difficulties.

European Union launched big funds for this to happen in Europe; different schemes to make sure that those areas which do not easily observe the benefits of the green shift, they also can tap into those benefits. You need on the individual level, to help people with retraining into new businesses; the Chinese company DiDi which is the Uber of China, they have launched a retraining scheme for former co-workers they can get a permanent job or they can get an intermediate job with DiDi until they get a more permanent occupation somewhere else.

So, to just sum up I am very optimistic, I believe the 21st century is the century where we will make an ecological civilization, but we need to create fairness between nations and fairness within nations. Otherwise, we will have difficulty making the leap we need to do and no one can guide us better than what Dr Pachauri quoted from the Veda- *the whole world is one family.*

Mr Vidar Helgesen, Executive Director, The Nobel Foundation

Thank you, TERI, for inviting me once again to this leading global Summit on issues that are really critical for planet and people. Thank you for putting on the agenda the issue of planetary health. I think Professor Capon's introduction made it quite clear to us how complex this is, he did refer to the former prime minister of my home country, Dr Gro Bruntland and her Commission. She is actually famous in my country for a statement saying that everything depends on everything else which might sound ridiculous, but it is really a deep truth in that, and that puts us with a big challenge when it comes to dealing with planetary health.

One of the questions we have been asked in this context is how do we achieve a systems-based approach and Professor Capon indeed spoke a lot about the need for assistance approach. This is as difficult as it is critical. We tend to live in silos, politics tend to be siloed, public administration tends to be siloed, businesses often operate in silos, and even science, even the scientists that tells us that we need to think across sectors, they are also quite often in silos. But there are ways in which we can overcome those silo challenges. I am going to point to two major and important strategies that I do think we need to see more of. One is systematic planning, which really is necessary if we are to manage across these different silos. In my home country, our economy builds a lot on the ocean, different aspects of the ocean economy, and the efforts made over two decades in integrated ocean management or marine spatial planning. Starting with a scientific assessment of the ecosystems, on the human impacts of the ecosystems, on the industrial impacts on the ecosystems, with that scientific basis involving all industrial actors, ministries, civil society in a broad-based planning process is an example that is now taking place in more and more countries. But after 20 years in Norway, this is still work in progress, it is really demanding, but I think it is the only way of going about this. Luckily, the high-level panel for a sustainable ocean economy comprising 14 important ocean states and more joining now, have committed to sustainable ocean planning. This we need to do not only in the blue domain, but also in the green domain and where the green meets the blue.

The other thing on systems approach, which I think is really critical is to put in place the policies that we do know work across sectors. A carbon tax is the prime example of this, where anyone doing carbon emissions will be impacted, regardless of sectors, if you apply it universally, that is a means to achieving systems changes, that is from a political perspective one of the easier no-brainer ways of doing it. The polluter pace principle of which the carbon tax is one out one example should be applied much more systematically. I think we need in the phase of the nature crisis, we need to go beyond this we need really to put in place proper natural capital accounting, so that whatever we take out of nature is compensated by reinvesting in nature. So, systems approach is very difficult but possible.

The second thing I would like to highlight is the need for public decision making to be informed by science. I believe that in the global situation we are in, we need new ways of science-policy interactions, in order to understand and manage the multiple global crisis that we have and to prevent those crises from worsening and hopefully to turn the crisis into opportunities. There are so many rapid changes now happening to ecosystems, in oceans and on land, that we need science much more continuously to inform policy about what happen. Because of those changes being so rapid we also need accelerated solutions. We need science to inform policy makers: what are the best solutions available and because we need this process to move faster, we need governments and businesses to make decisions faster. There is also a risk of unintended consequences, a risk of side effects, that we did not envision and that too requires a continuous interaction between research and policy making decision making to be able to correct course in time.

I believe many public decision-making processes today in all countries are too slow because we have a serial process, starting with research, then public commissions, then parliamentary and government dealing with the issues, and often those processes are too long-winded to actually address the speed with which we need solutions today. Not to speak of the fact that in many countries and in many situations, policies are not even evidence based in the first

place and in some countries, things are deteriorating in that respect. I think we really need science to get its hands dirtier and engaging with politics and we need policymakers, in politics and businesses, to engage much more systematically with those producing knowledge about where the world is heading, where our ecosystems are heading and what we can do to address the momentous systemic challenges that we have before us. Thank you.

Mr Manish Bapna, President & CEO, Natural Resources Defense Council
Thank you thank you so much Priya for moderating this event, as well as for TERI for the long-standing partnership TERI and NRDC has had, close to 15 years working for a better planet.

