World Federation of Engineering Organizations
Fédération Mondiale des Organisations d'Ingénieurs

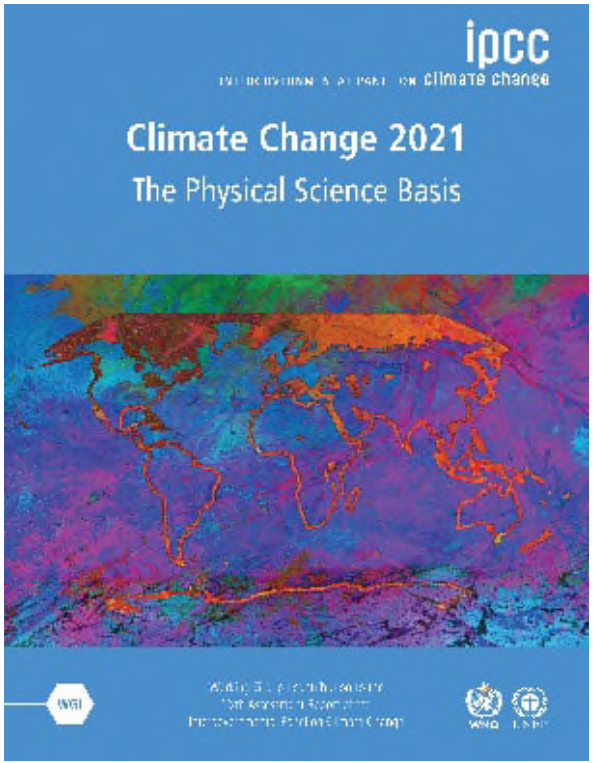
Energy Transition & Covid-19 Crisis: the Role of Engineers

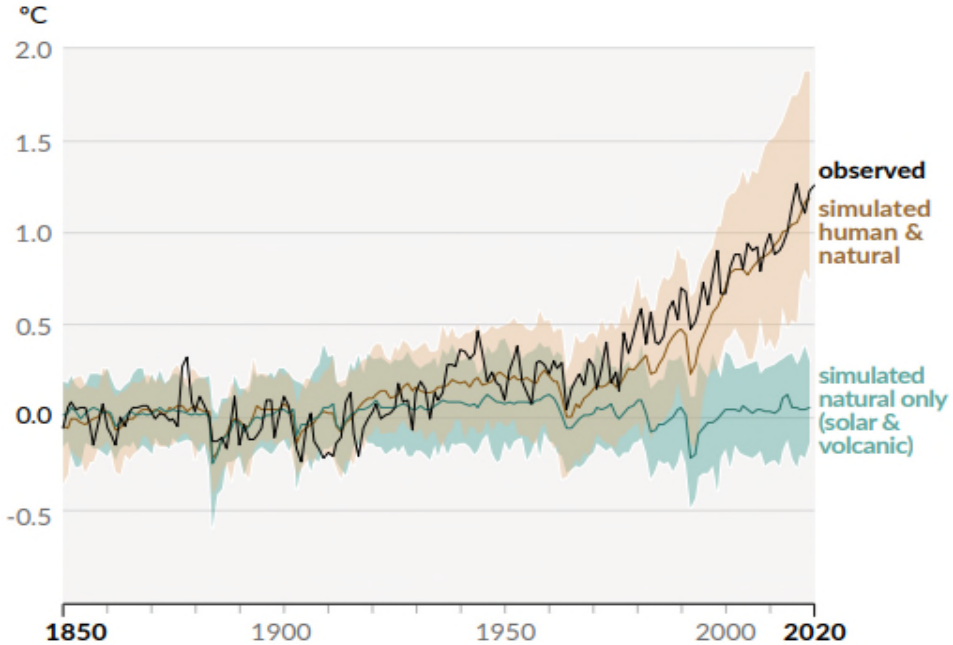
Engineer: Responsible to Energy Transition for Sustainable Development and Build the World Back Better and Wiser from COVID

GONG Ke

World Federation of Engineering Organizations (WFEO)

