A Bill to Clean the Planet's Atmosphere and Carbon Negative Economic Growth

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Two U.S. Senators successfully passed an unprecedented bipartisan amendment to the energy bill on January 28th, which aims to clean the planet's atmosphere. The amendment was introduced by Senators John Barrasso (R-WY) and Brian Schatz, (D-HI). It is a complete surprise to many, in particular to the writer who has advocated for years what the bill aims to achieve. The bill encourages and offers funding to use carbon capture technology to reduce the CO2 that is already in the atmosphere, and put it away. It aims at cleaning the planet's atmosphere.

A bipartisan bill in today's political climate seems almost unthinkable, particularly in the area of climate change. This bill seems even more unthinkable because it encourages radical innovation. This is not our grandparents' CO2 "capture and sequestration" (CCS). The old technology is now dead: it worked by taking away CO2 as it was being emitted by industrial chimneys and did so in a heavy handed and impossibly expensive way. The old technology attempted to `sequester' the gas into natural cavities, which can produce "burps" and is dangerous. The new amendment favors an entirely new method of CO2 capture that takes CO2 directly from clean air, so one ends up with less CO2 in the atmosphere than before. This is called carbon negative technology™. The new technology is significantly less expensive since it does not bury the gas but it sells it for commercial purposes, to make profits. In reality CO2 is a valuable gas and is in high demand: for food and beverages like Coca Cola, for dry ice to freeze hamburgers at McDonalds, for the desalination of water, for producing polymers, for carbon fibers, a valuable material that replaces metals in most automobiles in the market, and for building materials. Right now there are companies in Silicon Valley – such as Global Thermostat – whose technologies can make money by cleaning the atmosphere. This is another radical departure from the past, in economic terms. Since one can make money by cleaning up the atmosphere – for example, it is now possible to build "carbon negative power plants" that produce electricity while cleaning the atmosphere of CO2 – the traditional choice between more economic growth and a better atmosphere is no longer valid. This is of great importance for developing nations that need power but cannot afford the environmental consequences of coal power plants. China and India are first and second in this list.

We are now facing a monumental transformation of the concept of economic growth and its implications will be with us for centuries to come. More growth with a cleaner atmosphere. This means in particular that the refusal to accept mandatory emissions limits – for example from the US and from India – should gradually disappear as nations become aware and start using the new form of economic growth that is now available: Carbon negative energy. What we face here is a natural mistrust of innovation. But change is here today and sooner rather than later its implications will become clear to all. To start with in the global climate negotiations we could offer the concept of mandatory emission limits that are contingent to the availability of carbon negative economic growth, even contingent on obtaining profits from reducing emissions. For developing nations this could mean mandatory emission limits that are contingent on CDM funding for building carbon negative power plants. This way developing nations and the USA could accept mandatory emissions limits without fear of undermining their economies, and a global carbon market could operate successfully – as it depends on mandatory emissions limits. The desire for a global carbon market is very widespread and everybody would benefit from a global price for carbon, even the largest oil companies support such a price for carbon. This is the future – and is ours as soon as we recognize the realities of technological innovation.

The astonishment caused by the Barrasso ammendment is because the US Senate has been the most resistant political body in the world to accept climate change as a reality. For years – and until last month in the context of the COP21 global climate negotiations in Paris – the US Senate rejected any notion of mandatory controls for US emissions of CO2. The fact is that removing carbon directly from the atmosphere as in the Senate Barrasso-Schatz amendment, is now necessary to avert catastrophic climate according to the UN IPCC, the world's scientific authority.[1]

Is this human progress? Is this a complete turnaround of long held and somewhat dated positions? If not, what does it all mean?

In reality the bill is a fresh air of reality mixed with traditional self-interest from a coal rich state like Wyoming, where Barrasso is a Senator. The notion is that if one can clean the atmosphere of the noxious CO2 emitted by coal plants, this could remove the pressure to eliminate dirty coal and other fossil fuels as sources of energy. This is an error, because averting climate change requires *both* reducing emissions and removing CO2 from the atmosphere. Both are needed. But never mind: this would not be the first time that something good happens by mistake. Perhaps these days in such a bitterly divided Congress good things only happen by mistake.

The twisted situation in which a Senator from a coal state encourages removal of CO2 from air is reminiscent of the equally twisted coalitions that emerged in the US when President Lincoln was abolishing slavery. The analogy is not idle since slaves were then a critical source of energy in the South, and fossil fuels are a critical source of energy in the US today. US historians have compared the two situations and argued that the value of the assets at stake is similar. The value of the stranded fossil fuels that could not be used if we abolish fossil fuel energy, is similar to the economic value of slaves as an economic asset a century and a half ago. If this analogy bears further thought, it is that history indicates that we may be in for a long and bitter battle of two forces neither of which will easily yield. This means significant economic volatility. The historically low price of gasoline today is a pawn in this global economic chess game.

In any case: how does the Barrasso-Schatz bill work? It is a clean-air-technology amendment (S.A. 3017) to the Energy Policy Modernization Act, creating a prize system to encourage innovative technologies to remove carbon dioxide directly from the atmosphere and permanently set it aside on earth. "This amendment encourages American ingenuity and innovation," said Senator Barrasso. "It makes sense to look for alternative approaches for removing and permanently sequestering excess carbon dioxide." "By providing a financial incentive to cut carbon pollution, we can encourage the innovation of new, affordable technologies and protect our environment," said Senator Schatz. "We all know that climate change is the challenge of our generation, and this amendment can help create one more tool to use in the fight against it." The program contemplated in the new Senate bill would be established by a federal commission under the Department of Energy. The commission, appointed by the president, would be comprised of physicists, chemists, engineers, business managers and economists. Awards will go to public and private entities that design technology to remove and permanently sequester carbon dioxide directly from the atmosphere. Once the technology is developed, the United States would share the intellectual property rights with the inventor.

Another historical analogy seems applicable here. Historically, prizes have been used to spur all types of technological development to solve problems. For example, Charles Lindbergh was competing for the Orteig Prize when he flew in the Spirit of St. Louis non-stop from New York to Paris in 1927. Cleaning the planet's atmosphere is a much more important goal than flying planes, but air flight has been a transformative force in the world economy.

Right now our prediction of volatility is being confirmed: this week the Supreme Court took an action that is also unprecedented and runs opposite from Senate's new bill: it stayed Obama's EPA Clean Power executive order to regulate emissions from coal-fired power plants. This has never happened before, as the issue is currently being actively considered by several states.

And more volatility is coming down the line, as the stay order is most likely to return to the Supreme Court after an appeals court considers a challenge from several states and corporations.

Volatility is uncomfortable and costly to the energy industry who would like to know which way to go. It can be disabling. But volatility is the rule not the exception: it is the way things change. When there is a regime change it is always manifested by oscillation between the old and the new – there is no other way. And this is the volatility we are observing.

Welcome to the world of change.

References

[1] See e.g. UNFCCC IPCC 5th Assessment Report, November 14, 2014, p. 191.

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