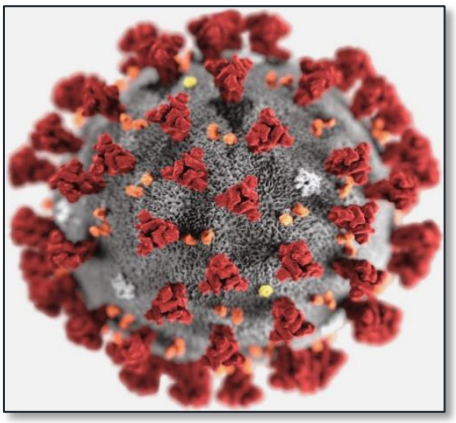
e-Newsletter April-May 2020

COVID-19 and Climate Change

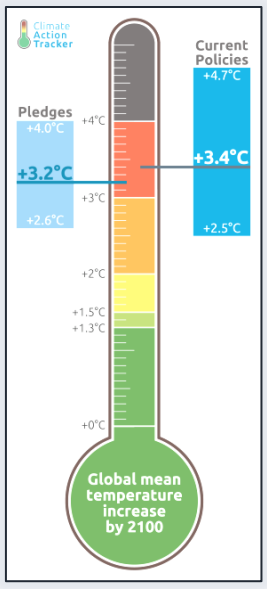
"The Corona crisis is a 100-meter race and the climate crisis is a marathon. We have to run both at the same time"

– Victor Galaz, Stockholm Resilience Centre

Corona viruses are a large family of viruses which may cause illness in animals or humans. In humans, several corona viruses are known to cause respiratory infections ranging from the common cold to more severe diseases. COVID-19 is short form of the infectious corona virus disease caused by a new corona virus SARS-CoV2, first seen in humans in 2019. It has impacted in more than two hundred countries across the world in a short period of less than six months.



Corona virus



Global Warming

Climate Change is caused by global warming due to accumulation of greenhouse gases in the atmosphere arising from increasing fossil fuel use for energy since the first industrial revolution, which took place about 250 years ago. From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of submerging coastal areas and threat of communicable diseases; are the key impacts of climate change, global in scope.

Greetings for World Environment Day 2020!

From Editor

We are amidst corona virus threat. Pandemic COVID-19 crisis has taken the world by surprise. How climate change and COVID are connected, is uppermost dilemma before those concerned with environment? Are we heading to sixth mass extinction as the number of species are becoming extinct, is another vital concern?

The Climate Change Research Institute (CCRI) presents first E-Newsletter on World Environment Day 2020 being celebrated in association with the India International Centre. It throws light on how rapid pace of human interventions with nature has triggered the climate change and health tipping point? How loss of biodiversity and polar migration of species from equator have threatened the human life across the world, irrespective of their state of development?

The CCRI has a mission to inform youth about the ecosystem changes, consequences of climate change and sustainability. It examines and provides scientific solutions on topics of societal interest.

We thankfully acknowledge various sources from the internet for the material presented in the newsletter.

With best wishes

- Dr (Mrs) Malti Goel
President, CCRI

https://youtu.be/qF5WJ5-aY3I

COVID-19 and Environment

Wonders of COVID-19 and Environment in India

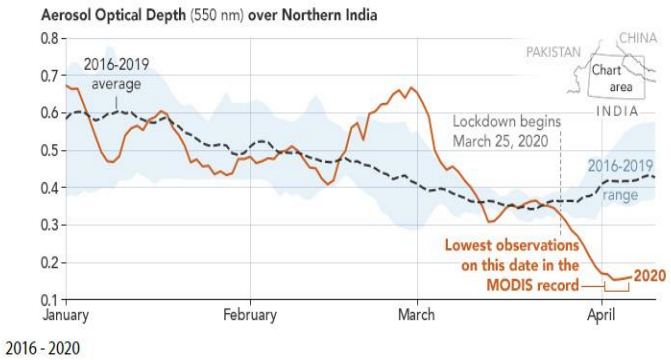
The Indian Ocean Humpback Dolphins have been seen playing freely in Mumbai's sea coast. According to the Bombay Natural History Society flocks of flamingos have turned the city pink. The population of the flamingos have bloomed since humans are under lockdown. It was seen that the flamingo migration population is 25% higher than the last year.

