ENVIRONMENT

Climate - IPCC WG3 report: from scientific rigor to social fable

Saturday 16 April 2022, by TANURO Daniel (Date first published: 4 April 2022).

This article discusses the draft of the Working Group 3 Summary for Policymakers from the Intergovernmental Panel on Climate Change (IPPCC), submitted for discussion and approval to 195 governments prior to its release on 4th April 2020.

Contents

Presentation:

The report was mangled by various governments, with an additional 22 pages, mainly presenting carbon capture and storage (CCS) as a form of carbon dioxide removal (CDR) from the atmosphere. Warning against these proposed changes before they came out, Kevin Anderson of the Tyndall Centre for climate research in Manchester said: that the report could "pull its punches, hiding behind billions of tonnes of carbon dioxide removal… then the academic community will have abdicated its responsibility and opted for realpolitik over real physics. The climate responds only to the second."

This is exactly what happened: in the words of a professor of CCS who supported the changes: "new fossil fuel facilities do not necessarily have to lock in future GHG emissions, provided that carbon capture and storage (CCS) readiness becomes an integral part of new infrastructure developments." This reflects the statement in the SFP that "CCS could allow fossil fuels to be used longer, reducing stranded assets", which also ignores the many other downsides of fossil fuel dependence, of which the war in Ukraine is one example.

The IPCC is now caught in the horns of a dilemma: technofixes using undeveloped technologies like CCS, versus the social measures it advocates, discussed – with all their contradictions as well - at the end of this article. [Eds]

Working Group 3 has just released its contribution to the IPCC's Sixth Assessment Report, on

greenhouse gas mitigation. [1] It complements those of WG1 (on the science of climate change) and WG2 (on risks and adaptation). The article below presents the main points of the document. It simply aims to make the main conclusions of WG3 available to activists, for information purposes. Although some remarks will be proposed in the conclusion, it is not a question here of repeating the ecosocialist critique of capitalist productivism and its impasse. It has already been done elsewhere and will undoubtedly be deepened in the future, by myself and by others (including on the basis of the WG3 report). [2]

The catastrophe is deepening

The report starts by taking stock of the state of mitigation. In fact, it is more a question of a failure to mitigate. Global emissions of all greenhouse gases combined have increased by 11% compared to 2010. Their volume (59 $GTCO_2eq$ in 2018) is larger than ever in human history. Between 2010 and 2018, the rate of increase slowed down somewhat: 1.3% per year, compared to 2.3% during the previous decade.

Cumulative net CO_2 emissions remain the main driver of climate change, and among these are emissions from fossil fuel combustion. However, emissions of fluorinated gases (a group of gases that are several hundred to several thousand times more radioactive than CO_2, some of which can remain in the atmosphere for thousands of years) are now playing a significant role in warming. Between 1980 and 2018, emissions of these fluorinated gases increased by 430%, while CO_2 emissions increased by 66%.

The increase in CO_2 emissions is due much more to the consumption of energy and materials due to rising incomes than to population growth. Between 2010 and 2018, the increase in average GDP per person increased fossil CO_2 emissions by 2.3%/year, while population growth increased them by 1%/year. Some countries have successfully decoupled economic growth and emissions, but in most cases this is relative, not absolute. The most emission-intensive activities have increased sharply over the decade 2010-2020: +28.5% for aviation, +17% for SUV purchase, +12% for meat consumption. The decoupling of energy demand from economic growth is only relative and a substantial decarbonization of energy systems is only observable in North America, Europe and Eurasia. Globally, the CO_2 intensity per unit of energy has remained unchanged over the last 30 years.

Slightly less inequality between countries, more inequality within countries

Between countries, the inequality in emissions remains glaring, although it has slightly decreased over the last decades. Average greenhouse gas emissions of all gases combined per person in 2018 were 13.1 metric tons CO_2eq in developed countries, 14.7 metric tons in Eastern Europe and Central Asia, 5.8 metric tons in Latin America and the Caribbean, 5.7 metric tons in Asia-Pacific, and 4.2 metric tons in Africa and the Middle East. Between 2010 and 2018, developed countries (17% of the population) emitted 35% of greenhouse gases; the Least Developed Countries (LDCs, 13% of the population) emitted just 3%. When we take the consumption of goods and services in developed countries as a basis (which includes “grey” emissions - imported in the form of products manufactured elsewhere), we see a slight decrease in grey CO_2 emissions: from 46% in 2010 to 41% in 2015.

