Health and Environment

Towards Greening Post COVID-19 Economic Recovery

Date: 29 May 2020 (Friday)

Time: 4:00 PM to 5:30 PM (1600 to 1730 hours), New Delhi India Time

Proceedings

Summary

- One of the major lessons learned from the COVID-19 pandemic is that we need to sensitize people more about bio-diversity and ecology.
- Creating a market for wastewater is important in the long run to promote re-use and re-cycling of waste water. Urban planning has to consider a mix of centralized and decentralized solutions for river water. More research is also needed to design master-plans with respect to water bodies and rivers including examining the role of traditional knowledge.
- There have also been studies on the linkages between COVID-19 mortality and air pollution. India needs to consider environmental factors while formulating COVID-19 response strategies.
- Research and development needs a major boost so that we are ready for similar pandemics in the future.
- While the scientific community works to resolve the challenge through novel antiviral drugs and vaccines to break the COVID-19 infection cycle, traditional knowledge can play a very important role in terms of building immunity of the body.
- Wild edibles, tubers and seeds that are rich in micro-nutrients should be mapped in local areas and awareness should be created about the ingredients and nutrients available in these sources.
- Healthcare facilities are highly energy intensive; they are next to the power and transport sectors at the global level as regards to consuming energy. Extreme weather events including cyclones, heat waves, heavy rainfall and floods impact the health sector particularly the heath care facilities – during these extreme weather events, the functioning of these facilities is paralyzed.
- The National Program on Climate Change and Human Health under the Directorate General of Health Services of the Ministry of Health and Family Welfare in India aims to work towards climate change mitigation and climate resilience, which is directed towards adaptation.
- Governments tend to look at shovel ready sectors that can provide immediate benefits in terms of employment and economic growth. They are under lot of political pressure and are unfortunately taking steps such as promoting coal, which may not be sustainable in the long term.
- Many economists agree that carbon tax is the most efficient way of moving to a low carbon economy. The revenue generated from carbon tax can be recycled back into the economy in the form of direct payments to people and for healthcare services.

Keywords: economic recovery, green recovery, planetary health, COVID-19, sustainable development

Format

The event was initiated by a welcome address and introductory remarks by the Chairs. A brief framing presentation was then made. The keynote address was presented followed by a special address. This was followed by thematic presentations by three experts. The event was chaired by R R Rashmi (Distinguished Fellow, TERI) and Shantanu Gotmare (India Country Representative, GGGI). The discussions in the webinar covered the following questions:

- What are the linkages between environmental quality and COVID-19 related vulnerability?
- What lessons does the current pandemic offer for long-term sustainability, waste management, and built environment related to the health sector?
- What actions are needed for the mitigation of spread of zoonotic diseases such as coronaviruses through planetary health and preservation of ecosystems?
- What is the role of traditional knowledge and medicine in the present pandemic situation?

Welcome: Shantanu Gotmare (India Country Representative, GGGI)

Mr. Gotmare thanked all participants for attending the webinar on "*Health and Environment: Towards Greening Post COVID-19 Economic Recovery"*. He began by explaining the webinar. The Energy and Resources Institute (TERI) and the Global Green Growth Institute (GGGI) has joined hands for a series of webinars looking at what can be done about the present COVID-19 situation and how can recovery in India be made more responsive to environmental issues. He stated that the Government of India has pledged resources under Atma Nirbhar Bharat and policy stakeholders are geared up for economic recovery in the light of the COVID-19 situation. The day's event series, he reiterated, is about looking at the health sector and post COVID-19 economic recovery.

Introductory Remarks: R R Rashmi (Distinguished Fellow and Programme Director, IPAD, TERI)

The issue of recovery in the wake of the COVID-19 crisis has taken on many dimensions. The Government of India has approached the issue of recovery based on five pillars and from a cursory look, the environmental aspect is not considered in any of these five pillars. The way we are going to handle the health infrastructure is critical in this entire process of recovery along with environmental sustainability. It is also important to take into account various requirements of different sections of the society including the informal sector. One of the key lessons from various actions that the Government initiated is that if these actions were to have an impact, the entire process has to also be sustainable in the long term.

