

## DEBATE

### **William RAMSAY, Senior Advisor of the Center for Energy at Ifri**

That is probably an enlightening discussion for a lot of us who were not aware of this function even existing in the market place. I certainly was not. I find it quite fascinating. Maybe we have some questions on that for you, Kristina. I think rather than me posing questions to the panel, I would like to see what the audience has by way of reactions to these presentations and if the audience has things that they would like us to develop a bit further, pose a question, and we will see who on the panel who would like to take it on. The floor is open to you.

### **Pierre PRIEUX, President of Alcen**

Where do you get your information?

### **Kristina RÜTER, Research Director of Oekom research AG**

We have a participatory rating approach so we do not send out questionnaires, but we start completing our rating ourselves based on publicly available information, so sustainability reports, factbooks, annual reports, website information and of course external information from environmental organisations. Then we send the first draft rating report to the companies analysed and then we ask the companies to complement missing information and also to make some corrections where we have perhaps misinterpreted data and that is how we come to our final rating results.

### **William RAMSAY, Senior Advisor of the Center for Energy at Ifri**

Manoëlle, you would like to talk about it from the corporate side since you are the supplier of the information. Why would Total find it useful to talk to a company that could pan it later on?

### **Manoëlle LEPOUTRE, Executive Vice President, Sustainable Development and Environment of Total**

It is quite smart because they do the job, as you explained, and then they submit the first draft to us. There is a discussion and dialogue before the final one is issued. It is quite constant. You are comparing the consistency with the results from the previous analysis. The work is done with a lot of potential, which is not always the case. For example, every year the CDP asks a lot of questions. You do not understand the finality of the questions, even when you discuss it with them, and then there is non-transparent specification because we have a discussion. If we do not understand, they will explain it, so there is a kind of transparency towards us. Other agencies do not provide the same level of transparency.

This pushes us to make progress, but it is not perfect because the evaluation is done according to what we issue. They look at consistency and also good communications. We want to be transparent, but sometimes you analyse a company through incorrect information, so you may not always get to the right information with everybody.



**William RAMSAY, Senior Advisor of the Center for Energy at Ifri**

I do not know what kind of quality checking you can do, but as you are not going to get information on that company from anybody else, you can observe them in the marketplace, but you basically have to rely on what they tell you and to some extent, what you can observe.

**Kristina RÜTER, Research Director of Oekom research AG**

We are heavily dependent on company information, but as these companies are all publicly listed companies, we have quite a lot of confidence in the reports that have been audited. As a kind of reality check, we also consult external sources. If someone makes a statement that is contradictory to what the company says, we try to balance the information and find out what is true. You are right - the rating can only be as good as the information you have available. I think it is the same with financial information.

**Manoëlle LEPOUTRE, Executive Vice President, Sustainable Development and Environment of Total**

They rated us first in the IOC last year, so I am very happy with what they do. We are the best.

**William RAMSAY, Senior Advisor of the Center for Energy at Ifri**

The results were good. It is Standard and Poor's that you have to worry about in the marketplace. People are evaluating your value as a function of your environmental performance.

**Manoëlle LEPOUTRE, Executive Vice President, Sustainable Development and Environment of Total**

That does not help our stocks. I do not know if you really influence the investors. At Total, we are very well rated by Ifri, but I do not know if you have much impact on investors.

**William RAMSAY, Senior Advisor of the Center for Energy at Ifri**

The whole function is quite fascinating because we need this kind of an evaluation. We need this kind of appraisal. We need this kind of feedback to our boards of directors, to our shareholders, to our public about how our companies are comporting themselves and even if it is necessarily imperfect because the criteria can be subjective, the information can be incomplete, things can happen, it still is the beginning of a process that is going to hold people's feet to the fire as to how they comport themselves.

Do you do this for all firms or just the publicly listed firms? For instance, is CNPC on your list?