The water quality of the *Ganges* has improved at an incredible level. The closure of industrial units in Delhi-NCR during the lockdown led to an improvement in water quality of the *Yamuna* river unbelievably.

Even the most polluted cities have clearer pollution statistics with an air quality index in two digits. Several cities in the states of Punjab, UP and Bihar could see the snow-capped Himalayas from a distance of 150-200km in the plains. According to NASA, smog in India has dropped to a 20 years low. These changes are making us more aware of how fundamental these natural surroundings are for our wellbeing.

It also highlights that online information on the positive environmental impact of the COVID-19 increased people's sensitivity to the environment effect of human activity and led to creation of awareness about climate change.

Himalayan snow peaks seen from Jalandhar, India (Source – picture by Manjit Kang on April 9, 2020)

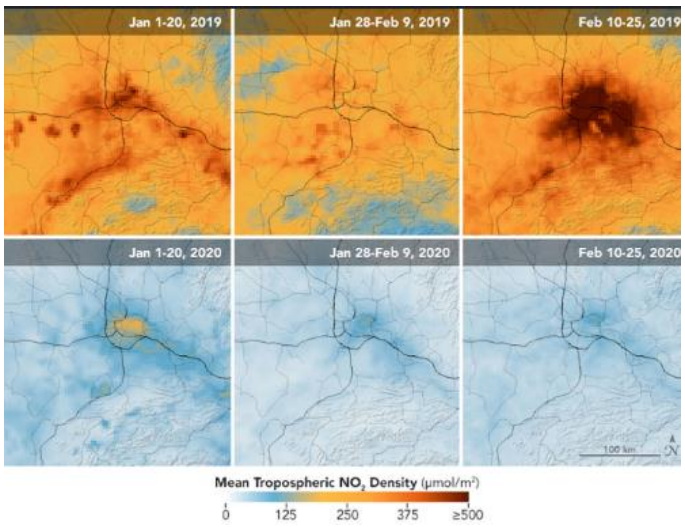


Aerosol Optical Depth variation for 2016-2020 over India showing significant fall in after lockdown (Source – NASA Picture)

Contd.

China – Reduced Air Pollution

In China, this NASA picture of Wuhan city got viral showing air pollution levels and NO_2 emissions reduced significantly during the month of February 2020 when COVID -19 was at peak, in comparison to same days in 2019. According to the Centre for Research on Energy and Clean Air, the levels of Nitrogen Dioxide have fallen in February 2020, in comparison of January 2020 thereby improving the air quality. The CO_2 emissions were estimated to reduce by 25 % in Europe. According to Centre for International Climate Research in Norway global carbon dioxide emissions could fall by 0.3 percent to 1.2 percent as a result of slower economic growth in 2020.



