

*Concepts/Ideas/Policy Paper*

**ATLANTIC ENERGY FORUM**

*In the context of decarbonization*

**THE WORLD NEEDS A NEW LEADERSHIP TO SUCCESSFULLY CONFRONT  
THE CLIMATE CHANGE THREAT AND ACHIEVE ENERGY TRANSITION**

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### **Content:**

This paper has been prepared for the *Atlantic Energy Forum* to be discussed in the first of three virtual meetings to be held October 3, 2024.

Its objective is to present an updated discussion of the new energy dynamics in the world – and in the Atlantic Basin -- in the context of decarbonization, because of the acceleration of the increase in CO<sub>2</sub> emissions and the average temperature of the planet, as reported by the Copernicus Center of the European Union. This is a consequence of the central use of coal in China, India and Asia Pacific, which has caused the limits agreed in Paris for 2050 to be exceeded in 2023. This requires the urgent need to stop burning coal in these countries and to replace it with gas, and subsequently even cleaner energy in the long term.

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*Concept/Ideas/Policy Paper*

## ATLANTIC ENERGY FORUM

### **Energy transition: Which fossil energy is the problem and which the solution?**

*When we speak of the energy transition, we refer to the period that elapses until the predominant source of energy is replaced by another.*

Today the world is going through its third energy transition and must now replace coal in electricity generation -- the largest source of CO<sub>2</sub> emissions -- with renewable and clean energies and, crucially, gas during the transition. The electrification of transport to replace oil is also a necessary part of the solution.

This makes it essential to address each of the fossil fuels individually, and to underline the different characteristics of coal, crude oil and gas. And to emphasize that coal is the main emitter and, therefore, it is urgent to stop using it first, regardless of the pace of reduction in oil and gas.

- **Coal** is responsible for 41% of CO<sub>2</sub> emissions; it is used primarily to generate electricity. It is the fossil energy experiencing the greatest energy demand, and the largest CO<sub>2</sub> emitter among energy sources. Due to the stoichiometry of reaction, it emits 3 to 4 times more than gas, depending on its calorific value. **This makes it imperative to stop using coal**, due to the risks and seriousness of the situation, even when it is still the cheapest energy sources for generating electricity.

- **Oil** is responsible for 35% of CO<sub>2</sub> emissions and is used mainly in transport, the second most important economic sector in terms of its share of global energy consumption (27.3%). Therefore, in order for it to make sense to electrify the energy matrix, electricity must be generated without emissions. If this could be achieved, we could solve two thirds (67%) of the problem.

Furthermore, we could also electrify most of the 11% of global energy demand which comes from residential and commercial consumption, and finally, part of 21.3% of the industrial demand, to have solved most of the problem of energy sources that generate climate change.

But ***the key is to stop burning coal for electricity generation.***

- **Natural gas** is also a fossil fuel, but because of its lower emissions compared to the others, it is an essential part of the solution; not of the problem. During most of the period since the dawn of the industrial revolution, gas was only a marginal energy source --unlike coal or oil--.

Therefore, there is no reason to consider gas indiscriminately as just another ‘fossil fuel’. Gas is certainly not the same as coal or oil, regardless of the insistence of advocacy groups demanding the immediate end of “fossil fuel” production.

Let us be clear: *gas is not responsible for climate change, but coal and oil are* – as the International Energy Agency (IEA) claimed when reporting on – in "The Golden Age of Gas" -- coinciding with the nascent boom in shale production in the US. These are now facts that the coal and oil lobby try to ignore, taking advantage of the disruption of the pandemic aggravated by Russia's invasion of Ukraine, to maneuver to extend the longevity and credibility of their business.

This is a ‘political economy’ tendency that we must attempt to avoid at all costs for the survival of humanity and the rest of life on planet. This message is particularly salient for the US where the coal lobby wields a great deal of influence in the Republican Party, allowing it to claim short-term validity, so as to buy time and continue making money. Such interests bald-facedly conceal the responsibility of coal as the main emitter and responsible source of climate change -- followed by oil.

