

Economics needs a climate revolution



By Tom Brookes And Gernot Wagner/ Brussels/New York

- **There is no excuse for continuing to adhere to an intellectual paradigm that has served us so badly for so long**

Nowhere are the limitations of neoclassical economic thinking – the DNA of economics as it is currently taught and practised – more apparent than in the face of the climate crisis. While there are fresh ideas and models emerging, the old orthodoxy remains deeply entrenched. Change cannot come fast enough.

The economics discipline has failed to understand the climate crisis – let alone provide effective policy solutions for it – because most economists tend to divide problems into small, manageable pieces. Rational people, they are wont to say, think at the margin. What matters is not the average or totality of one's actions but rather the very next step, weighed against the immediate alternatives.

Such thinking is indeed rational for small discrete problems. Compartmentalisation is necessary for managing competing

demands on one's time and attention. But marginal thinking is inadequate for an all-consuming problem touching every aspect of society.

Economists also tend to equate rationality with precision. The discipline's power over public discourse and policymaking lies in its implicit claim that those who cannot compute precise benefits and costs are somehow irrational. This allows economists – and their models – to ignore pervasive climate risks and uncertainties, including the possibility of climatic tipping points and societal responses to them. And when one considers economists' fixation with equilibrium models, the mismatch between the climate challenge and the discipline's current tools becomes too glaring to ignore.

Yes, a return to equilibrium – getting “back to normal” – is an all-too-human preference. But it is precisely the opposite of what is needed – rapidly phasing out fossil fuels – to stabilise the world's climate.

These limitations are reflected in benefit-cost analyses of cutting emissions of carbon dioxide and other greenhouse gases. The traditional thinking suggests a go-slow path for cutting CO₂. The logic seems compelling: the cost of damage caused by climate change, after all, is incurred in the future, while the costs of climate action occur today. The Nobel prize-winning verdict is that we should delay necessary investment in a low-carbon economy to avoid hurting the current high-carbon economy.

To be clear, a lot of new thinking has gone into showing that even this conventional logic would call for significantly more climate action now, because the costs are often overestimated while the potential (even if uncertain) benefits are underestimated. The young researchers advancing this work must walk a near-impossible tightrope, because they cannot publish what they believe to be their best work (based on the most defensible assumptions) without invoking the outmoded neoclassical model to demonstrate the validity of new ideas.

The very structure of academic economics all but guarantees that marginal thinking continues to dominate. The most

effective way to introduce new ideas into the peer-reviewed academic literature is to follow something akin to an 80/20-rule: stick to the established script for the most part; but try to push the envelope by probing one dubious assumption at a time. Needless to say, this makes it extremely difficult to change the overall frame of reference, even when those who helped establish the standard view are looking well beyond it themselves.

Consider the case of Kenneth J Arrow, who shared a Nobel Prize in Economic Sciences in 1972 for showing how marginal actions taken by self-interested individuals can improve societal welfare. That pioneering work cemented economists' equilibrium thinking. But Arrow lived for another 45 years, and he spent that time moving past his earlier work. In the 1980s, for example, he was instrumental in founding the Santa Fe Institute, which is dedicated to what has since become known as complexity science – an attempt to move beyond the equilibrium mindset he had helped establish.

Because equilibrium thinking underpins the traditional climate-economic models that were developed in the 1990s, these models assume that there are tradeoffs between climate action and economic growth. They imagine a world where the economy simply glides along a Panglossian path of progress. Climate policy might still be worthwhile, but only if we are willing to accept costs that will throw the economy off its chosen path.

Against the backdrop of this traditional view, recent pronouncements by the International Monetary Fund and the International Energy Agency are nothing short of revolutionary. Both institutions have now concluded that ambitious climate action leads to higher growth and more jobs even in the near term.

The logic is straightforward: climate policies create many more jobs in clean-energy sectors than are lost in fossil-fuel sectors, reminding us that investment is the flipside of cost. That is why the proposal for a \$2 trillion infrastructure package in the United States could be expected to spur higher

net economic activity and employment. Perhaps more surprising is the finding that carbon pricing alone appears to reduce emissions without hurting jobs or overall economic growth. The problem with carbon taxes or emissions trading is that real-world policies are not reducing emissions fast enough and therefore will need to be buttressed by regulation.

There is no excuse for continuing to adhere to an intellectual paradigm that has served us so badly for so long. The standard models have been used to reject policies that would have helped turn the tide many years ago, back when the climate crisis still could have been addressed with marginal changes to the existing economic system. Now, we no longer have the luxury of being able to settle for incremental change.

The good news is that rapid change is happening on the political front, owing not least to the shrinking cost of climate action. The bad news is that the framework of neoclassical economics is still blocking progress. The discipline is long overdue for its own tipping point towards new modes of thinking commensurate with the climate challenge.

– Project Syndicate

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Why hybrid cars are popular in an increasingly electric

world



By Kyle Stock Bloomberg

Confession: I'm an auto writer and I drive one of the world's most boring vehicles.

It's a minivan and a hybrid, though not a particularly robust one.

The 2018 Chrysler Pacifica manages just 30 miles on a charge. Did I mention it's white?

While my Tesla-driving neighbour may snicker, my dad-math is simple and sanguine: my crew seldom rolls more than 20 miles in a day.