Source- NASA

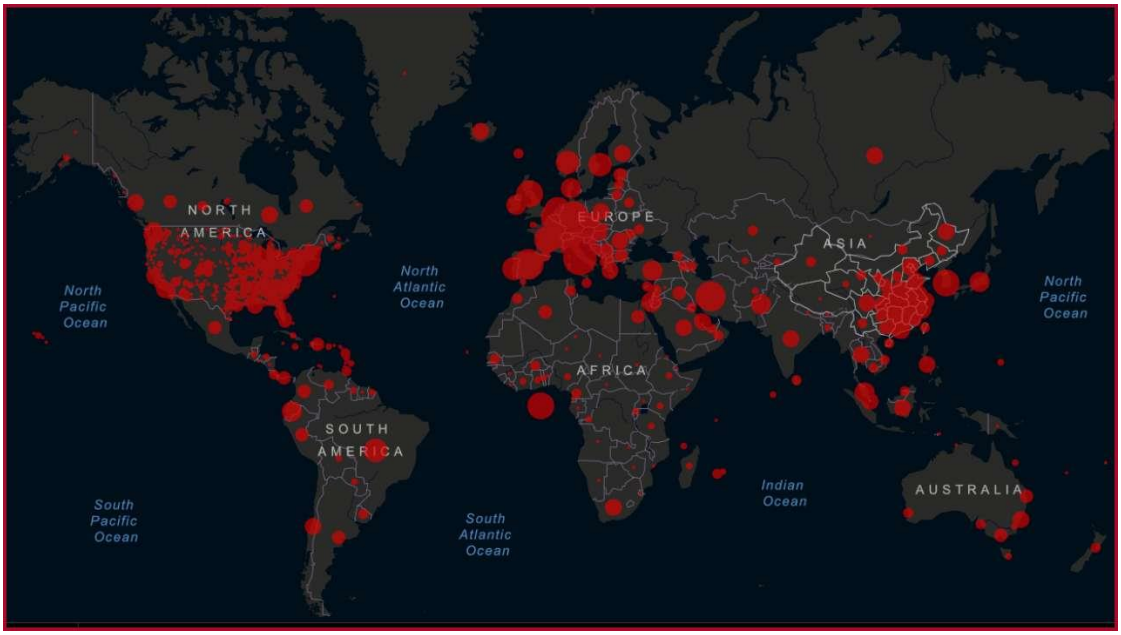
South Africa – Free for Animals

Lockdown across the world is giving an opportunity for animals to come out in open, as humans got under lockdown. Animals in national parks are spreading out in unusual places, due to lack of visitors in National Parks and Forests. Images of lions lazing in the middle of a road captured at Kruger National Park, South Africa.

Pandemic COVID-19

On 30 January 2020, World Health Organization (WHO) declared COVID-19 outbreak as a Public **Health Emergency of International Concern** arising from new Severe Acute Respiratory Syndrome coronavirus also known as SARS-CoV2**.** With the number of cases increasing outside China by 13-folds, and the number of countries with cases increased many folds, on 11th March, 2020, WHO has declared the **COVID-19** outbreak a **Global Pandemic**. The number of cases as on 30th May 2020 was reported as 5,945,737, with global death toll increased to 365,368, according to data compiled by Johns Hopkins University. India had a share of nearly 2, 00,000 in the affected population, with 48% recovery attained.

COVID-19 is the infectious corona virus disease caused by a new corona virus SARS-CoV2, first seen in humans in 2019. COVID-19 has caused a global social and economic shock across the globe, which is considered worse than the global financial crisis of 2007-09. The damage COVID-19 has triggered across the globe is inevitable to the economy, besides the destruction it has caused to humans. Will it lead to more exploitation of natural resources in a very unsustainable manner or would it help us to take a quantum jump keeping in mind the low carbon economy growth?



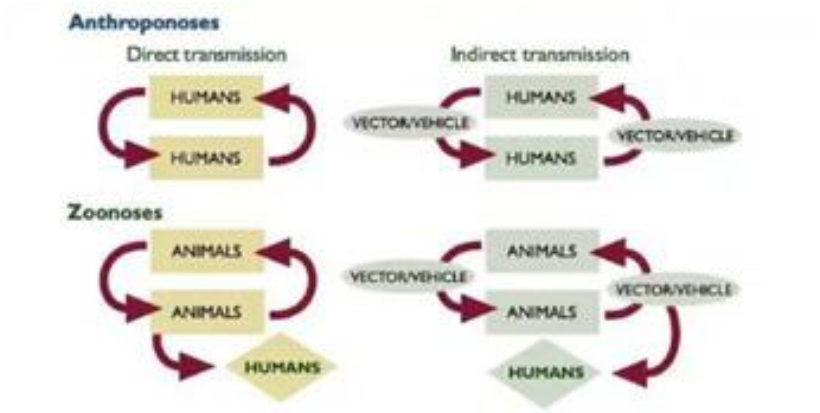
Source- John Hopkins University, USA

Climate Change and COVID-19

Increasing greenhouse gas emissions from fossil fuel combustion and other human activities and their accumulation in the atmosphere is giving rise to global warming. Climate change resulting from global warming–exacerbates the situation. Changes in temperature, humidity and seasonality directly affect the survival of microbes in the environment. With biodiversity loss evidence suggests that disease epidemics will become more frequent, as the climate continues to change.