The current pandemic offers lessons for long term sustainability, waste management and built environment in the five pillars of demand, demography, infrastructure system and economy. Over a period, we have seen that there has been a way of doing business which is business as usual where we focus on systems which are energy intensive and waste intensive. Different sectors where the process of greening the economy has begun will actually have impact over different time periods. For example, regarding environment, it is not possible to bring about substantial transformation in the immediate time frame with the present package. However, actions can have consequences over the medium and long term. Health is a key area where sustainability aspects can be looked at in the short, medium and long term.

Framing Presentation: Mani Juneja (Research Associate, TERI)

Many studies have already established the existence of a relationship between air pollution levels and respiratory diseases. It has also been claimed that high air pollution levels might also increase the risk of contracting COVID-19, as particulate matter (PM) has the potential to act as carriers for contagion leading to rapid spread over large areas. Studies in the US and Italy have found that residents of countries with high levels of fine particulate pollution over decades are 15% more likely to die from Covid-19 than inhabitants of regions with just 1 $\mu g/m^3$ less of such PM2.5 (particulate matter 2.5 micrometres or less in diameter) pollution. Investments on climate action and activities that can improve livelihoods and the health of ecosystems are urgently needed.

Over-exploitation of common goods that results in the 'tragedy of commons' needs to be checked. Investments to restore clean air and water, healthy ecosystems, and other environment and climate goods that contribute to planetary health are also required. There is a need to tap the opportunities of constructing climate resilient value chains; our current waste management practices also need to evolve to be resilient and create a successful circular economy. COVID-19 response should not just be looked at as a relief strategy but also a recovery strategy to ensure sustainability of healthcare services both from the demand and supply side.

The spread of zoonotic diseases is a type of hidden economic cost of human development because of the disruption of natural ecosystems; it is likely to increase in the future. The economic transition that may occur post-COVID-19 can act as an opportunity to replace current unsustainable practices with circular and regenerative models of the ecosystem. Economic stimulus packages with a focus on decarbonisation may be a more strategic approach during recovery from the COVID-19 pandemic.

Traditional healthcare practices like Ayurveda and traditional Chinese medicines have huge potential and possibility to both prevent and treat COVID-19. The inclusion of traditional healthcare practices should not be seen just as an extension of healthcare services but rather as an opportunity to conduct dedicated research to evaluate their effect on such pandemics. Along with the emergence of research, the implementation of proposed actions will also help in providing evidence-based insights, thereby strengthening the scope of traditional practices like Ayurveda beyond preventive health care and care for non-communicable diseases.

Keynote Address: Rajiv Ranjan Mishra (Director General, National Mission for Clean Ganga, Ministry of Jal Shakti, Government of India)

I am really happy to be a part of this discussion on a very important topic. These are very challenging times. As economic packages and various other schemes are being implemented, perhaps this is the right time to look at the lessons we have learnt to have a long-term perspective on COVID-19. We all know that there is a huge and clear linkage between environmental quality and COVID-19 vulnerability. We all know the biodiversity conservation must be kept in mind for dealing with both health and environment.

After the country went into a lockdown, there has been a lot of positive news with respect to the environment and how the air and water has become cleaner in a very short time. In the long run, we have to create necessary infrastructure and also facilitate behaviour change to sustain these benefits.

During the lockdown, people refrained from going to river banks and industries were closed so that there was less solid and industrial waste. However, sewage generation has remained more or less the same during this period. We have developed several waste water and sewage treatment plants and several other kinds of infrastructure; the priority is to keep these running properly. New capacity has been added in Haridwar and several other places.

The first lesson from COVID-19 is that rivers are in a position to rejuvenate if we give it some support. The second lesson is that we have to look at a holistic solution when it comes to cities. Looking back, when we have started *Namami Gange*, we also looked at the various previous sewage treatment plants that were constructed; we observed that they did not even have electricity and several of them were not working. We have tried to bring an element of public–private partnership in our programme along with sustainability. We are also trying to create a market for waste water because unless we do that it will be very difficult to sustain the plants in the long run. Re-use and re-cycling of waste water is also important. We have already initiated some projects along these lines. Mathura refinery is buying 20 MLD (millions of litre per day) of treated waste water so this process has started but we need to come up with a kind of comprehensive policy. Some states like Gujarat have such policies. We are in the process of developing a policy framework for reuse of waste water and other by-products. Bringing it in the markets and charging the user will not be very easy but some small steps in that direction have been taken in the *Namami Gange* programme.

