

## DEBATE 2

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

I come back to my question that I am going to put to you people. What do you think? From what you have heard today, what you have read and the actions that have been taken, are we going to stop the parts per million of CO<sub>2</sub> from rising above 450? If not and if the science is right, we may be faced with the apocalyptic scenario of a 2°C rise. It will not be consistent everywhere, but there will be rising sea levels, drought and all the other awful stuff.

There is a question I keep asking my friends that are very enthusiastic about this, like the Environmental Defence Fund, who deserve a lot of credit on the ICAO dossier. I am afraid that there is no plan B should it become apparent that we will not be successful in preventing global mean surface temperatures rising above 2 degrees.

I have heard nothing here, or at all the other meetings I have attended, that suggests we are going to be successful in mitigation.

However, I would be interested in having views from you. What would the plan B be?

No-one seems prepared to spend the money on carbon capture and sequestration. As for adaptation I believe we are talking about USD 100 billion and some of the estimates go far beyond that. USD 100 billion does not go very far when you are trying to adapt much of the planet to rising sea levels, drought, irrigation, geo-engineering and all the rest of the stuff that has to be done. Does anybody have any comments? Am I being unduly pessimistic?

**Philippe CHALMIN, Managing Director, Total E&P Qatar and Total Group Representative in Qatar**

I do not think you are too pessimistic. I would perhaps add one fact regarding what recently happened on the coal market. We had very low coal prices till early this year, and for 3-4 months, coke and coal prices have multiplied by three and steam coal prices by two. The reason is interesting. We had a voluntary move by Chinese authorities to limit coal production. They decided to close the most awful mines and decided to reduce the number of days when coal mines would produce. The result was a decline by 11% of coal production in China.

That sounds good. Unfortunately, Chinese needs were higher, both for steel production and for electricity generation. Therefore, Chinese imports have climbed up in the last 3-4 months, by around 180 million tonnes. This shows that in fact, although the Beijing government would dearly love to reduce the environmental problem, they are still completely addicted to coal. When you look at their forecast for 2020 electricity generation, they say, 'We will limit our coal dependency from 65 to 55%. However, taking into account the fact that we will need more electricity, we will in fact consume 15% more coal in 2020 than in 2015'.

Frankly, I am a bit depressed. That is a comment, but I just have a short question. I would like to have the advance of the panel because there is one piece of good news. Natural gas prices are lower than ever. We all focus on oil, but there has been no recovery in natural gas prices, and I imagine Qatar's export prices must be somewhere between USD 4 and 5 per million BTU. This is rather competitive. I was wondering what the real break-even price is for countries like Australia, Qatar, etc. Could natural gas be the real opportunity for less CO<sub>2</sub> and to be cost effective?



**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

Remember though that it still produces CO<sub>2</sub> up to 50% as much as coal. It slows the problem, which I suppose is good, and there is a Chinese example as to why it is good; less air pollution. I expect many of you have been in Beijing where often you can barely see across the street. I have the impression that the Chinese are even more concerned about particulates and health problems than about global warning, and that is one of the reasons why they are reducing coal as a fuel.

**Philippe CHALMIN, Managing Director, Total E&P Qatar and Total Group Representative in Qatar**

They are, but still, they are completely addicted to coal. The projection of the national energy administration for 2020 is 15% more coal consumption.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

Regarding Germany, tell me this? You talked about subsidies. I understood that Germany had asked the Commission for an extension of its coal subsidies to 2018. Is that correct?

**Hye-Min LEE, G20 Sherpa and Ambassador for International Economic Affairs, Republic of Korea, Former Ambassador to France, former Deputy Minister for Trade, Republic of Korea**

Yes. What the G20 leaders agreed to as I mentioned was about inefficient fossil fuel subsidies, which encourage wrongful consumption. This is a very contentious issue.

**Olivier APPERT, Chairman of the Conseil Français de l'Énergie**

In fact, you made a very interesting point with reference to coal. Usually, when we discuss energy, nobody discusses the elephant in the room, which is coal. The drivers of the coal market are clear. They come from China and India in the long term. Anyway, in the long term, the energy mix of China and India will continue to be based on coal. Clearly, there is a strong policy in China to reduce their coal consumption, but anyway, in order to sustain growth, they will need it. I think that in the figures from the energy mix for China for 2030-2040, coal will still represent 50% of the total energy consumption. It will reduce.