**Kristina RÜTER, Research Director of Oekom research AG**

No, they must be issuers of shares or bonds, or else our customers would not be interested and would not pay for this research.

**William RAMSAY, Senior Advisor of the Center for Energy at Ifri**

Other companies would pay.

**Christophe DE MARGERIE, Chairman & CEO of Total**

The thing is, for the time being, those ratings can only be negative. They cannot be positive, so if you are not well listed or well rated, it can have a negative impact on your stock. If you are what we call green investors, that by definition counts for much more than when it is a 'normal' listing. It depends on the category of investors.

If you take the normal investors, they would view this as much more negative if you are not better than C. If you are A, that is normal. This is not abnormal, by the way, because we should be better than C. The only concern I have is when I saw Enron, which proved to be the biggest crook, and was the best rated. That is proof that they were quite good at being very nasty, but that is another story.

I have one important question on this. We are followed by investors. We are followed by you and by investors who have what we call ratings for what we are doing in terms of business and what we are doing in terms of social responsibility. More and more in Total, we consider that we have something in common. A project cannot ignore social responsibility. It has to be included. As you said, it has to be economically viable, so it has to be part of the project. Then we see ISS and ESS and all those agencies who are delivering what I call a reason to vote for or against. You will see they only look at corporate governance.

People look at Total to see if it is a good company in terms of returns or in terms of dividend, reserve or production and so on, and then you have the social responsibility group. The two groups do not speak to each other. They do not share the same views. At the end, in the 'stock value' you have the financial part and for the votes at the annual general meeting, you have the social responsibility part of the investment group.

It is now time to deliver the message that it must be one single element of decision. This system should be capable of proving by itself that you can do it. You send a very bad image when you say, 'It is different.' We look at governance and when we want to buy shares, we look at profit. In my view, there should be some integration, to use Manoëlle's words. It should be integrated and I think it will help us. I strongly believe it will help rather than harm. The same things should be as one objective, and not split into tranches.

**Kristina RÜTER, Research Director of Oekom research AG**

I think it is important that in the end, all information comes together to give one picture, but I think it is very good that we have separated these pieces of work to avoid a conflict of interests. These financial data are great, so I would love to recommend the company, and this could influence the assessment of the environment and social and governance part. I think you are perfectly right that in the end, the investment decision should depend on a well-rounded, complete picture of what a company does in all of these aspects, but for the evaluation of the single aspect, it is good to have experts on each side.

**Christophe DE MARGERIE, Chairman & CEO of Total**

My point was that we should avoid having only experts. We should have a global view of the company because a company can be very good on social responsibility, for example, but making losses. I do not believe that a company that is making losses is socially responsible.



**Anil RAZDAN, Former Power Secretary of India**

I want to talk about social responsibility and ethics. Maybe we could bring the panel back to a larger focus on the bread and butter issues and what needs to be done in the sectors. I think there are no two views that energy and environment are closely interrelated. In fact, there is an impact that is understood. Regarding the energy scenario, I think we have got to understand that when we talk of affordability and access of energy, we have got to think of the economic scenarios that you presented to us.

We have got to know the costing of these scenarios and how much will be funded from which side and how because unless we present the major actors, particularly the developing countries who have growing energy needs, where are we going to get these funds from? These will all end up as very political scenarios.

First of all, I think we must understand that people need energy services and not really basic energy as such. The growth of energy services and the growth of human civilisation over the last 200 years or so have evolved around the development of the steam engine and the internal combustion engine, and then the electricity grid, as Edison saw it. We have identified new technologies, such as wind and solar, but they are highly decentralised, by and large. They are micro in their input packages as compared to the other giants. Unless we build the service technologies to be able to work on these sources of energy and provide the same levels of comfort to society, which has got used to it, we are not really catching the raw nerve of the whole issue.

New renewables would be largely decentralised. I think we have to work on smarter grids that are going to be able to capture smaller inputs of energy that are variable at times of the day. How will we store energy? One of the basic things about electricity is the inability to store it. What would be the environmental implications of developing storage and how would we do it?

