

Tackling the Global Environmental Problem of Climate Change through COVID-19 Economic Recovery Stimulus Packages: Some Suggested Legal Strategies

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Abstract

The effects of the COVID-19 are both immediate and dreadful. But another profound emergency is the planet's unfolding environmental crisis of climate change. Climate change disruption is getting to the point of no return. We must act decisively to protect our planet from both the COVID-19 and the existential problem of climate interruption. We need to turn the COVID-19 economic recovery process into a real opportunity to do things right for the future. The economic and social devastation caused by climate disruption will be many times greater than the current COVID-19 pandemic. COVID-19 pandemic-which is resulting in significant economic and political shifts worldwide, should be the international community's unique window of opportunity in which recovery plans can be instrumental in creating a more sustainable and resilient future through ambitious climate mitigation, adaptation, and financing aimed at building back better. This article, which adopted the doctrinal research methodology, examines how the global environmental problem of climate change can be tackled through COVID-19 economic recovery stimulus packages. The paper finds that focusing COVID-19 economic recovery stimulus packages on greener economy, renewable energies, circular economy, and reforestation can help tackle the global environmental problem of climate change. Further, the paper finds that there is a need for legal frameworks that guarantee investments in the suggested strategic areas taking insights from the European Commission Green Deal policy framework. This paper recommends that national governments and international financial lending institutions should focus their COVID-19 economic recovery stimulus packages on investments that tackle the global environmental problem of climate change.

Keywords: Global environmental problem, climate change, COVID-19, economic recovery, stimulus packages, legal strategies, European Commission Green Deal

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1. INTRODUCTION

The COVID-19 pandemic has revealed the need for the global community to urgently address the global environmental problem of climate change that have a related capability to seriously destabilize the systems that allow humanity and the planet to survive and thrive.¹ Although, COVID-19 is the most urgent threat currently facing humanity, we cannot forget that climate change is the biggest threat facing humanity over the long term.² As the pandemic has affected businesses, families, and economies globally, governments have moved quickly to control the spread, initiating sweeping changes to the manner we live our lives. Climate change, on the other hand, presents a far more significant risk to humankind, and yet our response has been much slower.

COVID-19 has strike speedily and according to the World Health Organisation (WHO), as at the 25th of August 2022, accounts for 6,457,101 deaths globally.³ Climate change has been, to a great extent, more gradual. However, the WHO has noted that the impacts of climate change could lead to about 250,000 yearly deaths

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¹COVID-19: Four Sustainable Development Goals that help Future-Proof Global Recovery (UNEP, 26 May 2020) <<https://www.unenvironment.org/news-and-stories/story/covid-19-four-sustainable-development-goals-help-future-proof-global>> accessed 9 August 2020; Jonathan Soble, How COVID-19 has shown us that Society needs resetting' *The Japan Times* (Tokyo, 29 June 2020) <<https://www.japantimes.co.jp/opinion/2020/06/29/commentary/japan-commentary/coronavirus-reset/>> accessed 9 August 2020.

²COVID-19 and the Environment: The Climate Action (Geneva Environment Network, 31 July 2020) <<https://www.genevaenvironmentnetwork.org/resources/updates/updates-on-covid-19-and-the-environment/>> accessed 6 August 2020; See Greening the Recovery-Special Series on Fiscal Policies to Respond to COVID-19 (Fiscal Affairs Department: International Monetary Fund, 20 April 2020) <<https://www.imf.org/en/Publications/SPRO/LLs/covid19-special-notes>> accessed 6 August 2020.

³WHO Coronavirus (COVID-19) Dashboard <<https://covid19.who.int/>> accessed 26 August 2022; According to Worldometer Covid-19 Live Updates, as at 25th of August 2022, Coronavirus accounts for 6,481,857 deaths globally <<https://www.worldometers.info/coronavirus/>> accessed 26 August 2022.

between 2030 and 2050 from factors like malnutrition, heat stress, and malaria. Also, data released in a report in the *New England Journal of Medicine* hint that climate change could compel 100 million people into extreme poverty by 2030, causing them to be more vulnerable to health problems. Due to climate change-associated food shortages, we could see additional 529,000 adult deaths by 2050.¹

To tackle COVID-19, we need to build strong health systems and to stay at home. To tackle climate change, we need much more transformational solutions. We need to transit to sustainable production and consumption.² Unsustainable production and consumption caused by brown financing,³ investments, and lifestyle choices have resulted in a depletion of natural resources, disruption of ecosystems, resource and carbon-intensive economies and infrastructures, and environmental health issues and diseases.⁴ We need to alter the method we produce and consume goods and services, including how we produce and consume energy, how we travel, the way we eat, and the way we live. And that is an enormous undertaking. So, what is the next step? First, we must ensure that the substantial COVID-19 economic recovery stimulus packages that governments are devising to support economies, companies, and people during the pandemic also tackle climate change.⁵ In other words, putting environmental preservation and restoration through climate action at the centre of the COVID-19 economy recovery stimulus packages is the ideal place to begin.⁶

The need for climate action is urgent. COVID-19 may be currently taking centre stage, but climate change is still waiting in the wings. Coastal regions are already enduring devastating floods, coastal erosion, sea-level rise, and extreme weather events linked to climate change.⁷ 2019 is believed to be the second-hottest year on record, capping off a five-year time that ranks as the warmest span in documented history. The effects are real: hurricanes, wildfires, and floods cost the world \$150 billion in 2019 alone. Insurance companies signified that business losses and the economy-before COVID-19 hit-were before now expected to rise due to a decade-long increase in natural catastrophes with direct links to climate change.⁸

Heads of government⁹ and international financial lending institutions such as the World Bank and the International Monetary Fund (IMF) are providing trillions of dollars in COVID-19 economic recovery stimulus funding to keep economies going.¹⁰ The United States, on 27th March 2020, enacted the *Coronavirus Aid, Relief, and Economic Security Act (CARES Act)* as part of measures to tackle the health and economic effects of the crisis through the provision of financial assistance for businesses¹¹ and reliefs to support citizens through cash-in-hand programmes directly.¹² In China, the Ministry of Finance issued 1.08 trillion CNY (USD 150 billion) of

¹Maria Mendiluce, Why we must address COVID-19 and Climate Change <https://www.linkedin.com/pulse/why-we-must-address-covid-19-climate-change-mar%25C3%25A4a-mendiluce/?trackingId=9Zyual9Sf8E1dYoy_0yYnxw%3D%3D> accessed 7 August 2020; See COVID-19 Coronavirus Pandemic Cases <<https://www.worldometers.info/coronavirus/>> accessed 7 August 2020.

²COVID-19: Four Sustainable Development Goals that help Future-Proof Global Recovery, supra note 1.

³Brown Financing describes domestic and international finance flows from both public and private sources that support carbon-intensive projects or activities and pathways that do not sufficiently consider future climate risks. See Climate Transparency, Financing the Transition from Brown to Green: How to track Country Performance towards Low Carbon, Climate-Resilient Economies (Overseas Development Institute (ODI) and Humboldt-Viadrina Governance Platform (HVGP), Berlin: Germany, 2017) <www.climate-transparency.org> accessed 11 September 2020.

⁴COVID-19: Four Sustainable Development Goals that help Future-Proof Global Recovery, supra note 1.

⁵Mendiluce, supra note 3; See Hans Bruyninckx, Reflecting on Climate-Neutrality Ambitions in Europe in Times of COVID-19 <<https://www.eea.europa.eu/articles/reflecting-on-climate-neutrality-ambitions>> accessed 8 August 2020.

⁶André Hoffmann, 'The Planet after the Pandemic' *The Jakarta Post* (Indonesia, 9 June 2020) <<https://www.thejakartapost.com/academia/2020/06/09/the-planet-after-the-pandemic.html>> accessed 8 August 2020.

⁷Cities-where the Fight for a Green Recovery will be Won or Lost (United Nations Environment Programme, 6 August 2020) <<https://www.unenvironment.org/news-and-stories/story/cities-where-fight-green-recovery-will-be-won-or-lost>> accessed 8 August 2020; See Faster, Further, Fairer: Putting people at the Heart of Tackling the Climate and Nature Emergency (UK Environmental Justice Commission, 27 May 2020) <<https://www.ippr.org/research/publications/faster-further-fairer>> accessed 9 August 2020.

⁸Opinion: Now is the Time to build a 21st Century Energy System (UN Climate Change, 14 May 2020) <<https://unfccc.int/news/now-is-the-time-to-build-a-21st-century-energy-system>> accessed 7 August 2020.

⁹Over 170 Countries have allocated a Total of \$9 Trillion in Fiscal Stimulus Plans. See UN Policy Brief: The World of Work and COVID-19 (International Labour Organization, 18 June 2020) <https://www.ilo.org/employment/Informationresources/covid-19/other/WCMS_748323?lang=en> accessed 7 August 2020.

¹⁰Editorial, 'Include the True Value of Nature when Rebuilding Economies after Coronavirus' [2020] (12 May) *Nature*, **581**, 119 <<https://www.nature.com/articles/d41586-020-01390-w>> accessed 9 August 2020; See Edward Cameron, A World made New: Beyond COVID-19 to a Low-Carbon, Resilient and Inclusive World (Universal Rights Group, 13 May 2020) <<https://www.universal-rights.org/blog/a-world-made-new-beyond-covid-19-to-a-low-carbon-resilient-and-inclusive-world/>> accessed 7 August 2020; See Agrawala, S. and Dussaux, D. and Monti, N. 'What Policies for Greening the Crisis Response and Economic Recovery?: Lessons Learned from Past Green Stimulus Measures and Implications for the COVID-19 Crisis' Environment Working Paper N°164 (OECD 2020) p. 9 <<http://www.oecd.org/environment/workingpapers.htm>> accessed 3 October 2020; See OECD, *Tax and Fiscal Policy in Response to the Coronavirus Crisis: Strengthening Confidence and Resilience* (Organisation for Economic Co-operation and Development, 19 May 2020) <https://read.oecd-ilibrary.org/view/?ref=128_128575-06rakte0aa&title=Tax-and-Fiscal-Policy-in-Response-to-the-Coronavirus-Crisis> accessed 8 August 2020.

¹¹Eric Usher, Eric Usher on how Banks around the Globe are helping Customers and Communities weather the COVID-19 Storm (UNEP Finance Initiative, 9 April 2020) <<https://www.unepfi.org/news/industries/banking/blog-unesp-fis-eric-usher-on-how-banks-around-the-globe-are-helping-customers-and-communities-weather-the-covid-19-storm/>> accessed 10 August 2020.

¹²Hepburn, C. and others, 'Will COVID-19 Fiscal Recovery Packages Accelerate or Retard Progress on Climate Change?' Oxford Smith

new outstanding bonds on 31st March 2020 to finance critical infrastructure projects. The United Kingdom has passed the *Coronavirus Job Retention Scheme (UK Coronavirus Act, 2020)*, which permits companies to apply for government support to cover up to 80% of furloughed workers' wages, capped at £2,500 monthly.¹ The Russian government has enacted a 300-billion ruble (\$4 billion) *Anti-Crisis Fund* to give tax breaks for airlines and companies in the tourism sector and preferential loans to businesses as part of the Covid-19 economic recovery package measures to help the country's economic recovery.² The Australian government has passed the *Coronavirus Economic Response Package Omnibus Bill 2020* designed to lessen the economic impact of Covid-19 as a result of cash flow constraints on Australian companies experiencing financial distress, reduce the closure of Australian businesses and avoid company collapses.³

However, the need to urgently revive economic activity is fuelling concerns that this could come at the expense of environmental sustainability. Every nation's economic plans and policies are rightly pivoting to dealing with COVID-19 and its effects. But as economies are revived, now is the right time to make up for past omissions and rebuild them in a way that takes the environment's real value into account.⁴ With the world speedily reaching the point when climate disorder becomes inevitable, how the trillions of COVID-19 economic recovery stimulus funds are spent is a use-it-or-lose-it moment, so what the governments do matters. Climate change is a universal crisis, meaning all nations must act.⁵

Thus, calls for COVID-19 economic recovery stimulus packages that will support rather than undermine the worldwide effort to tackle the environment and climate change crisis are growing.⁶ For instance, the IMF Managing Director, Kristalina Georgieva, has called for fiscal responses to COVID-19 to tackle climate change. According to her, the massive economic recovery fiscal stimulus measures adopted by governments worldwide to fight the COVID-19 pandemic must be adapted to tackle climate change at the same time.⁷ Many other environmental advocates are particularly demanding that bailout incentives for industrial manufacturers and transportation companies include provisions for massive emissions reductions in their future operations.⁸

2. CLARIFICATION OF KEY TERMS

For the purpose of clarity, some key terms are hereunder clarified.

2.1. Global Environmental Problem

Global environmental problems are environmental problems caused by human activities which affect the entire

School of Enterprise and the Environment Working Paper 20-02 (University of Oxford, 2020) p. 6 <<https://www.smithschool.ox.ac.uk/publications/wpapers/workingpaper20-02.pdf>> accessed 10 August 2020.

¹Ibid.

²Hepburn, C. and others, supra note 14, p. 7; Ostapets, I. and others, COVID-19: Russian Legal Impact (White & Case LLP, 24 March 2020) <<https://www.whitecase.com/publications/alert/covid-19-russian-legal-impact>> accessed 10 August 2020; RFE/RL Staff, Russia announces \$4 Billion Fund to help Economy Cope with Oil Plunge, Virus Impact' *RadioFreeEurope/RadioLiberty* (Prague: Czech Republic, 16 March 2020) <<https://www.rferl.org/a/russia-bud-get-coronavirus-aid/30489879.html>> accessed 7 October 2020; Russia Approves Anti-Crisis Fund' *Financial Tribune* (Iran, 7 October 2020) <https://financialtribune.com/articles/world-economy/99_46/russia-ap-proves-an-ti-crisis-fund> accessed 7 October 2020; Reuters, Russia to Launch \$4Bln Fund in attempt to Shield Economy from Coronavirus Shock' *The Moscow Times* (Russia, 20 March 2020) <<https://www.themoscowtimes.com/2020/03/16/russia-to-launch-4bln-fund-in-attempt-to-shield-economy-from-coronavirus-s-shock-a69633>> accessed 7 October 2020; See Rambler, 'Putin made a statement on coronavirus' *KXan36 Daily News* (Online, 18 May 2020) <<https://www.kxan36news.com/putin-made-a-statement-on-coronavirus>> accessed 23 October 2020; See RFE/RL Staff, 'Russia Scrambles To Save Its Economy As Oil Prices Collapse' *OilPrice.com Oil & Energy News* (18 March 2020) <<https://oilprice.com/Latest-Energy-News/World-News/Russia-Needs-Higher-Oil-Prices-But-Wont-Surrender.html>> accessed 8 October 2020.