Even with a standard outlet, we can fully recharge the Pacifica's meagre battery overnight and start again the next day, cruising on the electric motor on the eight-mile soccer commute or the 12-mile Home Depot lap.

On the rare road trip, we burn some fossils.

All told, we buy gas about four times a year.

Electric vehicles are killing the gas-powered car – even faster than expected – but they are also running roughshod over hybrid vehicles like mine, their cranky older siblings.

In America, sales of fully electric vehicles eclipsed those of

plug-in hybrids four years ago and have steadily pulled away since.

Americans bought four EVs for every hybrid in the first quarter of this year.

In Asia, hybrids lost the lead to EVs almost six years ago and the gap is far wider.

I get it, no one wants to do dad-math while they're standing on the sales lot.

With a purchase that big, the heart wants what the heart wants – namely something new and exciting.

A hybrid, increasingly, is a flip phone in an iPhone world.

Here's the thing, though: hybrids are bonkers good these days.

The nice thing about writing about the auto industry is that I get to drive a lot of different vehicles – “press cars” in the industry lexicon.

The first-hand experience is helpful when interviewing auto executives, and one of the best ways to stay familiar with what they're making.

Lately, my driveway has been a parade of excellent hybrids.

Right now, it's a Toyota Highlander that is steadily posting 35 miles to a gallon.

Before that, there was the Hyundai Sonata, Kia Sorento and a sublime BMW 530e.

Some, like my Pacifica, can be plugged in and charged, but many generate their electricity exclusively by dragging off the car's momentum when it slows.

In the industry argot, the former are plug-in hybrid electric vehicles, or PHEVs, and the latter are hybrid electric vehicles, or HEVs. Their much cooler, electric-only cousins are known as battery electric vehicles, or BEVs.

Nothing with an “H” in the acronym carries any gravity in the Tesla-sphere, but they all quietly nudged the needle on carbon emissions.

And they're all a little more fun to zip around in than their combustion cousins.

The standout of late was the Toyota RAV4 Prime, which goes for 42 miles before the spark plugs flare up and the tiny

explosions start.

That's top of the hybrid class these days, and more than enough for the average US commute.

And on a road-trip, it entirely cancels out the biggest EV bugaboo: range anxiety.

The combustion engine on a car like the RAV4 Prime is like a standby package of hot dogs at a barbecue or a well-rested starting pitcher sitting in the bullpen.

Don't think of it as a gas vehicle with a trickle of electrons, but as an EV with a robust Plan B.

True, it lacks the tech smugness of a silent, sentient Tesla, but the tradeoff is pretty good.

And I'm not the only one who thinks so – the rigs are selling like ice cream at the beach, according to Samantha Groot, Toyota general manager of vehicle marketing.

In the first quarter of this year, nearly one in four vehicles Toyota sold in the US was some form of hybrid, up from 12% a year earlier.

Honda is part of the acceleration, as well.

The share of customers buying its hybrid CR-V SUV surged 10-fold this spring.

Zombies With Batteries In Europe, the Middle East and Africa, more stringent emissions thresholds in the first quarter boosted plug-in hybrid sales ahead of purely electric vehicles for the first time in nearly three years, according to BloombergNEF.

In America, EVs stayed far ahead in that period, but there's some evidence the chimera vehicles gained back some ground in the second quarter.

Combination gas and electric vehicles accounted for 6% of US vehicle registrations in April, more than double the share of fully electric rigs, according to IHS Markit.

This isn't coming from Gen Z early adopters.

The new wave of hybrid buyers tend to be older, and many of them live in the South and Midwest, according to IHS.

In short: it's regular old car people making slightly more pragmatic (and greener) decisions.

Tesla surely doesn't care, but rest assured this stat isn't lost on other auto executives.

In the race to EV supremacy, the slow lane will be stacked with better and better hybrids.

So don't pour one out for the Prius just yet.

It's still doing just fine, and is increasingly in good company.

Just this week, Ferrari unveiled its second plug-in hybrid.

It's a lot like my minivan, save for the 205 miles-per-hour bit.

GREECE-TURKEY: ENERGY AS A MECHANISM FOR COOPERATION

TRANSATLANTIC
LEADERSHIP
NETWORK



“Climate crisis gives Greece and Turkey opportunity for ‘historic compromises”

By: Roudi Baroudi – Washington D.C. 23 June 2021

Greece and Turkey have one of the world's most complicated relationships. We all know the history, although many of the

details are contested by dueling narratives. However we got here, some indisputable facts are clear. Two former long-time enemies were thrown together as allies by the Cold War, when both of them joined NATO, but have generally remained at odds over a long list of issues.

The essential lesson from this simple synopsis is that Greece and Turkey joined the Atlantic alliance for the same core reason: each viewed their feud as a lesser threat than the one posed by the Soviet Union, which was potentially existential. At the end of the day, and despite both age-old resentments and ongoing tensions, successive governments – including military juntas – of both countries abided by the same rational analysis for decades.

Both are still NATO members, but the Soviet threat is no more, replaced only partially by a far weaker Russia. To some extent, this has led to a resumption of Greco-Turkish friction, especially over their maritime boundaries in the Mediterranean. And this time, there is much more than either pride or territory at stake. Since huge amounts of offshore natural gas have been discovered in several parts of the Eastern Med, the border dispute may well involve resources that could confer historic advantages on whoever controls them.