You mentioned carbon capture and storage. I think carbon capture is a must. Storage without utilisation or fixation is an extremely dangerous exercise. It is only pushing the problem under the carpet, or under the sea or under the ground, whatever you might like to call it. I think we have got to work much harder. You mentioned Statoil and other companies. If you can use it for enhanced oil recovery or for other purposes, it is extremely good, but if you can develop it into compounds or algae, as you mentioned, and somehow also probably connect the food chain to it, then we would be reaching somewhere useful.

Meanwhile, of course, it will probably take 20 years or more to develop. What will we do in the interim for new energy sources? I think we will need cleaner fuels, at least if you want people to move away from coal and oil and move into nuclear, gas or whatever. Of course, putting safety issues aside, you would need to create fuel banks for these cleaner fuels because even in the case of coal, we have seen that the moment you start consuming a particular fuel, prices become very volatile. When there are new, large, hungry entrants like India and China, and hopefully soon Africa, you have to present some alternatives of ultimate price stability.

Yesterday we heard the DG of the IAEA talk about a uranium fuel bank. I think it needs to be built up in a really strong way if you want people to pick up nuclear. Similarly for gas - we talked about the IAEA scenario for enhanced natural gas prospects. We need to build a bank because the moment you set up a plant, suddenly gas prices start shooting through the roof. Your cost of production of power is going to move from six cents to 12 cents to 18 cents, and then you have to shut down the plant because nobody is going to buy that power. Unless you create a stability of fuel, we are in for trouble.

The last point I would like to make is that when we talk about these new technologies, there is a strong issue of IPRs. If you want developing countries to adopt these technologies, they cannot afford to buy it at the cost that will still probably be offered. The fear or the suspicion is that the climate change debate and cleaner technologies should not become an excuse for a new business development environment in the name of a cleaner planet.

**Manoëlle LEPOUTRE, Executive Vice President, Sustainable Development and Environment of Total**

I agree with you that we have to think about services. If you do not think of both the primary mix and then the usage in parallel, and try to find a better balance between the needs, which are services and the primary mix that you have to produce anyway, you will not succeed. The primary mix is a very capitalistic long-term business. This is why the roots from now to 2030 are quite clear. There is no huge discrepancy between the people making the prognosis. On the other hand, usages can change quickly.

I will give two examples to illustrate my point. One is very well known. There is a huge debate about electric cars. I think that electric cars will be necessary, especially in cities with high concentration. For CO<sub>2</sub> and climate issues, it will not always solve the problems, especially in countries where electricity is produced by coal. If you calculate the life cycle of the energy from production to transportation and then usage, all of these processes are not fully efficient. You lose energy at each step and then your power plant uses a lot of coal.

Another example might be less classical. Gas for electricity is better in terms of impact on CO<sub>2</sub> emissions than coal. There is a factor of 2.5 between them, depending on the technology you use in your power plants. If you use gas to produce electricity and then use this electricity to heat buildings, the global efficiency from the primary energy to the efficiency of the heating compared to using gas directly to heat a home is very different. If you use gas to produce electricity, the global efficiency will be below 30%. This means that you lose 70% of the primary energy in the process. If you use gas directly for heating, you only lose 10% of the energy.

These are just two illustrations. We have to think systematically about these things when we build new infrastructure. Solar in Africa is very competitive. It is possible to electrify very remote villages using large infrastructures, but each case is different and we need more thinking and more innovative technology. We spoke about that already. We also need innovation in our business model in the way we adapt the primary mix to the final usage, taking into account the culture and organisation of the people in the countries.

I think this is really feasible. We just have to think systematically about the business model we want to use. In countries where there is existing infrastructure, it is completely different. If we have them, we have to optimise them.