³See Australian Government, *Coronavirus Economic Response Package Omnibus Bill 2020 (Schedule 7, Part 2)*, Cth. <<https://www.legislation.gov.au/Details/C2020A00022>> accessed 8 October 2020; See Amelia Kelly and Amy Nolan, The Australian "Coronavirus Economic Response Package Omnibus Bill 2020" <<https://www.dlapiper.com/cs/czech/insights/publications/2020/03/the-australian-coronavirus-economic-response-package/>> accessed 7 October 2020; See The Australian Government's Economic Response to Coronavirus (Australian Taxation Office: Australian Government, 6 October 2020) <<https://www.ato.gov.au/ge-neral/new-legislation/the-australian-government-s-economic-response-to-coronavirus/>> accessed 7 October 2020.

⁴Editorial, Include the True Value of Nature when Rebuilding Economies after Coronavirus, supra note 12.

⁵Damian Carrington, 'EU Green Recovery Package sets a Marker for the World: The Bloc is showing the Way in Rebuilding Coronavirus-Ravaged Economies to Fight the Climate Emergency' *The Guardian* (London, 28 May 2020) <<https://www.theguardian.com/environment/2020/may/28/eu-green-recovery-package-sets-a-marker-for-the-world>> accessed 25 May 2021.

⁶James Hulse, *There can be no Return to Business-as-usual for the Finance Sector (Responsible Investor, 17 April 2020)* <<https://www.responsible-investor.com/articles/there-can-be-no-return-to-business-as-usual-for-the-finance-sector/>> accessed 10 August 2020; See IEA, *Energy Efficiency and Economic Stimulus* (International Energy Agency, 2020) <<https://www.iea.org/articles/energy-efficiency-and-economic-stimulus>> accessed 7 October 2020; See OECD, *From Containment to Recovery: Environmental Responses to the COVID-19 Pandemic* (Organisation for Economic Co-operation and Development, 2020) <https://read.oecd-ilibrary.org/vj-ew/?ref=126_1264601tg1r2aowf&title=Fromcontainment-to-recovery_Environmental-responses-to-the-COVID-19-pandemic> accessed 5 October 2020.

⁷Reuters Staff, IMF Leader says Pandemic Stimulus must focus on battling Climate Crisis, (World Economic Forum, 30 April 2020) <<https://www.weforum.org/agenda/2020/04/imf-pandemic-coronavirus-covid19-response-battle-climate-crisis/>> accessed 14 May 2020.

⁸Robert Hamwey, Environmental Impacts of Coronavirus Crisis, Challenges Ahead (United Nations Conference on Trade and Development (UNCTAD), 20 April 2020) <<https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2333>> accessed 14 May 2020.

to spend more.¹ Economies move in phases and once they have contracted and fallen into a recession, they eventually enter a stage of recovery before starting the cycle again. The recovery starts when the recession bottoms out and ends once the economy has recovered all the gains that were lost. It then gives way to a new era of expansion and a fresh peak.²

2.5. Stimulus Packages

Stimulus package is a package of economic measures or intervention (tax rebates and incentives) used by the governments of various countries to stimulate a struggling economy and save their country from a financial crisis.³ Stimulus packages are often used in times when the economy risks entering a recession or when a recession is already under way.⁴ A stimulus package can be in the form of a [monetary stimulus](#), a [fiscal stimulus](#), or [quantitative easing](#). A monetary stimulus is when interest rates are cut, which in turn encourages more people to borrow and puts more money in circulation, thus, stimulating the economy. Lower interest rates may also cause the weakening of the exchange rate, which can lead to an increase in exports. When exports increase, more money enters the economy, encouraging spending and stimulating the economy. A fiscal stimulus is when government cuts taxes, increases its spending, or both in a bid to revive the economy. When taxes are cut, people have more income (income) at their disposal to spend, which boosts demand, production, and economic growth. When the government increases its spending, it injects more money into the economy, which decreases the [unemployment rate](#), increases spending, and, eventually, counters the impact of a recession. Quantitative easing is a type of [expansionary monetary policy](#) which occurs when the [central bank](#) of a country purchases a large number of financial assets, such as bonds, from commercial banks and other financial institutions, in order to expand excess reserves, encourage lending, lower yields and interest rates and increase the supply of money in circulation.⁵

2.6. Strategies

A strategy is a [general](#) plan or set of plans [intended](#) to [achieve](#) something, [especially](#) over a long period.⁶ It could also mean a plan of action intended to accomplish a specific goal.⁷ It defines a specific course of action that will take you from where you are now to where you want to be.⁸ Strategy is a high level plan to achieve one or more goals under conditions of uncertainty. Strategy is important because the resources available to achieve these goals are usually limited.⁹ A good strategy provides a clear roadmap consisting of a set of guiding principles or rules that defines the actions people in business, government, organization, etc should take (and not take) and the things they should prioritize (and not prioritize) to achieve desired goals.¹⁰

3. RATIONALE FOR TACKLING CLIMATE CHANGE THROUGH COVID-19 ECONOMIC RECOVERY STIMULUS PACKAGES

Carbon dioxide lingers in the atmosphere for centuries and this implies that the world is committed to sustained climate change regardless of any temporary decrease in emissions as a result of the COVID-19 pandemic.¹¹ Thus, there is nothing to celebrate in a likely decline in emissions driven by the COVID-19 economic crisis. In the absence of the right policies and structural measures, this decline will not be sustainable.¹² Thus, a global effort to leverage COVID-19 economic recovery stimulus spending to catalyze climate ambition is a win-win proposition when it comes down to the wide use of public money that the world cannot afford to overlook.¹³

¹Definition of Economic Recovery <<https://www.davemanuel.com/investor-dictionary/economic-recovery/>> accessed 27 August 2021.

²What is an economic recovery and what are the types? <<https://www.ig.com/en/trading-strategies/what-is-an-economic-recovery-and-what-are-the-types-200612>> accessed 27 August 2021.

³Definition of 'Stimulus Package' *The Economic Times*, 26 August 2021.

⁴Adam Hayes, Stimulus Package Definition <<https://www.investopedia.com/terms/s/stimulus-package.asp>> accessed 26 August 2021.

⁵What is a Stimulus Package <<https://gocardless.com/en-us/guides/posts/stimulus-package-meaning/>> accessed 2 August 2021; Economic Stimulus Package <<https://corporatefinanceinstitute.com/resources/knowledge/econ-omics/economic-stimulus-package/>> accessed 27 August 2021.

⁶Meaning of Strategy <<https://www.collinsdictionary.com/dictionary/english/strategy>> accessed 27 August 2021.

⁷Strategy meaning <<https://www.yourdictionary.com/strategy>> accessed 27 August 2021.

⁸Kristina H, What Is Strategy (and Why Should You Care)? <<https://www.braintraffic.com/insights/what-is-strategy-and-why-should-you-care>> accessed 27 August 2021.

⁹Definitions for Strategy <<https://www.definitions.net/definition/strategy>> accessed 27 August 2021.

¹⁰Michael D.W, 'Demystifying Strategy: The What, Who, How, and Why' *Harvard Business Review*, September 10, 2007.

¹¹COVID-19 and the Environment, *supra* note 2.

¹²Jillian Ambrose, 'Coronavirus poses threat to Climate Action, says Watchdog' *The Guardian* (London, 12 March 2020) <<https://www.theguardian.com/environment/2020/mar/12/coronavirus-poses-threat-to-climate-action-says-watchdog>> accessed 15 May 2020.

¹³Jennifer Allan, Announcements are not enough: Concrete Steps for Post-Pandemic Green Future (International Institute for Sustainable development, 12 May 2020) <<http://sdg.iisd.org/commentary/guest-articles/announcements-are-not-enough-concrete-steps-for-post-pandemic-green-future/>> accessed 12 May 2020; Julie Mollins, 'Reforestation could play Role in Pandemic Recovery Jobs creation, Says IMF's Georgieva' *Forest News* (Center for International Forestry Research (CIFOR) and Consultative Group on International Agricultural

The emergence of a new threat-COVID-19 does not reduce the human and economic risks of the ongoing climate change crisis, a current threat to human lives, health, and the economy. The decisions governments make at the moment will lock in the strategic direction of companies and economies in the coming years. Governments working on strategies to rebuild their economies should **pair COVID-19 economic recovery action with climate action** to make sure that they, and the companies they support, **come out stronger than before**. By applying a climate and resilience lens to longer-term economic recovery stimulus packages, governments can boost economic growth, create good jobs, help protect against the impacts of climate change through emissions reduction, ensuring clean air, and increasing resilience to future shocks.¹ Now is the time to consider using COVID-19 economic recovery stimulus packages to support a long-term change to better environmentally and climate-friendly business and personal practices.²

The COVID-19 pandemic may temporarily reduce greenhouse gas emissions, but it is not a substitute for sustained climate action. While COVID-19 has caused harsh international health and economic crisis, failure to address climate change may threaten human well-being, ecosystems, and economies for centuries. We need to flatten both the COVID-19 pandemic and climate change curves and exhibit similar determination and solidarity against climate change as against COVID-19. We need to take action collectively in the interests of the health and welfare of humanity, not merely for the current generation but for many generations ahead. It is, therefore, essential that COVID-19 economic recovery stimulus packages help the economy grow back better. Earlier economic crises have repeatedly been followed by "recovery" associated with much higher emission growth than before the crisis.³ We need to alter that trajectory. The world has to display the same unity and devotion to climate action and reducing greenhouse gas emissions as to controlling the COVID-19 pandemic. Failure to mitigate climate change could lead to higher human life and economic losses during the coming decades.⁴

We must use this period of crisis and renewal to build greater resilience and to tackle the biggest threat to our existence-the danger of climate change. Governments have to put climate action at the centre of COVID-19 economic recovery stimulus packages. Pairing COVID-19 economic recovery action with climate change action will guarantee that economies can grow more robust than before while simultaneously reducing emissions. The COVID-19 economic recovery stimulus packages should encourage the speedy deployment of existing climate solutions and stimulate the development and display of the technologies needed to create an inclusive, resilient net-zero carbon economy. Governments must offer companies the transparency and confidence they need to unlock additional investments in climate solutions.⁵

In the face of human calamity and the surplus of impacts of the COVID-19 pandemic, we have also been given an opportunity to rebuild society in a way that makes it more resilient to future crises. The choices we take

Research (CGIAR), 27 June 2020) <https://forestsnews.cifor.org/66058/reforestation-could-play-role-in-pandemic-recovery-jobs-creationsaysimfsgeorgieva?fnl=en&utm_source=twitter&utm_medium=newclimateecon&utm_campaign=socialmedia&utm_term=a4c04e10-b667-4dd6-95cf-c8d3a9f5fa9> accessed 8 August 2020.

¹Build Back Better: We Mean Business COVID-19 Policy Response (We Mean Business Coalition, 17 April 2020) <<https://www.wemeanbusinesscoalition.org/build-back-better/>> accessed 9 August 2020.

²Economic Slowdown as a result of COVID is no Substitute for Climate Action (World Meteorological Organization, 24 March 2020) <<https://public.wmo.int/en/media/news/economic-slowdown-result-of-covid-no-substitute-climate-action>> accessed 7 August 2020; See David Fogarty, 'Cities step up bid for Green Pandemic Recovery' *The Straits Times* (Singapore, 6 May 2020) <<https://www.straitstimes.com/world/cities-step-up-bid-for-green-pandemic-recovery>> accessed 9 August 2020; Mathew Taylor and Sandra Laville, 'City leaders aim to shape Green Recovery from Coronavirus Crisis' *The Guardian* (London, 1 May 2020) <<https://www.theguardian.com/environment/2020/may/01/city-leaders-aim-to-shape-green-recovery-from-coronavirus-crisis>> accessed 9 August 2020; See Paul Chatterton, 'Coronavirus: We're in a Real-Time Laboratory of a more Sustainable Urban Future' *The Conversation* (Africa Edition, 27 April 2020) <<https://theconversation.com/coronavirus-were-in-a-real-time-laboratory-of-a-more-sustainable-urban-future-135712>> accessed 7 August 2020.

³Earth Day highlights Climate Action (World Meteorological Organization, 22 April 2020) <<https://public.wmo.int/en/media/press-release/earth-day-highlights-climate-action>> accessed 7 August 2020; See Kartikeya Saigal, How is COVID-19 Impacting the Environment around us? (Invest India: National Investment Promotion and Facilitation Agency, 6 April 2020) <<https://www.investindia.gov.in/.../how-covid-19-impacting-environment-around-us>> accessed 17 May 2020; See Fiona Reynolds, COVID-19: Harnessing the Power of Collective Investor Action for Change (Principles for Responsible Investment (PRI), 27 March 2020) <<https://www.unpri.org/pri-blog/covid-19-harnessing-the-power-of-collective-investor-action-for-change/5626.article>> accessed 10 August 2020; See Matt McGrath, 'Climate Change: 2019 was Europe's warmest Year on Record' *BBC News* (London, 22 April 2020) <<https://www.bbc.com/news/science-environment-52380157>> accessed 10 August 2020.

⁴Economic Slowdown as a result of COVID is no Substitute for Climate Action, supra note 51; See Patrick Verkooijen, Flattening the Climate Curve in the Post-COVID World (World Economic Forum, 17 Apr 2020) <<https://www.weforum.org/agenda/2020/04/flattening-the-climate-curve-in-the-post-covid-world/>> accessed 9 August 2020.