On the other hand, climate inequality within countries is increasing, both in terms of income (27% of income captured by the richest 1%) and in terms of emissions (the richest 10% cause 36-45% of global emissions, while the share of the poorest 10% is 3-5% (the two are obviously linked). Two-

thirds of the richest 10% live in developed countries, the remaining third in “emerging countries”; most of the poorest 10% live in Sub-Saharan Africa, South-East Asia, Central Asia and Latin America. These regions are home to the 20% of the local population who do not have access to electricity and the 37% who do not have access to modern cooking facilities. The consumption patterns of the rich generate the largest carbon footprint: for example, 50% of air traffic is monopolized by the richest 1%. On the other hand, providing all humans on Earth with access to modern energy would have a negligible impact in terms of emissions…

Technology is not fulfilling its promises

Despite all the capitalist assurances, the facts show that technological progress is not solving the enormous challenge of climate stabilization. The annual rate of emissions growth has slowed significantly in the energy sector (1.4% between 2010 and 2018, compared to 3.2% in the previous decade) and in industry (1.7% compared to 5.0%) but has remained unchanged in the transport sector (around 2% per year). Since 2010, cost reductions have been strong in solar (87%), wind (38%) and batteries (85%); agrofuels account for 90% of the renewable energy used in transport. But these achievements of green capitalism do not put us on the path to “zero net emissions” by 2050, which is essential to stay below 1.5°C of warming.

Moreover, the recent news on the energy markets shows how reversible these developments are (cf. the revival of coal production in China and the extension of shale gas exploitation in the USA, etc., as part of the “post-covid recovery” - not to mention the impact of Putin’s war in Ukraine). From a productivist point of view, “green” technologies must therefore go hand in hand with carbon capture and sequestration (CCS), carbon removal from the atmosphere (CDR) and nuclear development. But these technologies are not progressing rapidly, in particular because of social concerns about safety and sustainability.

Projected emissions in 2030 are higher than government commitments, and these commitments in turn are not in line with the goal of limiting warming to below 1.5°C in the 21st century. The projected emissions gap in 2030 between nationally determined contributions (including conditional government commitments) and the pathway that gives a 50% chance of staying below 1.5°C without temporary overshoot is 25 to 34 $GtCO_2$ equivalent (out of total emissions of 59 Gt!).

To measure the difficulty of bridging this gap, it is important to know that the existing fossil energy infrastructure will emit 658 $GtCO_2$ by 2030, and that this emission volume will increase to 846 if we also take into account the fossil energy infrastructure that is planned to be built. These estimates represent about twice the carbon budget compatible with the respect of the 1.5°C (NB: they do not include the emissions of the projected infrastructures in industry, building and transport)…

With a constant degree of capacity utilization, and without any modification such as CCS installation, it is estimated that, in order to stay under the 1.5°C, the lifetime of the existing coal and gas power plants, which is currently 39 and 36 years respectively, would have to be shortened to 9 and 12 years (less if the planned power plants are actually built). These facts are enough to measure how strongly the multinational energy companies have and will have their foot on the train of the capitalist “ecological transition”…

Transforming the system?

Without new climate measures, the average global surface temperature will rise by 3.3 to 5.4°C by

2100. Staying below 1.5°C requires rapid emissions reductions and fundamental structural changes on a global scale. According to the scenarios, limiting warming to below 2°C requires that global emissions (all gases) peak “immediately” (between 2020 and 2025). Few scenarios still show the possibility of staying below 1.5°C without a slight overshoot (0.1°C). In any case, too little climate action in the short term will make the climate goals unattainable in the future. Staying below 1.5°C with a 50% chance and a slight overshoot requires emissions reductions of 35-60% in 2030 and 73-94% in 2050 (relative to the modelled emissions level in 2020).

In the scenarios limiting warming to 1.5°C with a 50% probability and a slight overshoot, the carbon budget still available is about 525 $GtCO_2$ (the carbon budget only accounts for CO_2). This implies that carbon neutrality will be achieved by 2055. Taking into account all greenhouse gases, the year of net zero is postponed by about 12 years. Deploying CDR technologies obviously increases the carbon budget. Reducing emissions of gases other than CO_2 (methane, fluorinated gases,...) does not dispense with the obligation to reduce carbon emissions to net zero, but increases the carbon budget available for a given level of maximum warming. However, one must take into account the warming effect that would result from the reduction of aerosols that reflect solar radiation back to space...

“Just degrowth”...

We can then understand the need underlined by the IPCC for fundamental transformations in all sectors and all regions, through policies that reduce both CO_2 emissions and those of other greenhouse gases. An important point here is that the IPCC, for the first time, echoes some research that explicitly argues for a break with the capitalist constraints of “ever more”. According to some researchers, climate stabilization cannot be achieved without a very substantial reduction in final energy consumption - a reduction so important that it necessarily implies a reduction in material production and transport.