**Paal FRISVOLD, Chairman of the Board of Bellona Europa asbl**

Thank you for those questions. CTS is obviously a technology that we have not seen yet at full scale. Total has a very interesting pilot demonstration project in the south of France with gas and it is testing storage. I think there are some very good results. It is true that it has funding problems. It has to upscale the technology and we have to ensure public understanding. It is also more energy intensive. That is true. When the European Union, for instance, demanded the deauthorisation of the power sector, we heard the same arguments from utilities saying that it would have an energy penalty of 15% to 17%. Today the energy penalty is 2.5%. As these technologies evolve and mature, the energy penalty will decrease.

There are ways of storing CO<sub>2</sub> in aquifers, such as in the North Sea, in depleted oil and gas fields. That has been done. Today under the Parisian Basin or Berlin, there is a hub of methane gas. Is there any public uproar about that? This is something that the petroleum sector has done for decades and they are able to monitor it. We need to get the price down and that is why the European Union is investing billions of Euro in demonstration projects. You will see the publication of the due diligence report of all those demonstration projects in February.

One of the things that happened in Durban right now - they have another plenary session, but yesterday, they opted to include CCS in the Clean Development Mechanism. It is not going to pay for CCS, but it is a very important signal and it is a very important element in its funding. It is also very important because when you do that, you have a set of rules and ways to deal with the legislation for storing CO<sub>2</sub>, which is vital for these countries.



Your last point about not coming from the West or the rich countries to exploit the poorer countries - obviously we have to watch out, but look at what is happening in today's world. Look at what happened to the price of the photovoltaic industry on solar panels. The Chinese introduction to this market has now ensured that the price has decreased phenomenally in the last six months. That is one of the reasons why we see the Chinese moving in Durban.

**Kevin SARA, Chairman and CEO of Nur Energie and Vice-President of the Tunisian British Chamber of Commerce**

They are also doing a technological evolution.

**Paal FRISVOLD, Chairman of the Board of Bellona Europa asbl**

Yes, absolutely. Again, biomass will have to play a role.

**Anil RAZDAN, Former Power Secretary of India**

Some countries have already completely ignored this.

**William RAMSAY, Senior Advisor of the Center of Energy at Ifri**

One of the other points was about fuel banks. I think the uranium fuel bank is about how to deal with Iran's preoccupation with secure access to uranium if they are not going to engage in enrichment themselves. I do not think that people are suggesting that the governments should organise fuel banks in any area. I do not think anybody has any interest in that. Markets are going to have to do that. There is no reason why markets and player could not be the supplier for Iran in gas. I think governments over the last 40 years have come to recognise that getting into commodity markets is not a very good place for them to be.

The solutions will have to be found in market mechanisms so that the fuel bank is virtual, but you know it is out there.

**Manaf ALHAJERI, CEO of Kuwait Financial Center (Markaz)**

My question is about investments that are emerging in businesses like carbon dioxide reduction and alternative energies. You mentioned about having worked with Jordan. I understand you are Norwegian, so you have dealt with many different types of investors with different perceptions or assessments of alternative energy. Can you tell us a little bit about the mindset behind people investing in emerging energy industries? Why would someone like a conventional Middle Eastern oil producer or even Norway invest in alternative energy, for example? Is it a conflict of economic interests or do they have a futuristic approach to what is happening? I understand the West has a different vantage point on this issue and might need to invest in emerging energy industries for different reasons. Why would the Middle East, for instance, invest? Why would Norway invest? I am sorry if my question is provocative.

**Paal FRISVOLD, Chairman of Bellona Europa asbl**

I think it is a very good question. There are two ways of answering that question. One way is a very general one. The world is faced with the threat of climate change. We need to bring these low emitting technologies out of the valley of death, which means that they need to be commercially viable. We need to go green by black numbers, not by red numbers. If not, it is not going to be done. Manoëlle talked about the need for a global CO<sub>2</sub> tax, a global agreement. Yes, absolutely, but the way things are evolving, that is going to be very difficult.