Both centralized and decentralized approaches are needed from the experience of *Namami Gange*. Urban policy will look at more centralized systems for densely populated areas. Decentralized systems are also important as certain vulnerable areas can implement decentralized systems. Urban planning has to consider a mix of centralized and decentralized solutions for river water. More research is also needed to design master-plans with respect to water bodies and rivers.

Another major lessons learned from this crisis is the need to sensitize people about bio-diversity and ecology. The health of only human beings is not important but that of the entire ecosystem.

The role of Ayurveda also needs to be explored in depth. We have a lot of traditional knowledge about water management. When we implement modern technology, we sometimes forget our strengths in the past. Our scriptures have prescribed dos and don’ts in terms of treatment of river waters.

A lot of discussion has taken place on the economic recovery programme; it is important to discuss and advocate green components in the recovery package. There should be an emphasis on urban areas including health infrastructure. Neighbourhood level infrastructure for sanitation, water and public health has to be considered.

Key points

- One of the major lessons learned from this crisis is the need to sensitize people more about bio-diversity and ecology.
- Creating a market for waste-water important in the long run to promote re-use and re-cycling of waste water.

- Urban planning has to consider a mix of centralized and decentralized solutions for river water. More research is also needed to design master-plans with respect to water bodies and rivers including examining the role of traditional knowledge.

Special Address: Dr Praveen Gedam (Additional Chief Executive Officer, National Health Authority of India, Government of India)

I thank TERI and GGGI for having me here to discuss this very important issue of health and environment. Everybody knows that health and environment are extremely interlinked. Human kind has seen quantum jump in technology and development; life expectancies have increased. Environmental protection and development are sometimes almost considered as contradictory in goals but the shift towards sustainable development has already started.

I think this pandemic will prove to be a watershed in our march towards sustainable development.

We have seen how environment and lifestyles have changed the entire health scenario from battling predominantly infectious diseases to predominantly non-infectious diseases; however, in India, we continue to have an extremely high burden of both e types of diseases.

Because of COVID-19, all activities including today's webinar have undergone change and we are meeting virtually. Even the health sector has witnessed an increase in tele-medicine. Recent guidelines have made it more flexible and friendlier for doctors in India to play a leading role in the field of tele-medicine not just in India but also internationally. In India, thanks to its strength in terms of human resources and IT technology, we are in a position to lead the world in health services in the same way we are leading various other service sectors. So we need to capitalize on this particular opportunity. The National Health Authority is helping the tele-medicine initiative of the Indian government by handling all the tele-call queries on COVID-19 and also diverting the relevant calls to the doctors so that tele-consultation can be done.

In terms of environment linkages, there are very close inter linkages between pollution levels and economic activities. As a result of COVID-19 lockdown, the air quality and river water quality has improved but pollution levels will spike again after the lockdown ends. There have also been studies on the linkages between COVID-19 mortality and air pollution. India needs to need consider environmental factors while formulating COVID-19 response strategies.

The SARS pandemic led to some changes in the ways of life in East Asia and now time will tell if COVID-19 ensures sustainable practices throughout the world. Due to COVID-19, we are witnessing many cultural changes even in the medical sector. The use of PPE (personal protective equipment) was extremely rare till the end of 2019 but is now very common. We are also witnessing a very high cost of health care because of changed medical protocols. Through Ayushman Bharat, we have changed the rate of treatment for COVID-19 patients by urgent interventions of policy and have absorbed the additional costs which we are incurring these days because of these changed medical protocols. We will also be witnessing changes in the protocols in disinfection and bio-medical waste disposal in all regions including rural areas and there is a need to think in terms of sustainability of health management.