It is nice to follow two Norwegians because I suspect the rest of them are in Beijing winning Olympic medals, so this at least makes it a little bit fairer for the rest of us trying to do a good job. Look what I want to focus on today Priya is what you started the session around. You talked about two words: interconnectedness and fragility and I want to speak a little bit about how we think about resilience in a fragile, interconnected world. What we have seen in the past two three years with COVID-19 is how difficult it has been for individual countries or the entire world to respond to COVID-19 in a thoughtful, effective way. We have not been very resilient and yet COVID19 has been an incredibly fast-moving challenge. As we think about biodiversity loss, ecosystem degradation or we think about climate, these are even slower moving risks, but arguably even more dental. Since Prof Capon started with a commission and commissions have been mentioned, I want to actually share the results of the commission that I was actively involved in, called the Global Commission on Adaptation. This was a commission that operated between 2018 and 2020, it was co-chaired by Ban Ki-Moon the former UN Secretary General, by Bill Gates, and Kristalina Georgieva, Managing Director, IMF. India was one of the handful of countries that sponsored this Commission. The Commission was focused specifically on how we think about building resilience to climate risk, how we elevate that in political kind of discourse, and how we develop an action agenda to build climate resilience all around the world.

The imperative for this should be fairly clear to everyone. There is a strong human imperative to invest in resilience, we know that those that are least fortunate are oftentimes the ones that are most at risk, whether it is COVID 19, whether it is ecosystem degradation, whether it is climate change. We also know there is a very strong economic imperative to invest in resilience. If you look at cost benefit analyses that have been done in a variety of different areas; ones we had done as part of the commission, found that we had economic benefits at least four times greater than the investment in resilience. In no small part because we know by investing early to avoid risk oftentimes is much more economically smart than waiting to respond to a disaster that strikes. If you think about investing in early warning systems, if you think about investing in more efficient water management, if you think about investing in mangroves or more resilient infrastructure, you can imagine how those investments pay off easily. So, there is a strong economic imperative to invest in resilience. Yet we do not, as a country, as a world invest sufficiently resilient. So, what is the problem state; there are four challenges that we identify why countries, communities, companies do not invest sufficiently in resilience.

The first is often the risk is not very visible. It is hard to understand precisely what the risk is and where to invest. Second, we have huge fragmentation in how governments or companies operate; if you think about governments whether there is wealth, strong coordination from the local level, to the state level, to the national level or between different sectors or ministries. This gets into the silos challenge and the need for systems thinking. That fragmentation makes it difficult for countries to respond to risk. Third, the finance system is very poor at understanding how to deal with non-financial risks; climate risk, environmental risk, health risk, these are risks that the current financial system is not very strongly responding to. Fourth, we also know that these risks tend to fall on those with the least political power and voice. So how often times we need to amplify their voice, the fact that oftentimes we fail to respond to those risks that fall upon those that have the least, is a challenge with our political system.

What this commission did is it identified three revolutions we needed to see to really build resilience. We needed a revolution in understanding a more precise understanding of what risk we are facing, of quantifying that risk, and of thinking about solutions to responding to that risks that can be shared around the world. So, we need to invest much more in risk identification and sharing what works and what does not work around the world. The second we needed a revolution in planning. We needed to improve how policy and investment decisions are made, we needed to integrate or mainstream risk into both public and private sector decision making across the entire planning process from upstream economic analysis, to risk screening, to environmental and social impact assessments, to budgeting, to permitting, to project design and implementation: a need to integrate risk into our planning processes. Third, we needed to really integrate risk and finance. We needed a revolution in finance. We are beginning to see private banks, insurance companies begin to recognize some of these risks that needs to be accelerated. We also

need the public sector public government expenditures to better understand these risks and invest in resilience, As part of this there is a very important role for the developed world to help support building resilience in the developing world. It is striking that we still have yet to meet the 100-billion-dollar climate finance commitment that was made in 2009 in Copenhagen, and yet we have found a way to mobilize 20 trillion dollars in response to COVID-19. So, the rich world was able to find USD 20 trillion to respond to COVID19, but had not been able to find USD 100 billion to support developing countries in responding to the climate crisis. So, revolutions in knowledge and planning and finance are critical to building resilience.

