

INDIVIDUAL PROFILE

TINA SOLIMAN HUNTER

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IS THE FUTURE NOW?

This interview is based on an original recording for the MyEnergy2050 podcast focusing on changes within the energy system. Each expert demonstrates both an in-depth understanding of their core area and also a broader vision of how the energy system changes. The material is useful for both teaching and research. It was created as part of a case study project of the Jean Monnet Chair in Energy and Innovation Strategy at Central European University.



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What is the general impact of COVID-19 crisis on the oil and gas sector?

It's been phenomenal. You know, it's like sitting in the backseat of a car and watching a very slow car crash and knowing that we're all going to be injured, but it's just how badly Are we going to be injured? If I feel like that imagine what it must be like for governments. And that's, that's an interesting question to even contemplate. But I guess one of the things that I first thought of when all this started was this is going to change the world order. Now, how are we going to get out of this new world economic order? And in fact, a new geopolitical order based on nothing more than, you know, the price of oil. The way the market behaved we've never seen this before.

Let's take the US for instance. It has a negative price with West Texas Intermediate. I mean, that's unheard of, you know, 25, 35, 40 years ago, the US was supreme. 10 years ago, the US became supreme again with shale gas. And now shale gas is highly at risk. The shutting down West Texas Intermediate which is obviously the market. Crude oil, not only has it tanked, but it's gone into negative. You hear people say these are uncertain times. And we've had uncertain times before, this is unprecedented times. This is something that no World War, no geopolitical has ever been able to achieve not even the collapse of the Soviet Union. The coming down of the Wall through unification of West Germany, which we all thought was the worst thing that was ever going to happen economically. That's just nothing, that's baby steps compared to this.

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Do any of these past events tell us how the markets or demand for oil and gas might play out over the next couple of years?

Well, for each of those events or episodes that I've talked about, there's one thing that comes back. It comes after all of them, and it's predictability. People, we use oil, we use gas, we will rebuild. We always want to get back to an order. And these have been geopolitical events. Okay, these have been events that are largely, if you want to say, are in the control, or in the hands of governments, you know, they, if governments or representatives were able to sit down and forge deals and make agreements and treaties, and plot an order and a path, then we could get some sort of recovery. But this is not like that. There is no order. There is no path. There is no treaty to be made. You can't make an agreement with a virus. We don't know how long this is going to go on for how long the economies are being affected. Who's going to work? Who's not? What the demand for oil and gas is going to be like when we go back? What is this going to do for distributed grids? How is this all going to play out is a huge uncertainty and markets don't like uncertainty. That's the reality. And because of that, the markets are reacting negatively and rightly so. The question then becomes, well, when do we get order? And the answer to that is, we don't know. And the very aspect of not knowing when we get order is what's going to keep this perpetuating and make this much worse for much longer.

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In the area of investments, if we are in an era of no order, is it simply the governments and industry together flailing around and being unable to find a balance?

Well, what balance are you trying to achieve, I mean, even protection is about investing, ensuring that investment comes. And then when that investment comes to undertake activities, that there will be protection. The protection will come from the law, the protection will come from the government. But what happens when the government itself is trying to desperately protect the fundamentals of their own society? They don't have the capacity or perhaps even the will to to protect investments in an area where, you know, it could be seen as a luxury mainly because you're trying to protect the fundamental pillars of society. And when you've got what the US has got, what 20% unemployment? [It's] huge. When you've got 20% unemployment, you're trying to provide accommodation and food stamps for millions of people, is that going to override your prediction of investment? And the forming of new investments and all of these fundamental building blocks of society? Such as, being threatened in a way that have never been threatened before? And as a result, society's going to have to re-align itself. And that includes investments and investors.