Climate Change is affecting infectious disease regime in human body with infectious agents varying greatly in size, type and mode of transmission. There are viruses, bacteria, protozoa and multicellular parasites. The microbes that cause "anthroponoses" have adapted, to the human species as their primary host. In contrast, non-human species are the natural reservoir for other infectious agents that cause "zoonoses". There are directly transmitted anthroponoses (such as TB, HIV/AIDS, and measles) and zoonoses (e.g., rabies). There are also indirectly-transmitted, vector borne, anthroponoses (e.g., malaria, dengue fever, yellow fever) and zoonoses (e.g. bubonic plague and Lyme disease) now covid.

Direct and Indirect Anthroponoses and Zoonoses networking



Source-https://www.who.int/globalchange/climate/en/chapter

Changes in human and animal populations that serve as hosts for certain pathogens, are also related to human activities such as migration, urbanization, changing dietary preferences, trade demands, and tourism. Between 1980 and 2000, more than 100 million hectares of tropical forest were felled, and more than 85% of wetlands have been destroyed since the start of the industrial era. In 2008, a team of researchers has identified 335 diseases that emerged between 1960 and 2004, at least 60% of which came from non-human animals.

Major changes in the environment are occurring from increased human activities. By altering land use–for settlement, agriculture, logging, extractive or other industries and their associated infrastructure–humans fragment encroach into animal habitats. It destroys the natural buffer zones that would normally separate humans from animals, and create opportunities for pathogens to spill over from wild animals to people. It is believed that epidemic of SARS-CoV2 rose out of the proximity between bats, carnivores and gullible human consumers, yet to be proven.

Biodiversity and COVID-19

Since 1978, over 750,000 square kilometres of Amazon rainforest have been destroyed with an increasing proportion of deforestation driven by industrial activities and large-scale agriculture. Australian wild fires this year broken heat records; and the worst locust invasion in Kenya and now in India after several decades; are grounds for loss in biodiversity.

International Convention on Biodiversity (CBD) defines Biodiversity as the variability among living organisms from all sources including; terrestrial, marine and other aquatic ecosystems and all the ecological complexes of which they are part. Marine Biodiversity refers to the species richness and abundance in the world's oceans and seas, which covers approximately 70% of earth surface. It includes coastal plant and animal species, their genetic variety, the habitats and ecosystems they form part of, and the ecological processes that support all of these.

Biodiversity loss is a major concern and there are predictions that the species are rapidly becoming extinct and we are moving towards mass extinction of the Planet, which may be sixth extinction in 550 million years. HIPPO Decline in Biodiversity is understood as;

H- Habitat loss is a greatest threat to biodiversity. Human activities degrade or completely eradicate areas on which species depend for their food and shelter.

I- Invasive species is any non-native organism whose presence negatively impacts one or more native species in a given area and affects their population.

P- Pollution and influx of carbon dioxide into the atmosphere directly impacts air and water quality, and therefore the health of individual species are affected.

P- Population increases are threats to biodiversity causing habitat loss, pollution, and land-use changes.

O- Over-harvesting i.e. extraction of resources including trees, plants, and animals that are targeted for their meat or other body parts from the natural environment are leading to biodiversity loss at an unsustainable rate.

As a result of loss in biodiversity outbreaks of animal-borne and other infectious diseases like Ebola, SARS, MERS, bird flu and now COVID-19, are on the horizon. Pathogens are crossing from animals to Humans and many are now able to spread quickly to new places.

Safeguarding Biodiversity is essential to prevent next Covid-19.

Climate Change, Biodiversity and COVID-19 linked!

''If the world has seen a scary future with the emergence of COVID-19, the future of our planet in a 3-4° C scenario takes us to an entirely different level of uncertainty, including in terms of health"

- UN Environment

''……..climate change could potentially disrupt the human immune response—either directly via higher temperature or indirectly via its effects on global food security''