⁵Maria Mendeluce, 'How we can All come back Better – and Greener – After Covid-19' *The Telegraph* (London, 21 April 2020) <<https://www.telegraph.co.uk/business/how-to-be-green/earth-day-covid-19/>> accessed 10 August 2020; See CLG Europe, More than 200 Hundred leading Businesses in UK urge UK Government to deliver Clean More (Corporate Leaders Group, 1 June 2020) <<https://www.corporateleadersgroup.com/reports-evidence-and-insights/news-items/leading-businesses-urge-uk-government-to-deliver-resilient-recovery-plan>> accessed 9 August 2020; See WWF, EU Economy must bounce Forward rather than Back after Covid-19, says WWF (World Wide Fund for Nature/World Wildlife Fund, 9 April 2020) <https://wwf.panda.org/our_work/our_focus/governance/?362110/Green-Recovery> accessed 9 August 2020.

now to kick-start our economies will also determine our ability to mitigate the impacts of climate change.¹ The way leaders decide to drive the economy in response to the COVID-19 crisis will either amplify or reduce the global problem of climate change, so they have to decide wisely. The risk is making nearsighted decisions that amplify emissions and continue to pollute the environment in the long term. Alternatively, there is an opportunity to champion solutions that not merely rebuild lives and stimulate economic activity in the immediate wake of the pandemic but as well hasten the transition to resilient, low-carbon economies and environment-rich societies.² Recovery plans that aggravate climate change would expose investors and national economies to increasing financial, health, and social risks in the future years. Therefore, governments should shun the prioritization of risky, short-term emissions-intensive projects that will not tackle the environmental problem of climate change.³

Pairing climate change action with COVID-19 economic recovery action will be reciprocally strengthening: global recovery from COVID-19 can set the world on the pathway for a safe, healthy, just, and sustainable future. By addressing the COVID-19 health and climate change crises together and applying holistic, economy-wide perspectives, the world will not simply "recover better" but as well become healthier, cleaner, and more prosperous for all people.⁴ Inaction when it comes to the fight back against adverse climate change is no longer an alternative. Inaction will put in danger all life on Earth as we know it and only lead to harsher and extreme weather events, land degradation and deforestation, loss of biodiversity, pollution, acidification of oceans, global food insecurity, drought, and floods.⁵ The less we do early enough to nip the climate change crisis in the bud, the more problematic and overwhelming it will be later.⁶

The climate change crisis may be viewed as a gradual moving crisis than the speed of the COVID-19 global pandemic, but its long-term impacts are likely to be far more threatening. Climate change is something we do not have the science, technology, or funding to solve. Without additional commitments to decarbonisation, the planet is on track for a 3.2-degree global temperature rise and beyond.⁷ According to Sawin, both the COVID-19 pandemic and the climate change crisis are problems of exponential growth against an inadequate capacity to deal with. In the case of the COVID-19, the risk is the number of infected people overpowering health care systems; with climate change, it is that emissions increase will surpass our ability to manage effects, for example, the increased possibility of pandemics, extreme weather events, droughts, floods, wildfires and widespread destabilization of global food, economic and security systems.⁸ The risk from climate change is as real as the risk

¹IEA, IEA and Denmark host Ministerial Roundtable discussion on making Clean Energy a key part of the Global Economic Recovery (International Energy Agency, 24 April 2020) <https://www.iea.org/news/iea-and-denmark-host-ministerial-roundtable-discussion-on-making-clean-energy-a-key-part-of-the-global-economic-recovery?utm_content=buffer7dd40&utm_medium=social&utm_source=twitter-icabirol&utm_campaign=buffer> accessed 9 August 2020; See Kevin Moss, The Coronavirus Pandemic could give Business Leaders a Broader Mandate for Sustainability (World Resources Institute, 9 April 2020) <<https://www.wri.org/blog/2020/04/coronavirus-pandemic-could-give-business-leaders-broader-mandate-sustainability>> accessed 10 August 2020; See A UN Framework for the Immediate Socio-Economic Response to COVID-19 (United Nations Sustainable Development Group, 2020) p. 3 <<https://unsdg.un.org/resources/un-framework-immediate-socio-economic-response-covid-19>> accessed 11 August 2020.

²Open Letter to Global Leaders – A Healthy Planet for Healthy People-Call to Action from the Planetary Emergency Partnership: Emerging from the Planetary Emergency and Partnering between People and Nature (Club of Rome, 26 March 2020) <<https://clubofrome.org/impact-hubs/climate-emergency/open-letter-to-global-leaders-a-healthy-planet-for-healthy-people/>> accessed 10 August 2020; See Alessandra Mazzai, Sustainability or Crisis with GGKP Head Benjamin Simmons (Foresight–The CMCC Observatory on Climate Policies and Futures, 6 May 2020) <<https://www.climateforesight.eu/jobs-growth/sustainability-or-crisis/>> accessed 9 August 2020.

³Simon Jessop and Kate Abnett, 'Rich Nations must make Pandemic Recovery Plans Green: Global Investors' *Reuters* (London, 4 May 2020) <<https://www.reuters.com/article/us-health-coronavirus-recovery-investors-idUSKBN22G08Y>> accessed 9 August 2020; See Laurie Goering, What COVID-19 can Teach us about Tackling Climate Change (World Economic Forum, 15 May 2020) <<https://www.weforum.org/agenda/2020/05/covid-19-a-pity-battling-climate-change/>> accessed 10 August 2020; See Emily Kasriel, A 'Mass Experiment' for the Climate: Has the Pandemic helped Individuals and Leaders get any Closer to Tackling the Environmental Crisis? *BBC-Future Planet* (London, 25 June 2020) <<https://www.bbc.com/future/article/20200624-has-covid-19-brought-us-closer-to-stopping-climate-change>> accessed August 2020.

⁴Opinion: Now is the Time to build a 21st Century Energy System, supra note 11; See UNEP and ILRI, Preventing the Next Pandemic: Zoonotic diseases and how to break the chain of transmission (United Nations Environment Programme and International Livestock Research Institute, Nairobi: Kenya, 2020) p. 43 <<https://www.ilri.org/publications/preventing-next-pandemic-zoonotic-diseases-and-how-break-chain-transmission>> accessed 7 August 2020.

⁵Tijani Muhammad-Bande, 'Inaction over Climate Emergency 'Not an Option' says UN Assembly Chief' *UN News* (New York, 10 January 2020) <<https://news.un.org/en/story/2020/01/1055171>> accessed 7 August 2020; See WMO, Earth Day highlights Climate Action: COVID-19 Exacerbates Socio-Economic Impacts of Climate Change, Which Accelerated in Past 5 Years (World Meteorological Organization, 22 April 2020) <<https://public.wmo.int/en/media/press-release/earth-day-highlights-climate-action>> accessed 7 August 2020.

⁶Renee Cho, What can we learn from COVID-19 to help with Climate Change? (Earth Institute at Columbia University Blog, 26 March 2020) <<https://blogs.ei.columbia.edu/2020/03/26/covid-19-lessons-climate-change/>> accessed 7 August 2020

⁷See COVID-19: Four Sustainable Development Goals that help Future-proof Global Recovery, supra note 1; See António Guterres, International Mother Earth Day: Secretary-General's Message (United Nations, 22 April 2020) <<https://www.un.org/en/observances/earth-day/message>> accessed August 2020; See Antonio Guterres, 'Guterres vows support for Island States in twin fight against COVID-19' *Climate Crisis UN News* (New York, 21 April 2020) <<https://news.un.org/en/story/2020/04/1062282>> accessed 7 August 2020; See Milan, E. and others, 'The European Green Deal after Corona: Implications for EU Climate Policy' *CEPS Policy Insights* No. 2020-06/March 2020 <<http://aei.pitt.edu/102671/>> accessed 30 May 2021.

⁸See Elizabeth Sawin, COVID-19 Sucks but it could teach us how to avoid the worst consequences of Climate Change

from COVID-19, despite the fact that it seems far away.¹ Unchecked climate change will undo COVID-19 economic recovery. However, climate change can be limited. As plans are formulated to help countries and communities rebuild their economies and societies, this is an opportunity to tackle climate change by **pairing COVID-19 economic recovery action with climate change action.**²

4. SUGGESTED STRATEGIES TO TACKLE CLIMATE CHANGE THROUGH COVID-19 ECONOMIC RECOVERY STIMULUS PACKAGES

4.1. Focus COVID-19 Economic Recovery Stimulus Packages on Investment in Greener Economy

According to the United Nations Environment Programme (UNEP), a green economy is one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcity. It is low-carbon, resource-conserving, and socially inclusive.³ Green economy potentially works towards decreasing environmental pollution, and thus improves the quality of soil, water and air and also protects environmental well-being.⁴ The green economy is geared to support sustainable consumption and production. It embraces new models of economic development that addresses the challenge of creating prosperity and a better quality of life for all within the ecological limits of the planet.⁵ A Green Economy can be thought of as an alternative vision for growth and development; one that can generate growth and improvements in people's lives in ways consistent with sustainable development. It is an economy that promotes, sustains and advances economic, environmental and social well-being.⁶ The green economy represents a radical new ambition for humanity: to ensure that our decision-making processes give full value to the environment and what it gives to us, so that we can continue to reap its benefits now and in the future.⁷

As economies revive, an opportunity exists to develop public and private policies to tackle the current climate change crisis progressively and promote the transition to a green economy. The rebuilding of the economic framework should set the foundations for environmentally sustainable and socially inclusive production and consumption as we progress into the future.⁸ According to Olivier De Schutter, the UN Special Rapporteur on extreme poverty and human rights, the economic turn down due to the COVID-19 pandemic underlines the need to invest greatly in a greener economy. He noted that if we make the proper choices now, it will be a chance to change our society into a more inclusive and equal one. Thus, as countries rebuild their shattered economies, there is an opportunity to build back better and live in a more sustainable, "greener" way.⁹

Governments worldwide are racing to implement economic recovery stimulus and support packages to keep individuals, businesses, and economies afloat. While supporting their urgent implementation, it is needful that

¹<https://www.resilience.org/stories/2020-04-02/covid-19-sucks-but-it-could-teach-us-how-to-avoid-the-worst-consequences-of-climate-change/> accessed 10 August 2020.

See Beth Gardiner, 'Coronavirus Holds a Magnifying Glass to America's Inequalities and the View is Brutal' *HuffPost* (New York, 27 April 2020) <https://www.huffpost.com/entry/inequality-coronavirus-society_n_5e955ca5c5b621d7471dc272?ri18n=true> accessed 7 August 2020; See COVID-19: Four Sustainable Development Goals that help Future-proof Global Recovery, supra note 1; See George Monbiot, 'Covid-19 is Nature's Wake-Up Call to complacent Civilisation' *The Guardian* (London, 25 March 2020) <<https://www.theguardian.com/commentisfree/2020/mar/25/covid-19-is-natures-wake-up-call-to-complacent-civilisation>> accessed 8 August 2020.

²Fiona Harvey, 'Covid-19 Economic Rescue Plans must be Green, say Environmentalists' *The Guardian* (London, 24 March 2020); See IEA, Put Clean Energy at the Heart of Stimulus Plans to counter the Coronavirus Crisis (International Energy Agency, 2020) <<https://www.iea.org/commentaries/put-clean-energy-at-the-heart-o-f-stimulus-plans-to-counter-the-coronavirus-crisis>> accessed 10 August 2020.

³See COVID-19: Four Sustainable Development Goals that help Future-Proof Global Recovery, supra note 1; See Maria Mendiluce, COVID-19 Stimulus should address Health, the Economy and Climate together (We Mean Business Coalition, 20 March 2020) <<https://www.wemeanbusinesscoalition.org/blog/covid-19-stimulus/>> accessed 8 August 2020.

⁴UNEP, Green Economy Reports: A Preview, 2010, p. 4-5 <https://plagiarism.repec.org/trica-papuc/trica-papu_c3.pdf> accessed 30 September 2020; Definitions for Green Economy - Advancing an Inclusive Green Economy: Rationale and Context <<https://www.unitar.org/sites/default/files/uploads/egp/Section1/PDFs/1.3%20Definitions%20for%20Green%20Economy.pdf>> accessed 20 August 2020; Swikriti Sheela Nath, Green Economy: A Brief Review <https://www.linkedin.com/pulse/green-economy-brief-review-swikriti-sheela-nath?trk=portfolio_article-card_title> accessed 19 July 2021.

⁵Swikriti Sheela Nath, Green Economy: Advantages & Disadvantages <<https://www.linkedin.com/pulse/green-economy-advantages-disadvantages-swikriti-sheela-nath>> accessed 19 July 2021.

⁶GEC, The Five Principles of Green Economy: Exploring what a Green and Fair Economy looks like in Principle and in Practice (Green Economy Coalition, 7 June 2020) <<https://www.greeneconomycoalition.org/news-and-resources/the-5-principles-of-green-economy>> accessed 19 July 2021; Green Economy (Sustainable Development Goals Knowledge Platform) <<https://sustainabledevelopment.un.org/index.php?menu=1446>> accessed 29 August 2020.

⁷Manish Bapna and John Talberth, Q&A: What is a "Green Economy?" (World Resources Institute, 5 April 2011) <<https://www.wri.org/blog/2011/04/qa-what-green-economy>> accessed 29 August 2020.

⁸Paul Ekins, What does the Green Economy mean to you? (Green Economy Coalition, 4 September 2017) <<https://www.greeneconomycoalition.org/news-analysis/what-does-the-green-economy-mean-to-you>> accessed 20 August 2020.

⁹ILO, COVID-19 and the World of Work: Jump-Starting a Green Recovery with More and Better Jobs, Healthy and Resilient Societies (International Labour Organization Policy Brief, 16 July 2020) <https://www.ilo.org/global/to_pics/green-jobs/publications/WCMS_751217/lang-en/index.htm> accessed 31 July 2020.

¹⁰Karin Erika Kamper, Planet Reboot: An Opportunity to reshape the World after COVID-19 (World Bank, 21 April 2020) <<https://blogs.worldbank.org/voices/planet-reboot-opportunity-reshape-world-after-covid-19?CID=CCGTTclimatechangeENEXT>> accessed 31 July 2020.

governments make sure that these measures do not lock us more into a high-carbon future but lead to a more sustainable economy.¹ The stimulus packages being turned out by governments and development institutions should improve the economy, support people and communities, and result in better environmental effects.² Instead of using the economic recovery stimulus packages to support ‘business as usual’-locking in outdated economic models and investing in assets that will shortly be stranded, we should invest in the new economy to emerge out of the crisis in better shape than we went into it, fit for the future: sustainable, inclusive, competitive and prepared.³

We can achieve healthier workforce and climate-resilience when COVID-19 relieves and we are ready to resume our economy by increasing our investments in low-carbon technologies.⁴ Such provisions could help avoid pollutant emission levels from rising to pre-COVID-19 pandemic levels.⁵ Hence, in the post-COVID-19 crisis setting, as governments approve stimulus packages to support job creation, poverty reduction, development, and economic growth, there is a need for Countries and businesses to build back better by capturing opportunities for leap-frogging to green investments such as renewable energy- guided by the principles and standards of sustainable production and consumption.⁶

A current report by the Food and Land Use Coalition (FOLU) revealed that the methods we produce and consume food and use land costs \$12 trillion annually in damage to our environment, health, and development. And if we do nothing, this will rise to beyond \$16 trillion yearly by 2050. Alternatively, the FOLU report found that it is feasible to control climate change, protect nature, guarantee more healthy diets for everyone, enhance food security, make stronger rural economies and unlock \$4.5 trillion in innovative business opportunities annually by 2030 while simultaneously preventing \$5.7 trillion annually in damage to people and our planet.⁷ The innovations in green and global financial systems and the positive changes we have seen in business and workplace practices, public policy, and consumer attitudes during this COVID-19 pandemic crisis have shown that a sustainable post-COVID-19 recovery is not mission impossible.⁸

During the 11th edition of the Petersberg Climate Dialogue Virtual Summit held on 27th to 28th April 2020, IMF Managing Director-Kristalina Georgieva, joined other policymakers and financiers like German Chancellor-Angela Merkel, UN Secretary-General-Antonio Guterres and Achim Steiner-UN Development Programme Administrator, in calling for focused efforts to encourage a "green recovery" from the COVID-19 crisis. Georgieva asked governments to do everything in their power to promote a green recovery in response to COVID19 by stating that its \$1 trillion post-coronavirus stimulus package must tackle the climate crisis. The IMF urged its 100 member governments who applied for financial assistance to invest emergency loans in green sectors and to scrap subsidies to fossil fuels and tax carbon. As it gears up to lend \$1 trillion to governments hit by the COVID-19 pandemic, the IMF gives guidance on using the cash to tackle climate change.⁹

By initiating the right policy environment, incentives for innovation, and infrastructure, governments can persuade companies to take benefit of the opportunities of new technologies and value chains connected to green sectors. Simultaneously, governments can change current carbon-intensive economic and industrial structures onto greener trajectories, allowing countries to meet international climate and development

¹Richard Florizone, Three Ways the Coronavirus is shaping Sustainable Development (International Institute for Sustainable Development (IISD), 31 March 2020) <<https://www.iisd.org/articles/three-ways-coronavirus-shaping-sustainable-development>> accessed 30 July 2020.