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One of the big side benefits of this collapse, essentially, is the cleaning of the environment. Less fossil fuel use, and people can see it and feel it, especially those living in cities. And do you think despite all this uncertainty, that there's going to be a push for maybe a cleaner trajectory for energy technologies or it's sliding back? And just using the cheap fossil fuels to move society to find this balance because maybe the cheaper way is fossil fuels, but more innovative kind of longer term push, it's a cleaner energy system.

For those people who live in cities that see what can be done with less consumption of hydrocarbons, I think it provides for them for the very first time a glimpse into what they could accomplish or achieve. We now know that a marked reduction in the consumption will give us what we've projected. So that is fantastic. So it is achievable. What needs to be determined is whether people have the will.

The will to do that and that will is going to obviously come from things like maintaining what we're doing and then even going further. That's going to depend on whether people are sick and tired of, you know, their life being changed or whether they get used to it. So, for instance, in the UK where I am at present. People, they've changed their way of life because they had to, but you see, as soon as it's relaxed, they go back to the old ways. You know, crowding on beaches, whatever. What's interesting is Australia, where I'm now going to reside and working. And Australia has seen some change, but not a large amount, but continue to embrace a new pathway. So I think it comes down to the will of the people. Are we willing to follow this new trajectory? Or do we see it as a huge inconvenience, and we just want to get back to the old life?

Here, many people say, 'Oh, the world is never going to be the same. We're going to remain connected through electronic media and new technology.' But I'm now hearing people saying I'm just sick of it. I just want to get my old life back. That's going to be the forefront. That's going to be the watershed of whether we go back to where we were or we embrace new directions and new technologies. And it remains to be seen, I'd like to think that actually, we're going to go down a new path. And I certainly am going to. I have been advocating it for a long time. Indeed, we're holding this right now with me in the UK and EU in Hungary. So I think that's the future. The question then is, is will everybody embrace it? And will government promote that? That's the question.



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With the bottoming out the market and the bankruptcy, the challenge in the United States for those operators mainly in the US are shale oil and shale gas. What about expenditure for more higher priced regions, non-traditional regions? Like the Arctic? How does this change that?

If it wasn't the Arctic, I would have said it would have changed everything. If it was something like the North Sea, or a new oil and gas province in Mexico, some way sort of fairly traditional. Fairly, non-geopolitical, I would have said it would have changed everything. The reality is no. Russia has just released its Arctic principles to 2035. It has its maritime strategy. And it also has its energy, strategy, energy policy. And if you put those three together, then what we see is that the Arctic is not about not just about petroleum. It's about a whole range of things. It's about claiming the geopolitical space. It's about re-militarizing. Not for a proactive military aggression, but for reclaiming the Arctic space, because that's where the Russian military has, has had a home for a long time. And it's also about the northern sea route. It's about Russia's new maritime principles. Which are about ensuring that instead of the Arctic, the Northern sea route being just for domestic, that it's an international sea route, and it's much faster. And I think if you put all of those together, then we know that oil and gas exploration and production.

The Yamal Peninsula, is actually the source driving those things. So for instance, if you want to get infrastructure in for an oil and gas project you need planes. Planes can land up there on military runways or runways that are in in big towns. So there is a need for population and settlement up there. After the end of the Soviet Union settlement and population fell away from those areas. From places like Murmansk, Arctic military bases, they are now being reinstated. There's also fishing fleets, all of these economic activities. The Russian government sees the Arctic as an incredibly important economic zone. Without a doubt.

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Can it be described as like a re-colonization? Would that be a proper term?

I don't like the word 'colonization'. Resettlement. Although this time, it's voluntary, which is nice. It's always positive, especially in Russia, I applaud the Russian government for what they're doing, because they're making use of all of their land, and all of their resources. And in doing so this takes pressure off some of the more heavily used areas. And it makes sense to use that. And it's not without danger going into the Arctic areas because of global warming and changes in the environment. And it's going to be interesting to see how that plays out. But I think, oil has to be around about \$36 to \$40 a barrel in order for that to be break even let alone even profitable, but gas is different. Okay. Let's not forget that. And let's not forget that we still have some very hungry gas consuming countries like China, South Korea, and Taiwan. And then what's happening in that region is going to play into this. Let's also not forget that India, now India is looking like they're going to fund some huge developments in the Arctic, the Russian Arctic region. And because of that, that's going to make an incredibly different dynamic in that zone.