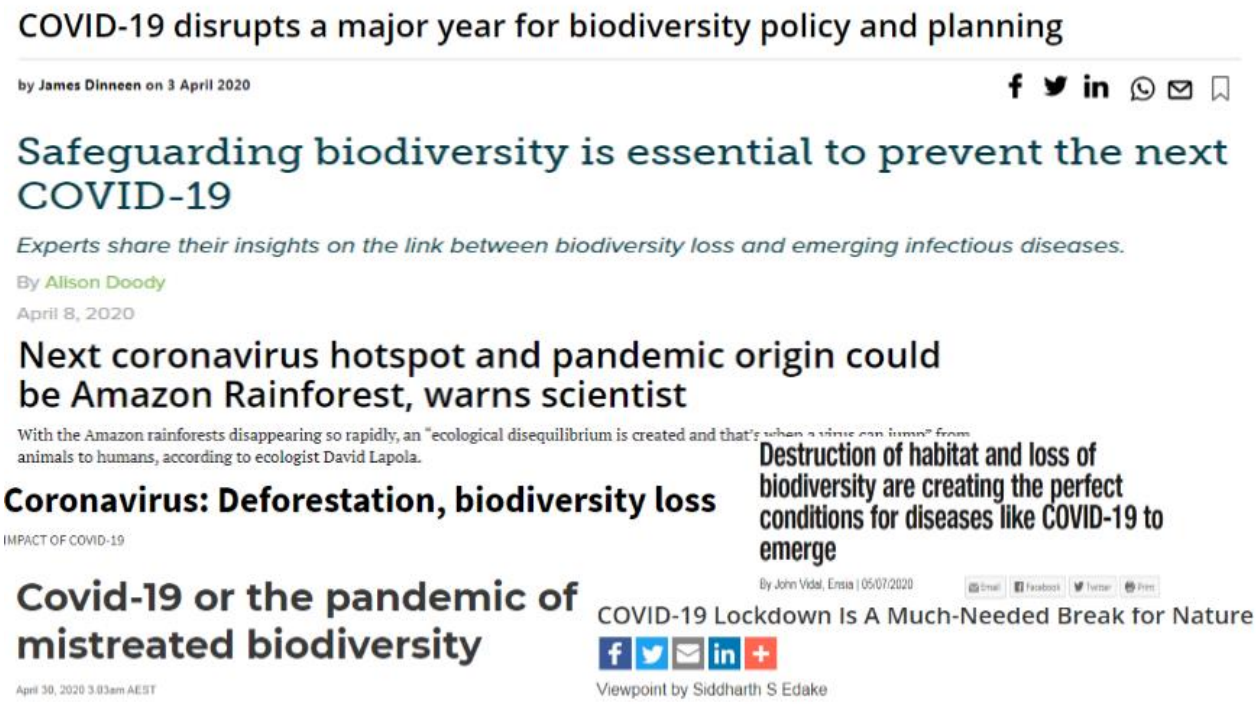
- Intergovernmental Panel on Climate Change report, 2019

''Changes in infectious diseases transmission patterns are a likely major consequence of climate change''

- World Health Organization

"***The biggest lesson Covid-19 has taught the country is to become self-reliant***"

-Narendra Modi, Prime Minister of India



How Endemics and Pandemics are related to Climate and Climate Change?

Heavy rainfall due to changing climate is one of the many reasons for the spread of diseases. These places become breeding grounds for mosquitoes. According to WHO since the early 19th century, the regions of India have experienced malaria epidemics due to increase in monsoons and humidity. This condition, higher temperature and wetter climate form the suitable weather conditions for mosquito-transmitted diseases. A 2019 study found that a 10 percent increase in deforestation would raise malaria cases by 3.3 percent; that would mean 7.4 million people worldwide. Similarly flooding can provide breeding grounds for insects and cause water contamination, leading to the spread of diarrheal diseases like cholera.

Heat and droughts create dry conditions, providing fuel for forest fires that end up fragmenting forests and driving wildlife closer to humans. Droughts and floods also affect crop yield, sometimes resulting in malnutrition, which makes people more vulnerable to disease while forcing them to find other food sources. Changes in temperature, humidity & seasonality directly affect the survival of microbes in the environment & the evidence suggests that disease epidemics become more frequent, as the climate continues to change.

According to the US Agency for International Development, 75% of new or re-emerging diseases at the start of the 21st century have been transmitted from animals, often because deforestation has brought them closer to the human environment. Destroying their natural habitat to create agricultural fields, and for other purposes, mining, industry and others reduce biodiversity, and the species that survive are more likely to host illnesses that can be transferred to humans.