We know that this virus probably generated somewhere in the wet markets of Wuhan. There will be strict regulation regarding wet markets and activities related to wild animals trading. As in the case of all infrastructure projects in urban areas, rural areas of economic activities like agriculture and fisheries will also be witnessing change especially when it comes to human–wildlife contact.

In many countries including India, R&D in health care is not as satisfactory as it should have been. R&D needs a major boost so that we are ready for similar disasters in the future. We are not the only species on this planet; we are one of the millions species and we have to learn to cohabitate with all other species of living beings. That is the key to sustainable development.

Key points

- There have been studies on the linkages between COVID-19 mortality and high air pollution. India needs to need consider environmental factors while formulating COVID-19 response strategies.
- Research and development needs a major boost so that we are ready for similar disasters in the future.

Thematic Presentation: Dr Rameshwar Sorokhaibam (Assistant Director, National Centre for Disease Control)

Realization of greenness as well as climate resilience is the main objective of the National Program on Climate Change and Human Health (NPCCHH) in India which is under the National Centre for Disease Control, Directorate General of Health Services of the Ministry of Health and Family Welfare. All 37 states/UTs are under the NPCCHH, which aims:

- To develop green and climate resilient healthcare facilities
- To facilitate assessing and identify gaps in existing healthcare facilities based on a checklist for green & climate resilient healthcare facility
- To prioritize existing healthcare facilities to retrofit on both these principles
- To include green and climate resilient principles in new and upgrading healthcare facilities

The healthcare sector is a highly intensive energy use service sector round the clock (24×7) – roughly less than 10% of the total carbon footprint in the world (next to power sector and transport sector). Moreover, climate change is increasing the frequency and magnitude of extreme weather events across the world including India. Extreme weather events including cyclones, heat waves, heavy rainfall and floods impact the health sector particularly heath care facilities – they either paralyse its functioning or totally collapse the facilities.

Green healthcare implies decarbonized health facilities through efficient energy use, use of renewable energy, cleaner modes of transportation, efficient water use and conservation (examples: rain water harvesting, use of sensors in water faucets, grey water for use in plantations), waste and sanitation management (processing of waste before disposal and recycling of waste items), sustainable or green procurement, and food considerations such as encouraging the use of locally available products so that energy use in transportation is reduced.

Climate resilient healthcare facilities imply multi-hazard assessment of facilities by understanding climate risks and community vulnerabilities; protecting vital clinical care facilities and functions; land use planning, design, and regulation; infrastructure protection and resilience; and environmental protection and strengthening ecosystems.

The NPCCHH programme has a multi-sectoral approach. Green is meant for mitigation. Mitigation, in a sense, is about reduction of carbon footprint while climate resilience is directed towards adaptation. Scientists at the National Centre for Disease Control have realized the need for adaptation in the health sector given the implications of climate change and visible impacts of extreme events on health facilities. We now have to adapt in terms of becoming climate resilient. In terms of climate

resilience, hospitals or health care facilities should be able to withstand crisis and not become paralyzed during untoward climate events. During these crises, the health sector professionals at the hospitals are very much required to prevent injuries. In the 37 states/UTs, we are trying to expand climate resilient health care facilities at the district level.

Key points

- Healthcare facilities are highly energy intensive; they are next to the power sector and transport sector at the global level in terms of energy use. Extreme weather events including cyclones, heat waves, heavy rainfall and floods impact the health sector particularly heath care facilities – they either paralyse its functioning or totally collapse the facilities.
- The National Program on Climate Change and Human Health under the Directorate General of Health Services of the Ministry of Health and Family Welfare aims to work towards climate change mitigation and climate resilience, which is directed towards adaptation.

Thematic Presentation: Dr Anjali Parasnis (Senior Fellow, The Energy and Resources Institute)

Based on her experience with tribal communities, Dr. Anjali Parasnis shared her knowledge about traditional food, immunity and nutrition. From a molecular biologist's perspective, the 2019 novel coronavirus is different from the natural viruses that have occurred over the many decades as the transmission rate is really very fast which has raised doubts if it has been engineered.