Take India. In fact, in India, there is a strong policy on coal, which is to increase coal production, and for the electricity sector to increase the renewables as well as coal power generation. As a result, there will be quite low prices, which will be a strong incentive, all around the world, to develop power production from coal. You need to discuss this and we discussed renewables and nuclear, but the most significant problem is related to coal. It is very important to take into consideration the drivers of coal demand worldwide.

**Bruno LAFONT, Co-chairman of the Board of Directors, LafargeHolcim**

I am sorry I have not attended the whole workshop. I am from the cement industry, so I am a consumer and a user. We are also working on improving building materials to make buildings more energy efficient from the beginning. Many cities, which have not been built yet, will come up in the next 25 years, so there are a lot of things to do. I found the workshop extremely interesting, so I have taken a lot of notes; it is very focused on energy and on what we do in this sector.



I just wanted to make 2-3 remarks on the side of industry and maybe the consumer also. I think it requires governance to make sure that this COP21 can be implemented, because the devil will be in the details. If we want the private sector to invest and to finance the transformation and to make it efficient, we need to have clear rules. We need to set clear goals and we have to set a very clear way to measure this. We need to put a framework in place, which companies, investors and capital markets believe in, because most of the financing will come from the private sector in the end.

It starts with innovation. We are putting a lot of money into innovation, and I am very scared about how to scale up. Without rules, standards, recommendations, proper public procurement and measurement, scaling up will not happen. It is good to discover things and to invent beautiful things, but if they remain confidential, it will be difficult.

Another topic is carbon pricing. We are all in favour of carbon pricing and implementation, and we need a visible, clear signal which is not too high and not too low, but not something which is not useful.

We know from the very start that carbon pricing will not be the same in all countries, for many different reasons. We know that Japan does not want carbon pricing in this industry, and other countries want a low one to start with. Emerging countries have a different agenda. This will create big distortions in the competitive landscape for some industries for the next 10-20 years. How do you manage these distortions?

Many people from climate change organisations, such as UNFCCC, are talking about border adjustments. However, when you talk to the WTO, they have not looked at the situation and how it fits with the rules of the WTO. We have to identify all the potential bottlenecks which will make the agreement difficult to implement, counterproductive or counter-efficient. I think that is very important. There is another thing about measurement.

There was our friend from Total, and I do not want to say his presentation was not good, as it was extremely good, but he said we know how to be compatible with the maximum 2° increase. We know that we will have all the questions coming from the financial markets. Are you compatible? What are you doing? The question is how can you certify that you are within the 2°? What is the measurement system again? How do you measure externalities? These are useful questions contributing to addressing climate issues, not only reducing your CO<sub>2</sub> emissions but also providing solutions which help others reduce CO<sub>2</sub> emissions. All this needs to be worked on, and we need alignment between organisations. We need skilled governments, because it is a very technical thing. In order to succeed in the transformation, you need to prepare very quickly, because it will take time.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

Can I ask you a question, by the way, about your area in cement? My recollection is that cement production is responsible for something close to 7% of CO<sub>2</sub> emissions.

**Bruno LAFONT, Co-chairman of the Board of Directors, LafargeHolcim**

It is less than that.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

My question though is about the notion of agreements, as we have seen in the aircraft industry. At one point, when I was in the OECD industry, we tried to bring many of the industries together, and I think Lafarge was there to talk and ask if we were capable. Could we have an agreement amongst the world's cement industries on emissions?



**Bruno LAFONT, Co-chairman of the Board of Directors, LafargeHolcim**

We have done that, so that means these measurements, this database, this certification, and this verification have been implemented in 28 large cement groups. I was the chairman in charge of all this for many years and we pushed and pushed, and the Chinese are now coming into the picture.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

The Chinese would not buy it.

**Bruno LAFONT, Co-chairman of the Board of Directors, LafargeHolcim**

The Chinese cement producers are now joining us.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

How do you measure it also? How do you monitor it?

**Bruno LAFONT, Co-chairman of the Board of Directors, LafargeHolcim**

Monitoring has been set up through the discussion with them today and on how they report. The question is, to what extent governments will agree to report them. We have built a special organisation for China so we can get them to be compliant with the system we have put in place.