These researchers are not neo-Malthusians: they all insist on the need for what might be called “just degrowth”, putting social equality and climate justice on the same level as climate stabilization. This new path (in the IPCC reports, of course) echoes indigenous “buen vivir” theories. It is partly expressed through so-called “lower demand” or “decent living scenarios”, or other (mostly unmodeled) proposals that reduce or completely eliminate the use of negative emission technologies (NETs), strongly advocate dietary change (less meat, especially beef), more easily meet the Sustainable Development Goals (SDGs) and consequently reduce pressure on land, ecosystems and people - except for the rich, of course. It is significant that the IPCC report echoes this, even if its overall orientation remains clearly focused on the needs of capitalist accumulation (as if this were a law of nature).

... or recourse to negative emission technologies

With regard to these needs of accumulation, the IPCC report substantially develops the danger of “locking-in” in fossil fuels. It sees - rightly! - a major risk of postponing the necessary measures beyond the 2020-2030 decade, under the pressure of “established interests”. Globally, emissions from the energy sector must decrease by 2.2 to 3.3% per year until 2050 to stay below 1.5°C. Low-carbon technologies (note: this term, in the IPCC lexicon, includes nuclear) must produce 90 to 100% of electricity by 2050 (less than 40% today). At the same time, the share of electricity in final energy consumption should increase to 40% before 2050 to stay below 1.5°C (20% today). The stakes for the fossil fuel multinationals are enormous: because of a climate policy that is equal to the stakes, the “stranded assets” (the devaluation of capital) could amount to thousands of billions

(trillions) of dollars…

As we have seen, negative emission technologies (NETs) are one of the ways in which governments can increase the carbon budget, postpone the "net zero" deadline, and therefore alleviate the threat of capital devaluation to the fossil fuel sectors. The deployment of these technologies is therefore necessary in most scenarios that limit warming to below 1.5°C (except for the "just degrowth" scenarios mentioned above). For the IPCC, CDR is used to counterbalance residual emissions in sectors where emission reductions are difficult (aviation, shipping, agriculture, steel, cement, petrochemicals).

The simplest and least expensive negative emissions technology is the use of CO_2 absorption by ecosystems. Comparatively, this IPCC report is much more reserved on BECCS (bioenergy with carbon capture and storage) than the previous one. In the AR5, 95% of the climate scenarios were based on a massive implementation of this technology. Now the IPCC tells us that its mitigation potential "has declined", that its massive implementation could have opposite effects, and that more scientific research is needed on this subject. The same need for more research is cited for other technologies that some have touted as silver bullets: direct capture-sequestration of CO_2 from the air, fixing CO_2 by eroding and converting certain rocks into carbonates, etc. Of all these systems, the IPCC now tells us that they can have negative effects on ecosystem services and on the Sustainable Development Goals (SDGs)…

Social Feasibility and Wishful Thinking: IPCC in Wonderland

Overall, according to the IPCC, the existing potential for emission reductions achievable by 2030 would cut emissions in half by 2030, and mitigation options costing less than $20 per ton of CO_2 would account for half of that potential. But this requires high long-term investments in the early years, and profound transformations in the short term. This raises the question of social feasibility, where the IPCC finds that solar, wind, demand side management, building changes, energy efficiency, electromobility and urban system transitions face less resistance than nuclear and negative emission technologies.

In general, this report, like the IPCC WG2 report, is considerably less technocratic and "economistic" than the previous one. Like the WG2 report on risk and adaptation, it emphasizes the priority to be given to "equity" and "stakeholder participation" in the perspective of a "just transition". The authors note that individual behavioural changes alone cannot significantly reduce greenhouse gas emissions. They stress that these changes must be embedded in structural, cultural and institutional change. They even emphasize the importance of social movements, especially youth movements, to move the lines against "established interests"…

At the same time, like that of WG2, this report is full of the profoundly unrealistic idea that it would be possible to make antagonistic social interests converge to save the Earth's climate in universal harmony, without in the least questioning private ownership of the economy, competition for market shares, production for profit and the "produce for produce" that automatically follows from it. It would be enough to install new social norms. And to do this, it would be enough for 10 to 30% of the population, especially the socially visible ones, who have the means to reduce their emissions, to avoid flying, to live without a car, to switch to electromobility, and to invest in low-carbon companies to become the models of a new way of life…

I am still fascinated to see how sharp and rigorous scientific minds prefer to tell themselves fables rather than draw the right social conclusions from their own analysis…

4 April 2022

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P.S.

• IVP. SATURDAY 16 APRIL 2022:
https://internationalviewpoint.org/spip.php?article7612

Footnotes

[1] There is not enough time and space to review the chapters of the report devoted more specifically to the mitigation of emissions in industry, transport, land use (cities in particular), agriculture-forestry-land use (in this sector, the balances between food, fibre and fuel production, CO_2 absorption, rights of rural communities and protection of biodiversity... are particularly difficult, especially in a productionist scheme!

[2] See "Contribution to the development of an ecosocialist programme in the framework of the necessary reduction of global material production".