**It is an existential urgency to stop using coal in** electricity generation, the largest source of energy demand (40%) and the sector with the highest emissions by far.

To be successful in the electrification of the energy matrix, it is essential to definitively stop the use of coal in generation. Emissions-free generation is essential to solve 67% of the problem.

Therefore, **it is clear there is no complementarity among fossil fuels** -- but there is between gas – the essential bridge fuel in this historical moment, and the key technical accessory to balancing – and the combined intermittency of renewables, hydroelectricity and the additional promise of distributed nuclear generation.

The main objective of the energy transition is to ensure that coal and oil are replaced by clean energies as main sources of supply – and natural gas a crucial catalytic bridge to and enabler of the transition. We claim that gas emits 60-70% less CO<sub>2</sub> than coal – more than the conventional wisdom – and we point to it as the key ingredient in any transition to achieve "neutral emissions" by 2050, and "zero emissions" by the end of the century. Perhaps with this strategic outlook, the average temperature of the planet will remain below 1.5° C, in the long run, compared to the pre-industrial era, as set out in the Paris Agreement.

#### **The two previous transitions took 50 years**

If we are to suppose that this transition -- which began in earnest in 2009 -- will also take 50 years, it should be completed around 2060.

However, unlike the previous energy transitions, the current transformation does not merely target economic progress or improvements in the quality of life, but rather ensure that life on the planet remains sustainable. This is unlikely to be possible with

temperatures 4 to 6° C higher than the pre-industrial era as was estimated before the Copenhagen Summit. Indeed, life as we know it would not be possible.

The current transition therefore requires stronger leadership, which is absent. This becomes clear considering the European Union's Copernicus Climate Change Service Report, which officially reported that the year 2023 was + 1.48 ° C warmer than the pre-industrial period of 1850-1900. It was also the warmest of the last 100,000 years, with two days 2°C above in November; and almost half of the year above the 1.5°C limit agreed in Paris for 2050.

That report let us reach the conclusion that emissions from countries such as China, India and other in Asia-Pacific exceeded the Paris Agreement limits 27 years earlier -- a serious fact that endangers life on the planet and indicates that we must adopt urgently serious corrective measures, and change the rules, including the UN's leadership of the current international climate effort.

The report makes it clear that *China, India and the Asia Pacific countries must stop burning coal now, to significantly reduce their emissions*. The time for 'mitigating' and good intentions is over, and the voluntarist rhetoric of environmentalists is no longer enough.

### **Why after 28 years of UN leadership are there no satisfactory results?**

After three decades of rhetoric, the UN has failed in achieving any progress or positive results. Rather the opposite seems to have occurred – given that the objective was to control climate change and to limit average temperature increase to below 1.5° C by 2050.

But the result so far has been very different. The OECD countries continue to grow and fulfill their responsibility to reduce their emissions to control climate change. They cut emissions of GtCO<sub>2e</sub> by 17.3% by beginning to decouple economic growth from emissions. The US and the European Union replaced coal with natural gas and renewable energy in electricity generation, cutting the share of coal in the energy matrix and emissions from 22.6 to 10.4%, and 24.3 to 10.5%, respectively. Their share in global emissions fell from 48% to 33.3% as a result, in pursuit of "neutral emissions by 2050" and zero emissions by 2100. But the non-OECD countries, following UN rules, went in the opposite direction. They are burning more and more coal: "developing with coal, the cheapest fuel".

Their gigatons emitted increased by 17.9% and their contribution to global emissions from 52 to 67%. As a result, they are now the biggest emitters and responsible for the acceleration of global warming.

It is the consequence of the huge increase in GtCO<sub>2e</sub> emitted by China, India and Asia-Pacific that explains the increase in temperature indicated by the Copernicus Center: their strongly accelerated emissions have seriously compromised the energy transition. Their sharp increase in emissions could end up derailing the transition.

