

production and exploration, possibly to a time in which environmental regulation or changed market conditions will make their use no longer viable. Low oil prices have also accelerated the determination with which many oil-producing countries, in particular in the Gulf, are pursuing their economic diversification efforts. The United Arab Emirates' post-oil strategy, together with plans in Saudi Arabia to sell shares of the national oil company to support economic growth and reform, are powerful signs of this.

Will Paris make a difference?

It is argued here that, in order to see the real potential of the Paris Agreement to support the needed global energy transformation, one must look beyond its actual and perceived shortcomings. These include its internal

operational and structural weaknesses (the gap between pledges and science, and the weak enforcement mechanism), issues related to external perceptions (the UNFCCC's weak track record), and parallel energy trends (low oil prices).

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Post-2015, the question of whether the Paris Agreement will be successful or if it will spur change in the energy sector, is arguably synonymous to asking if national climate policies will be strengthened and implemented over time, and where energy investments will be directed as a result. Despite all its shortcomings, the Paris Agreement,

as a universal climate agreement, represents a realistic compromise and achieves more than many had expected. The debate, going forward, should therefore not be about whether Paris succeeded or not, but about how to leverage the Agreement to support national-level implementation worldwide. Ultimately, future generations will not judge ours for whether the Paris Agreement included ambitious pledges, or even if it set up functional confidence-building and support mechanisms, but whether we, collectively, managed to cut our energy emissions quickly and deeply enough to keep global temperature rise at a safe level.

**The views expressed in this article are those of the author, and do not necessarily reflect the views of the Emirates Diplomatic Academy or the UAE Government.*



COP21: One step forward, a mile to go

Scott Barrett

At the Paris climate conference last December, all the world's countries were able to reach a consensus about a matter of profound importance. They agreed that climate change needs to be halted and that every country must play a role in halting it.

Why were countries able to reach a consensus? One reason, of course, is that all countries recognize the threat posed by climate change. But another reason is that, under the rules of the first climate treaty, adopted in Rio in 1992 (the United Nations Framework Convention on Climate Change, or UNFCCC) decisions by the parties *must* be agreed by consensus. As the new agreement was being negotiated under these same rules, opposition by any country could have sunk the effort – this is what happened in Copenhagen

in 2009 at the previous make-or-break climate meeting. All countries agreed after this that they had no alternative but to try again.

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Another reason why a consensus was reached in Paris is that the main obligations of the agreement are self-determined and explicitly voluntary (other obligations are collectively determined, but the agreement says that implementation of these obligations is to incorporate 'built-in flexibility'). Previous efforts to negotiate a climate treaty tried to get countries to do more than they were willing to do on their own, without providing any

means for enforcing such obligations. If the means for enforcement are lacking, and a consensus is needed, then it's obvious how the negotiations should be structured: you have to ask countries to accept obligations that they are willing to accept. You can urge them to do more, but you cannot compel them to do more. And since the obligations are usually expressed in terms of outcomes that countries don't control directly (country-wide emissions), you have to accept that meeting these obligations is ultimately voluntary in order to provide an extra measure of reassurance.

This is not to say that the negotiations were tension-free. Although each country wants to be free to choose its own obligations, every country would like all *other* countries to do much

more than they are willing to do on their own. Moreover, every country knows that all countries together are better off if they all agree to do more than they are willing to do on their own. The problem is that no country is willing to do this unless given the reassurance that all other countries will do it. This is the main purpose of enforcement – to provide such reassurance. Unfortunately, when the means for enforcement is lacking, all that can happen is that countries urge others to do more, while at the same time insisting that their own obligations be self-determined and voluntary.

People who cheer the Paris Agreement see it as reducing emissions relative to a forecast of 'business-as-usual'. Indeed, the Secretariat to the UNFCCC produced an analysis of all the submitted 'intended nationally determined contributions' shortly before the Paris conference, and showed that, if countries fulfilled these pledges, emissions would likely dip slightly below 'business-as-usual'.

There are several things to note about this:

- 1 We will never observe business-as-usual (by definition, this is a future world that will never be realized since countries are now operating under the Paris Agreement). The Secretariat can do no more than try to infer what emissions would have been in the absence of the pledges.
- 2 Countries have incentives to limit their emissions unilaterally. Every country will be adversely affected by climate change – certainly in the longer term and with respect to 'abrupt and catastrophic' climate change – and

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so every country has an incentive to do something to limit its emissions. The problem, of course, is that countries have little incentive to reduce emissions for the benefit of other countries. We should expect all countries to do something, but we should not expect any country to do enough.

