Platform of Action on Renewable Energy

May 2023

Summary of Key Takeaways on Energy from the IPCC AR6 Synthesis Report

The Intergovernmental Panel on Climate Change (IPCC) released the Synthesis Report (SR) of the Sixth Assessment Reports Cycle (AR6) at Interlaken, Switzerland on 20th March 2023. The SR compiles and summarises the reports of the three working groups (WG) viz., WGI – *The Physical Science Basis*;WGII – *Impacts, Adaptation and Vulnerability*;WGIII – *Mitigation of Climate Change*, as well as the three special reports *Global Warming of 1.5°C*; *Climate Change and Land*; and *The Ocean and Cryosphere in a Changing Climate*. The summary report for policy makers (SPM), and the longer reports can be accessed at https://www.ipcc.ch/report/sixth-assessment-report-cycle/.

The SR, which should have been released before the COP27 in Egypt, was delayed and hence could not have the desired impact on the discussions at Sharm El-Sheikh. However, considering that the preparations for the COP28 in Dubai as well as other relevant international events planned in the lead up to COP28 are currently in progress, and since the next series of reports from the IPCC seventh assessment cycle are not expected any time soon, the Global Platform of Action on Renewables (PoA) of Climate Action Network has summarized some of the key takeaways on energy and renewables from the SR of AR6.

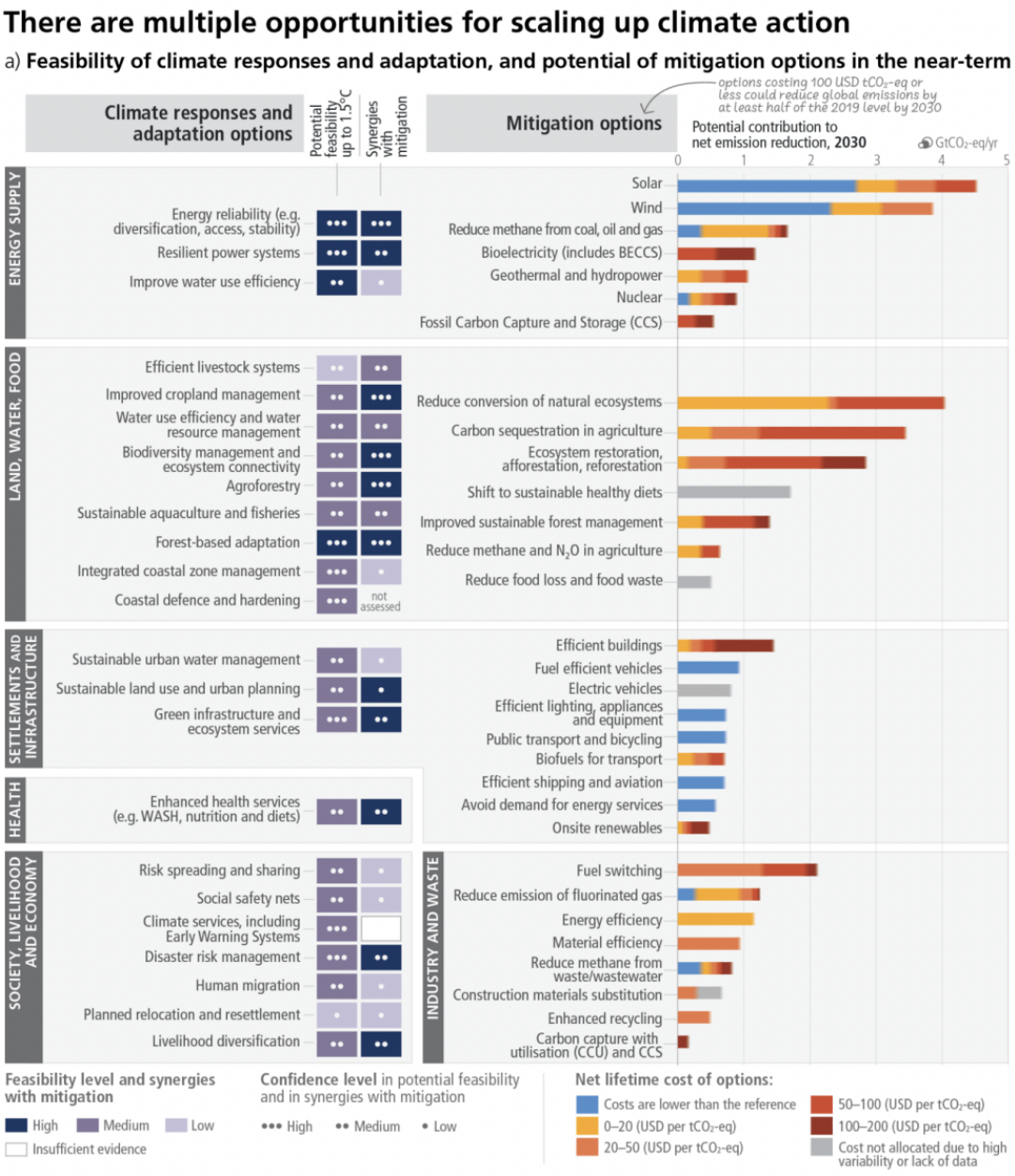
- The largest share and growth in gross GHG emissions was caused by CO_2 from fossil fuels combustion and industrial processes (CO_2-FFI). Approximately 79% of global GHG emissions came from the sectors of energy, industry, transport, and buildings.
- CO_2 emissions from just the existing fossil fuel infrastructures, without additional abatement (which CAN denounces as unproven and infeasible), will take us beyond the 1.5°C goal.
- The world cannot afford any additional creation of fossil fuel infrastructure. Projected cumulative future CO_2 emissions over the lifetime of existing and presently planned fossil fuel infrastructure, are approximately equal to the remaining net carbon budget for limiting warming to 2°C by 2100, which is about twice as high as the net carbon budget for 1.5°C remaining until the end of the century.