Then we come to the second element, which has to do with what are the commercial value chains that we can develop to spur investment in these technologies? I have been working under the major energy ministerial under the Obama project with all the oil producing countries. There is very strong participation from the Middle East because they see at one point - I do not know whether that is general, but at one point you will start to need to do also EUR and in-house oil recovery. Then it can be economically profitable for you to get access to CO<sub>2</sub>. It is quite a contradiction that we need CO<sub>2</sub> to enhance oil recovery, but the oil companies tell us there is not enough CO<sub>2</sub> available. Why is this? We do not have it in the quantities and we do not have access to it.

Technology such as carbon capture and storage will enable us to get access to CO<sub>2</sub> to do in-house oil recovery, which means from an environmental perspective too, because obviously people will say that we are contributing to exploiting more fossil fuels and emitting more CO<sub>2</sub>. That is true, but it also allows us to develop the technology and fund the infrastructure. We did a study on the Norwegian shelf. We said, 'If we can use CO<sub>2</sub> to increase the extraction of oil and gas for 12 years in one field, it does not take much of a percentage increase and that can prolong the life of these fields for decades.' The Norwegian deal is high tax of 79%, so the tax revenue from increased oil exploration will finance the expense of building an infrastructure for CO<sub>2</sub>.

That is why we need to look at these kinds of infrastructure in projects to get these technologies going. Finally, what kind of world are we looking at? I think it was calculated the other day that today the world produces 24,000 gigawatts of energy, but if we are to have enough energy to bring the emerging or developing countries up to our standard, we need 54,000, so there is a huge gap there. If we are to provide energy for all in 2050 when the world will be 9 billion people, then we need to go up to 74,000 gigawatts.

Let me just say that the US Geological Service said that if we are going to produce so much energy, if we need to go to 74,000 gigawatts, we have coal reserves for 25 years. If we are to provide energy for the rest of the world which is clean, available and inexpensive, then we have to look at other ways. As we say, it is the energy companies that need to embrace and take advantage of this market.

**Manaf ALHAJERI, CEO of Kuwait Financial Center (Markaz)**

When I asked my question, I did not mean to contradict. Of course, I see all the merits, but I am also keen to better understand the marketing proposition from people behind new investments when they come to the Middle East region. If it is about reducing pollution, this is not tied to another part of the world. If it is about making new investments, we are extremely slow in deploying funds to invest in our fossil oil production facilities. I am talking about the conventional ones.

I would like to add a touch of reality to the proposition that we hear from time to time. Unless people come to us with a realistic marketing proposition for the opportunities that we see, I think the priorities in the CCC region will continue to be investing in fossil oil facilities rather than alternative energy.



**William RAMSAY, Senior Advisor of the Center for Energy at Ifri**

Fair enough.

**Christophe DE MARGERIE, Chairman & CEO of Total**

This was more to follow up on certain comments. We heard about the best oil company in the world, by definition, and an NGO working towards certain dreams, but at least not only to say, 'That is not good' but trying to find solutions, rating companies for the good, I hope. I think we have a good message for the energy industry. We know that we have to do better. It is not easy. If we want to be realistic, it has to be economical, so I think we are going in the right direction, but we face certain problems.

It is not bankable today, not only because of the crisis, because there has been a bubble on many of those renewables. If we take solar, for instance, it is almost bankrupt. It is bankrupt in China, so it is not only a question of being bankrupt in Europe or whatever - it went bankrupt in Germany first, the first country that started solar. It is bankrupt in China because of the same bubble. We have ourselves made an acquisition of a big solar company SunPower. They are not on such a difficult path, but they were in a very difficult situation. It is everything except bankable.

No bank will give anything to one of those companies before they give it to one of the projects you mentioned here. We have to go through a longer period with people in research and development trying to make those projects profitable before they can be bankable. Unfortunately today the banks are not taking any more risks. If we do not take it as people in charge of industry and energy, there is no chance. I think it is our duty, even if our core business is not renewables, but as far as what Manoëlle Lepoutre said, there is not enough energy, so we need renewables in any case.