The Russian Arctic is kind of hot right now. If you'll excuse the expression, Norwegian Arctic, they've got developments. But that area is very much being seen as a negative development by the Norwegian people. And there's, of course, the Greenpeace case that keeps sort of popping its head up every so often. And as a result, we need to see where that's going to go. At the moment, the North American Arctic is pretty dead. And I don't see any investment because it's private actors. I didn't see any investment there in the foreseeable future at all. Shell got out when the price was, you know, positively booming compared to now. But Russian optics are different because it's driven by and can only actually be developed by Russian state-owned oil companies. And I think therein lies the difference.

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Is it wrapped up into the geopolitical actions of the state as well?

Absolutely. Without a doubt. And I think it's not even so much funding, I think it's about risk. And reducing the risk, we talked about investment protection before. When you're the investor and you're the operator in your own territory, what you do is you actually change the dynamics of investment risk. And quite honestly, I think that the only investment activity that's likely to get any sort of legs up at the moment is going to be nice with state backing, because it reduces the risk.

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What about these OPEC countries or Middle Eastern countries with the low oil price now? How does that geopolitically change their position?

If you had asked me, pre-COVID, I would have said that the strength of the US shale had probably almost broken the back of OPEC. Saudi Arabia was certainly in a much weaker position. And that was for a whole range of reasons. And you can see that with the reforms that are going on in inside Saudi Arabia in terms of social and cultural. You can see it also in Saudi Vision 2030. Saudi Arabia is really getting ready to open up to the world because oil can't shelter them anymore. That's the reality and they realize that they see tourism as the great savior, which is really interesting. Interesting. But now, my understanding and I stand corrected is that many of the shale gas producers due to COVID-19 are on their knees. And for the first time that production is filled to 5 million barrels a day for a long time now that places Saudi Arabia in a really interesting position. In 1980, we had the Carter doctrine which said that the US would protect its interests in the Middle East. Its oil interests, no matter what, including with military force. And I have been questioning the relevance of Carter Doctrine for the last half a dozen years. I think suddenly the Carter doctrine has become important again. Because there's one thing that the US needs and that's oil.

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What is the Carter Doctrine?

The Carter Doctrine was announced at the State of the Union in 1980, [President] Carter announced that we would protect our interests in the in the Middle East, and that protection would include military force if necessary. It's interesting if you take that from 1980 and then you look at all of the things that have happened in the Middle East militarily, since that time, it gives you a sense of what the impetus might be.

As I said, in the last sort of half a dozen years, I've sort of looked at the Carter Doctrine and thought, is that really relevant now that the US is producing, you know, 12 to 13 million barrels of oil and gas a day? And in fact, the US has just become the biggest oil and gas producer in the world. And in three months, that's been wiped out, their gains that they've made in the last 10 years have been wiped out. US shale producers cannot sustain that. So, where does that leave us in terms of the value of the Middle East and Saudi Arabia? They're on equal footing now. They were on equal footing. And then looking in the back of all of this is Russia. And you can see why OPEC plus was not keen to do anything. Because what they got out of this was the continued weakening of the US. And COVID has managed to do what Saudi Arabia and Russia could not do, which was break the back of the shale gas producers. And this is a new world order now, where this is going to lead us, I have no idea. But it's exciting.



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The technology—hydraulic fracturing technology and all the associated technologies that the US innovated. That is, it invented to become the global leader in oil and gas extraction. But now it is broken because of the price. The producers can now produce at a cheaper price in the US and sustain it. The ban that was provided by the US essentially meant that oil couldn't be sold for a cheaper price of around \$40 a barrel. But now that's broken.