But the UN mistakenly continues to support the same policy model today, without realizing that the rules that were designed in times of the Kyoto Protocol, when China was a developing nation, and India and Asia Pacific did not count. China is today a power that disputes the world's leadership with the US, and along with the countries mentioned, they are responsible for 52% of global emissions. This fact demands immediate corrective measures

### **A goal without a plan is just a wish, and the UN never had a plan**

The UN confuses its objectives: its rules start with the 'means' and leave the 'ends' (or objectives) -- to limit global warming and make life on the planet sustainable -- lingering on the sidelines. The UN never really had a plan. This is why they failed to control climate change and to truly push forward the energy transition.

Instead of focusing on limiting or eliminating CO<sub>2</sub> emissions, the UN pointed to the developed nations as responsible for the stock of CO<sub>2</sub> in the atmosphere. **Therefore, they allowed developing nations to use coal without limit – in terms of quantity or time** -- to equalize growth opportunities. Upon establishing the Green Fund, they committed US\$ 100 bn per year to be contributed by the OECD nations and distributed among the 170 non-OECD nations to “mitigate and remedy the effects” of climate change -- **not to combat it!** Finally, its requirement that each Summit Declaration should be issued by unanimous decision, among the 198 participating nations, proved the nail in the coffin<sup>1</sup>.

*None of these efforts were seriously aimed at solving the problem of climate change.* This explains why the principal effective measures to limit and control it were adopted by decision of the G7 and the BRICS -- led by President Obama on the margin of the Copenhagen Summit, and only after the formal talks had ended in deadlock.

As was the case in Copenhagen 2009, when **the international community shifted the economic and energy world model** towards a low-carbon and low-energy-intensity economy, to **limit global warming to 2° C**. **But the Summit ended** without any conducive measures having been adopted.

Even though the international community “had changed the energy paradigm”, **the Copenhagen summit was considered as a failure** because it failed to integrate the Green Fund's US\$ 100 billion. **This indicates where the UN's true focus was placed.**

From Copenhagen onwards, the world understood that it is as important to have energy available as it is to use it efficiently. The concept of *energy intensity* -- the amount of energy needed to increase GDP by 1% -- has been accepted as a legitimate measure of progress.

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<sup>1</sup> Equating the representativeness and votes of the nations that emit the most (China, the United States, the European Union, India, Japan, Russia, Brazil) with the more than 100 whose emissions do not reach 2 decimal places.

The International Energy Agency (IEA) and the US Department of Energy developed the models for "neutral emissions" for 2050 and "zero emissions" – not the UN Summits. This fact underlines the prompt need for change of leadership on climate change in order to be effective in the fight against it and to save the planet.

This also explains why, at the Glasgow Summit in 2021, it was not possible to express in the final Declaration that *coal is primarily responsible for climate change*. India, with the support of China, opposed it. These are precisely the two nations with 76% and 74% of their primary energy mixes provided by coal, and 64% and 71% respectively, of their generation mix. It matters little that China invests the most in renewables, has the most electric cars and the most electrified matrix in the world, because they still emit the most CO<sub>2</sub>, threatening life on the planet as we know it.

Global warming is a technical problem, and who is responsible for limiting it must have knowledge and technical support to exercise leadership and to develop and execute a credible strategic plan and tactical operational roadmap. As reality has already shown, the UN's warnings are not enough, and its model of assigning responsibilities to developed nations allows non-OECD countries to burn coal without limit. This has condemned international efforts to failure, because it clashes directly with the objective of controlling climate change. And it ignores the fact that coal is the main culprit, as evidenced by the Copernicus Report.

Brazil is an example of a good plan to follow because they have decarbonized both their energy matrix and their economy. Brazil now generates electricity with 89% clean energy, including hydropower, solar, wind, and some nuclear. And unlike China and Asia Pacific, they are not turning to coal. That is why they have almost solved the problem at their scale of required contribution. As most of its transportation is fueled by alcohol-based biofuels, they are now able to electrify the rest of Brazilian transportation (which would resolve practically 70% of the problem). This trend is diametrically opposed to developments in China, India and Asia Pacific where between 64% and 71% of electricity is generated from burning coal.

Furthermore, Brazil is now going to be the site of the first site for a Chinese electric car plant installed outside of China.