²Kamper, supra note 71; See Alex Kimani, \$110 Trillion Renewables Stimulus Package Could Create 50 Million Jobs <<https://finance.yahoo.com/news/110-trillion-renewables-stimulus-package-220000106.html>> accessed 28 July 2020.

³Bertrand Piccard and Frans Timmermans, ‘Which World do we want after COVID-19?’ *Euractiv* (Brussels: Belgium, 16 April 2020) <<https://www.euractiv.com/section/energy-environment/opinion/which-world-do-we-want-after-covid-19/>> accessed 31 July 2020; See Moustapha Kamal Gueye, Grasp the Silver Lining of the COVID-19 Pandemic (International Labour Organization Blog, 5 June 2020) <<https://iloblog.org/2020/06/05/grasp-the-silver-lining-of-the-covid-19-pandemic/>> accessed 30 July 2020.

⁴Aaron Bernstein, Coronavirus, Climate Change, and the Environment: A Conversation on COVID-19 with the Director of Harvard University's Centre of Climate, Health and the Global Environment (Harvard T.H. Chan School of Public Health and Harvard Centre of Climate, Health and the Global Environment , 20 March 2020) <<https://www.hsph.harvard.edu/c-change/subtopics/coronavirus-and-climate-change/>> accessed 30 July 2020.

⁵Hamwey, supra note 22.

⁶UNEP Statement on COVID-19 <<https://www.unenvironment.org/news-and-stories/statement/unep-statement-covid-19>> accessed 30 July 2020; See IEA, Put Clean Energy at the Heart of Stimulus Plans to Counter the Coronavirus Crisis, IEA, Paris (International Energy Agency, 2020) <<https://www.iea.org/commentaries/put-clean-energy-at-the-heart-of-stimulus-plans-to-counter-the-coronavirus-crisis>> accessed 28 July 2020.

⁷Paul Polman, This is a Wake-up Call. We must Live within our Planetary boundaries to avoid Future pandemics (Ethical Cooperation, 23 March 2020) <<https://www.genevaenvironmentnetwork.org/resources/updates/updates-on-covid-19-and-the-environment/>> accessed 22 September 2020.

⁸Gueye, supra note 74.

⁹Claudia Assmann and Colm Hastings, Will 2020 be the Year of the Green Industrial Revolution? (Green Growth Knowledge Platform, 23 June 2020) <<https://www.greengrowthknowledge.org/blog/will-2020-be-year-green-industrial-revolution>> accessed 31 June 2020; Megan Darby, ‘IMF Chief: \$1 Trillion Post-Coronavirus Stimulus must tackle Climate Crisis’ *Climate Home News* (London, 29 April 2020) <<https://www.climatechangenews.com/2020/04/29/imf-chief-1-trillion-post-coronavirus-stimulus-must-tackle-climate-crisis/>> accessed 30 July 2020.

goals under the Paris Agreement and 2030 Agenda for Sustainable Development.¹ What we do now will not merely restructure our economies and societies; it will also restructure humanity's future on this planet. A 'green recovery' is our link to a more resilient future. Thus, governments must focus COVID-19 economic recovery fiscal spending on promoting investments in greener technologies and climate resilience.²

4.2. Focus COVID-19 Economic Recovery Stimulus Packages on Transition from Fossil Fuels to Renewable Energies

Fossil fuels are hydrocarbons, primarily crude oil (petroleum), coal, and natural gas formed from decayed plants and animals by exposure to heat and pressure in the earth's crust more than hundreds of millions of years. The burning of fossil fuels by humans is the major source of emissions of carbon dioxide, which is one of the greenhouse gases that contribute to global warming with the resultant effect of climate change.³ Renewable energies, often referred to as clean energies are energies that comes from natural sources or processes that are constantly replenished. Renewable energies are sustainable - something that cannot run out, or is endless, like the sun (solar energy) or wind (wind energy) and are alternative to the most commonly used non-sustainable sources of energy- like coal, petroleum etc. For example, sunlight or wind keep shining and blowing, even if their availability depends on time and weather.⁴

According to the UNEP climate change expert-Niklas Hagelberg, without basic shifts in international energy production; we should have no grounds to expect a long-lasting reduction in emissions. COVID-19 provides us an opportunity to take stock of the risks we are taking in our unsustainable relationship with our environment and snatch the chance to rebuild our economies in more environmentally responsible ways. We must consider global threats such as pandemics and climate change disasters to build resilient countries, global systems, companies, markets, and a healthy, sustainable future for everyone. Supporting COVID-19 economic recovery fiscal stimulus, and finance packages to take advantage of decarbonisation and hastening renewable and clean energy transition will not be only a short-term economic win but a win for future resilience as well.⁵

The magnitude of government spending to tackle COVID-19 needs to extend to an even deadlier crisis colliding with this pandemic-the climate change crisis. The way forward is to decrease carbon intensive-energy, such as fossil fuels, and transit to renewable energy, which is now a competitive alternative.⁶ As Inger Andersen, the Executive Director of UNEP explains, renewable energy is now more cost-effective than ever, providing a chance to prioritize clean economic recovery packages and get the world closer to meeting the Paris Agreement Goals. Renewable energy is a vital pillar of a healthy, safe, and green COVID-19 recovery that leaves no one behind. If governments take benefit of the ever-falling price tag of renewable energy to place clean energy at the centre of COVID-19 economic recovery, rather than subsidizing the recovery of fossil-fuel industries, they can take a huge step in the direction of clean energy and a healthy natural world, which eventually is the greatest insurance policy against global pandemics.⁷

The promotion of renewable energy can be a powerful engine for recovering the economy after the COVID-19 crisis, creating new and secure jobs. At the same time, renewable energy improves air quality, thus protecting

¹Assmann and Hastings, *ibid*.

²Reuters Staff, IMF Leader says Pandemic Stimulus must focus on battling Climate Crisis, *supra* note 22; See The Editorial Board, 'The Virus fight opens up a Climate Opportunity' *Financial Times* (London, 15 May 2020) <<https://www.ft.com/content/eb683e52-95d0-11ea-abcd-371e24b679ed>> accessed 7 August 2020; See Kristalina Georgieva, Managing Director's Opening Remarks at the Petersberg Climate Dialogue XI (International Monetary Fund, 29 April 2020) <<https://www.imf.org/en/News/Articles/2020/04/29/sp042920-m-d-opening-remarks-at-petersberg-event>> accessed 22 September 2020; See Mitch Anderson, Germany is Leading the World toward a Green Recovery: As Europe's Biggest Economy Reboots, It - and many Others - are Planning to Transition away from Fossil Fuels (Reasons To Be Cheerful, 15 May 2020) <<https://reasonstobecheerful.world/coronavirus-lockdown-germany-green-economic-recovery/>> accessed 22 September 2020; Helen Mountford, Responding to Coronavirus: Low-Carbon Investments can help Economies Recover (World Resource Institute, 12 March 2020) <<https://www.wri.org/blog/2020/03/coronavirus-economy-low-carbon-investments>> accessed 7 August 2020; António Guterres, The recovery from the COVID-19 Crisis must lead to a different Economy (United Nations, 31 March 2020) <<https://www.un.org/en/press-communications/2020/03/launch-report-socio-economic-impacts-covid-19>> accessed 8 August 2020.

³Fossil Fuel <https://www.sciencedaily.com/terms/fossil_fuel.htm> accessed 11 September 2020; Otto C. Kopp, Fossil Fuel: Additional Information <<https://www.britannica.com/science/fossil-fuel>> accessed 28 August 2020.

⁴Lora Shinn, Renewable Energy: The Clean Facts (Natural Resources Defence Council (NRDC), 15 June 2018) <<https://www.nrdc.org/stories/renewable-energy-clean-facts>> accessed 15 September 2020; See Renewable Energy: Types, Forms & Sources of Renewable Energy <<https://www.edfenergy.com/for-home/energywise/renewable-energy-sources>> accessed 11 September 2020

⁵UNEP, Record Global Carbon Dioxide concentrations despite COVID-19 Crisis (United Nations Environment Programme, 11 May 2020) <<https://www.unenvironment.org/news-and-stories/story/record-global-carbon-dioxide-concentrations-despite-covid-19-crisis>> accessed 7 August 2020.

⁶Vinod Thomas, 'Time to spark a COVID-19-like Climate Response' *The Hill* (Washington, D.C, 5 May 2020) <<https://thehill.com/opinion/energy-environment/499921-time-to-spark-a-covid-19-like-climate-response>> accessed 8 August 2020.

⁷UNEP, Falling Clean Energy Costs provide Opportunity to Boosts Climate Action in COVID-19 Recovery Packages (United Nations Environment Programme, 10 June 2020) <<https://www.unenvironment.org/news-and-stories/press-release/falling-clean-energy-costs-provide-opportunity-boost-climate-action>> accessed 7 August 2020; Stéphane Belleró, 'What will power the Post-Pandemic Global Economic Recovery?' *UN News* (New York, 27 June 2020) <<https://news.un.org/en/story/2020/06/1067032>> accessed 8 August 2020.

public health.¹ The WHO warns that air pollution-from sources that contribute significantly to the climate crisis cost \$2.9 trillion, or 3.3% of global GDP, in one year (2018) and 1.8 billion days of work absence. The heat caused by air pollution may cost global economies more than \$2 trillion by 2030, with losses in some countries of 6% or more of GDP.² Two-thirds of deaths resulting from air pollution are caused by fossil fuels emitted from cars, factories, and power plants. Experts estimate that illness and premature mortality connected with air pollution from road transport cost the Organisation for Economic Co-operation and Development (OECD) countries \$1.7 trillion in 2010. In 2013, coal-related air pollution accounted for approximately 366,000 premature deaths. Also, India has 22 of the 30 most-polluted cities on Earth. The smog in New Delhi - the capital city of India became so toxic in November 2019 that the government pronounced a public health emergency, shutting down schools and urging people to stay indoors.³

The UN Secretary-General-Antonio Guterres, had noted that the world needs to transition from fossil fuels to clean energy (renewable energy) and urged countries to stop wasting money on fossil fuel subsidies and place a price on carbon. While speaking at the International Energy Agency's (IEA) Clean Energy Transitions Summit, Guterres outlined what he believed were the three "vital reasons" to choose clean energy. First, air pollution is already causing close to nine million early deaths each year and shortening the human lifespan by three years-a heavier toll than tobacco. Second, the ever-growing scientific evidence of the increasing toll of climate disruption is another reason. Third, the world needs to transition from fossil fuels for economic reasons. According to him, the business case for renewable energy is now better than coal in virtually every market. He ended his speech by encouraging the meeting to commit to no new coal today and all the countries to stop providing finance for coal in the developing world.⁴ In line with Guterres's view, Green sources of power like solar and wind can meet electricity demand ahead of more costly production, such as coal.⁵

Further, Guterres has urged China to end fossil fuel subsidies and the funding of coal projects. While speaking at Tsinghua University, Beijing, during a lecture series titled "Climate Governance in the Post-Pandemic World," **Guterres** said as follows:

The economic recovery to the coronavirus pandemic is a 'make-or-break moment' for the planet. China's actions could determine whether the world limits warming to 1.5C – the tougher target of the Paris goal on which the survival of vulnerable nations depends. As an economic superpower, how China restores growth will have a significant impact on whether we can keep 1.5C within reach. The trillions of dollars being spent on the economic recovery to the coronavirus pandemic could either serve as a slingshot to hurtle climate action forward or set it back many years. Governments have a narrow window, but a vast opportunity to rebuild a cleaner and fairer world.⁶

In the United States, environmental advocates are concerned that the government's perceived resentment to climate science and encouraging of fossil fuel industries will distort the economic recovery rescue packages in damaging ways. The intended bailout for airlines and the cruise industry's demand for cash are a pressing worry. According to Annie Petsonk of the US-based Environmental Defence Fund, given that airlines produce a substantial and increasing amount of climate pollution, any financial assistance should include requirements that these companies take action to reduce their emissions. The cruise industry, which has, in addition, requested billions in aid, has severe environmental impacts, and should meet up new standards in exchange for government funding.⁷ In exchange for public money, companies should give definite commitments on carbon reduction. That would be a significant step in the fight against climate change.⁸ After spending trillions of public money in the

¹UNEP, Falling Clean Energy Costs provide Opportunity to Boosts Climate Action, *ibid*; Bellero, *ibid*.

²Maria Mendiluce and Jose Siri, The COVID-19 Recovery can be the Vaccine for Climate Change (World Economic Forum, 9 June 2020) <<https://www.weforum.org/agenda/2020/06/covid-recovery-climate-and-health-hand-i-n-hand/>> accessed 10 August 2020.

³Mountford, *supra* note 82.

⁴Justin Rowlett, 'Clean Energy future 'is Vital' - UN Chief' *BBC News* (London, 9 July 2020); See Kip Hodges and Jeremy Jackson, 'Pandemics and the Global Environment' (2020) (6)(28) *Science Advances*, eabd1325 DOI:10.1126/sciadv.Abd1325; See Bertrand Piccard, Business Leaders Commit to a Clean Economic Recovery (Solarimpulse Foundation, 1 June 2020) <https://solarimpulse.com/news/business-leaders-commit-to-a-clean-economic-recovery?utm_campaign=CleanRecovery&utm_source=twitter&utm_medium=paidsocial&utm_term=image%20trombinoscope&utm_content=%23cleanrecovery%20push> accessed 9 August 2020.

⁵William Wilkes and Rachel Morison, Smog-Free Skies allow Germany to Break Record for Solar Power (Bloomberg Green, 21 April 2020) <<https://www.bloomberg.com/news/articles/2020-04-20/smog-free-skies-all-ow-germany-to-break-record-for-solar-power>> accessed 7 August 2020; See Patrick Verkooijen, Flattening the Climate Curve in the Post-COVID World (World Economic Forum, 17 April 2020) <<https://www.weforum.org/agenda/2020/04/flattening-the-climate-curve-in-the-post-covid-world/>> accessed 7 August 2020.