There is no more conflict of interest, to follow up on your point. The conflict of interest existed when people were talking about replacing something by something else. Today, especially with the problem of nuclear, you cannot replace. You have to hope that there will be sufficient energy, even with all of what we have to do to reduce consumption per inhabitant. Today, there is no conflict of interest. Why are we investing? I live in a Middle East country and I have a Middle East company, Total Mobile. We are investing in Shams, the biggest solar plant, not only in the Middle East, but in the world. The second is in Qatar, QSTP, which is the biggest research centre, Doha. It has been sponsored by His Highness Sheikha Mozah. We work on our core business, which is oil and gas plus renewables.

Why are they interested? I think there are two reasons. They know that there will not be enough fossil energy. Secondly, they want to keep the existing fossil energy for the long term, so they want to protect it and not produce everything at the same time. Third is acceptability. Like us, they consider that this is a chance for them to have oil and gas in their soil, which is a gift. They have to pay the price through research and development just to be part of those who have the capacity for doing it. It is a little bit similar for Total. We do not have the oil and gas opportunities in our soil, but we have a chance to be a company with profits and doing well.

I think in business, we have a moral obligation to spend money on research and development for renewable energies. In a pragmatic way, we have to do it. It is part of our role and there is no conflict of interests because if those who have money do not do it, then nobody will do it. That is why I like the pressure you are putting on us. At the same time, it needs to be good pressure because if we stop, good luck to everyone else because there will be nobody doing it.

I was surprised yesterday at the meeting where our friend from the Central Bank told us to be careful because the traders were not responsible for volatility. I fully support this because we are all responsible for volatility. When you



say, 'Wow, the Euro is in an awful shape' the trader is just spinning what has been done by others. We know the embargos are important and necessary, but at the same time, embargos have an impact on oil price. You might ask why, and it is life. Libya has an impact. Nigeria has an impact. Venezuela has an impact. Traders are using it to make it more profitable for them, and more volatile, which is not good for us, but real volatility comes from facts - from what politicians are saying and doing. That is the reality.

My last point is that Norway is the best ever producer. We may say think of the Middle East when we talk about a conflict, but there is more oil and gas per inhabitant in Norway than in the Middle East and they are so rich.

**Kevin SARA, Chairman and CEO of Nur Energie and Vice-President of the Tunisian British Chamber of Commerce**

I have a comment about the renewable industry generally. I think that there has been a tremendous policy failure and also a lot of failures on corporations entering the renewable marketplace because of a fundamental lack of understanding of the energy markets and what renewables are supposed to do. They are supposed to be replacing fossil fuel plants and supplying reliable power 24/7 to industry and consumers. The problem is with existing renewable technologies today, it cannot do that. When the wind stops blowing, there is no electricity coming from the wind farms. When the sun goes down, there is no power coming from the solar fuels.

There are some technologies which are very promising and I am perplexed why so many resources have been poured into the PV industry when it is a fundamentally intermittent solution. It is just a fuel saver and without integrating it with storage and electrical storage, which, as someone has already said, is much too expensive, it is pretty useless. Even then it is hard to turn down your coal plants and you cannot turn down your nuclear plants, so it is really hard to see how it is going to really scale up.

There are some technologies that are very promising, like CSP, which Paal has been talking about, and that is why the Sahara project is so interesting because it integrates storage with it and so you can actually replace fossil fuels. I have a question for the representative from Total. I am trying to understand the solar strategy because you have made as big an investment in PV, which is fundamentally intermittent, but then as your CEO has mentioned, you are also involved in Shams, which is an integrated project. I think it is actually with hybrid, which again to Paal's comments, where you have this interim stage where you have hybrid technology, so it integrates fossil fuels and renewables. That is a very interesting solution as well.