The one other point I would like to make Priya, is that one of the challenges in building resilience is all to tackle underlying vulnerability in human health. One of the biggest challenges that you and a number of people have mentioned is around air pollution. We all know that air pollution around the world and especially in India has major implications on human health, on agriculture in terms of crop yields, in terms of ecosystem health, arms water quality, and there is a range of issues related to air pollution that continues to be a big challenge. One of the areas of work that NRDC has been doing in India is to help support cities develop clean air plants, and so I am really delighted that today as part of this conference NRDC in partnership with the Indian Institute of Public Health in Gandhinagar and the Centre for Environment Education are releasing a major report called C*leaning the Air: Priority Pollution Control and Monitoring Strategies based on efforts in Ahmedabad. W*hat we have done and I think there might be a slide here that shows this particular report release is to try to identify where we see opportunities to tackle air pollution at the city level, as a way to help the Clean Air for All mission that the Indian Environment Ministry has just launched at the end of 2020.

So, to conclude as we think about interconnectedness, as we think about fragility. My main point is that the world governments, countries, communities, cities, have not done a sufficiently good enough job in building resilience to risk: to environmental risks, to climate risks in particular. We need systems approach. We need to start now. Economics are very powerful, why investing resilience makes sense, but to really do this we need to see revolutions in understanding, in planning and in finance to better identify, mitigate, and manage climate and environmental risks in how we operate. What this commission report does is demonstrate how to do that in the key economic systems that we all recognize are critical for human well-being, agriculture, water, urban issues, the health sector, and infrastructure and so on. Thank you.

Mr Ranjit Barthakur, Founder & President, Balipara Foundation

There was a technology conference recently which I attended and they were all younger people than me for sure, the whole conference was fun and the whole conference was about actually conquest and looking at the future and looking at things so differently so I just wonder whether the sustainability movements that we are doing with our leaders Prime Minister Narendra Modi and all of us are actually trying to do fun, knowledge, and money all three things matter to us. I think we need to just bring in a little smile I think everybody has so said so many wonderful and good things and many recommendations which actually are already employed or will be deployed.

I think there are basically to say this I started the preamble because as I was going through it, I was just trying to say that while I was very interested in many of the points is this yet another conference which Patchy had set up and, in his memory, I think he always had a smile and he did something fantastic for WSDS and Priya thank you for introducing everybody so happily and concluding it even happier. So, I think we should just make this something which will be touchable, feel-able and a little more relevant to our real life because it is not all lost, it is tough it is an uphill task but that is the way all start-ups today are actually managing the world. So welcome to this conference.

There are seven billion people in the world and I was wondering out of the 3.4 billion in rural area, then why is it that 97% of the world is located in urban areas. There is already a divide which is happening in trying to do this and most of us are really townies. 1.6 billion people directly depend on forests out of this for their livelihoods, but 5.4 billion people in the world indirectly depend on forests for the essentials like food, building, material, clean water, and technically also for the air that they breathe. There is a case not just for sustainable development, there is a case for biodiversity conservation, not only for that, but also for equity and social justice. Unless you have the people, and unless you have indigenous people, and unless you have the people, as what economics call it, the bottom of the pyramid included and involved in this entire change movement that we want, post-industrial liberalization, I doubt they would be able to succeed. The opportunity is to bring back wealth to where it belongs to the forest. The reason why I am saying back is because long before agriculture, forests - including the Great Amazon Forest – were largely mixed crop farms, and Human beings helped enhance the biodiversity of the Amazon basin according to many experts.

So, let us re-examine what brought in modern economics. I think Adam Smith's legacy is really a very interesting starting point, there could be many starting points including as recently as Bretton Woods and post second world war where all the elements of Adam Smith actually went faster. I think Adam Smith celebrated treaties. The inquiry into the nature and causes and wealth of nations is widely acknowledged to be one of the foundational texts of modern capitalism today. It presents some of the most basic and accepted assumptions of our economy, the rational and the entire process of the rationality seems to be indicated in what we are doing. We also believe that the theory of economic growth through free market emerged at the time of privatization and enclosure of commons across Europe and emergence of private property. Emergence of private property is a key form of capital. In British colonies like India the principle of enclosure of common lands for profit was instrumental in development of forest management system and that still remains the backbone of the forest policy, as well as the expansion of the plantation economy, which we call the colonization of nature through tea, coffee, rubber. The creation of reserve forest and protected areas which cordoned off indigenous communities from lands and resources they once freely had access to, is a direct legacy of the imperial need for timber and expansion of natural assets. This was the way the empire built the railways, they also created fantastic infrastructure, in fact, the plantation economies of former colonies led to over-exploitation of the ecosystem, and ultimately depletion of the soil. I have been chairman of a tea company until recently, it is a big monoculture system and this entire monoculture system, the soil, the water, the entire ecosystem in the valley chain of nature has been affected, but this is 150 years later. I wish we were wiser then, but nevertheless what is it that we go forward. I think the new liberal consensus that emerged in 1970 built on Adam Smith's classic principles of rational economic self-interest and free market birthing the international commitment to liberalization, privatization, and globalization. Today, this has evolved into a race to the bottom, in the name of profit, subsidies, ecological destruction of sectors including fossil fuels. The enclosure of public lands and commons to private entities for consumption-based deregulation of fuelling and deregulation of pollution and globalization, weakening communities as a business cut expenses by finding the cheapest labour and the cheapest natural resources in the world to fuel the continued growth of the largest stock markets of profitability. Rising consumption has fuelled growth and it has fuelled the destruction of our planet and its fragile balance today.