The thing you've got to remember is the set up for conventional well. The setup is incredibly expensive, you've got the drilling, then you've got all the infrastructure, and then you've got the pumping and all of that sort of stuff, the pipelines and whatever. Shale is different. Shale relies on continued hydraulic fracturing, so there's always on-going costs. So you need to continue to fracture in order to get continued field development. And when there's no appetite and there's no sort of economic drivers to continue, then essentially your incomes going to dry up. But the other good thing is that you can then go back to those wells and continue to hydraulically fracture and then continue to produce later on. Whereas it's very difficult to suspend production out of a conventional oil. So there's pluses and minuses on both sides.

But if we're talking about the next few years, And certainly right now, there is a new world order being primed and it is coming. I'm not convinced that the US is going to be at the top of that world order. I mean, I would lay out on here and make my predictions that in 10 years' time, the strongest player in all of this is going to be Russia. Twenty years ago, there was a paper I read it came from Chatham House. It was about 15 years ago, actually. And this was before the shale gas revolution. And it said the USSR as a global power, they never had it. But the Russian Federation will be able to have power and global power in a way that they never could when they were in the USSR for one reason or for one reason only. And that is energy resources because Russia's got everything. They've got thorium, uranium, coal, wind, hydro, they've got gas, they've got oil, they've got the Arctic, they've got the steppes. They've got everything. And they're developing it. And they're smart, and they've got good strategies and policies. And that's one of the advantages of having Putin in for 20 years is that you get somebody that can thinking long term strategies. And that's the whole idea of the new energy strategy to 2030 or 2035, the new Arctic principles to 2035. It's about long-term planning. And we see in the US we see in the UK, we see in many countries, but those in particular that we can't plan beyond a single term, government term's don't align to 2035. And I think that is going to be to the detriment. And I think also allowing the market, if I may talk about markets, what's been really interesting is for those economies that rely on markets in a pandemic, the market is actually the one thing that has let you down. And the market has had to take and capitalize on the use of government money. So it's the social system that has held the market up. And that's really interesting. The market is always only short term. Whereas for the planned, and more planned economies, may I say, even socialist economies, what you have is a longer term strategy, a longer term vision, and that gives you more fat to be able to use as a buffer.

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Can you describe your writing about the Equinor oil and gas exploration in the Great Australian Bight? Can you describe what the Bight is? Based on your background in Norway and your familiarity with Australia, it seemed like the perfect piece for you to weigh in on that.

You're right in that the Norwegian knowledge and both of their lore in their in their rig and their company, and the knowledge of Australia was absolutely ideal. So Equinor took over BP's leases in the Greater Australian Bite. It was going to be drilling exploration wells in two and a half thousand meters of water in a virgin area. [The Bight is] the area to the south of Australia, and between Australia and Antarctica, basically, in the area that sort of goes up in the middle of it. There's an area that looks like somebody's taking a bite out, but it's basically in this in the seas to the south of Australia. And these are our tuna fishing grounds, great areas of tourism. It's also an area with no petroleum activity at present. Several times they've tried to take on petroleum activities. But what has happened is each time, they've tried to drill exploration wells, but each time those wells have not been able to be finished because of the conditions. So BP was going to spend \$1.3 billion undertaking exploration drilling in a number of areas. And we got the first environment plan and what was interesting after going through it with a fine-tooth comb.