COVID-19 became both a health pandemic that is killing lakhs of people and a socio-economic crisis for all. The pandemic affects people across all walks of life, both developed and developing countries are affected, though certain groups are more impacted than others.

United Nations has set out the 17 Sustainable Development Goals (SDGs) supported by 169 specific targets that will create a better world for all by 2030. We should capitalize on the opportunity and the space it provides to take a quantum jump towards SDGs. The pandemic is teaching us lessons in lifestyle changes and human behaviour that could bring us closer to these goals in the future.

Climate Actions – Sustainable Development Goal 13

The Paris Agreement for Climate Change adopted in 2015, aims to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels. The agreement also aims to strengthen the ability of countries to deal with the impacts of climate change, through appropriate financial flows, a new technology framework and an enhanced capacity building framework.

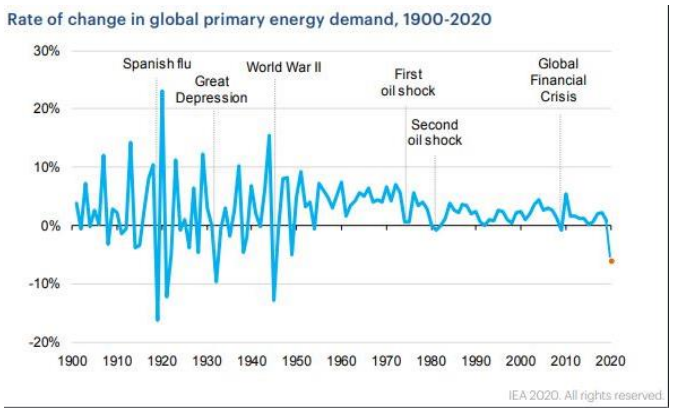
In 2019, Carbon dioxide (CO_2) levels and other greenhouse gases in the atmosphere had risen to new records, making it second warmest year on record. In 2020, due to corona crisis impacts on environment, we can hope to achieve the nationally determined contributions with larger goals.

COVID-19, CO_2 Emissions and Renewables

Beyond the immediate impact on health, the current crisis has major implications for global economies, energy use and CO_2 emissions.

-Global Energy Review, IEA

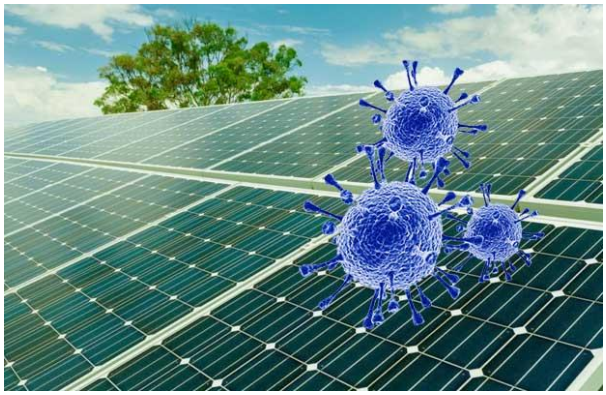
According to the International Energy Agency (IEA) the global energy demand has declined by 3.8% in the first quarter of 2020, with most of the impact felt in the month of March as lockdown measures were enforced. Global coal demand was hit the hardest like anything giving existential threats followed by the global oil demand. Since the whole world is under lockdown, the price of oil has fallen by 55% this year and became negative, unprecedented and unheard of in the oil history, though only for a day. The National Thermal Power Corporation, India quoted peak electricity demand was low by as much as 45% during lockdown period in India.



Global Energy Review, 2020 suggested that globally the renewables were the only sources which have shown demand and growth driven by larger installed capacity and priority dispatch. Renewables demand is expected to increase because of low operating costs and preferential access to many power systems. Recent growth in capacity, some new projects coming online in 2020, would also boost output. According to the IEA, global carbon emissions are set to fall by 8%, or to levels the world hasn't seen for a decade.

World Meteorological Organization however said that although COVID-19 may result in a temporary reduction in greenhouse gas emissions, this does not substitute for sustained climate action. Carbon dioxide (CO_2) concentrations at key monitoring and reporting stations remain at record levels.