⁶Chloe Farand, 'Guterres confronts China over Coal boom, urging a Green Recovery: China's Provinces have overseen a Coal plant building spree in the first half of the Year, in a bid to revive the Covid Pandemic-hit Economy' *Climate Home News* (London, 23 July 2020) <<https://www.climatechangenews.com/2020/07/23/guterres-confronts-china-coal-boom-urging-green-recovery/>> accessed 30 July 2020.

⁷Harvey, *supra* note 63; See Achim Steiner and Francesco La Camera, 'Turning the Page on the Age of Oil' *Euractiv Media Network* (Brussels: Belgium, 14 May 2020) <<https://www.euractiv.com/section/development-policy/opinion/turning-the-page-on-the-age-of-oil/>> accessed 7 August 2020.

⁸Harvey, *ibid*.

form of bailout, it would be a tragedy if we rebuild the same unequal, vulnerable, and high carbon economy we had before.¹ Taxpayers, several of whom are currently struggling financially, have the right to look forward to responsible behaviour from companies in exchange for bailouts. They should not be funding private businesses simply to see them generate more costs for the public in the form of climate impacts in the future.²

Environmental experts and campaigners fear that if the longer-term COVID-19 economic recovery stimulus packages are not designed carefully, they will simply establish fossil fuel dependence across the global economy. According to Fatih Birol, the executive director of the IEA, as governments are drawing up economic recovery stimulus plans to counter the economic damage from COVID-19, these stimulus packages present an outstanding opportunity to make sure that the vital task of building a secure and sustainable energy future does not get misplaced in the midst of the flurry of immediate priorities. Also, Shaun Spiers, the executive director of the Green Alliance, noted that weakening or doing away with environmental regulations to obtain a fast economic hit would be misplaced-out of the frying pan into the fire, even though the fire seems a few years away.³ Georgieva, has noted that to ensure that economic recovery fiscal stimulus addressed climate change risks; governments should make financial lifelines for carbon-intensive companies contingent on commitments to reduce carbon emissions.⁴

By promoting renewable energy within the framework of COVID-19 economic recovery stimulus packages, we have the chance to invest in future prosperity, health, and climate protection. When the present crisis relieves, governments will have to strengthen their goals not just on renewable power but as well on the decarbonisation of transport, buildings, and industry.⁵ There is no superior reason not to be phasing out fossil fuels and setting up renewable energy technologies, the majority of which are currently internationally available and already cheaper than fossil fuels in several cases. For policymakers responding to the current COVID crisis, the objective should be to support citizens' livelihoods by investing in renewable energy as opposed to fossil fuels. Now is the time to redirect the \$5.2 trillion spent on fossil-fuel subsidies every year toward renewable energies.⁶

4.3. Focus COVID-19 Economic Recovery Stimulus Packages on Building a Sustainable Circular Economy

The preceding 150 years of industrial evolution have been dominated by a one-way or linear model of production and consumption wherein goods are manufactured from raw materials, sold, used, and then discarded or incinerated as waste.⁷ A circular economy is based on designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.⁸ A circular economy reveals and designs out the negative impacts of economic activity that cause damage to human health and natural systems. This comprises the release of greenhouse gases and hazardous substances, the pollution of land, water and air, together with structural waste such as traffic congestion. A circular economy supports activities that preserve value in the form of energy, labour, and materials. This means designing for durability, reuse, repair, remanufacturing, and recycling to keep existing products, components, and materials circulating in the economy.⁹

At its core, the circular economy aims at transforming waste products of the traditional linear economy into valuable resources, by recycling and recovering it for different or multiple production cycles, thus raising the efficiency of resource usage.¹⁰ To quote a definition proposed by Baran, the circular economy follows three principles:

Preserving and enhancing natural capital (through the regulated usage of available resources, and the balance of renewable resource flows); optimising resource yields (which means that

¹Over 150 Global Corporations urge World Leaders for Net-Zero Recovery from COVID-19: Joint Press Release by the Science Based Targets Initiative, the UN Global Compact, and the We Mean Business Coalition (Science Based Targets, 19 May 2020) <<https://sciencebasedtargets.org/2020/05/18/uniting-business-and-governments-to-recover-better/>> accessed 7 August 2020.

²Harvey, supra note 63.

³Ibid; See Covid-19 and Commodities-Deutsche Bank (Commodities-Deutsche Bank, 23 April 2020) <<https://cib.db.com/insights-and-initiatives/flow/trade-finance/covid-19-and-commodities.htm>> accessed 22 September 2020.

⁴Reuters Staff, IMF Leader says Pandemic Stimulus must focus on battling Climate Crisis, supra note 22.

⁵UNEP: Falling Clean Energy Costs provide Opportunity to Boosts Climate Action, supra note 87; Bellero, supra note 87.

⁶Sandrine Dixon-Declève and Hans Joachim Schellnhuber and Kate Raworth, Could COVID-19 give rise to a Greener Global Future? (World Economic Forum in collaboration with Project Syndicate, 25 March 2020) <<https://www.weforum.org/agenda/2020/03/a-green-reboot-after-the-pandemic/>> accessed 10 August 2020.

⁷The Benefits of a Circular Economy (World Economic Forum, 2020) <<https://reports.weforum.org/toward-the-circular-economy-accelerating-the-scale-up-across-global-supply-chains/1-the-benefits-of-a-circular-economy/>> accessed 26 September 2020.

⁸What is The Circular Economy? (Ellen MacArthur Foundation, 2017) <<https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy>> accessed 17 September 2020; See Jorge, N.F. and Cristian, S. 'An Innovation Policy to meet the EU's Green Deal Circular Economy Goals' *CEPS Policy Insights* No. 2020/21, September 2020

⁹The Circular Economy in Details <<https://www.ellenmacarthurfoundation.org/explore/the-circular-economy-in-detail>> accessed 26 September 2020.

¹⁰Klee, T.J. 'The European Green Deal: An Analysis of how the European Commission promises to Manage Climate Change' Master Thesis, University of Barcelona, p. 52; Moric, I. and others, 'The Effect of Phases of the Adoption of the Circular Economy on Firm Performance: Evidence from 28 EU Countries' [2020] (12)(6) *Sustainability*, p.2557;

remanufacturing, refurbishing and maintenance are well planned, in order to make materials a part of economic processes for as long as possible); and fostering system effectiveness (to minimise negative externalities and eliminate toxic substances, by either replacing or reducing them, for example choosing appropriate materials, thus leading to waste reduction or replacing fossilised energy resources by renewable ones).¹

A circular economy which is a systemic approach to economic development that is restorative or regenerative by intention and design devised to benefit businesses, society, and the environment² has the possibility to reduce greenhouse gas emissions and the use of raw materials. It substitutes the end-of-life model with restoration, changes towards the use of renewable energy, eradicates the use of toxic chemicals, which hinders reuse and return to the biosphere, and aims to eliminate waste by means of the superior design of materials, products, systems, and business models.³ Circular systems make efficient utilization of bio-based materials by promoting several diverse uses for them as they cycle between the economy and natural systems. A circular economy prevents the use of non-renewable resources and preserves or improves renewable ones, for example, by returning important nutrients to the soil to encourage regeneration or using renewable energy as opposed to relying on fossil fuels.⁴

A sustainable circular economy signifies a new economic model shift from narrow GDP growth to multi-dimensional progress, that is, the broader strengthening of environmental quality, human well-being, and economic prosperity for current and future generations. Only such a circular economy could regenerate the environment. The way we use resources has altered our economy and society in the past. A circular economy presents us with an opportunity to deliver sustainable benefits for the future.⁵ As economic recovery stimulus packages are introduced to aid recovery from COVID-19, there is a great opportunity to intensify our commitment and encourage a circular economy as part of a green recovery. Funds should also be used to directly encourage circularity, for instance, by investing or providing loan guarantees to circular economy start-ups that are driving solutions.⁶

The prospective benefits of shifting to a circular economy go further than the economy and into the natural environment. By designing out waste and pollution, keeping materials and products in use, and regenerating instead of degrading natural systems, the circular economy represents a dominant contribution to realizing global climate targets. For example, it is believed that a circular economy development path could halve carbon dioxide emissions by 2030, relative to today's level across mobility, food systems, and the built environment. In addition, sector-specific analysis indicates that the UK, for example, could decrease greenhouse gas emissions by 7.4 million tonnes yearly by keeping organic waste out of landfills.⁷

Following the principles of the circular economy would be a fundamental step in fighting climate change as it has the potential of reducing greenhouse gas emissions on a global scale. Transition to the circular economy approach would require a shift in how society uses natural resources. Greenhouse gas emissions can be decreased if we improve resource efficiency and develop more circular business models.⁸ Climate change and the use of materials are closely linked. According to Circle Economy calculations, 62% of global greenhouse gas emissions (excluding those from land use and forestry) come from the extraction, processing, and production of goods to meet society's needs; only 38% are emitted in the supply and use of products and services. For example, emissions from industry in the European Union would fall by 56% in 2050 if the circular economy became a reality. The reduction in emissions measured on a global scale will be even greater because the European Union will no longer import primary raw materials from countries outside the Union, reducing greenhouse gas

¹Baran, B. 'The Circular Economy in EU Policy as a Response to Contemporary Ecological Challenges' [2019] (300)(4) *Gospodarka Narodowa*, pp.31-51; See Hartley, K. and van Santen, R. and Kirchherr, J. 'Policies for transitioning towards a circular economy: Expectations from the European Union (EU)' [2020] (155) *Resources, Conservation and Recycling*, p. 104634.

²See The Circular Economy in Details, supra note 104; See Circular Economy: Definition, Principles, Benefits and Barriers (YouMatter, 21 February 2020) <<https://youmatter.world/en/definition/definitions-circular-economy-meaning-definition-benefits-barriers/>> accessed 26 September 2020; Jelle Steenbergen and Xiao-Er Kong and Wouter Noordijk, Circular economy, a systemic approach to economic activity <<https://www.foodinspirationmagazine.com/8568/circular-economy/>> accessed 17 September 2020.

³Circular Economy: Definition, Principles, Benefits and Barriers, *ibid*; From Linear to Circular-Accelerating a Proven Concept (World Economic Forum, 2020) <<https://reports.weforum.org/toward-the-circular-economy-accelerating-the-scale-up-across-global-supply-chains/from-linear-to-circular-accelerating-a-proven-concept/#view/fn-11>> accessed 26 September 2020.

⁴The Circular Economy in Details, supra note 104.

⁵Anne Velenturf and Phil Purnell, 'What a Sustainable Circular Economy would look like' *The Conversation* (Africa, 6 May 2020) <<https://theconversation.com/what-a-sustainable-circular-economy-would-look-like-133808>> accessed 26 September 2020.

⁶Naoko Ishii and Frans van Houten, To build a Resilient World, We must go Circular. Here's how to do it (World Economic Forum, 6 Jul 2020) <<https://www.weforum.org/agenda/2020/07/to-build-resilience-to-future-pandemics-and-climate-change-we-must-go-circular/>> accessed 11 August 2020; See Eliot Whittington and Maria Mendiluce, 'EU Climate Neutrality is Essential, or Recovery will be Short-Lived' *Euractiv* (Brussels: Belgium, 19 May 2020) <<https://www.euractiv.com/section/energy-environment/opinion/eu-climate-neutrality-is-essential-or-recovery-will-be-short-lived/>> accessed 7 August 2020.

⁷The Circular Economy in Details, supra note 104.

⁸Andre Goncalves, **Is a Circular Economy the Key to Fighting Climate Change?** (YouMatter, 11 February 2019) <<https://youmatter.world/en/is-circular-economy-the-key-to-fight-climate-change-a-circle-economy-report/>> accessed 26 September 2020.

emissions in those countries.¹

Economic growth in emerging markets has helped raise living standards-but inevitably; it has also generated massive consumer and industrial waste.² The circular economy model calls on our ability to do more with fewer materials and consume responsibly. Thus, there is a need for a transformation in consumption and production practices to achieve a truly sustainable circular economy.³ In the face of fast volatility growths across the global economy and proliferating signs of resource depletion, the call for a new circular economic model is getting louder. The pursuit for a significant enhancement in resource performance across the economy should lead businesses to search for ways to reuse products or their components and restore more of their valuable material, energy, and labour inputs.⁴ A more circular economy can create deep cuts to emissions from heavy industry: in an ambitious situation, as far as 296 million tons of carbon dioxide (CO₂) annually in the European Union by 2050, out of 530 million tons total-and some 3.6 billion tonnes per year globally.⁵

A circular economy minimizes the extraction of raw materials and replaces it with resources locked up and forgotten in our waste.⁶ The economic advantage of transitioning to this new business model is projected to be worth over one trillion dollars in material savings. The environmental benefit is that it will help in the fight against climate change.⁷ Making better use of the materials already existing in the economy can take the global industry halfway towards net-zero emissions. Moreover, doing so is economically attractive.⁸ Initiatives for a more circular economy, thus, merit an essential place in global climate and industrial policy⁹ and the COVID-19 economic recovery stimulus packages. Hence, rather than revive an inherently wasteful system, national governments should build a sustainable circular economy post-COVID-19 pandemic.¹⁰

4.4. Focus COVID-19 Economic Recovery Stimulus Packages on Tackling Deforestation through Investment in Reforestation

Deforestation is the clearing of virgin forests, or intentional destruction, or removal of trees through deliberate, natural, or accidental means.¹¹ Human activities such as agricultural expansion, wood extraction (e.g., logging or wood harvest for domestic fuel or charcoal), mining, oil extraction and infrastructure expansion such as road building and urbanization are the major causes of deforestation.¹² Reforestation is the replanting of trees in an area where there was previously a forest which was destroyed or damaged (usually through deforestation) by humans or some natural calamity, to restore the environment to its natural form.¹³

Forests are fundamental in developing global solutions to mitigate and adapt to climate change. There is a strong link between biodiversity loss and the climate crisis. There are about three trillion trees on the planet. However twice as much existed before the start of human civilization. At present, 10 billion more trees are cut down than are planted yearly.¹⁴ This destruction through deforestation is a significant contributor to the carbon emissions that are driving the climate change crisis. The global rainforests could be extinct in 100 years should we persist with the present rate of deforestation.¹⁵ Reforestation can help to reduce the concentration of carbon dioxide in the atmosphere and drastically lessen the presence of toxic gases like methane which notably contribute to climate change. Forests are an effective, natural carbon sink, soaking up much of the carbon

¹What are the Environmental Benefits of the Circular Economy? <<https://kenniskaarten.hetgroenebrein.nl/en/knowledge-map-circular-economy/ce-environmental-benefits/>> accessed 26 September 2020; See The Circularity Gap Reporting Initiative: A Global Score for Circularity (Circle Economy, 2019) <<https://www.circularity-gap.world/>> accessed 26 September 2020.