What I found was that their standards were not as good as what was going to be used in the North Sea in Australia. So let me start again in Norway. So wherever the standards in Norway would be what we call North sock zero, d 010, which is a very good drilling standard. And we're going to use other standards. And by their own calculations, they couldn't get to a rig in time if there was an accident. If a well was to blow out and cause an oil spill, that couldn't get to the rig for at least 17 days. Whereas under their own laws, so 29 days, whereas their own laws said that we'll actually have to get a rig there within 10 or 12 days. So my point to them was, well, you're going to come into our backyard and drill with these poor standards. Whereas if you were to do it in your own backyard, it would be much higher standard. We think that's wrong. And you should go home, basically. And so we had a lot of activity and I say 'we' because it was not just me, I worked with Greenpeace, and we wrote a report about all of this, but then the Sydney Environment Institute at the University of Sydney got together a group of experts. One was a sociologist Andrew Hopkins who is amazing. Another guy was Greg Ward, who used to work for BP, Maryland Taylor from the University of Sydney, who is in excellent in her area as well. And together, we produced a report for the regulator saying, 'I'm really sorry, but these are the things that you've missed. And these are the things that are really, really important.' And about six weeks later, Equinor pulled out. So that gives you the idea of what academics can actually accomplish. And it also gives you an idea of having quirky interests, hidden in the thought that knowing about Norway and Australia, and having expertise in both demonstrates what it could bring you. But it was that expertise of being able to say, "Look, you might be fulfilling technically the Australian law, but that's not the best you can do because we know that you have to do this in Norway. So why don't you at least give us that? And your modeling is wrong because if you were in Norway, this wouldn't be acceptable. And we know that you could do it better, but you refused to do it because you don't want to pay. That's not good enough. We're worth more than that." And that's what we said to them repeatedly.

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Did Equinor pull out because of the requirement or the push or the public opposition to it?

Public opposition was big, which is really unusual for Australia, but they pulled out in February. Now, I would bet my bottom dollar that it wasn't just us. What I think is they were watching COVID and knew that the price of oil was going to drop. Because, you know, they weren't indications. I mean, we're talking about February, mid-February. It got out. Italy was just going off. And they pulled out citing economic reasons, not environmental reasons. And they were going to spend \$1.3 billion. And I think they just made a really ripe decision. They hadn't invested that much money there. And I think they made a really smart business decision. Why would you spend that sort of money in a virgin area? When there's a stack of people dying of a disease that got out of China, you know that starting to, to be not smart, and they were clever. And I applaud them.



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I went to a conference last year in Bergen, and the chief economist of Equinor was there and he spoke. But a lot of people were opposed to them, and they were quite rude.

This is the interesting thing about Equinor. I mean, Equinor, obviously, it used to be Statoil, they changed the name from Statoil to Equinor State Oil Company to Equinor, and became an energy company. That's probably the world's first state owned energy company that actually does everything. And yet increasingly, people don't want to work for them. They don't want them in the same room. They are seen in Norway as evil. A big bad oil company. And there, I predict that, you know, within 10 years the state will have divested itself of its interest in Statoil, In Equinor now. Because, the state may own it, but they're not earning so much money from it and more importantly, to be associated with Statoil is a dirty word. Sorry, Equinor, it's no longer cool to be a state owned oil company in Norway, because increasingly, the younger generation is finding it unpalatable. Now, what's interesting is that the younger generation who has had the most opportunity of any youth in history, because of the oil, now are rebelling against the oil. There's something deeply psychological. It's an area of research that should be taken up I'm sure. But it is really interesting that people don't want what they have. And you know, young people are not impressed with Statoil, even though, I'm sorry, Equinor, even though now it's an energy company. They're into wind and hydro and hydrogen and all of this but this essentially seen as an oil company, and one of the reasons I changed the name is that Statoil was very clear about it so they could recruit people to work for them. Wow. They didn't want to work for Statoil.

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In the past, students were going into the oil and gas sector, the fossil fuel industry. And now they're going into renewables or looking at much more sustainable options. From reading and talking to different people in the oil and gas companies, mainly here in Central Europe, I know that recruiting the bright people that are bright graduates is getting harder and harder and they're having to do different things to entice them to to come work for them. Do you think oil and gas companies themselves are going to be limited and simply have to diversify and become like Equinor become diversified into other areas of energy?