October 2021

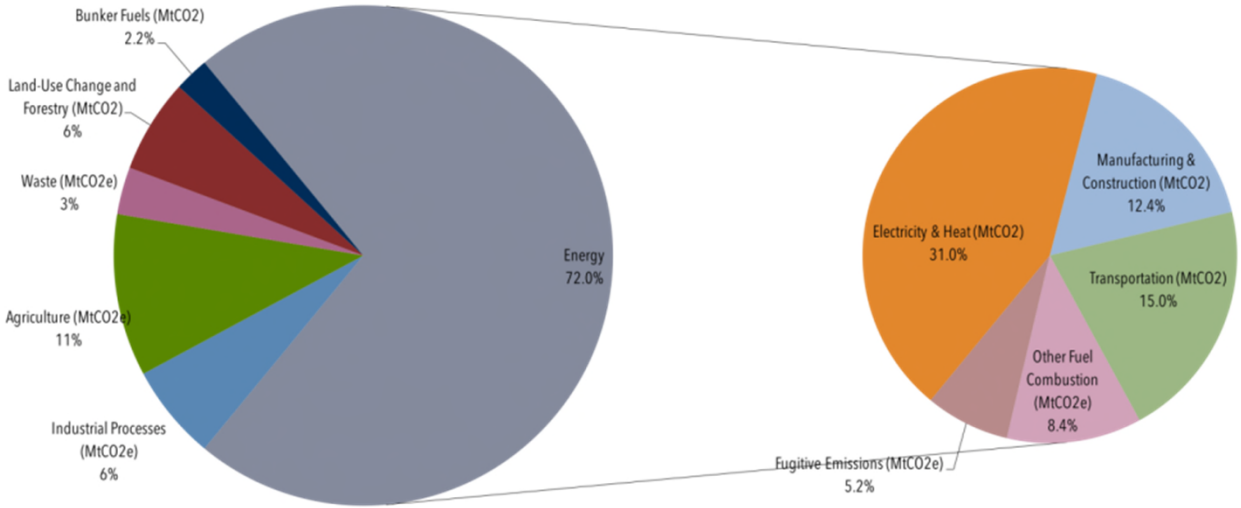




Change in Global Surface Temperature (annual average) as observed and simulated using human & natural and only natural factors ①

① IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.