**Marie-Claire AOUN, Director, Center for Energy, Ifri**

I actually have two questions for Tatsuo Masuda and also for Daniela Lulache. Regarding the first one, Tatsuo, you described the wide range of technologies that exist. However, there is a huge uncertainty, and we particularly need a lot of investments for these technologies to be concrete. If there was one technology that you think is the most promising on the medium term, what would it be? My second question is related to nuclear. One of the most significant obstacles today to nuclear is related to social acceptability. Can you share with us your views on how to overcome this obstacle?

**Tatsuo MASUDA, Professor, Nagoya University of Commerce and Business Graduate School, Japan**

If I had USD 100 million in my hand, I would definitely invest in battery technologies, because batteries are widely used for transport, households, companies and elsewhere. This is an abundant intermittent energy resource, which is not closely connected to the networks. So battery technology should be the first priority.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

However, you have to generate the electricity for the batteries. How are you going to do that? What is your source going to be? Is it coal? That is one of the big issues regarding electricity and electric cars. You have to generate it somehow. If you generate it with nuclear, that is okay. Daniela would agree with that.



**Daniela LULACHE, Chief Executive Officer, Nuclearelectrica, former Counselor of the Vice-Governor of the National Bank of Romania**

Regarding the public acceptance of nuclear, obviously, it is an issue, and there are a lot of green organisations which consider that a controversial industry. What I can tell you is what I am doing on a daily basis. I come from a country where nuclear generation covers around 20% of our national consumption. We have a public acceptance of over 70%, which increased after the Fukushima Daiichi incident. Regarding what is going on, we are very transparent and we do communicate with the public. We explain whatever is going on in our business. Whenever we have an unplanned outage, we explain what is going on there.

We are ready to have all peer reviews possible and we are audited almost on a yearly basis. Now we have an audit mission from IEA and we had another one this year from WANO. We share the information with the public regarding the results of these peer reviews, and the Romanian public knows that we are one of the best nuclear power plants worldwide. We do respect all the safety standards and safety is the first consideration in all our decisions.

I think you can deal with this, and I am sharing something. I am talking with my colleagues within the industry. Probably one of the problems in the nuclear industry is the mystery and the fact that we did not discuss much about what was going on within our business and our industry. If we did, people would understand that safety is not such a major issue as is perceived. I will finish on an optimistic note. I am convinced that most of you do not know that flying over the ocean exposes you to a higher radioactive dose compared to the ones our employees are exposed to working in a radioactive area. It is just a matter of knowledge.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

Let me just add a point. Personally, I am very distressed by what happened to the nuclear industry. I am probably older than most of you, but I grew up under Atoms for Peace, the philosophy that the Americans had at the end of the war, notwithstanding Hiroshima and Nagasaki. Atoms for Peace was under Eisenhower, and we thought nuclear was going to be the answer. The American energy sector at the time, said it was going to be so cheap that it would not have to be monitored.

When I think about new technologies, I think of nuclear as a new technology. It is within my lifetime, so I think it is a new technology. The French have been the global leaders in nuclear. I think between 75 and 80% of electricity in France is generated by nuclear. Is that correct? Is that the number?

**Jean de KERVASDOUÉ, Managing Director of the Institut mutualiste Montsouris; Emeritus Professor of Economy and Health Management at the Conservatoire National des Arts et Métiers and founder of the Pasteur/CNAM School of Public Health**

It is 75 and the number of deaths caused by nuclear activities accounts for 4,000: less than for the coal industry. The nuclear industry is the safest by far if you count the number of people who die, but that is not enough to convince many people.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

The fact of the matter is that if the world had followed France's example, we would not be having this discussion today. That is pretty sobering, when you think about it.

**Olivier APPERT, Chairman of the Conseil Français de l'Energie**

I would remind you that electricity represents 20% of the energy mix. However, it usually represents 95% of the comments from politicians and the media.