That's a really good question. And for those of us who are old enough to remember BP in the 1980s, BP actually changed their logo to BP - Beyond Petroleum, and actually tried to become an energy company. And it was an incredible failure. Absolutely incredible failure. And that's because the timing wasn't right. And because cheap fossil fuels in the 1990s made it impossible for them. What I see in young people is that it's geographical. Okay, so I've taught on Oil and Gas Law degrees, I've taught on Energy, Law, Energy and Environment law degrees. And what I see is, if you're from a newly emerging oil and gas jurisdiction, like Ghana, or Uganda, or Tanzania or any of them, oil and gas degrees, is a must, but if you're anywhere that's not like that, then you want an energy degree, or an energy law degree.

Now you might take the exact same subjects, but the reality is about labelling. It's about names. It's about, 'Am I interested in energy, or am I interested in oil and gas? And to the detriment of everything else.' And one of the things that we see in oil and gas companies is that they are very aware of the energy transition. But not only is the energy transition coming, but actually that it's here and it's taking place and how are they poised. So many of the skills... The great thing is that many of the skills are transferable. So if you're a seismic person, and you do seismic survey, that's going to be valuable for finding oil and gas, but it's also can be valuable for finding the best rock. To use a bedrock to put a offshore wind farming. So many of these same skills, such as with drilling and the same with completions and all of these things. Many of the skills are very transferable. And in fact, in Aberdeen, that's one of the things that they're looking at is how can we transition to the energy economy rather than the oil and gas economy. And that's the sort of conversation that needs to have place rather than looking at the outcomes of the activities, look at the skill base.

What skill base are we developing? For instance, is an energy contract, different to an oil and gas contract? You know, government policies, all of these sorts of things. What are we actually doing? How different is a pipeline to a transmission line? You know, in terms of property law, absolutely no different. You still need a public easement. Okay, or an easement. So these are the things that need to be sort of matched up and synchronized in terms of energy. As a resource rather than oil and gas, there's going to be a transition. So probably I would, I would suggest to listeners, the best thing you could do is watch a movie called "Switch". It's done by a guy called Scott Tinker. It's from the University of Texas Austin. And it's about the switch from hydrocarbons to renewables, and how that's going to look, and what we need to do to get from one place to another.

[The movie] is interesting because they talk about the fact that actually the driver and the most important thing is going to be gas. And I think they're right. And the role of gas in our transition economy is going to be absolutely enormous, because gas is such a versatile fuel. And we see that because the European Union has invested a lot of time energy and money and laws into the gas market and gas security. We're seeing that in Russia that the developing gas, gas is the choice for many places, including India, China, Taiwan, Japan, oil is not the choice anymore. But what's interesting is our legal institutions or international legal institutions have not caught up. So, for instance, the international energy agency still predicates oil security and doesn't have as much sort of role in in guest security. These sorts of things you know, OPEC needs to be to make that shift from just oil producing. Right now, it's about oil and gas. eventually it'll be mainly about gas.

So, I see gas as the most important field particularly now, you talked about technological development before. And I think the technological development around LNG (liquefied natural gas), which allows us to move gas by ship, but also allows us now with you know, technologies with regasification ships that you can have a ship, to sitting off the coast and it can store that liquefied gas and then as the state needs it, they can regasify it and put it in. So, rather than having these big regasification terminals you just have a ship, big or small sitting off the coast. And they can connect their little pipelines up, and then not. And so this portability is really important. And that's a bit like, you know, the development of what we call Lego nuclear reactors. Yes. So people wouldn't would probably know that. At the moment. There's a floating nuclear reactor off the coast of the Arctic coast, in Russia, that wanders along to each different town. That's going to be the future. Lego nuclear reactors, I think, as it should be a big fear about nuclear reactors. If you've seen Chernobyl, the series, and probably rightly so. And I would encourage everybody to watch that. But we're really shifting into a whole new era.

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So the energy transition doesn't mean just renewable, like clean energy? That would include nuclear, that also does include gas.