Is this all bad or is this all good? I am not here to judge, but it is for us to understand a bit of history before we try and actually give solution, but inclusion at the bottom of the pyramid is absolutely a key to this entire developmental agenda. However, the fundamental premises of Adam Smith's thinking were formerly resorted solely on the basis of observation of a particular class of people within Euro-American society. By 1920s anthropologists around the world had discovered a different motivator for economy and cultures as diverse as indigenous community in North America to the aboriginal people of the pacific islands; reciprocity was the name. In this economic framework, economy is one element of a complex web of interdependent relationships. As many of the speakers have talked that everything that you start and everything that you challenge means to another and to another. In the economic framework, economy is one element of a complex system. David Graeber, I think his book on debt the first five thousand years covers case studies showing how local economies have historically functioned absent of the barter principle and with people directly sharing with each other. A mounting body of evidence from behaviour economics and psychology, most of which we discussed earlier shows that people do not purely behave in self-interest, but act altruistically or reciprocally expect most often than others the keystone of social cohesion. Evidence from archaeology, anthropology and ecological ecology demonstrates the historical role that people have played in creating forests we see today. Studies in the Amazon for example suggest that the Amazon began its life as a giant food forest maintained by the historical Mayan civilization and indigenous communities in the region. The prairie of north Americas was managed by the Native American communities just as controlled burns by aboriginal communities in Australia. Collective land management historically has been linked therefore with greater biodiversity and ecological well-being.

Research from around the world shows that the biggest predictor of biodiversity loss is socio-economic inequality. Even in countries with robust institutions for protecting biodiversity, high levels of inequality led to rampant biodiversity loss. I make this a point and I have given a big introduction primarily to link as to what the basic issue about deforestation has been and the fringes of all the rainforest, poverty, and inequality, social deprivation is really a function of the fact that we have created this inequality from the top to the bottom. This control over natural assets, the commodification of their value and only removed from the natural ecosystem and converted into some projects, the benefits of which are not given always to the people who are underprivileged.

We created a subject called Naturenomics, it is nothing but the interdependence between nature and economics. We have tried to create figures around it so that we can address issues around stock markets, wall street, our Sensex in India. This is not made an argument that ecology and economy are the same as a framework. As a framework, naturonomics evaluates the impact of economic activity on the ecosystem, both positive and negative

and aims to eliminate negative elements by affirming positive nature related impacts. The most critical imperative of Naturenomics is recognizing that ecology is economy. It means valuing our natural assets and natural capital pools that they hold rather than in visibly dividing their benefits and socializing the costs of their destruction. To achieve the following, Naturenomics calls for us to do the following: Effectively rally natural capital, which include water; ecological concepts: every country must have an ecological budget before they go into the economic budget. So, when we have our finance budget every year in India – although it is an outdated system, nevertheless we still use it – we actually do the finance budget with no reference to the ecological wealth that we have. Here we are talking about G20, we are talking about COP26, but no country has an ecological budget. Unless you stand out there and talk about the ecological budget and then talk about the economic budget, we have actually missed the boat. Investing in nature needs regenerative economies.

We need to change the new paradigm; the future is with lush green forests Bhutan, state like Arunachal and Assam have 85% forest, but GDP list, they are last. Are they happy people? Yeah. But are they actually rich people? No, because there is no such value for nature.

We need a new economic paradigm centring on nature capital and securing natural assets for sustainable community future. The valuation is a must to pave the way for social inclusion. This capturing of ecosystem goods and services to drive delivery of universal basic assets such as healthcare, education, and indigenous rural communities will spur our natural assets. This happens quite a lot in many countries certainly the Nordic countries so, valuing nature and quantifying the benefits of the capital is absolutely critical. The Dasgupta review last year, released in 2020, actually attributes an entire process and it shows how according to that, produced capital doubled in per capita but the human capital increased 17%, and natural capital declined by 40%. I think like many economists today the Dasgupta review points to the limitation of the GDP model; we need a new model and with leaders like yourselves on the panel, I think that we will be in a position to actually do this and take it forward.