- 3 Pledges are almost always expressed in terms of a country's emissions, and yet countries do not adopt policies and measures to control their emissions directly. They adopt policies and measures to control their emissions indirectly. Even if countries adopt the policies they promise to adopt, there is no guarantee that the emission levels they have pledged will be met. For example, if emissions are expected to fall due to the adoption of new energy efficiency standards, the extent of the reduction will depend on the 'rebound effect', about which there can be significant uncertainty.
- 4 Future emissions will depend on factors that countries do not control, such as economic growth, technological advancements, and unanticipated shocks such as the tsunami that caused Japan to close its nuclear plants and Germany to phase out nuclear power.
- 5 Even if a particular country reduces its emissions, and keeps within its pledge, the consequence may only be to increase emissions elsewhere, because all countries are linked through global energy markets and trade.

The most important thing to understand about the pledges submitted in the lead up to Paris is that, even if they are all met, analysis by the Secretariat for the UNFCCC shows that global emissions will continue to increase through 2030. Such an outcome virtually guarantees that the overall goal agreed in Paris – to keep global mean temperature change (relative to pre-industrial levels) 'well below' 2 °C – will not be met.

How is it possible for countries to agree on a collective goal and then not adopt the policies needed to meet it? This is the essence of the collective action problem. All countries collectively have an incentive to meet the overall goal. Each country would be willing to take measures to play its part in meeting the overall goal – but only if assured that all other countries will play their part in meeting the goal. Of course, there is also the matter of countries needing to come to an agreement about the parts that each should play in this collective effort – these were all the things that were not agreed in Paris. As matters now stand, the only way in which the voluntary contributions pledged thus far could achieve the collective 2 °C goal would be if a 'miracle' occurred around 2030 – something like a technological breakthrough that caused global emissions to plummet around this time. Even then, according to another analysis by the Secretariat for the UNFCCC, the chances of staying within the 2 °C goal would be no better than 50–50.

Again, this assumes that countries do what they have pledged to do. Will they?

Perhaps the most important aspect of the Paris Agreement is the arrangement for transparency and review. The idea is that if countries knew they were going to be scrutinized, then they would take the steps needed to meet or exceed their pledges. But is this true? To determine the effect of such a process on behaviour, Astrid Dannenberg (of the University of Kassel in Germany) and I conducted a laboratory experiment involving real people playing for real money. The advantage of an experiment is that you can create the needed 'counterfactual'. That is, we can compare behaviour with and without a review process.

This is what we found: The review process causes groups to choose a



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more ambitious collective target. However, the target they choose is still too weak relative to what is required to make the group as well off as possible. We also find that the review process causes the players to announce more ambitious pledges. However, when added up, these pledges fall short of the group's target. Finally, we find that the review process does not increase contributions. Moreover, contributions fall short of pledges. Hence, our research suggests that the review process will affect what countries say but not what they do. The analyses by the UNFCCC that I noted previously assume that countries will fulfil their voluntary pledges, but we can't be sure of this. Over the past 25 years, many countries have made pledges to reduce emissions and then failed to achieve them.

The real problem with the Paris Agreement is that it embodies the same approach that has been tried again and again – that of setting targets and timetables for emission limits at the national level, without providing a means for enforcement.

Are there ways in which a more ambitious agreement could be enforced? Recent research by William Nordhaus of Yale University shows that a club of like-minded countries could enforce more demanding obligations using a generalized tariff. However, the use of such a tariff could possibly spark retaliation – a possibility Nordhaus assumes away. Even if a trade war is avoided, Nordhaus's analysis shows that a tariff will lose its effectiveness once the price on carbon tops about US\$50/tCO₂, which is a pretty low number compared to what is needed to bring about a transformation in the global energy system.

**Plainly, the world isn't ready yet to
 contemplate such trade measures. Are
 there other options?**

To my mind, the best thing about the Paris Agreement is that it doesn't forestall parallel approaches of the kind I have been recommending for 15 years – approaches that involve *coordination*.

One such approach is already underway. This is an effort to amend the Montreal Protocol (an agreement to protect the ozone layer) to limit hydrofluorocarbons (HFCs), a potent greenhouse gas. This approach will work because Montreal is designed very differently from any of the climate agreements. The climate agreements have all tried to limit the consumption of fossil fuels (meaning, the emissions that occur on a country's own territory). The Montreal Protocol is very different. It not only limits the consumption of chlorofluorocarbons (CFCs); it also limits the production of CFCs, arranges for rich countries to pay for the costs of compliance by poor countries, and bans trade in CFCs and products containing CFCs between parties and non-parties. As a result of this combination of measures, participation in this agreement has been full. CFCs have been phased out. And trade has never needed to be restricted.

There should now be an effort to identify other opportunities like this one. An obvious place to start is with negotiations under the International Civil Aviation Organization for international aviation, and under the International Maritime Organization for international maritime shipping. Both of these organizations should lead negotiations to establish agreements for technology standards that can improve the efficiency of transport. Enforcement in such agreements would involve ports and airports within the territories of every party, restricting access to vessels and planes to those that comply with the agreed standards.