I am just trying to understand what Total's strategy is in solar. How do you see PV fit in with CSP? Could you comment on the French government since you are a French company, which seems to have abandoned the solar sector completely and is placing all of its bets on wind? There are serious questions about how you can integrate wind into a national electricity grid.

**Manoëlle LEPOUTRE, Executive Vice President, Sustainable Development and Environment of Total**

As I said in my introduction, we invest in technologies where we believe it offers competitiveness with others and be affordable. If we compare Shams with a mixture of solar and fossil and photovoltaic, Shams is built in a country where you have a lot of sun, basically, so you can optimise on a large scale. It is adapted to this kind of country. In photovoltaic technology, our experts in R&D believe that there will be huge progress and the efficiency of the technology still has a lot of space for progress. This means that it will become more and more competitive and in some countries, it is competitive now.

We have acquired SunPower and it is a bit difficult. We are now third in the photovoltaic industry. You talked about the problem of storage. This is true. Renewable energy, leaving aside biomass which I will talk about later, is intermittent, so this results in a storage problem because otherwise you have to double your capacity with classical and



thermal electricity. You probably know that over the last two years, there has been a huge increase in R&D investment from various countries, such as the US and China. There has been less investment in Europe, but it is growing now.

We see a lot of start-ups in new technologies and old technologies that are being revived. Total is working on this kind of thing. We made an investment a week ago in the storage issue. We are not in wind power. Part of this decision is based on your remarks. We are in biomass because we are already following the regulations for biofuels in Europe. We think that biofuel is the only way to replace oil, so it will be useful. Nevertheless, it poses the problem of food competition and surface accessibility. This is why we are working hard in R&D with the objective of optimising the agricultural surface.

We are developing the use of third generation using plants. We are investing in mixed technology using biotechnology. I would say we are more at the R&D stage, but we believe that in the future, this will be useful. Due to agricultural competition, it will not completely replace the volume of oil in the short term.

#### **From the floor**

That is why Dutch people started to use bicycles. That was the idea - 25 years later, there will be petrol and no gas.

#### **Anil RAZDAN, Former Power Secretary of India**

I would like to support the panel by another argument. In India, for example, we have seen that you have the coal deposits, but they are lying within heavily forested areas. You have another environmental issue of not allowing the mining of those deposits. I would tend to agree that if we continue to grow at this 45 degree or 60 degree energy growth bar, we will probably run into that problem. I think we need to get back to efficiency, look at the new technologies and understand that it will probably take at least another 50 years for us to develop the alternative technologies and the service chain if we start working on it now. I do not think it is a false alarm.

#### **Paal FRISVOLD, Chairman of the Board of Bellona Europa asbl**

I just mentioned this as an example. We did not leave the Stone Age because of a lack of stones, which is a clichéd argument. Obviously there are fossil fuel sources for a very long time. This is absolutely correct. When we look at the way to bring energy and the way to tackle climate change, we need to start developing other sources.

#### **William RAMSAY, Senior Advisor of the Center for Energy at Ifri**

I think we have taken this as far as we can.

#### **Robert DELBOS, Adviser to the India Trade Centre for Oil & Gas**

The Germans made the decision to have nuclear plants.



**Manoëlle LEPOUTRE, Executive Vice President, Sustainable Development and Environment of Total**

There was a short-term increase.

**Robert DELBOS, Adviser to the India Trade Centre for Oil & Gas**

We will have energy convergence in Europe.

**William RAMSAY, Senior Advisor of the Center for Energy at Ifri**

We were talking about fiscal convergence. Energy convergence may have to wait until we are done with fiscal convergence. The resource bases are more defined by the price of the commodity in the market than it is by the geology. We are finding that there is a lot of this stuff out there - oil, gas, coal. I do not think we are too worried about that. I think we are limited by our ability to burn it.

Ladies and gentlemen, thank you very much. We got as much out of the table as we did out of our panellists, but we had some really good panellists. I like the composition too. This was the right way to get at this issue and look at the solutions rather than the problems. Thank you all for your participation.