Dr Zhou Jinfeng, Secretary-General, China Biodiversity Conservation and Green Development Foundation
Thank you and today I will share our vision of planetary resilience. Today I would like to emphasize our human-based solution. We believe all the troubles are caused by humans and the human-based solution is the only solution. I would like to explain with a few stories. First one is the moon cake. The moon cakes annually cost about several multi billions U.S Dollar in China only, and we need those packaging and what about after we eat the cakes and the packaging. We do not have enough land to landfill or we do not have enough air to burn those or even to do recycling, even to do the packaging with very low carbon material, it is not right. We filed the litigation against the leading mooncake company because they are following the standards the industry standards are crazy. All those terrible over packaging are allowed by our recent direct laws in the standards in the regulations. This is something we do not have that enough ecosystem to support us to avoid wasting of such a great deal of the unnecessary goods. Finally, we pushed the authority to change the standards.

Another case is the fast-food disposable chopsticks. In China, every single day, the leading fast food delivery company have over 10 million sales. That caused a big a huge area of forest; that is the we are enjoying the new lifestyle. We also had litigation against all major six fast food delivery companies. We have a very hard time but eventually, we changed the regulation: all the fast-food delivery companies cannot provide disposable chopsticks unless they are asked. This is a big change.

In the biodiversity conservation we have tried very hard to do for many years starting from 1992, but the world failed to slow down the biodiversity loss. There are many reasons: one reason is the biodiversity conservation cannot slow if we only do it in the state protected area. We need to do better about biodiversity conservation in our neighbourhoods, during our farming, during our living, during the city's urban areas construction, and that is the huge area we need to take care of. There are a lot of things we can do, but the industrial admission push that all the farmers, all the agricultures, all the business, use chemicals and with those chemicals, we stop using the traditional fertilizer, we stop using the traditional native way of protecting the banks. The industrialization helps to promote their businesses but at the same time, we destroyed all biodiversity; that is the very important reason we failed to slow down the biodiversity loss.

Talking about the carbon, we are born equal of carbon. Everybody, every citizen, are equal with carbon right, the emission rate, also are equal with the carbon responsibility. Take the example of our buildings; even when everybody left the building during the night, the building is still air conditioned on 23 degrees centigrade, regardless of whether it is very hot summer or winter. We must change especially those very developed area like what we live in and we need to care about our responsibility of carbon emission. The industrialization is pushing and are selling their

products but we cannot afford it today. This is another story about Community Conservation Area and this is a special bird called Great Bustard. In China, the state has a Great Bustard protected area in Mongolia, it is very high standard state protected area, but during the winter birds are flying to the southern part because of the weather. Those birds do not know where the state protected area is anymore, they landed at the bank of yellow river. Local people start trying to hunt them, they are the heaviest and it is not difficult to hunt them with today's technology, it is very simple. The local authority does not care about it since it is not a state protected area and our volunteers set up the community conservation area for Great Bustard in China, which works a lot. This is a new mission, a new approach, this is the way we engage all human, people, community, and volunteers, that is the only way to change our today's situation; this is the only way to engage planetary resilience.

Another story is in Nanyang, Beijing, the local authority is trying to build a huge new wetland forest in wetland park. They have money, they are doing ecological projects to build the forest wetland park, but after they build the park, how many birds do we have in the new forest in the wetland park? We have four to five kinds of birds. How many did we have before the park? We had 40 to 50 kinds of birds before the park. Why? the wilderness has different kind of grass, different breezy, different kind of seeds, and the wetland has different bugs so different birds eat different bugs. After we build the forest wetland park the grassland is very unique, and they use chemicals to control the bugs. Even though they call this ecological project, but it is not. During our development we have building old highway, airport, parks, buildings we have risk we have destroyed the nature. That is what we cannot afford today.

This is another story in Shanghai coastal area. In Shanghai, they are going to plant trees in this coastal area because they want to absorb carbon, to do carbon neutrality. Yes, planting trees can do something good for carbon neutrality but the coastal area is the only important integrated wetland. We feed the migratory birds and they are the homeland for many species of the sea. Sea life is very important for biodiversity, also for climate because the lands in water in ocean are a big alliance for fighting climate; a big alliance to do carbon neutrality, but the industrialization makes it simple. They want to do simple ways and to do standard ways, to do their ways but this is not what we can afford today.

I hope we can continue to share our story, to learn that one the new way. We need to start to change our way of life, we need a new civilization. The industrial civilization but the most of the time it is only a green code, a carbon code. It is really plain industrialization and the globalization is also a by-product of industrialization. Yes, we need globalization, but today we also need localization for local food. We need to welcome a new civilization to change our way of life, to change our way of production that is only human based solution is the only solution to tackle our emergency today. Thank you.