²Mapping the Benefits of a Circular Economy (McKinsey & Company, 1 June 2017) <<https://www.mckinsey.com/business-functions/sustainability/our-insights/mapping-the-benefits-of-a-circular-economy>> accessed 26 September 2020.

³Velenturf and Purnell, supra note 110.

⁴The Benefits of a Circular Economy, supra note 102.

⁵Mari Pantsar and Samuli Laita, The Circular Economy—A Powerful Force for Climate Mitigation: Transformative Innovation for Prosperous and Low-Carbon Industry (Material Economics Sverige AB, 5 June 2018) pp. 8, 176 <<https://www.sitra.fi/en/publications/circular-economy-powerful-force-climate-mitigation/>> accessed 26 September 2020.

⁶4 Benefits of a Circular Economy (Waste Wise Products Inc., 30 November 2017) <<https://www.wastewiseproductsinc.com/blog/sustainability/4-benefits-of-a-circular-economy/>> accessed 26 September 2020.

⁷The Benefits of a Circular Economy, supra note 102.

⁸See Pantsar and Laita, supra note 118.

⁹Ibid.

¹⁰Carrington, supra note 20.

¹¹Effects of Deforestation (Pachamama Alliance, 2020) <<https://www.pachamama.org/effects-of-deforestation/>> accessed 25 September 2020.

¹²See The Causes of Deforestation <<http://www.eniscuola.net/en/argomento/rain-forest/deforestation/the-causes-of-deforestation/>> accessed 26 October 2020; See Causes of Deforestation: Direct Causes (Earth Observatory, 30 March 2007) <<https://earthobservatory.nasa.gov/features/Deforestation/deforestationupdate3.php>> accessed 26 October 2020.

¹³See Importance and Advantages of Reforestation (Earth Reminder, 28 October 2019) <<https://www.earthreminder.com/importance-of-reforestation-with-advantages/>> accessed 26 September 2020.

¹⁴Reforestation|Deforestation|Afforestation <<https://www.sappi.com/reforestation-deforestation-afforestation-and-their-differences/>> accessed 26 September 2020; Jennifer Rankin and Shaun Walker, 'EU plan for 3bn Trees in 10 years to tackle Biodiversity Crisis' *The Guardian* (London, 19 May 2020) <<https://www.theguardian.com/environment/2020/may/19/eu-plan-for-3bn-trees-in-10-years-to-tackle-biodiversity-crisis>> accessed 27 September 2020.

¹⁵Reforestation | Deforestation | Afforestation, ibid.

emitted from burning fossil fuels. Reversing global deforestation through reforestation is a key element of an effective mitigation strategy to fight the global climate change problem.¹

Among the many gifts forests give us is one we desperately need: help with slowing climate change.² Forests store great quantities of carbon. Trees and other plants absorb carbon dioxide from the atmosphere as they grow. This is converted into carbon and stored in the plant's branches, leaves, trunks, roots, and soil.³ In other words, trees not only absorb carbon dioxide from our air; they also store carbon in their roots, leaves, and trunk. When trees are cut down, burnt, or allowed to rot, their stored carbon is released into the air as carbon dioxide. And this is how deforestation and forest degradation contribute to climate change.⁴ Healthy forests absorb (remove) carbon dioxide from the atmosphere, acting as valuable carbon sinks. This means that deforested areas lose that ability and release more carbon dioxide (stored in those trees) into the atmosphere.⁵ Forests worldwide store more than double the amount of carbon dioxide than is found in the atmosphere.⁶ Less carbon dioxide implies less pollution and less global warming that contributes to climate change.⁷

The Food and Agriculture Organization (FAO) Global Forest Resources Assessment 2020 indicates that deforestation continues globally at a rate of 10 million hectares yearly⁸ and that it is the second leading cause of climate change. (Burning of fossil is the first).⁹ It is estimated that 25% of the world's total greenhouse gas production comes from deforestation alone¹⁰ and that trees in the Amazon rainforest alone hold 48 billion tons of carbon.¹¹ Forests are believed to have already removed nearly one-third of human-produced carbon dioxide emissions from the atmosphere. Through planned and sustainable reforestation, they could remove much more.¹² So, when trees are cut down, it is a situation that is bad in two different ways on climate change—more carbon dioxide is released, and less is absorbed. Brazil, for instance, has lost 20% of its rainforest to deforestation, making the country one of the world's biggest contributors to greenhouse gases and global climate change.¹³ Averaged over 2015-2017, global loss of tropical forests contributed about 4.8 billion tonnes of carbon dioxide annually (or about 8-10% of yearly human emissions of carbon dioxide).¹⁴ So only through planned reforestation can the effects of deforestation be checked, and climate change caused by deforestation can be reduced.¹⁵

¹Thomas Schueneman, The Benefits of Reforestation (PlanetWatch, 22 March 2012) <<https://earthmaven.io/planetwatch/oceans-forests/the-benefits-of-reforestation-eCVcU-dK-0-6QmWsgRRulq>> accessed 26 September 2020; See Sonia Madaan, Advantages and Importance of Reforestation <<https://www.earthelipse.com/environment/advantages-and-importance-of-reforestation.html>> accessed 26 September 2020; See 10 Benefits of Reforestation <<https://woodenwatchesclub.com/blogs/news/10-benefits-of-reforestation>> accessed 26 September 2020; Ime Njoku, 'Climate Change: Association embarks on 1Million Tree planting Campaign in Kaduna' *Voice of Nigeria* (Nigeria, 8 July 2020) <<https://www.von.gov.ng/climate-change-association-embarks-on-1million-tree-planting-campaign-in-kaduna/>> accessed 29 September 2020.

²What is the Relationship between Deforestation and Climate Change? (Rainforest Alliance, 12 August 2018) <<https://www.rainforest-alliance.org/articles/relationship-between-deforestation-climate-change>> accessed 25 September 2020.

³Annika Dean, Deforestation and Climate Change (Climate Council, 21 August 2019) <<https://www.climatecouncil.org/deforestation/>> accessed 25 September 2020; See David Gibbs and Nancy Harris and Frances Seymour, By the Numbers: The Value of Tropical Forests in the Climate Change Equation (World Resources Institute, 4 October 2018) <<https://www.wri.org/blog/2018/10/numbers-value-tropical-forests-climate-change-equation>> accessed 25 September 2020; See Reforestation-Earth Awareness <<https://earthawareness101.weebly.com/reforestation.html>> accessed 26 October 2020.

⁴Tropical Deforestation and Global Warming (Union of Concerned Scientists, 9 December 2012) <<https://www.ucsusa.org/resources/tropical-deforestation-and-global-warming>> accessed 28 September 2020.

⁵Effects of Deforestation supra note 100; See What are the Consequences of Deforestation? <<https://www.toppr.com/ask/question/what-are-the-consequences-of-deforestation/>> accessed 25 September 2020.

⁶Lauren Bennett, Deforestation and Climate Change (Climate Institute, 18 April 2017) <<http://climate.org/deforestation-and-climate-change/>> accessed 25 September 2020.

⁷Madaan, supra note 129; See 10 Benefits of Reforestation, supra note 129.

⁸United Nations Environment Programme and International Livestock Research Institute, *Preventing the Next Pandemic: Zoonotic diseases and how to break the chain of Transmission (Nairobi, Kenya: UNEP 2020)* p. 29 <<https://www.ilri.org/publications/preventing-next-pandemic-zoonotic-diseases-and-how-break-chain-transmission>> accessed 29 September 2020; See Bradshaw CJA and Giam X and Sodhi NS. 'Evaluating the Relative Environmental Impact of Countries' [2010] (5)(5) *PLoS ONE* <<https://doi.org/10.1371/journal.pone.0010440>> accessed 26 September 2020; FAO, Global Forest Resources Assessment 2020 Key Findings (Rome: Food and Agriculture Organization of the United Nations, 2020) <<http://www.fao.org/forest-resources-assessment/en/>> accessed 27 September 2020; Joseph Opoku Gakpo, Agricultural technology key to protecting nature and preventing pandemics (Alliance For Science, 24 July 2020) <<https://allianceforscience.cornell.edu/blog/2020/07/agricultural-technology-key-to-protecting-nature-and-preventing-pandemics/>> accessed 27 September 2020.

⁹Sarah Derouin, Deforestation: Facts, Causes & Effects (Live Science, 6 November 2019) <<https://www.livescience.com/27692-deforestation.html>> accessed 25 September 2020.

¹⁰Bennett, supra note 110.

¹¹Leading the Way for a Cleaner Future: Working Across Brazil to Decrease Deforestation and Carbon Emissions (The Nature Conservancy, 2020) <<https://www.nature.org/en-us/about-us/where-we-work/latin-america/brazil/stories-in-brazil/deforestation-and-climate-change/>> accessed 26 September 2020.

¹²Reforestation | Deforestation | Afforestation, supra note 103.

¹³Leading the Way for a Cleaner Future, supra note 139; See Riley Farabaugh, 25 Facts About Climate Change & Deforestation (Vermont Woods Studios, 30 July 2020) <<https://vermontwoodsstudios.com/blog/deforestation-climate-change-facts/>> accessed 25 September 2020.

¹⁴Dean, supra note 131; See Gibbs and Harris and Seymour, supra note 131.

¹⁵Madaan, supra note 129; See 10 Benefits of Reforestation, supra note 129.

5. THE NEED FOR LEGAL FRAMEWORKS THAT GUARANTEES INVESTMENTS IN THE SUGGESTED STRATEGIC FOCAL AREAS: INSIGHTS FROM THE EUROPEAN COMMISSION GREEN DEAL

There is a need for legal frameworks that guarantees investments in the suggested strategic focal areas. Thus, national governments and international financial lending institutions should draw up COVID-19 economic recovery stimulus legal frameworks that guarantee investments in a greener economy, transition from fossil fuels to renewable energies, building a sustainable circular economy, and tackling deforestation through investment in reforestation. In doing so, national governments can take insights from the European Commission Green Deal.

The European Green Deal (EGD) pronounced by the European Commission in December 2019 is a set of policy proposals that involves a 10-year investment plan to fund a drastic reduction of the European Union's (EU's) greenhouse gas (GHG) emissions in 2030 by 55% compared with 1990 and to make Europe realize zero (net) emissions or "climate neutrality" by 2050.¹ The EGD is the European Commission's strategy to tackling climate change and related environmental challenges.² The EGD seeks for the European Union to become the world's first "climate-neutral bloc" by 2050³ through the transformation of the 27-country bloc from a high-to a low-carbon economy.⁴ The EGD aims to simultaneously address EU's economic, environmental and social challenges in a mutually supporting way.⁵ It is an ambitious policy package intended to make the EU's economy environmentally sustainable.⁶ The European Green Deal will work through a framework of regulation and legislation setting clear comprehensive targets with action plans for critical sectors.⁷ The following figure illustrates the various elements of the European Green Deal:⁸

¹See Servaas Storm, The EU's Green Deal: Bismarck's 'what is possible' versus Thunberg's 'what is imperative' Institute for New Economic Thinking Working Paper No. 117, March 11, 2020, p. 3; Tamma, P. and Schaart, E. and Gurzu, A. 'Europe's Green Deal plan unveiled' *Politico* (Arlington County: Virginia, 11 December 2019) <<https://www.politico.eu/article/the-commissions-green-deal-plan-unveiled/>> accessed 21 November 2020; See Kinga, J. and Jarle, H., The Consultative Committee of the European Economic Area Resolution and Report on the European Green Deal, 18 September 2020, p. 11; Pellerin-Carlin, T. and Sweatman, P. 'What Businesses Can Do for the European Green Deal: Nine Climate, Innovation and Social Actions for CEOs in a Climate Emergency' Jacques Delors Energy Centre Energy Union Policy Brief, 15 January 2020; Lee-Makiyama, H. 'The EU Green Deal and its Industrial and Political Significance' European Centre for International Political Economy (ECIPE) Policy Brief No. 1/2021. p. 2; Sikora, A. 'European Green Deal – legal and financial challenges of the climate change' (ERA Forum 2020) <<https://link.springer.com/article/10.1007/s12027-020-00637-3#citeas>> accessed 22 November 2020; Janez Potočnik, The European Green Deal and a post Covid-19 prosperity: *Two sides of the same coin* (Ellen MacArthur Foundation, 16 October 2020); Marco Sidi, 'The European Green Deal: Assessing its Current State and Future Implementation' *Finish Institute of International Affairs (FIIA) Working Papers*, No. 114, May 2020, p. 6.

²Breukelaar, I. J. 'The European Green Deal: Opportunities and Challenges' <<http://www.efcc.eu/media/4703/attachment-41-the-european-green-deal.pdf>> accessed 30 May 2021; Ossewaarde, M. and Ossewaarde-Lowtoot, R. 'The EU's Green Deal: A Third Alternative to Green Growth and Degrowth?' *Sustainability* [2020] (12), 9825; Circular Economy Action Plan 2020 Summary for Businesses: Implications and Next Steps (Geneva: Switzerland, World Business Council for Sustainable Development, October 2020) p. 4.

³Financing the green transition: The European Green Deal Investment Plan and Just Transition Mechanism (Green Finance Platform, 14 January 2020) <<https://www.buildup.eu/en/news/financing-green-transition-european-green-deal-investment-plan-and-just-transition-mechanism>> accessed 21 November 2020.

⁴Fiona Harvey and Jennifer Rankin, 'What is the European Green Deal and will it really cost €1tn?' *The Guardian* (London, 9 March 2020) <<https://www.theguardian.com/world/2020/mar/09/what-is-the-european-green-deal-and-will-it-really-cost-1tn>> accessed 17 November 2020; See Nathaniel Gronewold, E.U.'s Coronavirus Recovery Plan also Aims to Fight Climate Change (Scientific America, 28 May 2020) <<https://www.scientificamerican.com/article/e-u-s-coronavirus-recovery-plan-also-aims-to-fight-climate-change/>> accessed 9 August 2020; See Damian Carrington, 'EU Green Recovery Package sets a Marker for the World' *The Guardian* (London, 28 May 2020) <<https://www.theguardian.com/environment/2020/may/28/eu-green-recovery-package-sets-a-marker-for-the-world>> accessed 20 September 2020; See Roger Harrabin, 'Climate Change: Could the Coronavirus Crisis spur a Green Recovery?' *BBC News* (London, 6 May 2020) <<https://www.bbc.com/news/science-environment-52488134>> accessed 20 August 2020.

⁵Thorfinn Stainforth, Celine Charveriat, Eloise Bodin, Tsvetelina Filipova, Green Deal for All: How to Achieve Sustainability and Equity between the People, Regions, Countries and Generations of Europe in a Post-Covid-19 Era (The Institute for European Environmental Policy (IEEP) Policy Report, 2020) p. 7.