Global Manmade Greenhouse Gas Emissions by Sector, 2013

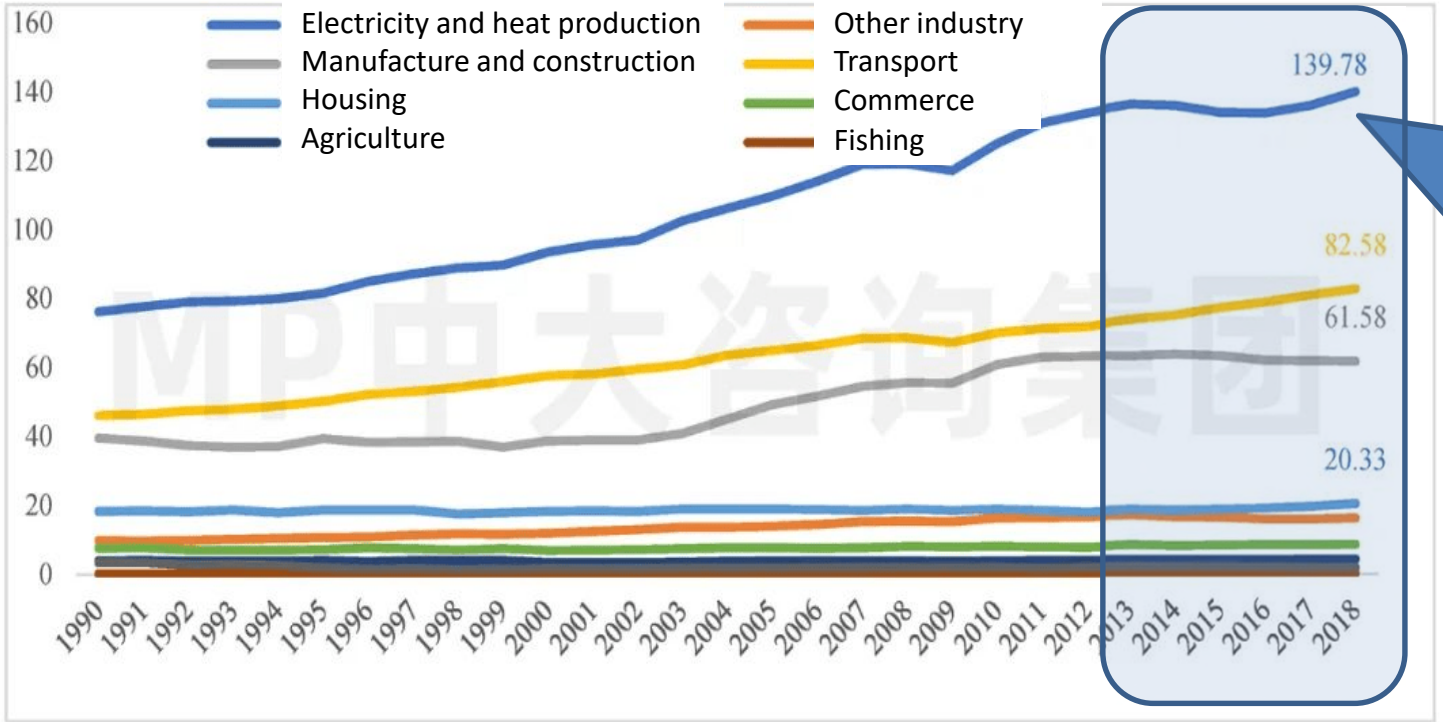


Global Emissions | Center for Climate and Energy Solutions (c2es.org)

Globally, the primary sources of greenhouse gas emissions are:

- **electricity and heat (31%),**
- agriculture (11%),
- transportation (15%),
- forestry (6%) and
- manufacturing (12%).

Energy production of all types accounts for 72 percent of all emissions.

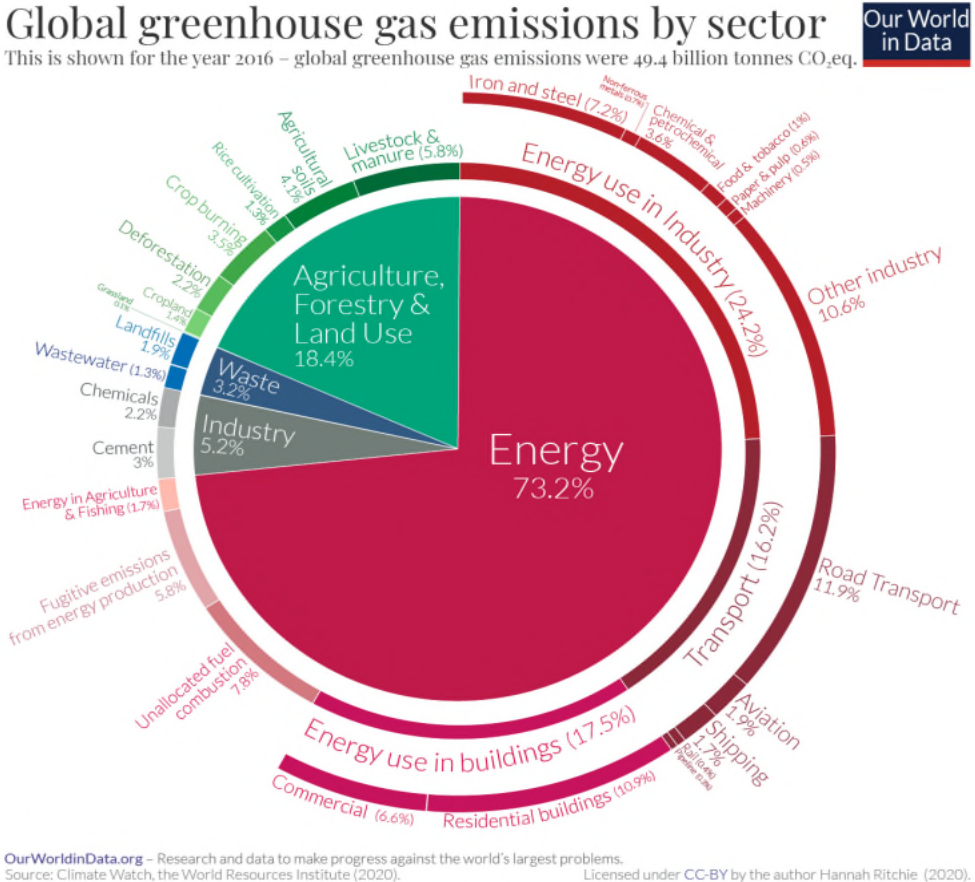


The proportion of electricity and heat production induced carbon emission is still increase.