Once again, these sound like rational calculations. But are they really? I will allow that large reserves of natural gas have the potential to help any country secure a better future for its people. The savings and revenues would allow unprecedented investments in education, healthcare, transport, and other infrastructure, creating more and better jobs and lifting countless people out of poverty. Even the transit fees from hosting an international pipeline can provide significant income, and the more territory a pipeline crosses, the higher the fees.

But ladies and gentlemen, I would submit that, as was the case

during the Cold War, both Greece and Turkey would do well to take fuller account of larger – in fact, much, much larger – considerations. And all of them have to do with climate change. This challenge constitutes a mortal threat, not only to Greeks and Turks, but also to human civilization itself. And unlike the Soviet Union, this is not a politico-military power that can be deterred, mollified, or reasoned with. Nor can we wait it out and hope that, like the USSR, climate change will be torn apart by its own flaws.

No, we will only save our planet by working together to undo the damage we have done by pumping endless streams of carbon into the atmosphere. We can only do that by drastically reducing emissions, and that can only be accomplished by transitioning to renewables and cleaner, greener fuels. And like it or not, as major Mediterranean powers, Greece and Turkey have enormous roles to play in this process – and therefore enormous responsibilities. As in NATO, both will be expected to pull their respective weights.

As a result of all this, Greece and Turkey once again face a common and potentially existential threat. Energy is a crucial consideration in combating this threat, but the acreage that matters most in the long term is no longer on the seafloor. Instead, it is on the surface, where offshore wind and solar parks figure to provide much of the electricity required to reduce, and eventually end, reliance on hydrocarbons.

The sea will abet decarbonization efforts in other ways, too, by hosting multiple clean energy activities and technologies that help reach the Paris Agreement goal of “Net Zero” carbon emissions by 2050. The options include wave, rain, and tidal power; undersea geothermal; and, yes, natural gas, which is cleaner than other fossil fuels and can be expected to persist for a considerable time as a transition fuel. In addition, no coastal country can ignore the potential of “Blue Carbon”: if we restore and maintain the health of coastal and marine ecosystems, they will naturally remove more and more carbon from the atmosphere.

But here is the thing. Implementation of offshore energy projects will be slowed, or even indefinitely postponed, if Greece and Turkey continue on their current course. Even if they agree to reduce tensions but fail to settle or suspend their differences, the uncertainty will steer many investors to less troubled waters. By contrast, if they find a way to truly put the past behind them, both countries' decarbonization efforts will be vastly more attractive. As a result of an earlier and stronger start, they will also be more effective – exponentially so if they take the next step and actively cooperate, especially on maritime issues.

The sea is a wondrous place filled with many things we need, many we simply love, and others that we have yet to discover. It is also, however, a veritable and pitiless force of nature: what it cannot violently destroy in an instant, it will inevitably erode, undermine, and dissolve over time. We now have technologies to make far more – and far more responsible – use of the sea than ever before, but its very nature makes most undertakings more difficult and potentially dangerous than on land. And as any sailor knows, the best tools we have to predict, avoid, and/or overcome whatever the sea throws at us are information and cooperation.

As neighbors in this shared space and de facto partners in the campaign to reduce emissions, Greece and Turkey could maximize the return on their efforts, both individual and combined, by working together. Given the importance of information and the rate at which our ability to gather it is growing due to technology, the natural place to start would be comprehensive data-sharing. For almost anything built, installed, and/or operated at sea, advance knowledge of weather conditions, tides, currents, water temperatures, salinity levels, etc., can be crucial for planning, performance, and the protection of both human beings and the environment. Wind and solar parks are no exceptions, and neither are numerous other activities in the Blue Economy, including maritime transport,

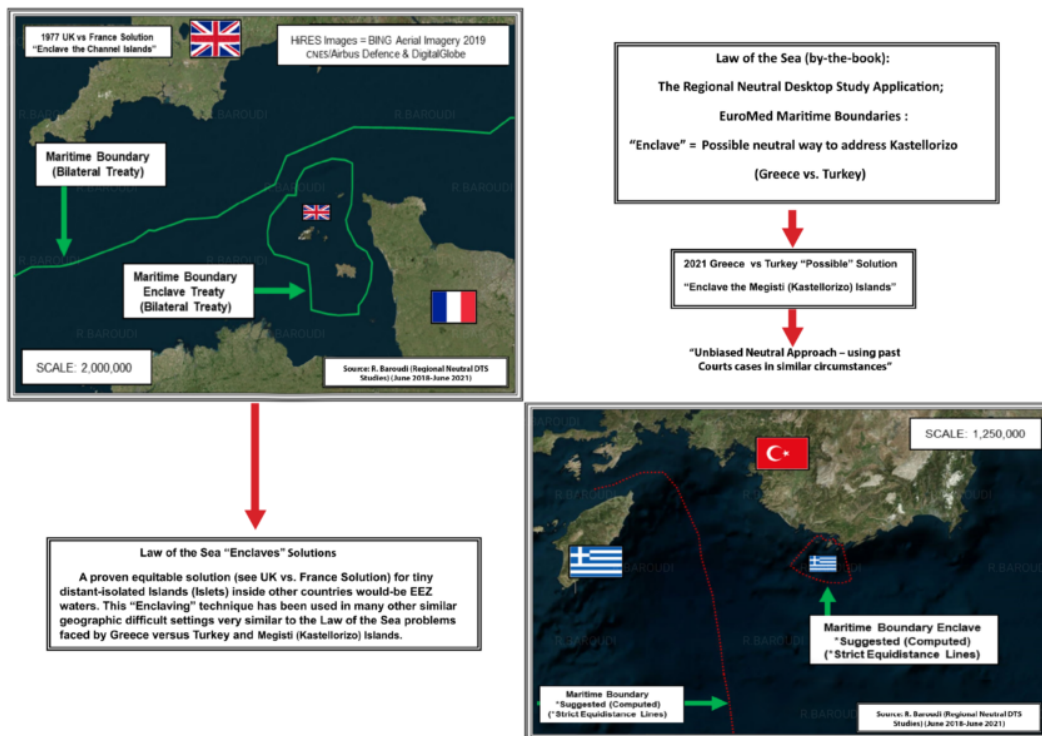
aquaculture, conventional fisheries, tourism, seabed mining, and bio-prospecting.

