COP28 REVIEW

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It is my view that COP28 was a success. Following is a review.

Politics.

It was rather naïve of many of the parties to believe that they could get agreement on "phasing out fossil fuels". OPEC countries would never agree to this. Therefore, it was clear from the start that a worldwide consensus could not be reached on this point.

The wording that was finally agreed of "transiting away from fossil fuels in an orderly and equitable manner" is a good compromise. From a technical and economic point of view it is also more correct. It is not necessary to phase out all fossil fuels if effective and reliable carbon capture and storage, carbon capture and usage, and direct air capture methods are implemented even on a limited scale. This will permit the continued use of fossil fuels for some hard to decarbonize processes.

Good, practical, and realistic decisions.

Several good, practical, and realistic decisions were made as follows:

- A very modest $ 700 million climate damage fund was established to help countries mitigate climate damage. Although the amount was very modest, it is a good start.
- The UN Climate Green Fund was replenished with about $ 13 billion. This will provide significant help in assisting energy transition in many developing countries. Although the contribution is very limited, it is nevertheless a meaningful amount.
- 120 nations decided to triple renewable supplies by 2030 and double energy efficiency. This is a very significant agreement. Based on the VME world energy forecast, this will have a very significant impact. The current VME forecast is that renewables will supply 26% of the world energy needs in 2030. If the countries realize the triple commitment this may increase the renewable supplies to about 33%.
- 20 nations decided to triple nuclear power by 2050. Also, this is an important contribution. The VME forecast for 2050 is that nuclear will supply about 9% of the world energy needs by 2050. This commitment will increase this to about 12%.
- The VME estimate of renewables plus nuclear supplies by 2050 is 66%. The combined COP28 commitments on renewables and nuclear may push this to 77%. This is a significant increase.
- 50 companies, including Shell, TotalEnergies and ExxonMobil, decided to phase down methane emissions to 0.2% of their oil and gas production. This is an extremely important agreement. Methane emissions are a significant contributor to global warming and stringent restrictions are required on methane emissions. Companies voluntarily agreeing to this concept is of great importance.

- The final COP28 documents also feature some realistic approaches to carbon capture and storage and direct air capture.

Moving from fantasy to reality.

An important decision that was made is that countries are now supposed to provide by 2025 detailed forecasts and measures as to how they intend to reach their stated goal of NetZero.

This is important, because so far, many countries have happily stated that they intend to be carbon neutral by 2050, for instance. Yet, at the same time there is no hard evidence in their estimated supply-demand forecasts that this is actually going to be achieved.

It is the VME opinion that the 2050 NetZero objective will not be achieved as explained below.

The evidence in 2025 will very likely prove this point. It will become clear that many countries simply are not going to achieve NetZero by the year they indicated.

This will permit the COP30 in Brazil to move from fantasy to reality. It will permit a more realistic planning of energy transition and a more detailed analysis of the impacts of climate change and possible mitigating measures.

Much still needs to be done.

It is obvious that far more needs to be done to achieve NetZero as soon as possible. Important measures that must be taken include the following:

- Carbon pricing. The President of IMF gave a powerful speech that carbon pricing needs to be adopted on a much larger scale to achieve climate change goals. Currently, only 23% of the world emissions are subject to carbon pricing. There is no question that carbon pricing will result in the fastest and most economical way of energy transition to NetZero.
- Currently world coal use is at a maximum, therefore, the phase down of unabated coal is critical. Yet, this will cost billions of dollars per year. The developing countries simply do not have the funds to achieve such a goal. Very large support from developed countries would be required.
- Fossil fuel subsidies are still in the order of billions of dollars per year on a worldwide basis. These need to be phased out as soon as possible.
- Despite the excellent decision of 50 oil companies to phase down methane emissions, these companies represent only a fraction of the total emissions caused by the petroleum industry. Therefore, worldwide stringent regulatory change is required to force the reduction of methane emissions.
- Far greater efforts are required to decarbonize the world fossil fuel use, in terms of demand electrification, hydrogen use, development of sustainable aviation fuels as well as facilitating the introduction of renewables and hydrogen.

NetZero will not be achieved in 2050.

Despite, the excellently prepared NetZero Roadmap for 2050 by IEA, it is the VME opinion that this will not be achieved for the following reasons:

- Adequate financing assistance by developed countries to assist in the phase out unabated coal will simply not be available in relevant amounts.
- The demand electrification will require a three-fold expansion of the electric networks, in particular long distance power lines. The not-in-my-backyard opposition to new power lines is very strong, in particular from environmentalists. The required grid will not be available by 2050.
- As IMF indicated, the current policies of subsidizing renewable development and demand electrification are not sustainable from a debt creation perspective.
- China and Brazil and many other countries committed to NetZero by 2060 and India by 2070.
- Subsidies or implied subsidies will remain in many OPEC countries and Russia.
- Carbon pricing will not be adopted in most countries.

The VME estimate based on a very detailed analysis is that NetZero may be achieved by 2070 instead. The analysis is available on the VME website as a free document and is called "World Petroleum Industry Perspectives and Energy Transition". This is also the basis for the Energy Transition courses provided by VME.

Yet, …….

The world has always underestimated the possible effect of new technologies. An enormous amount of R&D is going on that could dramatically change the future energy framework. Current examples are:

- The startup Airloom has announced that they have developed an onshore wind system that may produce electricity at 1/3 of the costs of regular turbines.
- Fourth Power, a startup in Boston, announced that they can reduce the cost of utility type storage to 10% of costs based on lithium-ion batteries, though a superhot heat storage system.
- The Korean SEMP Research Institute demonstrated at COP28 an entirely new way of producing electricity without emissions called AISEG that could be very low cost (it looks phony to me but who knows?).
- New perovskite based solar panels may be able to produce solar energy with an efficiency of 40% at a fraction of the costs.
- A Norwegian start up Worldwide Wind believes they can bring offshore wind generation costs down with vertical rather than horizontal turbines.
- New biochar based BECCS projects could lower the costs of carbon capture and storage.
- New direct solar panel processes may produce hydrogen for a fraction of the current costs.
- MIT has developed a new thermochemical process that could produce hydrogen at $ 1/kg by 2030, making it very competitive as a fuel.
- Hydrogen could replace gas in pipelines and reduce the need for electricity grids by simply transporting hydrogen and generating electricity at the required locations.

As a result, the future may develop rather differently from current estimates, including VME estimates.