⁶Leonard, M. and others, 'The Geopolitics of the European Green Deal' Policy Contribution, Issue No. 04/2021, Bruegel <<https://www.bruegel.org/2021/02/the-geopolitics-of-the-european-green-deal/>> accessed 29 May 2021; See Marianne Kettunen, Eloise Bodin, Ellie Davey, Susanna Gionfra and Céline Charveriat, An EU Green Deal for Trade Policy and the Environment: Aligning Trade with Climate and Sustainable Development Objectives (Brussels/London, Institute for European Environmental Policy (IEEP), 2020) p. 26.

⁷Harvey and Rankin, *supra* note 147; See Gronewold, *supra* note 147; See Carrington, *supra* note 147; See Harrabin, *supra* note 147.

⁸See Breukelaar, *supra* note 145.

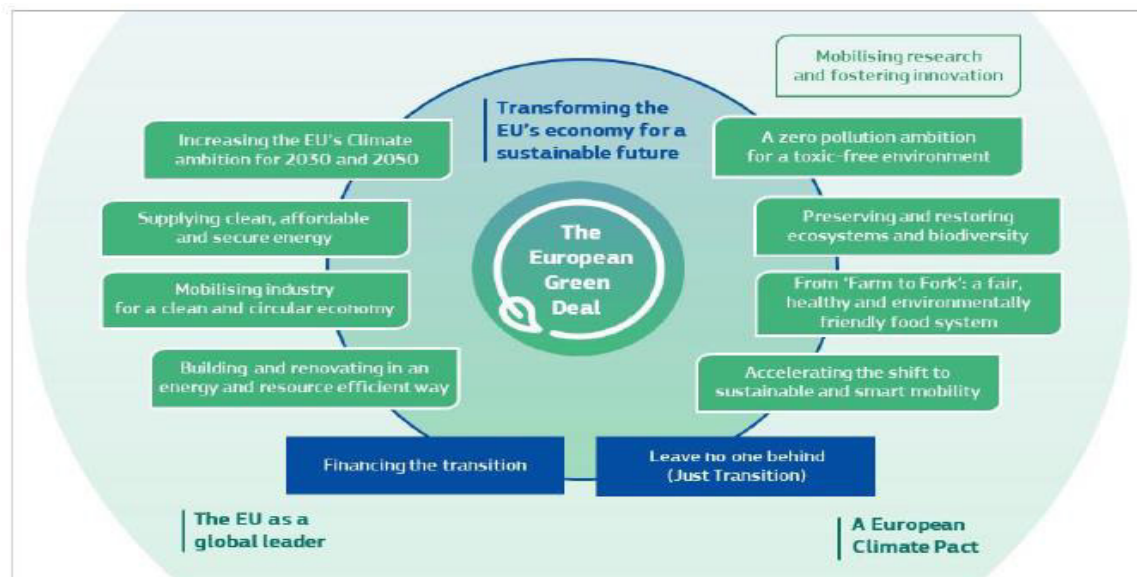


Figure 1: The European Green Deal and its key areas

Source: European Commission 2020, Communication on the European Green Deal

The European Green Deal is not a law in itself, but a general policy strategy, outlining the ambitions and goals in different policy sectors. For its implementation, existing regulations and standards will be revised over the next few years and new laws and directives will be developed and implemented. There are eight key policy areas that make up the European Commission Green Deal.¹ They include:

1. Increasing the EU's climate ambition for 2030 and 2050;
2. Supplying clean, affordable and secure energy;
3. Mobilising industry for a clean and circular economy;
4. Building and renovating in an energy and resource efficient way;
5. Accelerating the shift to sustainable and smart mobility;
6. From 'Farm to Fork': designing a fair, healthy and environmentally-friendly food system;
7. Preserving and restoring ecosystems and biodiversity;
8. A zero pollution ambition for a toxic-free environment.²

However, for the purpose of this paper, the authors shall focus on clean energy (Supplying clean, affordable and secure energy), circular economy (Mobilising industry for a clean and circular economy), sustainable mobility (Accelerating the shift to sustainable and smart mobility), and biodiversity (Preserving and restoring ecosystems and biodiversity). That is, policies 2, 3, 5 and 7.

5.1. European Commission Green Deal 'EU Strategy for Energy System Integration' under the Clean Energy (Renewable Energy) Policy

For the European Union to reach its climate neutrality target, one goal is to decarbonise its energy system to achieve net-zero greenhouse gas emissions by 2050.³ In 2020, the European Commission made public its strategy for a greener, cleaner energy future. The EU Strategy for Energy System Integration (EUSES) serves as a framework for an energy transition, which comprises measures to create a more circular energy system by promoting energy efficiency, supporting the reuse of waste heat generated from industrial sites and data centres, improving synergies between energy infrastructures with the review of the Trans-European Network in Energy Regulation, incentivising the use of agriculture residues to produce sustainable biogas and biofuels. The EUSES

¹Fetting, C. 'The European Green Deal' European Sustainable Development Network (ESDN) Report 2020 (Vienna, ESDN Office, December 2020) p. 7.

²European Commission, Communication from the Commission - The European Green Deal, COM (2019) 640 final, 11 December 2019, p. 4; Sabato, S. and Fronteddu, B, A 'Socially Just Transition through the European Green Deal? European Trade Union Institute Working Paper, August 2020, p. 12; Anastasiya Synytsia, 'European Green Deal: Opportunities And Threats To Ukraine, Policy Paper, Resource and Analysis Center "Society and Environment"- Institute for Economic Research and Policy Consulting, and the DiXi Group, 2020) p. 15.

³Haines, Andy and Scheelbeek, Pauline, "European Green Deal: a major opportunity for health improvement" [2020] (February) *The Lancet*, 1-4:1-2 <https://www.researchgate.net/publication/339230998_European_Green_Deal_a_major_opportunity_for_health_improvement/link/5e4cf6a25299b1fdb9356036/download> accessed 21 November 2020; See Simon, Frédéric, 'The EU releases its Green Deal. Here are the key points' *Climate Home News* (London, 12 December 2019) <<https://www.climatechangenews.com/2019/12/12/eu-releases-green-deal-key-points/>> accessed 21 November 2020; See Clean Energy: The European Green Deal (European Commission, 11 December 2020) <https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/clean-energy_en> accessed 21 November 2020.

also includes measures to accelerate the use of electricity produced from renewable sources by increasing the generation of renewable electricity, expanding the use of renewable electricity in buildings, transport, and industry, for example, through heat pumps, electric vehicles, and furnaces, accelerating the development of charging stations for electric vehicles and the introduction of renewable electricity in the network.¹

The EUSESI also contains measures to promote renewable and low-carbon fuels, as well as hydrogen for sectors that are difficult to decarbonise by unlocking the potential of sustainable biomass and biofuels, green hydrogen, and synthetic fuels, enabling carbon capture, storage, and use to encourage deep decarbonisation (for instance, in cement production), visibly define and classify various fuels to support market uptake and transparency, promoting innovative projects based on low-carbon fuels, such as hydrogen-fuelled clean steel plants. Additionally, the EUSESI contains measures to adapt energy markets and infrastructure to a more complex, integrated energy system by ensuring equal treatment for every energy carriers, making electricity and gas markets fit for decarbonisation, concerning taxation-better inform consumers about their preferences to interact with the energy market and the sustainability of the products they consume, promote digital energy services, as well as smart meters for homes and smart chargers for electric vehicles, promote research and innovation to develop new synergies in the energy system.²

5.2. European Commission Green Deal ‘Circular Economy Action Plan for a Cleaner and More Competitive Europe’ under the Circular Economy Industrial Policy

A further target area to realize the EU's climate goals is the introduction of the Circular Economy Industrial policy in March 2020. The Commission's Circular Economy Action Plan for a Cleaner and More Competitive Europe is one of the main thrusts of and aligned with the objectives of the European Green Deal. It is a push for sustainable consumption and keeping resources in the EU economy for as long as possible.³ The plan lays out the EU agenda for attaining a sustainable Europe by promoting a circular economy. It comprises legislative and non-legislative measures in different areas, including the circularity in regions and cities.⁴ The Commission itself presents a simple reasoning for adopting a circular economic model:

There is only one planet Earth, yet by 2050, the world will be consuming as if there were three. Global consumption of materials... is expected to double in the next forty years, while annual waste generation is projected to increase by 70% by 2050. The EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade.⁵

The European Commission mentions raw material extraction and material processing responsible for 90% of biodiversity loss and water stress. The new circular economy strategy aims to make sustainable products, services, and business models the norm and transforms consumption patterns so that no waste is produced in the first place. A sustainable product framework initiative will address high-impact products, including textiles, construction products, electronics, and plastics.⁶ The circular economy action plan will include a “Sustainable Products Policy Framework” to support the circular design of all products based on a common methodology and principles. It will prioritise reducing and reusing materials before re-cycling them. It will foster new business models and set minimum requirements to prevent environmentally harmful products from being placed on the EU market.⁷

¹EU Energy System Integration Strategy: The European Green Deal (European Commission, 8 July 2020) <<https://www.buildup.eu/en/practices/publications/eu-strategy-energy-system-integration>> accessed 21 November 2020; Working together for carbon neutrality, July 16 2020 <<https://www.bcheck.be/working-on-carbon-neutral-ity-t-ogether/>> accessed 22 November 2020; Mathieu Pollet, ‘Explainer: Why is the EU Commission betting on hydrogen for a greener future?’ *Euronews* (Lyon: France, 10 July 2020) <<https://www.euronews.com/2020/07/10/explainer-why-is-the-eu-commission-betting-on-hydrogen-for-a-cleaner-future>> accessed 17 November 2020; European Clean Hydrogen Alliance: Kick Starting the EU Hydrogen Industry to achieve the EU Climate Goals <https://ec.europa.eu/growth/industry/policy/european-clean-hydrogen-alliance_en> accessed 17 November 2020.

²EU Energy System Integration Strategy, *ibid*; Pollet, *ibid*; European Clean Hydrogen Alliance, *ibid*.

³See The Wonk's Survival Guide to the European Green Deal, *supra* note 124; See The European Green Deal: Background Note for the Union for the Mediterranean On-Line Water Expert Group, June 9-10, 2020; Communication from the Commission “A New Circular Economy Action Plan for a Cleaner and More Competitive Europe”, COM(2020) 98 final, Brussels.

⁴Circular Economy Action Plan for a Cleaner and More Competitive Europe <https://ec.europa.eu/jrc/communities/sites/jrccties/files/new_circular_economy_action_plan.pdf> accessed 21 November 2020; See Mario Munta, The European Green Deal: A Game Changer or Simply a Buzzword?, May 2020.

⁵European Commission Circular Economy Action plan, *ibid*, p. 2.

⁶Travers Smith LLP, The European Green Deal - Overview and Status Report (Lexology, 13 July 2020) <<https://www.lexology.com/library/detail.aspx?g=b18af039-49eb-484e-ac52-25820a7513e3>> accessed 17 November 2020 (Hereinafter, The European Green Deal - Overview and Status Report); See Frédéric, *supra* note 130; The Essentials of the "Green Deal" of the European Commission (Green Facts on Health and the Environment, 7 January 2020) <<https://www.greenfacts.org/en/europe-green-deal-2019/1-2/index.htm#0>> accessed 17 November 2020.

⁷See Circular Economy Action Plan, *supra* note 158.

With regards to the “Sustainable Products Policy Framework”, the European Commission itself already gives a general summary of measures to be implemented. These include:

Improving product durability, reusability, upgradability and reparability, addressing the presence of hazardous chemicals in products, and increasing their energy and resource efficiency; increasing recycled content in products, while ensuring their performance and safety; enabling remanufacturing and high-quality recycling; reducing carbon and environmental footprints; restricting single-use and countering premature obsolescence; introducing a ban on the destruction of unsold durable goods; incentivising product-as-a-service or other models where producers keep the ownership of the product or the responsibility for its performance throughout its lifecycle; mobilising the potential of digitalisation of product information, including solutions such as digital passports, tagging and watermarks; rewarding products based on their different sustainability performance, including by linking high performance levels to incentives.¹

Fundamental points of the circular economy policy area consist of boosting the modern aspects of industries, stimulating the exploration and development of new markets for climate-neutral and circular economy friendly products. This additionally involves the decarbonisation and modernisation of energy-intensive industries, for instance, steel and cement.² The market for secondary raw materials will be enhanced by standardisation and harmonisation of regulations on end-of-waste status and by-products. A consultation on the review of rules on waste shipments was launched in March 2020. The current Waste Shipments Regulation is to be revised to move the attention away from waste exports, where waste can be organized for reuse or recycling or treated within the EU, with a likely ban on exports of waste with harmful environmental or health impacts.³

5.3. European Commission Green Deal ‘EU Strategy for Sustainable and Smart Mobility’ under the Sustainable Mobility Policy

A decrease in emissions from transportation methods is another target area within the European Green Deal.⁴ In the framework of the EU Green Deal, the European Commission announced the adoption of a new Strategy for Sustainable and Smart Mobility (EUSSSM) to help contribute to the achievement of the EU Green Deal target of reducing transport-related greenhouse gas (GHG) emissions by 90% by 2050.⁵ Smart mobility integrates different modes of transportation and infrastructure to make travelling safer, cleaner, and more efficient. Current mobility systems are the main contributor to greenhouse gas emissions.⁶ According to the European Environment Agency, transport is one of the main sectors contributing to climate change.⁷ Improving the sustainability of transportation is not only a key challenge in fighting climate change and other environmental

¹European Commission Circular Economy Action plan, supra note 158, p. 54.

²European Commission Industrial Policy <<https://ec.europa.eu/growth/industry/policy/en>> accessed 17 November 2020; Sustainable Industry: The European Green Deal (European Commission, December 2019) <https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6724> accessed 1 November 2020; Global Resources Outlook, 2019 (The International Resource Panel, 2019) <<https://www.resourcepanel.org/reports/global-resources-outlook>> accessed 17 November 2020; Communication From The Commission To The European Parliament, The European Council, The Council, The European Economic and Social Committee and The Committee of The Regions: A New Industrial Strategy for Europe (COM/2020/102 final) <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0102>> accessed 17 November 2020.

³The European Green Deal - Overview and Status Report, supra note 136; Circular Economy Action Plan, supra note 134; See Communication from The Commission to The European Parliament, The European Council, The Council, The European Economic and Social Committee and The Committee of The Regions (Brussels, 11.12.2019 COM 2019, 640 final) <https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf> accessed 17 November 2020; Commission's "Green Deal" could lead to ban on EU waste exports (EUWID Recycling and Waste Management, 11 December 2019) <<https://www.euwid-recycling.com/news/policy/single/Artikel/european-commission-presents-green-deal.html>> accessed 17 November 2020; Communication from The Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of The Regions: A New Circular Economy Action Plan for a Cleaner and More Competitive Europe (Com/2020/98 Final) <<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>> accessed 17 November 2020.