Other opportunities exist in other sectors. For example, a change in the smelting process for making aluminium could eliminate the emission of perfluorocarbons (PFCs), another potent greenhouse gas. A new agreement would mandate that all new aluminium smelters adopt this technology by a particular year, and that existing plants adopt this technology by some future year. Financial transfers from rich countries would cover the compliance costs of poor countries. And all parties to this agreement would agree to import aluminium only from countries that participate in and comply with the agreement.

This approach of coordinating behaviour is piecemeal. It isn't fully cost-effective, and it won't, on its own, stabilize atmospheric concentrations. However, it is a conceit to believe that these objectives can somehow be achieved by a single global, overarching agreement.

Because none of these approaches is enough, a coalition of willing countries should also undertake joint research into 'game-changing' technologies, including the only true backstop technology for reducing emissions – an industrial technique for removing CO₂ directly from the air. Such a technology is likely to be very expensive, but the collective action needed to develop this technology and to apply it at very large scale is potentially easier than trying to change behaviour worldwide.

The Paris Agreement won't stabilize the climate, but we should work to get the most out of this Agreement, which means investing in its implementation. In addition to this, we should also

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work now to build parallel agreements around Paris – agreements like an amended Montreal Protocol and similar efforts targeted at specific sectors and gases. We also need to

contemplate more radical approaches – enforcement mechanisms like the one proposed by Nordhaus and technological remedies such as ‘direct air capture’. The problem of

climate change is unprecedented, and addressing it fully will require actions that go beyond the measures that negotiators have so far dared to contemplate.



The Implications of the Paris Agreement and climate change from a legal perspective

Raphael J. Heffron

The hot topic in energy research for many disciplines has become discussing the implications of the UNFCCC Paris Climate Change Conference (the 21st session of the Conference of the Parties, or Paris COP21). And while some heralded and stood like *Tubicenae* (trumpeters) in Ancient Rome to await the policy makers and their entourages returning from Paris with their pronouncement concerning climate change, lawyers, it can be said, were not rubbing their hands with glee. From a legal perspective, the effects of the Paris Agreement will take time to work their way into the three levels of energy law: international, national, and local.

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It is also worth considering that while the Paris Agreement of 2015 is seen as a landmark in terms of climate change negotiations, in some sense we have been here before. Similar pronouncements have been made before and after climate change negotiations in the past. Some disciplines have moved on from this focus and have begun to see climate change differently. In this context, the real focus of many climate change scholars has been to follow the ‘money

trail’. There remains too much money in the fossil fuel industry. This is the big battle society is facing and a transformative shift, in terms of how we govern the energy sector and indeed the greater economy, is required.

Paris COP21 and the law

Paris, home to the latest climate change negotiations, is a city known for its stories of romance and is indeed a melting pot of leading literary figures, from Joyce to Beckett, to Camus and Sartre, to name but a few. It has given us a similar romantic tale about climate change. And just as Paris remains a city of romance and literature, it is likely that Paris COP21 will remain significant in the battle against climate change. More countries than ever before have agreed to take action on climate change. Paris COP21 has delivered real potential for change, with three of the world’s largest carbon dioxide (CO₂) emitting countries, India, China, and the USA having initially agreed to be part of the Agreement – which will be signed between 22 April 2016 and 21 April 2017.

In considering the effect of the Paris COP21 negotiations, the real goal from a legal perspective is the aim of moving ‘beyond 2020’. Law in terms of energy and climate change has been dominated by the year ‘2020’ – the year when new targets for emissions, efficiency, and the contribution of

renewable energy would be met under binding targets for many countries present at Paris COP21. While these countries have been focusing on meeting these targets – with mixed success in many cases – there has been little direction as to what will happen post-2020. The impact of Paris COP21 is that it has brought this *beyond 2020* debate more into focus.

Certainly, from a legal perspective there seems to be an acknowledgement that ‘legal thinking’ is essential in thinking *beyond 2020*. Policy makers and scholars in general now recognize the necessary development of new law to provide improved, and new, market structures for the energy sector so that Paris COP21 climate change goals can be realized. Lawyers need to play more of a role in achieving the next stage of climate change targets, for 2030. And perhaps in thinking of the wider energy and climate change community and their focus on energy transition scenarios, and of the energy scenarios of 2030, 2050, and 2080, law has been a forgotten part of the debate.

Paris COP21 and the ‘silent legal signals’

Paris COP21 has placed climate change at the forefront of public consciousness by its achievement of more international cooperation than ever before on the issue. This is significant when we think of the indirect legal effects of Paris COP21. To explain this we can return to