To address the climate emergency, post-pandemic recovery plans need to trigger long-term shifts that sustainably change the trajectory of CO_2 levels in the atmosphere.



Post COVID-19 Action Plan

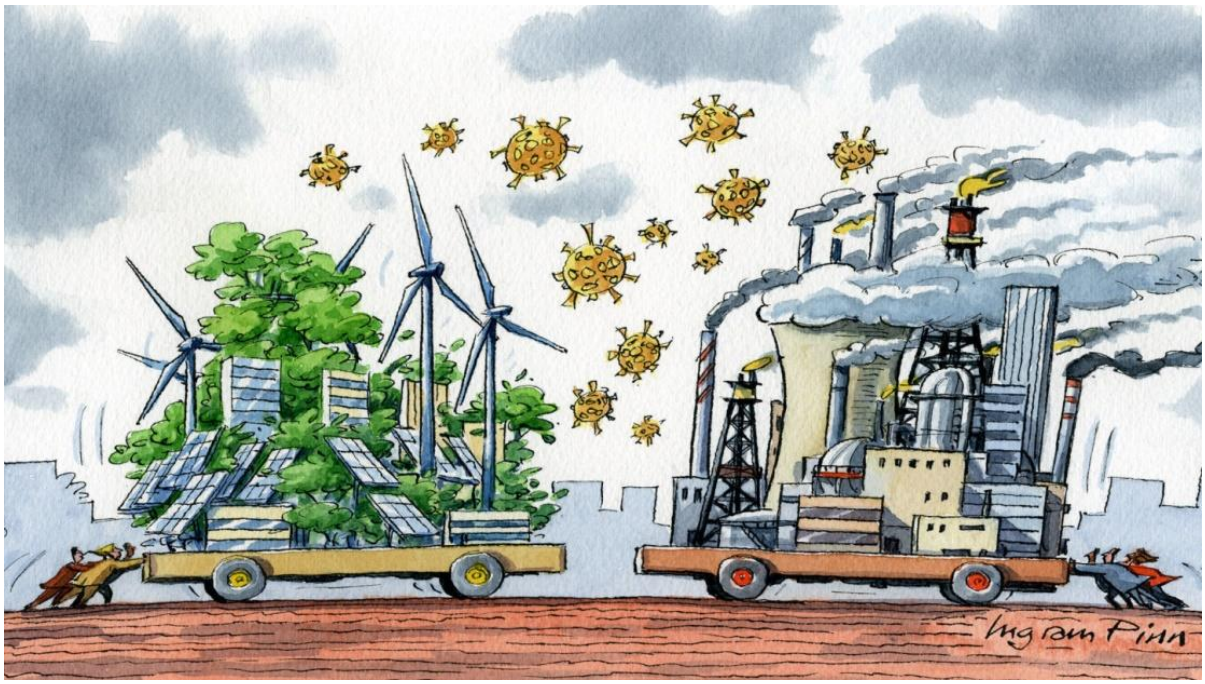
It is time to act decisively. My message to governments is clear: tax pollution, end fossil fuel subsidies; and stop building new coal plants. We need a green economy not a grey economy

- Secretary General, Antonio Guterres on World Environment Day

As countries move toward rebuilding their economies after COVID-19, recovery plans can shape the 21st century economy in ways that are clean, green, healthy, safe and more resilient. The current crisis is an opportunity for a profound and rapid shift that works for both people and the planet.

The UN Secretary-General has proposed six positive actions to address climate change actions for governments to take once they go about building back their economies and societies:

1. Green transition: Investments must accelerate the decarbonisation of all aspects of our economy.
2. Green jobs and sustainable and inclusive growth
3. Green economy: making societies and people more resilient through a transition that is fair to all and leaves no one behind.
4. Invest in sustainable solutions: fossil fuel subsidies must end and polluters must pay for their pollution.
5. Confront all climate risks
6. Cooperation – no country can succeed alone



A dilemma between Green and Grey Economy

Climate Change Research Institute Thanks all the Corona Warriors for their untiring support and blesses the Earth to get free from the grip of Corona Virus!

Visit us at Website – www.ccri.in

31st May 2020