In addition to activating commercial, efficiency, safety, and environmental gains, cooperation in these fields would also help build trust, but operational coordination and regulatory harmonization would go even further. In the best-case scenario, Greece and Turkey would both reap significant benefits by expanding into joint compliance and enforcement work, streamlining cross-border trade and investment, easing the migrant crisis, and addressing numerous other issues of mutual concern.

To get there, both Athens and Ankara need to take strategic decisions which, one way or another, insulate their present and future relationship against all extraneous considerations. And more than one clock is ticking. In addition to the 2050 target date for Net Zero carbon, an even more pressing deadline attaches to the region's natural gas prospects. In a report for consideration during the UN Climate Conference, COP 26, at Glasgow in November, scientists have recommended that if we are to meet the 2050 goal, development of new oil and gas fields should not be permitted beyond the end of this year. It is too early to know whether that deadline will be adopted, but the writing is on the wall: apart from those that have already started – Egypt, Israel, and to some extent Cyprus – if East Med countries want to profit from their offshore hydrocarbons, they need to make meaningful progress very soon.

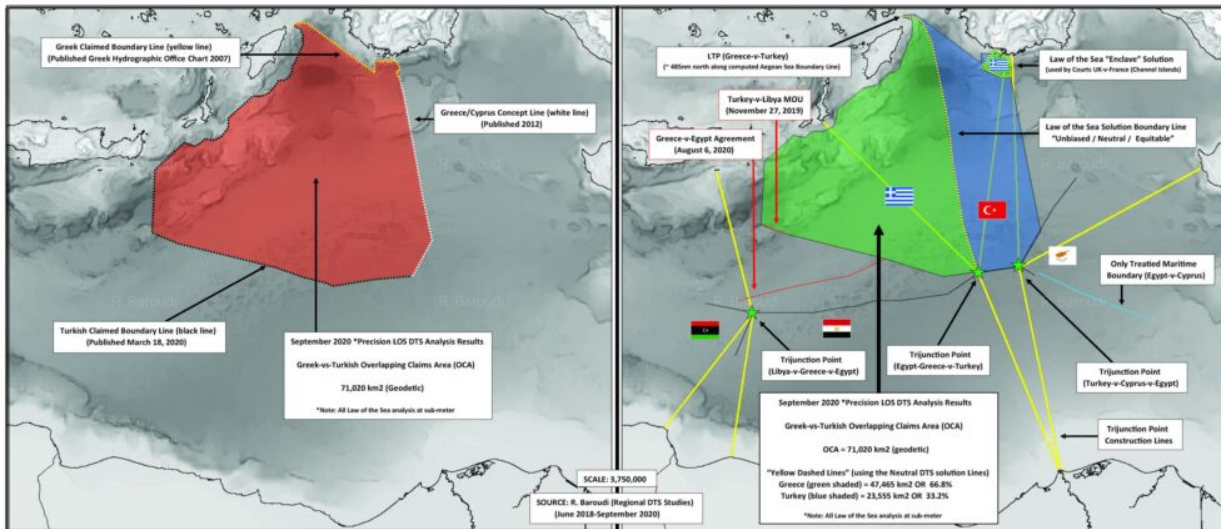
For several countries in the region, the primary obstacle is that most of its maritime boundaries remain in dispute or otherwise unresolved, so their claimed Exclusive Economic Zones overlap. With Greece and Turkey, the overlap is considerable.

Example of Law of the Sea “Enclaves” Techniques



But even this obstacle can be surmounted if there are sufficient amounts of both goodwill and self-interest. Both Greece and Turkey need to make the most of the Blue Economy, but neither will realize its full potential unless and until it helps the other do the same. The UN Convention on the Law of the Sea, or UNCLOS, lays down a comprehensive assortment of legal and scientific standards for the fair and equitable drawing of borders at sea, and these apply to both member and non-member states. Whatever mechanism the parties use to settle their boundary dispute, whether it's direct negotiations, an international court, or some form of arbitrations, the same rules apply.