According to 2020 released report, the percentage of energy related greenhouse gas emission has increased to 73.2%.

This is to alarm us on the urgency of energy transition.

Engineering and all engineers are responsible to implement the energy transition and to shape a net-zero carbon world, this is the meaning for “build back better and wiser” from the COVID-19.



ENERGY COMPACTS

Committing to Action on Sustainable Development Goal 7 (SDG7) – Affordable and Clean Energy for All by 2030

SUPPORTED BY: UN ENERGY

In the opening remarks to High-level Dialogue on Energy, UNSG **António Guterres** said:

"**Without deep and rapid decarbonization of our energy systems over the next 10 years, we will never reach the Paris Agreement goal of limiting temperature rise to 1.5-degrees**." "This will be fatal to the Sustainable Development Goals, to us all and the planet. **Science has shown us exactly how to avoid it. To limit temperature rise to 1.5 degrees we must reduce emissions by 45% below 2010 levels by 2030 and reach net zero emissions by 2050.**"

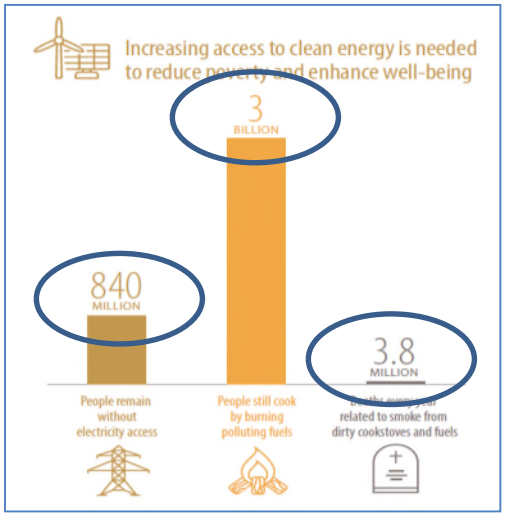
7 AFFORDABLE AND CLEAN ENERGY

7.1 By 2030, ensure universal access to affordable, reliable and modern energy services

7.2 By 2030, increase s[illegible]tantially the share of renewable energy in the global energy m[illegible]

7.3 By 2030, doub[illegible]obal rate of improvement in energy efficiency.

Energy poverty remains extensive, with 840 million people lacking access to electricity, predominantly in sub-Saharan Africa, and more than 3 billion people relying on polluting solid fuels for cooking, which causes an estimated 3.8 million premature deaths each year.



7 AFFORDABLE AND CLEAN ENERGY

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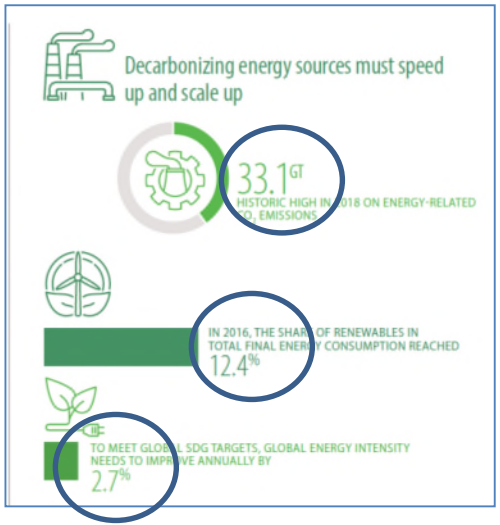
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

7.3 By 2030, double the global rate of improvement in energy efficiency.

Energy-related greenhouse gas emission reached historical high of 33.1Gt in 2018, this is far from being on track to meet the Paris objectives. According to the IPCC, if current demand trends continue, renewables will need to supply 70 to 85% of electricity in 2050, but it is only 12.4% in 2018. Under a business as usual scenario, it may be expected only 22% in 2050. Therefore, decarbonization of energy sources needs to speed up by triple, 2.7% per year, to reach the target.