Whatever we give to the environment, the environment gives back to us. If we provide organic inputs, we get organic outputs; if we give pesticides, we get pesticides in food. New micro-organisms are evolving and existing ones are mutating including the Corona virus which has caused COVID-19 disease and is said to have mutated about 30–36 times. This virus is going to lead to transfer of genetic material from one organism to another. While the scientific community works to resolve the challenge through novel antiviral drugs and vaccine to break the COVID-19 infection cycle, traditional knowledge can play a very important role in terms of building immunity of the body.

A holistic perspective of health is needed. There are many options that are naturally available, which include crop species and tubers that can help in the fight against COVID-19 and were proven effective in the case of SARS virus. The Ministry of Ayush has issued advisory to states to explore traditional medicine interventions as a supplement to conventional healthcare systems.

Ayurvedic medicines, at the time of preparation, release minimum amount of effluence into water bodes as most ingredients are in the natural form. Moreover, since they are naturally occurring, they do not cause resistance in the body. While working in the tribal block of Western Maharashtra, a 70+ year old woman showed us wild edible and medicinal plants in her village. She directed the team to the tuber of a plant with colocasia like leaves and told that the entire village consumed the tubers at the onset of monsoon for two months to prevent stomach upsets. The team brought back the tubers to the laboratory and found the bio-chemical constitutes and also did a literature survey. They found that someone has published a research on the deworming impact of the tuber. To benefit more people from this traditional knowledge, we created a database in the public domain with about 200 unique food items and medicinal plants from coastal areas with details of their chemical constituents. There also many mushroom varieties found in the Himalayan region that have been used for more than 5000

years by Chinese medical practitioners. There is a lot of information but it is not very well documented.

The body immune system responses are of two types. One is intact or innate and one is a long-term adaptive immune response. The latter depends mainly on antibodies and is the principle behind vaccines. The immune system has to be constantly alert, monitoring for signs of invasion or danger; it must also be able to distinguish own cells from foreign bodies. Here building micro and macro-nutrients play a very important role. Hence, selenium and vitamins are very essential; in India, different agro climatic regions have their own traditional methods and diets that use micro nutrients. The phrase 'gut feeling' comes from the feeling of confidence and surety that comes from within the body when the body is healthy. The majority of immune cells within the human system are found with the gut-associated lymphoid tissue with microbes whose constituents changes over the life course due to environmental factors as well as exposure to antibiotics. Curds, buttermilk and mushroom powder can help in building immunity by aiding the growth of probiotics in the gut. Few simple food articles in the diet can also help boost immunity and avoid risk factors. Selenium micronutrients are very important for optimal immune system function especially in case of viral infections. Eggs, beans and mushrooms in the daily diet can help with sufficient amounts of selenium which is very important to boost the immunity. The same is the case with glutamine, which is a nonessential amino acid found in curds, spinach, and cabbage.

Unfortunately in India, many people are malnourished as they do not have good sources of nutrition. Wild edibles and traditional plants are a huge source of nutrition; there should be more emphasis on conservation and awareness of these practices. Wild edibles, tubers and seeds available in local areas should be mapped and awareness should be created about ingredients and nutrients available in these sources.

Key points

- While the scientific community works to resolve the COVID-19 challenge through novel antiviral drugs and vaccines to break the COVID-19 infection cycle, traditional knowledge can play a very important role in terms of building immunity of the body.
- Wild edibles, tubers and seeds that are rich in micro-nutrients should be mapped in local areas and awareness should be created about ingredients and nutrients available in these sources.

Thematic Presentation: Prof. Abhijit Banerjee (Associate Professor, Jindal School of Liberal Arts and Humanities)

Whether this pandemic will lead to a transition to a new type of system that is more sustainable depends on us; we could very well go back to business as usual. After the financial crisis of 2008, there were similar discussions but without very encouraging outcomes as we went back to business as usual. Signs are not encouraging as many countries are promoting unsustainable practices such as expansion of coal use as is happening in China, India, and South Africa. Governments tend to promote industries or sectors that are known as 'shovel ready'. Shovel ready projects can provide 'immediate benefits' in terms of employment and economic growth. Governments are under lot of political pressure regarding these issues; thus, they are taking steps that may not be sustainable in the long term.