Greece vs. Turkey Overlapping Claims Analysis (Sketch for Illustration purposes only) - 2021



Ideally, Greece and Turkey would mount an all-out effort to recognize the relevant limits of their respective EEZs. It may be too late to succeed before a moratorium on new gas development is declared, but even if that is the case, they will still need in certain areas EEZ clarity to maximize both their offshore renewables and the non-energy components of their Blue Economy industries. In addition, they also have the option of circumventing the EEZ issue, allowing them to develop subsea gasfields and share the proceeds, while temporarily putting their territorial dispute in abeyance. Even if that fails too, the mere attempt might improve relations, establishing a basis for the cooperation described above.

Previous attempts at reconciliation have always fallen short or been derailed, but there is reason to hope that the time is right for a new effort, and that some of the key players are in the right frame of mind. Last week's NATO summit, for instance, saw US President Joe Biden hit very different notes than his predecessor, Donald Trump, by stressing the alliance's potential to influence a wide variety of geopolitical issues. His meetings on the sidelines of the summit included one with his Turkish counterpart, Recep Tayyip Erdogan, who later described their conversation as having opened a "new era" of constructive ties. If that turns out to

be true and Ankara really wants to repair its relations with Washington, it could have positive ramifications, not only for Greco-Turkish reconciliation, but also for a peaceful resolution of the Cyprus issue.

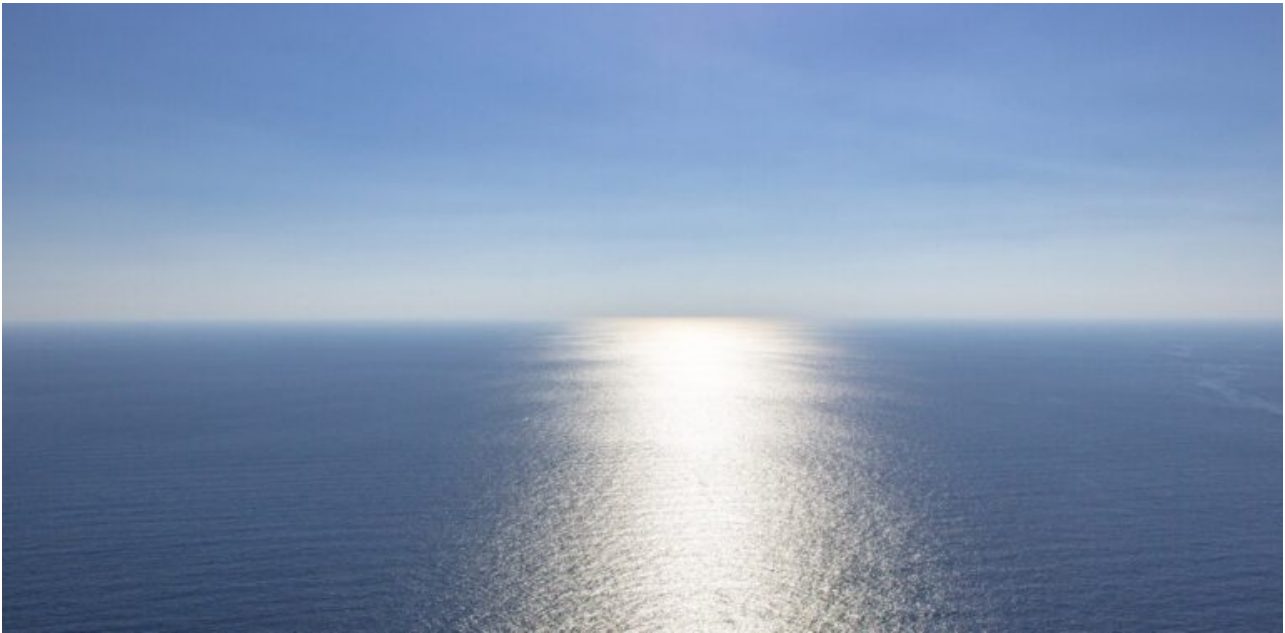
In the final analysis, both Greece and Turkey have everything to gain, and nothing or relatively little to lose, by cooperating at every opportunity, but especially on various forms of energy. As with their respective decisions to join NATO, this will require clear-headed analysis and pragmatic policymaking, but also the sangfroid to reach, promote, defend, and implement some historic compromises.

Roudi Baroudi has more than 40 years of experience in the energy business and has helped design policy for major international oil companies, sovereign governments, and multilateral institutions. He currently serves as CEO of Energy and Environment Holding an independent consultancy based in Doha, Qatar.



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Roudi Baroudi: Μπλε οικονομία στη Μεσόγειο



Οι χώρες της Μεσογείου πρέπει να είναι από τους μεγαλύτερους νικητές στη μετάβαση από τα ορυκτά καύσιμα στις ανανεώσιμες πηγές ενέργειας, δήλωσε ειδικός σε θέματα ενέργειας την Τετάρτη σε ένα βασικό συνέδριο πολιτικής.