I like to think of it as a transition to a lower carbon economy. Because the high carbon economy is oil and coal. And, you know, countries have to get off coal says me, who's an Australian who is about to create the world's biggest coal mine, but I apologize for my government. But, you know, that lower carbon economy is critical. And I think what we do is we transition to lower and lower and then lower and lower and it's a step forward. It's not an all or nothing, because we rarely do that in history. Have a look at history. Now, say for instance, the development of weapons. We didn't go from spears to ICBMs, you know, we had so many step changes in between that. And I think the shift from oiling and, and coal to wind power only, has got so many step changes. We need to develop batteries; we need to develop other forms of storage. You know, what about solar? How are we going to do solar, the next critical thing that I perceive will be offshore solar panels. Because the problem with solar panels is they take up too much land and in countries like Australia, they're actually taking up agricultural land. Yeah, so when we can actually put solar panels in a place that can stop consuming land and have these conflicts of land use, that will be a big step change and the development of batteries. And then just to be really depressing, because I can be, what about what do we do when we develop those batteries? What is going to be the environmental and economic consequences of the materials that we put in those batteries? And how many virgin forests are going to be raped and pillaged? How many people in the developed, developing, or extremely underdeveloped nations are going to be abused in terms of human rights [for the minerals]?



We've seen that in countries already, like very young children working to dig up rocks. You know, these are first world problems. We think in terms of oh, you know, are we going to transition to what kind of economy? Probably the last thing I would say is, you know, what about developing economies? And this is a philosophical question that I don't have the answer to. 'Do they have the right to undertake economic development by going through the carbon cycle?' What I mean by that, is to go from high carbon to lower carbon to lower to lower. But should they start at higher carbon like we did? Do they have the right to do that? Or if you turn it on its flipside. Do we, as a Western World have the right to stop them?

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Looking at your profile you have in there and I know from speaking with you in the past, the role of indigenous groups and religious concepts and natural resource law. Can you describe this? Because this Western approach with oil and gas markets drastically differs from an approach based on indigenous or religious beliefs. Obviously, we have a very capitalistic system. But what about other social systems that are affected by natural resource extractions?

That's very interesting because I'm actually in the middle of developing a subject on just this topic, indigenous, religious, and political concepts. So let's not forget politics in there. So if you look at religious concepts, and I'll be fairly brief about this. Religious concepts of property in natural resources, well, you wouldn't think that religious should even be sort of in that mix, but very much certainly in Islamic law. So in the Quran, and as part of Sharia law, and natural resources are a public good. So they're not something that can be privatized. So this is really interesting. So let's say, you know, does that mean that we can have private oil companies? No, not at all. What that means is the government can delegate if you like, or give licenses to somebody to undertake that activity on their behalf. But they, as the owner, and as the caretaker of a resource, have a have a responsibility. But what about things like water? So for instance, in my country, in Australia, we sell water to the highest bidder, and privatized water ownership rights. So under Sharia law, and there's some in some religious laws that would not be allowed, because that's not for the public good. So for instance, in Australia at the moment, farmers can't plant their crops, even though the weather's fine, seeds there. They've got the land, the land is fertile because they don't have water. Because that water has been sold to Chinese companies to make money. They just trade the water rights. So Australian farmers cannot produce from the earth using God given water. For the, because, that would feed the population, because water has been privatized. Now, that is something that is very much against some religious aspects. And that's just one example. In terms of things like indigenous views. Now, what is the indigenous view of water? For instance, again, let's have an example. So I did some work once in the Pilbara, Northwest Australia with an indigenous group. And the company was going to come in and undertake some hydraulic fracturing. And, you know, we stipulate that you had to monitor the water table to make sure there wasn't any damage. And so they said, yes, they would water the monitor water table down to about 250 meters. But then there was another quite deep water area that five, 600 meters and the indigenous people wanted that monitored as well, that wasn't damaged. And the company said, "No, we're not going to the water is of no value, you can't drink it." They said, well, it might not be of commercial value to you. But for us, that's where the dream circuit comes from. That's our entire belief system comes from there. And they refuse, it's like, it's an absolute no value we refuse. So that gives you another example of this, this difference in view and therefore value. And because the third one is things like, and I've touched on it before is that capitalist system versus a socialist or communist, where a natural resource in say, Norway is seen as being there for the good of the people to be developed in a way that all of society benefits and we see that in Article one dash two of the Norwegian petroleum act of 1994 versus private ownership and the right to develop individually under the capitalist system in the US. And I think that's a perfect example. So you can see how indigenous, religious, and political, socio political aspects can really alter the use, the profitability and the availability of a natural resource.