#### **Proposal for the Atlantic Group of 44 countries: G7 and BRICS must be the new leaders**

The goal of combating climate change requires a plan against which to measure progress and results. Good intentions are not enough.

When the Paris Agreement was signed, the commitment of companies to the goal of controlling climate change was the novelty -- particularly on the part of energy companies. This process was disrupted in 2020 by the COVID pandemic, *giving the coal and oil lobbies* an unexpected opportunity to regain initiative and delay the energy transition -- moved only by greed and money, in the face of the UN's passivity.

The Russian invasion of Ukraine gave them a strong boost, and the excuse they needed to delay and slow down the energy transition – which as we know, requires more gas, now that Russia has been cut off from Europe.

This highlights, once again, the lack of leadership and the need for immediate corrective action, as global warming exceeded all admissible limits and has received no serious corrective action.

*All of this makes clear the urgent need for immediate change of leadership.*

Ten years ago, the Atlantic Energy Forum pointed out the shift in O&G supply from the east to the west, and demand from the northern Atlantic to Asia Pacific, where under the leadership of China and India they turned to coal with the noted consequences.

*We propose a change of leadership towards the G7 and BRICS – the two groups of countries responsible for 80% of global emissions, and with the economic, technological and financial capacity to innovate and produce the necessary changes to save life on the planet. They also, and they alone possess the sufficient leadership capacity to 'pull' the rest of the nations along with them.*

This will require imaginative solutions, such as the one applied by the EU on food, which by law cannot be imported if it is not certified that it does not come from deforested lands. This suggests a possible pathway forward: *the US and the EU are 60% of China's export market; if they do not reach an agreement, applying market rules, both could decide not to import more goods and services from countries that have more than 20% of coal in their energy matrix, for example, or that generate electricity with more than 20% from coal. This could be done with an adaptation period of 4 years and decreasing annual percentages -- without the need for global governance or the imperative to create new bureaucracies.*

China is today one of the two largest economies in the world, and the share of coal in its energy matrix is the largest in the world (76.4%); they generate 1/3 of the world's electricity. And from stoichiometry, we know that it emits 3 to 4 times more CO<sub>2</sub> than gas, making this energy source the largest emitter in the world and the main culprit behind climate change.

China -- followed by India, the fourth country in terms generation (6.4% of the world) produced from coal (71%) and together with other Asia Pacific countries – are responsible for 52% of world emissions and of the global warming acceleration -- as temperatures in Brazil and New York threaten to eventually breach 60° C.

Once again, this highlights the need to change our global climate leadership, to update the 'rules' and to remind the international community that in 1995 at the time of Kyoto Protocol, when the reigning rules were designed, the causes of global warming were still to some extent unknown; China was a developing country and India and Asia Pacific did not count.



But today, 30 years on, things have changed, and this change must be reflected in different actions and different leadership to preserve life on this planet.

The goal of combating climate change is not to raise more taxes, nor to generate a parallel business of buying and selling *carbon bonds* – which even when applied do not guarantee results. Rather, they disperse our attention, dilute the force of our actions and take the focus off the central objective of combating climate change. Therefore, it is recommended – even essential -- to focus on the central objective of reducing emissions by eliminating coal first, and then oil, to achieve “neutral emissions in 2050 and zero” by the end of the century.

**How to address -- from the perspective of the Southern Atlantic -- the growing need for critical materials in the decarbonization transition?**

Finally, an extra challenge presents itself: how to facilitate access to critical materials such as copper, lithium, rare earth, and other critical materials needed for cheap batteries and new climate change technologies to solve the crucial challenge.

Part of the answer is found in the South Atlantic (Argentina, Chile and Bolivia) where there is enough copper, lithium and rare earth elements to ensure the supply of critical materials the world needs for new technologies -- like batteries to storage electricity -- and to electrify the energy matrix.

Chile has in full development the lithium and copper sectors, while Argentina remains in its infancy, but encouraged by the new RIGI law (Regime to Promote Large Investments) which provides a legal, regulatory, fiscal and exchange security frame for 30 years.

***Finally, what we need is to push for a “New Green Global Deal” along the lines outlined above.***

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