- IPCC identifies that the decarbonisation needed to achieve the 1.5 °C goal are about 43% (all GHG) and 48% (CO2) emissions reductions compared to 2019 by 2030, 60% and 65% respectively by 2035, 69% and 80% respectively by 2040, 84% and 99% respectively by 2050. Reducing the use of fossil fuels and their emissions is the largest potential in the coming years.

		Reductions from 2019 emission levels (%)			
		2030	2035	2040	2050
Limit warming to1.5°C (>50%) with no or limited overshoot	GHG	43 [34-60]	60 [49-77]	69 [58-90]	84 [73-98]
	CO_2	48 [36-69]	65 [50-96]	80 [61-109]	99 [79-119]
Limit warming to 2°C (>67%)	GHG	21 [1-42]	35 [22-55]	46 [34-63]	64 [53-77]
	CO_2	22 [1-44]	37 [21-59]	51 [36-70]	73 [55-90]

IPCC AR6 SYR, Summary For Policy Makers (SPM), table B.6.1 (Lee et al. 2023)

- The achievement of a net zero CO_2 energy system by mid-century will require a substantial reduction in overall fossil fuel usage, widespread electrification, deep decarbonisation of electricity systems, improved energy efficiency and conservation, and alternative energy carriers in applications less amenable to electrification. All the globally modelled mitigation pathways for net zero include transitioning from fossil fuels to very low- or zero-carbon energy sources, such as renewables.
- Solar, wind energy, and energy efficiency improvements across all economic sectors represent not only the largest technical potentials of all GHG decarbonisation options but are also the most economically feasible options for emissions reduction.
- Technologies like CCU, CCS and nuclear power have much lower potential for GHG/CO_2 emissions reductions in the next decades compared to RE options, and are also much more costly.
- Renewables, in addition to directly supporting emission reduction, have significant synergies with sustainable development. Mitigation and adaptation actions have many more synergies than trade-offs with the Sustainable Development Goals (SDGs).
- There is no contradiction in the goals of emission reduction and eradicating energy poverty. Eradicating extreme poverty, energy poverty, and providing decent living standards in low-emitting countries / regions to achieve sustainable development objectives can be achieved without significant global emissions growth.