«Εδώ στην περιοχή της Μεσογείου, η μετα-άνθρακα εποχή έχει στην πραγματικότητα τεράστιες ευκαιρίες όσον αφορά την μπλε οικονομία», δήλωσε ο βετεράνος της βιομηχανίας **Roudi Baroudi** στο εικονικό All Things Energy Forum. Πρόσθεσε ότι ενώ η συμβατική αιολική και ηλιακή ενέργεια θα έχουν «βασικό ρόλο να διαδραματίσουν», η εγγύτητα της θάλασσας προσέφερε μια άλλη διάσταση.

“Υπάρχουν και άλλες πολλά υποσχόμενες ενεργειακές τεχνολογίες, όπως η βροχή, τα κύματα και η παλιρροϊκή ενέργεια, καθώς και η υποθαλάσσια γεωθερμία”, δήλωσε ο κ. Baroudi, ο οποίος έχει διετελέσει σύμβουλος σε κυβερνήσεις, πολυμερείς οργανισμούς και μεγάλες διεθνείς εταιρείες για την ενεργειακή πολιτική.

«Μερικές από τις πιο υποσχόμενες αντικαταστάσεις για τα ορυκτά καύσιμα περιμένουν στη θάλασσα, αν μόνο έχουμε τη σοφία και την προνοητικότητα να τις αναπτύξουμε».

Η μεγάλη εγγύτητα μιας μεγάλης θάλασσας όπως είναι η Μεσόγειος δίνει στα παράκτια κράτη της βασικά πλεονεκτήματα σε σχέση με άλλα κράτη που είναι εγκλωβισμένα στην ξηρά, εξήγησε, επειδή έχουν πολλές περισσότερες επιλογές για παραγωγή ηλεκτρικής ενέργειας χαμηλής ή χωρίς άνθρακα.

Ο 40χρονος βετεράνος της περιφερειακής ενεργειακής σκηνής προέβλεψε ότι με ισχυρή ηγεσία, **οι περιφερειακές χώρες θα μπορούσαν να χρησιμοποιήσουν αυτό το δυναμικό για την πλήρη ηλεκτροδότηση όλων των κατοικημένων περιοχών τους.**

Αυτό το είδος πρόσβασης, στην ηλεκτρική ενέργεια, αποτελεί βασική προϋπόθεση για το είδος της οικονομικής ανάπτυξης που θα βοηθήσει εκατομμύρια ανθρώπους – ακόμη και δεκάδες εκατομμύρια – από τη φτώχεια», δήλωσε.

«Θα μειώσει επίσης τη ροή των Αφρικανών μεταναστών που δεσμεύονται για την Ευρώπη δημιουργώντας νέες οικονομικές ευκαιρίες για αυτούς στην έδρα τους».

Ο κ. Baroudi προειδοποίησε, ωστόσο, ότι παρέμειναν σημαντικά εμπόδια εάν η περιοχή επρόκειτο να πραγματοποιήσει το πλήρες δυναμικό της για υπεράκτια παραγωγή ενέργειας, κυρίως επειδή περίπου τα μισά από τα θαλάσσια σύνορα της Μεσογείου παραμένουν αδιευκρίνιστα.

Όπως και με τις προοπτικές για υπεράκτιο φυσικό αέριο, εξήγησε, οι επενδυτές αποφεύγουν τέτοια διαφιλονικούμενα σύνορα επειδή η αμφισβητούμενη ιδιοκτησία μιας περιοχής ενέχει πολύ μεγάλο κίνδυνο. Για αυτόν τον λόγο, είπε, και επειδή η πίεση χτίζεται για μορατόριουμ για την ανάπτυξη νέων πεδίων πετρελαίου και φυσικού αερίου, **οι περιφερειακές χώρες χρειάστηκαν να υιοθετήσουν τη διπλωματία και να καταρτίσουν συνθήκες που ορίζουν τις αντίστοιχες αποκλειστικές οικονομικές ζώνες τους.**

Δεδομένου ότι το φυσικό αέριο αναμένεται να παραμείνει βασικό καύσιμο μετάβασης για τουλάχιστον δύο δεκαετίες, εξήγησε, περιφερειακές χώρες θα μπορούσαν επίσης να κερδίσουν δισεκατομμύρια έσοδα από υπεράκτιες καταθέσεις – αλλά ορισμένες εξακολουθούν να χρειάζονται συμφωνίες ΑΟΖ για να ξεκινήσουν.

Δεν υπάρχει ανάγκη να είναι πιο πειστική, ειδικά επειδή ο διάλογος και οι συμβιβασμοί που απαιτούνται όχι μόνο θα ανοίξουν την ανάπτυξη του φυσικού αερίου, αλλά θα έθεταν επίσης τα θεμέλια για στενότερη συνεργασία σε άλλους τομείς – αυτό ακριβώς απαιτεί η Μπλε Οικονομία για να αξιοποιήσει πλήρως τις δυνατότητές του», δήλωσε ο κ. **Baroudi**, ο οποίος είναι επί του παρόντος διευθύνων σύμβουλος της Energy and Environment Holding, ανεξάρτητης συμβουλευτικής εταιρείας στη Ντόχα.