⁴Sustainable Mobility: The European Green Deal (European Commission, 11 December 2019) <https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6726> accessed 17 November 2020.

⁵EU Strategy for a Sustainable and Smart Mobility: Bringing Mountain Territories into the Transition (European Association of Mountain Areas (EUROMONTANA), 18 September 2020) <<https://www.euromontana.org/en/eu-strategy-for-a-sustainable-and-smart-mobility-bringing-mountain-territories-into-the-transition/>> accessed 20 November 2020; EU Sustainable and Smart Mobility Strategy: The Voice of European Railways <<https://www.cer.be/eu-sustainable-and-smart-mobility-strategy>> accessed 20 November 2020; Strategy for a sustainable Transport and Mobility: The European Green Deal <https://www.unescap.org/sites/default/files/3_Session3_EU.pdf> accessed 20 November 2020; Benjamin Baxter, Future of Smart and Sustainable Mobility in Europe <<https://www.eltis.org/participate/events/future-smart-and-sustainable-mobility-europe>> (Eltis: The Urban Mobility Observatory, 26 October 2020).

⁶See Smart Mobility in Tomorrow's Smart Cities <<https://mobility.here.com/learn/smart-mobility/smart-mobility-tomorrows-smart-cities>> accessed 20 November 2020; See Daniel Bland, What is smart mobility? (Global Fleet, 31 August 2018) <<https://www.globalfleet.com/en/smart-mobility/global/article/what-smart-mobility?a=DBL10&t%5B0%5D=Smart%20City&curl=1>> accessed 20 November 2020.

⁷Alberti, V. and others, ‘Tracking EU Citizens’ Interest in EC Priorities Using Online Search Data: The European Green Deal (Luxembourg, Publications Office of the European Union, 2021) p. 6.

problems. As an important sector in modern economies, more efficient and sustainable transport systems contribute to economic growth.¹ Transport is responsible for a quarter of the EU's greenhouse gas emissions, and road, aviation, waterborne and rail transport will all have to contribute to the reduction.² Clean technology is one of the principles of smart mobility and can considerably reduce emissions. The aim is to replace polluting vehicles, trains, aircraft, ships, and boats with zero-emission transportation modes.³

With respect to land transportation, this includes promoting zero and low-emission vehicles on EU roads, deploying public recharging and refuelling stations and proposing more stringent air pollutant emissions standards for combustion-engine vehicles.⁴ It also involves the development of smart traffic management systems and applications as a solution. Installations of charging ports for electric vehicles intend to encourage the purchase of low-emission vehicles. The aim of these public transport modifications is to reduce public congestion and pollution.⁵

With respect to aviation, the Green Deal anticipates a revamping of the "Single European Sky" to significantly reduce aviation emissions and improve air quality near airports.⁶ The Single European Sky (SES) plan focuses on air traffic management to increase safety, flight efficiency, and environmentally friendly conditions.⁷ The SES plan is a European Commission scheme that intends to reform the European air traffic management system via a chain of activities carried out in four diverse stages (institutional, operational, technological and control and supervision) with the goal of satisfying the needs of the European air space with respect to capacity, safety, efficiency, and environmental impact. The EU and the aviation industry have noted that the SES could reduce aviation's carbon dioxide (CO₂) emissions by up to 10%,⁸ or 50 million tonnes.⁹ With regard to vessels (ships), the Green Deal provides for regulating access of the most polluting maritime ships to EU ports and requiring docked ships to use shore-side electricity.¹⁰

5.4. European Commission Green Deal 'EU Forest Strategy' under the EU Biodiversity Strategy for 2030

The 2030 EU Biodiversity Strategy will put Europe's biodiversity on the path to recovery by 2030, for the benefit of people, the climate, and the planet. As a core part of the European Green Deal, it will support recovery in a post-COVID-19 pandemic world, bringing jobs and sustainable growth.¹¹ The EU biodiversity strategy is a vital component of the climate change mitigation strategy of the European Union. From 25% of the European budget that will fight climate change, a large portion will be dedicated to restoring biodiversity and nature-based solutions. On the official page of the EU Biodiversity Strategy for 2030 is cited Ursula von der Leyen, President of the European Commission, stating as follows:

Making nature healthy again is key to our physical and mental wellbeing and is an ally in the fight against climate change and disease outbreaks. It is at the heart of our growth strategy, the European Green Deal, and is part of a European recovery that gives more back to the planet than it takes away.¹²

The EU Biodiversity Strategy for 2030 sets ambitious EU targets and commitments for 2030 to achieve healthy and resilient ecosystems and includes the following targets:

1. Protect 30% of the sea territory and 30% of the land territory, especially primary forests and old-growth

¹Schepelmann, P. and others, 'A Green New Deal for Europe: Towards Green Modernisation in the face of Crisis' A Report by the Wuppertal Institute for Climate, Environment and Energy (Green European Foundation, 2009).

²Strategy for Sustainable and Smart Mobility/Before 2021-1: Legislative Train-1 A European Green Deal (European Parliament, October 2020) <<https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/file-sustainable-and-smart-mobility>> accessed 20 November 2020; See Sustainable Mobility: The European Green (European Commission Deal, 11 December 2019) <https://ec.europa.eu/commission/presscorner/detail/en/FS_19_6726> accessed 20 November 2020; European Green Deal sets out ambitious targets - *Air Cargo News* (United Kingdom, 13 December 2019) <<https://www.aircargonews.net/policy/government/european-green-deal-sets-out-ambitious-targets/>> accessed 22 November 2020.

³See Smart Mobility in Tomorrow's Smart Cities, supra note 167; See Bland, supra note 167.

⁴A Sustainable Recovery for Europe: The EU's Green Deal July 9, 2020, p. 5 <<https://www.clearygotlieb.com/-/media/files/alert-memos-2020/a-sustainable-recovery-for-europe-the-eus-green-deal.pdf>> accessed 27 May 2021.

⁵Sustainable Mobility (The European Green Deal, 11 December 2019) <https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6726> accessed 17 November 2020.

⁶A Sustainable Recovery for Europe, supra note 172.

⁷Single European Sky (The European Green Deal, 11 December 2019) <https://ec.europa.eu/transport/modes/air/ses_en> accessed 17 November 2020.

⁸Sam Morgan, 'Corona-crisis and Brexit boost EU air traffic reform hopes' *Euractiv* (Brussels, 29 September 2020) <<https://www.euractiv.com/section/aviation/news/corona-crisis-and-brexit-boost-eu-air-traffic-reform-hopes/>> accessed 20 November 2020.

⁹Europe to take a third attempt at sorting out the Single European Sky (CAPA Centre for Aviation, 26 October 2012) <<https://centreforaviation.com/analysis/reports/europe-to-take-a-third-attempt-at-sorting-out-the-single-european-sky-86383>> accessed 20 November 2020.

¹⁰A Sustainable Recovery for Europe, supra note 172.

¹¹EU Biodiversity Strategy: Bringing nature back into our lives <https://ec.europa.eu/info/sites/info/files/env-2_0-002_factsheet1-vbo-en-b.pdf> accessed 19 November 2020.

¹²EU Biodiversity Strategy for 2030 <https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/eu-biodiversity-strategy-2030_en#the-new-eu-wide-biodiversity-strategy-will> accessed 17 November 2020.

- forests.
2. 3 billion additional trees planting by the year 2030.
 3. Restore at least 25,000 kilometres of rivers so that they will become free-flowing.
 4. Decrease the use of pesticides by 50% by the year 2030.
 5. Increase organic farming.
 6. Increase the biodiversity in agriculture.
 7. Reverse the decline of pollinators.
 8. Give €20 billion yearly to the issue and make it part of the business practice.¹

The European Commission has proposed the European Green Deal EU Forest Strategy of 2021 under its EU Biodiversity Strategy for 2030 to achieve targets 1 and 2, which deal with forest protection (stopping deforestation) and reforestation. Besides strictly protecting all remaining EU primary and old-growth forests, the EU intends to increase the quantity, quality, and resilience of its forests, particularly against fires, droughts, pests, diseases, and other threats possibly to rise with climate change. To maintain their function for biodiversity and climate, every forest has to be preserved in good health. More resilient forests can sustain a more resilient economy. They as well play an essential role in providing materials, products, and services vital for the circular bio-economy. To make this happen, the European Commission EU Forest Strategy of 2021 will comprise a roadmap for planting at least 3 billion additional trees in the EU by 2030, in full respect of ecological principles. Simultaneously, the Commission will continue to work with the Member States to make sure that the EU is adequately equipped to avert and respond to significant forest fires, inflicting major damages on forest biodiversity.²

Afforestation, reforestation, and tree planting to encourage biodiversity and ecosystem restoration will be promoted through the Common Agricultural Policy (CAP) Strategic Plans and the Cohesion Policy funds. The CAP seeks to ensure sustainable agriculture with respect to economic, social, and environmental aspects. The CAP presently offers farmers numerous ways to contribute to the EU's climate and environmental ambitions.³ According to Article 177 (in particular the second paragraph thereof) of the Treaty on the Functioning of the European Union (TFEU), the Cohesion Fund, created in 1994, make available funding for environmental and trans-European network projects in the Member States whose gross national income per capita is below 90% of the EU average. For the 2014-2020 programming period, it, among other objectives, provides support to investment in the environment, as well as areas connected to sustainable development and energy, which present environmental benefits.⁴

Also, guidelines on biodiversity-friendly afforestation and reforestation and closer-to-nature-forestry practices will be developed by the European Commission in parallel with the new EU Forest Strategy. To get a better picture of European forests' health, the European Commission will work with other data providers to more develop the Forest Information System for Europe. This will help create up-to-date assessments of the condition of European forests and connect all EU forest-data web-platforms.⁵

6. CONCLUSION

The COVID-19 economic recovery stimulus packages must include the fight against climate change. It should be the duty of each responsible government to see that our economies are restored and rebuilt in a manner that will stand the test of time. That means investing in industries and infrastructure that can turn the tide on climate change.⁶ Sustainable COVID-19 economic recovery is only possible when aimed at tackling the climate change

¹The Essentials of the "Green Deal", supra note 160; EU Biodiversity Strategy for 2030, *ibid*.

²Communication from The Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of The Regions EU Biodiversity Strategy for 2030 Bringing nature back into our lives COM/2020/380 final (European Commission: Brussels, 20 May 2020) <<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1590574123338&uri=CELEX:52020DC0380>> accessed 19 November 2020 (Hereinafter, EU Biodiversity Strategy for 2030 Bringing nature back into our lives).

³See Factsheet: How the future CAP will contribute to the Euro Green Deal (European Commission, May 2020) <https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/sustainability_and_natural_resources/documents/factsheet-how-cap-contributes-to-green-deal_en.pdf> accessed 20 November 2020.

⁴Fact Sheets on the European Union Cohesion Fund <https://www.europarl.europa.eu/factsheets/en/sheet/96/c_ohesion-fund> accessed 20 November 2020; Cohesion Fund-Regional Policy-European Commission <https://ec.europa.eu/regional_policy/en/funding/cohesion-fund> accessed 20 November 2020; Cohesion Policy-Glossary-Regional Policy-European Commission <https://ec.europa.eu/regional_policy/en/policy/what/glossary/c/ohesion-policy> accessed 20 November 2020; Consolidated version of the Treaty on the Functioning of the European Union, Part Three - Union Policies and Internal Actions, Title XVIII - Economic, Social and Territorial Cohesion, Article 177 <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12012E177>> accessed 21 November 2020.

⁵EU Biodiversity Strategy for 2030: Bringing nature back into our lives, supra note 179.

⁶ILO, COVID-19 and the World of Work, supra note 70, p. 9; Petersberg Climate Dialogue: Governments discuss how Coronavirus Recovery 'must tackle Climate Change' *BBC News* (London, 29 April 2020) <<https://www.bbc.co.uk/newsround/52467688>> accessed 20 September 2020; Frank Jordans, 'UN Chief: Use pandemic to 'rebuild our world for the better' *ABC News* (New York, 28 April 2020) <<https://abcnews.go.com/International/wireStory/chief-pandemic-rebuild-world-70382942>> accessed 11 September 2020.

crisis. As we rebuild our economy by introducing the necessary economic recovery stimulus packages to bring sustainable economic development and global prosperity. We must not lose sight of the progressing climate change crisis when designing the COVID-19 economy recovery stimulus packages to stimulate the economy after the COVID-19 pandemic.¹

As we come out from the COVID-19 crisis, we need to be explicit that responding to the short-term economic decline with bad long-term investments would not make meaning. Instead, we have an opportunity to utilize economic recovery stimulus measures to both enhance growth following the COVID-19 health crisis and to tackle the climate change problem. The growing urgency of the climate change disaster shows the dire need for immediate measures to cut current emissions level drastically. While COVID-19 and its economic consequences are fairly the main focus of many governments at present, as we look to improve the economy, we, in addition, need to consider the future. For countries expecting to support their economies in a turbulent period *and* attain long-term sustainable growth, climate change action presents a compelling opportunity.²

It is the view of the authors that national governments sum up the courage, foresight, and wisdom to take advantage of the opportunity to make their COVID-19 economic recovery stimulus packages really transformative by investing in technologies, infrastructures, and economic developments models that will help tackle the global environmental problem of climate change. Therefore, the authors recommends that national governments and international financial lending institutions' COVID-19 economic recovery stimulus packages designed to combat the economic impacts of the COVID-19 pandemic should:

1. Help tackle the current economic crisis resulting from the COVID-19 pandemic and the ongoing climate change problem simultaneously through increased investments in a greener economy.
2. Be used to build a zero-carbon future through the transition from fossil fuels such as coal, oil, and natural gas to renewable energies such as solar energy, wind energy, hydro energy, tidal energy, geothermal energy, and biomass energy.
3. Discourage excessive and unsustainable resource extraction (overuse of natural resources) and improve resource efficiency through investment in and transition to a sustainable circular economy.
4. Protect and restore global forests by tackling deforestation through investment in reforestation.
5. Draw up legal frameworks that promote and guarantee investments in greener economy, transition from fossil fuels to renewable energies, building a sustainable circular economy and tackling deforestation through investment in reforestation.

It is the authors' view that complying with the above recommendations will help tackle the global environmental problem of climate change through COVID-19 economic recovery stimulus packages.

¹European Green Deal must be Central to a Resilient Recovery after Covid-19 (13 European Climate and Environment Ministers, 9 April 2020) <<https://www.climatechangenews.com/2020/04/09/european-green-deal-must-central-resilient-recovery-covid-19/>> accessed 9 August 2020.

²Montford, *supra* note 82; See Stéphane Hallegatte and Stephen Hammer, Thinking ahead: For a Sustainable Recovery from COVID-19 Coronavirus (World Bank Blogs, 30 March 2020) <https://blogs.worldbank.org/cli_matechange/thinking-ahead-sustainable-recovery-covid-19-coronavirus> accessed 11 August 2020.