The point of a green stimulus recovery is to re-orient our entire economy towards a better direction so that traditional sectors can be provided with conditional incentives. For example, after the 2008 financial crises in the United States of America, the one prominent condition for the automobile sector recovery was dramatic increase in the fuel efficiency standards. In France, a condition for bailing Air France is that the airline cannot run flights between cities that are very close and between which good high-speed train services are available. In India, policies related to renewable energy and use of natural gas can be promoted through targeted incentives. In urban and industrial areas, natural gas can be promoted as fuel for small and medium scale enterprises, which can make a difference in urban and industrial air quality in India. The same is the case with electric vehicles and green buildings. If these sectors include industrial energy efficiency as one of their goals, it could lead to the sector becoming labour intensive and thus, a creator of many jobs.

Another sector that can create jobs is the recycling industry, which is labour intensive. Although some waste streams have had a measure of success, other streams have failed. There are waste management rules in India but only few cities have developed plans for it; even these cities are struggling to continue their recycling process. The government can also use purchasing power to promote all kinds of recycled products such as bricks, paper and plastics. This purchasing power of the government can help drive recycling and also promote good health practices in the informal recycling sector. Another important aspect is rural livelihoods in India. Migrants are going back to their rural areas but there are not enough employment opportunities in the rural areas. Public–private partnership needs to be encouraged in rural areas; this can make a big difference not only in terms of electrification though micro grids but also have cascading effects in rural businesses and enterprises. Biomass waste from agriculture can be used for biogas and fertilizers and stimulate rural enterprises. Labour under the MG-NREGS scheme can be used for ecological restoration.

Because of the crash in the price of oil, some government credit has already been freed. Many economists agree that carbon tax is the most efficient way of moving to a low carbon economy. However, carbon tax can hurt the poor as any tax on essential commodities increases the prices of everything. This carbon tax can be recycled back into the economy in the form of direct payments to people below the poverty line. There are already proposals of a universal basic income where the poor will have a guaranteed monthly payment and additional revenue from carbon taxes can be directed towards development and healthcare.

Key points

- Governments tend to look at shovel ready sectors that can provide immediate benefits in terms of employment and economic growth. They are under a lot of political pressure and are unfortunately taking steps such as promoting coal, which may not be sustainable in the long term.
- Many economists agree that carbon tax is the most efficient way of moving to a low carbon economy. The revenue generated from carbon tax can be recycled back into the economy in the form of direct payments to people and for healthcare services.

Annexure 1: Webinar Agenda –Health and Environment: Towards Greening Post COVID-19 Economic Recovery

Date: 29 May 2020 (Friday)
Time: 4:00 PM to 5:30 PM (1600 to 1730 hours), New Delhi India Time
Online, Cisco Webex

Event chairs

- Mr R R Rashmi (Distinguished Fellow and Programme Director, IPAD, TERI)
- Mr Shantanu Gotmare (India Country Representative, GGGI)

Event coordinator

- Ms. Shailly Kedia (Fellow, TERI)

4:00 PM to 4:05 PM	**Welcome and Introductory Remarks by Chairs**
4:05 PM to 4:10 PM	**Framing Presentation** • Ms Mani Juneja (Research Associate, TERI)
4:10 PM to 4:20 PM	**Keynote Address** • Mr Rajiv Ranjan Mishra (Director General, National Mission for Clean Ganga, Ministry of Jal Shakti, Government of India)
4:20 PM to 4:30 PM	**Special Address** • Dr Praveen Gedam (Additional Chief Executive Officer, National Health Authority of India, Government of India)
4:30 PM to 4:40 PM	**Thematic Presentation** • Dr Rameshwar Sorokhaibam, Assistant Director, National Centre for Disease Control
4:40 PM to 4:50 PM	**Thematic Presentation** • Dr Anjali Parasnis (Senior Fellow, The Energy and Resources Institute)
4:40 PM to 5:00 PM	**Thematic Presentation** • Prof. Abhijit Banerjee (Associate Professor, Jindal School of Liberal Arts and Humanities)
5:00 PM to 5:20 PM	**Question and Answers**
5:20 PM to 5:30 PM	**Summary and Ways Forward by Chairs**