IPCC AR6 SYR, Summary For Policy Makers (SPM), table SPM.7a (Lee et al. 2023)

- Adaptation and mitigation actions, that prioritise equity, social justice, climate justice, rights-based approaches, and inclusivity, lead to more sustainable outcomes, reduce trade-offs, support transformative change, and advance climate resilient development.
- Improved access to clean energy sources and technologies generates health benefits, especially for women and children. Electrification, combined with low/zero-GHG energy like renewables, and shifts to active mobility and public transport will enhance air quality, health, employment, improve energy security and deliver equity.
- Removing fossil fuel subsidies will directly contribute to emission reduction. Any adverse distributional impacts, especially in vulnerable populations, can be mitigated

by redistributing the revenue saved. The macro-economic benefits of improved public revenue and sustainability performance will further help mitigate any temporary social impact that such subsidy removal has.

- The adoption of low-emission technologies lags in most developing countries, particularly least developed ones, due in part to limited finance, technology development and transfer, and capacity.
- The magnitude of climate finance flows has increased over the last decade and financing channels have broadened but growth has slowed since 2018. However, public, and private finance flows for fossil fuels are still much greater than those for climate adaptation and mitigation.
- Renewable energy options such as solar energy and wind energy, electrification of urban systems, urban green infrastructure, energy efficiency, and demand-side management, are becoming increasingly cost effective and are generally supported by the public. There have been sustained decreases in the unit costs of solar energy (85%), wind energy (55%), and lithium-ion batteries (85%), and large increases in their deployment, e.g., >10x for solar and >100x for electric vehicles (EVs) between 2010-2019. Maintaining emission-intensive systems are more expensive than transitioning to low emission systems in many regions / countries.
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- Deep decarbonisation in the next years until 2030 for a 1.5 C trajectory requires roughly a growth in investments for mitigation technologies, most in renewables and energy efficiency, by factor 4-7 in developing countries and 3-5 in developed countries compared to present investment levels for mitigation interventions.
- Renewable energy can provide most of global energy demand by mid-century. Renewable energy sources such as solar, wind, hydroelectricity and modern bioenergy can supply more than two-thirds of total primary energy demand by 2050 under a low-emissions scenario compatible with 1.5°C. However, this would require a massive increase in renewable energy capacity and investment, as well as improvements in energy efficiency, storage, and transmission.

- The technologies exist, and the financial resources are available for the energy transition that is required to achieve net zero emissions and reach the goal of limiting global warming to 1.5°C. What is required is the political will to enable and accelerate this transition, in the form of strong policy support, collective action, and international cooperation.

In conclusion, the AR6 SR makes it amply clear that the world is quickly reaching the point of no return, with adverse climate impacts already more far-reaching and extreme than anticipated. Even temporary overshoots beyond 1.5°C, which seem unavoidable during this century, will lead to much more severe, and even at times irreversible impacts. However, it is still not a lost case and the IPCC report clearly mentions that, with sufficient support, proven and readily available adaptation solutions such as solar energy, wind power, and energy efficiency and conservation can build resilience to climate risks, deliver broader sustainable development benefits, and even help reverse the impacts to some extent.

However, it is imperative that no new investments should be made in fossil fuels, proposed investments be diverted to low and zero carbon technologies, and existing fossil fuel infrastructure be replaced with low and zero carbon options at the earliest, feasible opportunity. This requires unprecedented global political will and international cooperation on all fronts. The rest of the year, especially the period leading to the COP28 summit in Dubai, is an opportunity for all stakeholders, particularly world leaders, to demonstrate their commitment and ambition towards this goal.