**Tatsuo MASUDA, Professor, Nagoya University of Commerce and Business Graduate School, Japan**

I would like to colour this wonderful workshop led by Don with a very positive tone. If we had had this kind of debate ten years ago, we would have failed to see many strong initiatives from the private sector as today. Now, we have the Breakthrough Energy Coalition led by Bill Gates. There is also the Portfolio Decarbonizing Coalition led by leading funds engaging tens of billions of dollars. The Oil and Gas Climate Initiative is another important private initiative. Those are flourishing everywhere. The point is that money talks. When they invest in the right direction at the right time, it really works. Therefore, I feel very positive in spite of the clash of national interests and all sorts of disturbing concerns. Business is running faster than politics, and young people may follow such business initiatives. As far as climate initiatives are concerned, effective leadership will not come from politicians but from the private sector.

**Olivier APPERT, Chairman of the Conseil Français de l'Energie**

I would like to make a comment on technology. I have been working on technology for decades. Technology is part of the solution, but it is not the panacea as presented by some politicians. With technology, you can do everything, provided you are able to pay. In order to ensure that technology will bring solutions, it is necessary to take into account the maturity of this technology. Is it just an idea in an R&D lab or is it a real way, a real process which can be implemented? What is the business model? If you want to deploy this technology, as you said, it is necessary to be able to present a business model which should not be based only on public subsidies.

The last point is what is the public acceptance? We referred to nuclear and we referred to CCS. Just take the example of CCS. I have been working on CCS for more than 10 years at IFP. In 2005, it was the panacea and in fact, all the technologies are available. They come from the oil industry, so it is a very mature technology. They just needed to reduce the cost. At the time, there was no problem, because the price of CO<sub>2</sub> was USD 25 per tonne.

Everybody anticipated that in 2025, the price of CO<sub>2</sub> would be at 50. That is a miracle, that the cost is reducing and the price of CO<sub>2</sub> increasing. There is a wonderful business model. You know what the result is today, and CCS is still a technology for the future. However, it will take quite a long time, because we have underestimated public acceptance and because of the business model, which is not in place now due to the drop in the CO<sub>2</sub> price.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

We understand that the whole regulatory framework for CCS, which we studied, is very complex. However, one of the problems you may run into is about the NGOs who produce scenarios for the public. These are about possibilities. It is possible that we will be able to mitigate them, but it is probabilities I am worried about, because it is the politics that plays into probabilities. Possibilities are infinite and we can be very excited about them. We may have some breakthrough technologies and we may get politicians to stop short-termism. All kinds of things are possible, but they are not probable, on the basis of experience to date.

I do not know if many of you know this, but the CO<sub>2</sub> problem was first identified in 1896 by a Nobel Prize winning chemist in Sweden called Svante Arrhenius. He made these predictions about global warming at that time, but he was off by some 1 000 years. He thought it would take until the year 3000 or something like that to where we are now. The



fact of the matter is, we have been aware of this problem, and it came up in 1972. I read those proceedings at Stockholm, and that was a UN conference. We then went through Gro Harlem Brundtland's report, Our Common Future. Then we had Rio and then we created the IPCC.

We have gone on for decade after decade after decade with no visible results. Now we are at five minutes to midnight and the question is, do you really think, Olivier or any of you, that we are going to be successful? Or do we hope that the scientists are wrong? That is a possibility. I do not know if it is a probability, but it is certainly a possibility. I find it alarming, frankly, that we cannot get more motivation into this process.

**Olivier APPERT, Chairman of the Conseil Français de l'Energie**

I do not know if it is wrong or right, but clearly, climate change is an issue, and we should take it seriously. It is very difficult to cope with these challenges. It is very important to take adaptation into account. What is surprising me is that in Rio and in Kyoto, there were two legs in the agreement, which were mitigation and adaptation. For the last decade or so, we only discussed mitigation. However, if it is so difficult to combat climate change, it is more and more mandatory to take measures in order to adapt our economies to this climate change issue. Fortunately, in Paris, there were some references to adaptation, but I am not sure that in Marrakech, some improvements were made.

**Donald JOHNSTON, Chair of the McCall MacBain Foundation, Geneva, Switzerland, Former Secretary-General of the Organisation for Economic Co-operation and Development (OECD) in Paris**

There was the adaptation fund, which was discussed at Marrakech, but I agree with you 100%. Until the seas start to rise dramatically, I do not know if we are going to get much out of adaptation.