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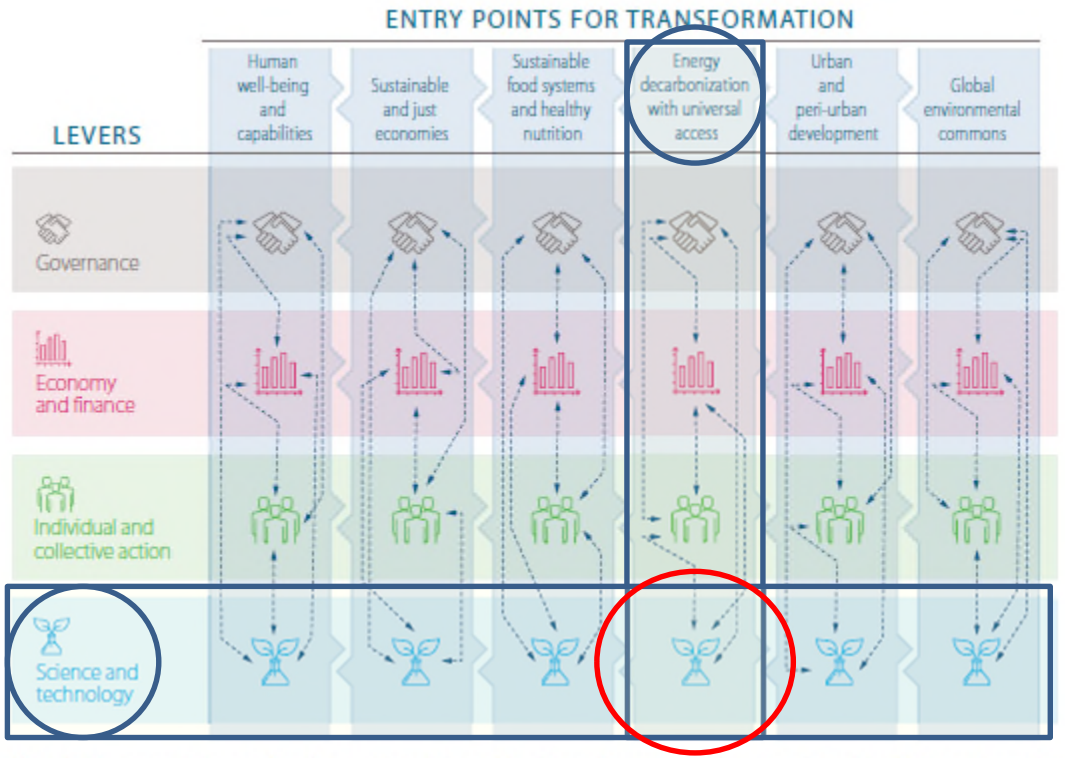
Improvements in energy efficiency will be critical. Under a business as usual scenario, the demand for energy is expected to rise by 25% in 2040, due to rising incomes and to a growing population particularly in the urban areas of developing countries, and again this increase could be significantly higher if not for continued improvements in energy efficiency.

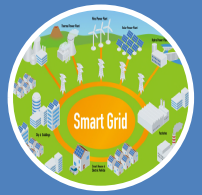


Note: Pathways are integrated and context specific combinations of levers to achieve transformational change towards sustainable development through the six entry points.

High efficient and cheaper renewable energy

Safe, reliable and efficient long-term storage

Scalable and economic CCUS and negative emissions technologies



Smart, resilient and effective transmission, distribution and operation

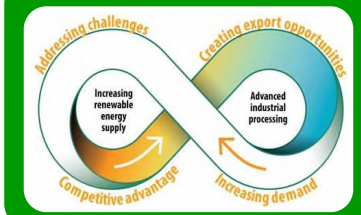
Widely and clean electrification of end uses and efficient usages

And much more

The rising role of electricity and digital applications are critical vectors for change in providing various energy services, for which an extensive and in-depth energy revolution in both supply and demand sides should be carried out by our engineers.

And a stark figure reminds us that 2030 Agenda will fail if we allow people to be left behind: 90 per cent of the over 65 million people worldwide who have been forcibly displaced from their homes are living without access to electricity. The gender dimensions of energy transitions are often overlooked but are important.

-- GSDR 2019



Energy transition is imperative and of great urgent to sustain humankind and the planet

All engineers are responsible to this comprehensive energy revolution in both supply and demand sides

WFEO unites all engineers, men and women, to engage into the energy revolution so that to build the world better and wiser from the COVID

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Thanks for your kind attention

Each engineer is essential in WFEO's commitment to promote sustainable development.