Τα πλεονεκτήματα από την ηρεμία στη Μεσόγειο

«Ως μπόνους, μια πιο ήρεμη, φιλικότερη Μεσόγειος θα επέτρεπε επίσης την κατανομή ευθυνών και τη συγκέντρωση πόρων και δεδομένων, τα οποία θα βελτιώσουν σημαντικά τα αποτελέσματα σε όλα, από τη μετανάστευση, την πρόγνωση καιρού και την αναζήτηση και διάσωση σε συστήματα προειδοποίησης για τσουνάμι και την προστασία καλωδίων επικοινωνίας», είπε.

«Τότε θα μπορούσαμε απλώς να δούμε ολόκληρη την ευρωμεσογειακή περιοχή να γίνει ένας από τους καλούς γείτονες, ένα μέρος αμοιβαίων στόχων, διευθετημένων παραπόνων και ακόμη και γεωστρατηγικής συνεργασίας.

Τολμώ να το πω, κυρίες και κύριοι, η Μεσόγειος θα μπορούσε να είναι απόλυτα ειρηνική στη ζωή μας”.

Η εκδήλωση, της οποίας οι ομιλητές περιελάμβαναν διακεκριμένους ακαδημαϊκούς και ανώτερους ηγέτες επιχειρήσεων

και ενέργειας, καθώς και βασικούς κυβερνητικούς υπουργούς, πραγματοποιήθηκε την Τετάρτη.

Ο Roudi Baroudi έχει περισσότερα από 40 χρόνια εμπειρίας στον τομέα της ενέργειας και βοήθησε στη χάραξη πολιτικής για μεγάλες διεθνείς εταιρείες πετρελαίου, κυβερνήσεις και πολυμερείς θεσμούς. Σήμερα υπηρετεί ως Διευθύνων Σύμβουλος της Ενέργειας και Περιβάλλον Διαθέτοντας ανεξάρτητη συμβουλευτική εταιρεία.

Renewables boom unleashes war over talent for green jobs



Clean energy giants are finding a shortage of workers with the skills needed to support their ambitious growth plans.

The renewables jobs market is heating up and candidates with the right abilities are becoming harder to find, according to Miguel Stilwell, chief executive officer at Portuguese clean-energy firm EDP Renovaveis SA. The company is one of the world's top installers of green power and plans to hire 1,300 employees over the next two years.

"There's a war over talent globally," Stilwell said in an interview on May 28. "The renewable sector, given the massive amount of growth that is expected, doesn't have enough people."

As countries funnel billions of dollars into developing renewable power, policymakers are banking on the sector to create new jobs that are crucial for the post-pandemic economic recovery. Solar generation capacity is expected to triple by the end of the decade, while wind capacity is expected to more than double over the same period, according to clean energy research group BloombergNEF.

Green supermajors such as NextEra Energy Inc, Iberdrola SA, Enel SpA and EDP are leading the race to electrify the global economy. But some large oil companies are starting to get into the sector too, with BP Plc announcing last month it's looking to fill 100 offshore-wind jobs in the U.K. and the U.S., a figure that could double by the end of the year.

Engineering skills such as energy assessment, project management and project design are in high demand, EDP's Stilwell said. Good business developers who understand clean energy technologies are also a scarce resource. Other roles, such as managing mergers and acquisitions, or back office tasks, can easily be hired from other industries.

"We're having to bring in people from other sectors, whether it's oil and gas or other parts of the energy industry, or recruiting directly from universities," Stilwell said. "There's a lot of competition out there."

Engineering and chemistry graduates working on a masters degrees in renewables at the Universitat Politecnica de Catalunya in Barcelona are often hired while they're still in school, or right after they finish, according to Professor Jordi Llorca. The university has partnerships with other colleges in Europe and students often get hired to work in other countries like the U.K. or Denmark, said Llorca, who is also the director of an engineering research center at the university.

"We need to be fast to adapt the contents of our programs on the energy transition and renewable energies to make sure our graduates are competitive in the market," Llorca said. "We're constantly looking at the contracts and agreements we have with different industries to see what's needed."

The university launched a masters in hydrogen energy last year after professors realized very few people have the skills in mechanics and chemistry that the fast-growing sector will need very soon. "There's always a moment of vacuum whenever a new technology comes in, but we're able to put together new programs in just a few months."

Offshore wind farms are another growth area. The projects involve erecting and maintaining wind turbines the size of skyscrapers miles out to sea. A single turn of one of the massive blades could power a house for two days. The industry was pioneered in Europe, but is now rapidly expanding to Asia and the east coast of the U.S.

Those new markets don't have people with experience. That means that developers are often sending British and European employees to lead the way, according to Clint Harrison, director at renewable energy-focused recruitment firm Taylor Hopkinson. But as business takes off there's pressure to hire locally.

The limits of a well-trained workforce could end up being a

bottleneck in an industry that is key to slashing emissions.

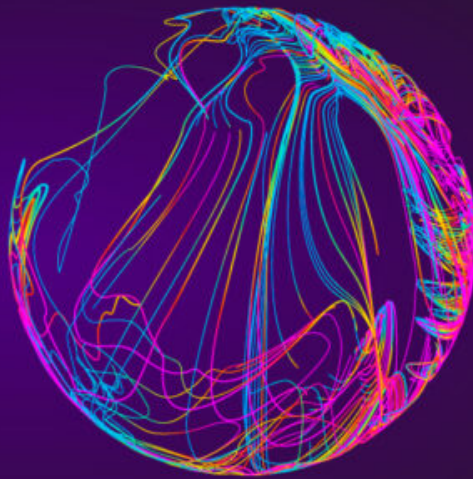
“There’s a sense of urgency,” Harrison said. “The market is growing very, very quickly and we need to ensure we have the right people across various projects and regions to ensure projects move forward and aren’t delayed.”