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When we talk about indigenous rights, in a sense, it's only an example. But it's an example of a different perspective of how they view the natural resources, the role as a central part of their society. But we can also look at Norway, right? As like a developed country, but they also have a different view. Then the Americans have a different view.

That's because of political, socio political, and rather than, you know, religious, and then if you have, you know, the Saudi view or the Egyptian view or whatever, it's going to be different again. Well, the Sharia view, is a very good book done by a colleague of mine, who looked at Iraqi petroleum contracts. But a lot of the first part of the book is about Sharia law in relation to exactly that to the ownership of those resources and property and benefits. And it's really the perspective is is incredibly important for the benefit for everybody. Man, I'm appalled that my country sells water. The Chinese buy the water rights and the water licenses and then trade them and make money. As a commodity to be traded. Yeah, because it's Yeah. Because Australia's point is, you know, we have to get investment. But for my mind investment means that the investee should be a beneficiary. And that's not the case. Yeah, that's when when it comes up, when a company comes in and invests in a country, they should be building things for the benefit of both parties. And that was the traditional investment paradigm. And this is not how it is anymore.

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How do you describe the energy sector? How do you describe what it what it means to people and the impact that it has, and in a very kind of general way?

That's a really good question. And I think the energy sector is it's something that we can't live without, but it's something that is the bane of our existence. You know, there's so many flow on effects like everything else has so many flow on effects from the energy system. But there's so many benefits, no energy means no development, no development means no progress. But then that I always ask the students question, how much more progress do we need? Are we progressing in order to feed the energy system to make new technology developments? What if we stopped today? So one of the biggest problems I think the world has is that this this goal of, you know, improving, you know, economic growth every year. When do we stop growing? When is it acceptable to stop growing, and it's the energy system that drives that, but also the energy system that is part of that, and it's a feedback loop mechanism. You know, and you only have to look at China. That's the classic feedback, but I think it's also very rapidly changing. I've been a automate, I started my PhD 15 years ago, and oil and gas was the only thing on the energy. I mean, we didn't even think of the word energy we thought of thought of petroleum energy didn't exist. And now, petroleum or rolling gas is a dirty word with some... Somebody said to me, oh, you know, didn't see many people with your qualifications or your, you know, skill set in your area and take note we're a dying breed. But you know what, and this is the problem. We shouldn't be oil and gas people shouldn't be a dying breed because we are always going to need oil and gas. But we can't find people to replace us. So trying to find a young academic who's interested in petroleum law is like trying to find hen's teeth. You know, it's a bit like military intelligence. It's a bit of an oxymoron. You know, because oil and gas academic is... Why would you go into something that's dying? But it's not. Gas is here for a long time. And oil is necessary. Well, you've got cars you've got oil. Well, you've got ships, you've got oil. If you haven't got ships on oil, you're gonna have them on gas. LNG. Bunkered gas.



Oil and gas is here for a very, very long time and you'll always need the legal and regulatory environment. The Equinor example shows what you did as an academic. You were able to weigh in on a case and point out the deficiencies there. So it's not just simply going and working for an oil company and trying to extract the oil but it's also from an environmental side of it.

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