In the U.K. alone, around 200,000 skilled workers will be needed in the offshore energy sector by 2030, up from 160,000 today, according to a recent report by the Robert Gordon University in Aberdeen. About half the jobs are expected to be filled by people transferring from the oil and gas sector and about 90% of current workers in the fossil-fuel sector can be retrained for renewables, said author Paul de Leeuw.

“Demand for courses on renewable energy and the energy transition is ramping up rapidly and at the same time we see demand for oil courses declining,” he said. “It’s a societal and industry shift mirroring in the education system.”

BLUE ECONOMY IN THE MEDITERRANEAN

ALL THINGS ENERGY FORUM



ATHENS, Greece: Mediterranean countries should be among the biggest winners in the transition from fossil fuels to renewables, an energy expert told a key policy conference on Wednesday.

“Here in the Mediterranean region, the post-carbon era actually holds enormous opportunities in terms of the Blue Economy,” industry veteran Roudi Baroudi told the virtual All Things Energy Forum. He added that while conventional wind and solar would “have a key role to play,” the proximity of the sea offered a whole other dimension.

“There are other promising energy technologies too, including rain, wave, and tidal power, as well as undersea geothermal,” said Baroudi, who has advised governments, multilateral institutions, and major international companies on energy policy. “Some of the most promising replacements for fossil fuels are waiting out at sea, if only we have the wisdom and the foresight to develop them.”

The very proximity of a large sea like the Mediterranean gives its coastal states key advantages over landlocked counterparts, he explained, because they have many more options for low- or no-carbon power generation. The 40-year veteran of the regional energy scene predicted that with

strong leadership, regional countries could use this potential to fully electrify all of their populated areas.

“That kind of access [to electricity] is a key requirement for the kind of economic growth that would lift millions of people – even tens of millions – out of poverty,” he stated. “It also would reduce the flow of African migrants bound for Europe by generating new economic opportunities for them at home.”

Baroudi cautioned, however, that significant hurdles remained if the region was to realize its full potential for offshore energy production, mainly because about half of the Mediterranean’s maritime boundaries remain undefined.

As with the prospects for offshore natural gas, he explained, investors avoid such unsettled borders because contested ownership of an area and/or resource poses too great a risk. For this reason, he said, and because pressure is building for a moratorium on developing new oil and gas fields, regional countries needed to embrace diplomacy and hammer out treaties that define their respective Exclusive Economic Zones. Since gas is expected to remain a key transition fuel for at least a couple of decades, he explained, regional countries could also earn billions in revenues from offshore deposits – but some still need EEZ deals to get started.

“No need is more pressing, especially since the dialogue and compromises required would not only open up gas development, but also lay the groundwork for closer cooperation in other fields – which is exactly what the Blue Economy demands in order to realize its full potential,” said Baroudi, who currently serves as CEO of Energy and Environment Holding, an independent consultancy in Doha.

“As a bonus, a calmer, friendlier Mediterranean would also allow the sharing of responsibilities and the pooling of resources and data, which would significantly improve outcomes in everything from immigration, weather forecasting, and

search and rescue to tsunami warning systems and protecting communication cables,” he said. “Then we could just see the whole Euro-Med region become one of Good Neighbors, a place of mutual goals, settled grievances, and even geostrategic cooperation. Dare I say it, ladies and gentlemen, the Mediterranean could be fully at peace in our lifetimes.”

The event, whose speakers included noted academics and senior business and energy leaders, as well as key government ministers, on Wednesday.

Roudi Baroudi has more than 40 years of experience in the energy business and has helped design policy for major international oil companies, sovereign governments, and multilateral institutions. He currently serves as CEO of Energy and Environment Holding an independent consultancy based in Doha, Qatar.

A global incentive to reduce emissions



- **A fair proposal for reducing emissions would go some way towards reassuring that we do not live on another planet. And it would give everyone a greater incentive to save this one**

With President Joe Biden's administration recommitting the United States to the Paris climate agreement, and with a major United Nations climate-change conference (COP26) coming later this year, there is new hope for meaningful global policies to meet the challenge. But while mounting evidence of increasing climate volatility – unprecedented wildfires in Australia, droughts in California and Sub-Saharan Africa, intensifying hurricane and cyclone seasons – suggests that we must move fast in curbing planet-warming greenhouse-gas (GHG) emissions, there are serious impediments to concluding any new global accord.

Economists generally agree that the way to reduce GHG emissions is to tax them. But such taxes almost certainly will cause disruptive economic changes in the short run, which is why discussions of imposing them tend to run quickly into free-rider or fairness problems.

For example, industrialised countries such as the US are concerned that while they work hard to reduce emissions, developing countries will keep pumping them out with abandon.

But at the same time, developing countries like Uganda point out that there is profound inequity in asking a country that emitted just 0.13 tonnes of carbon dioxide per capita in 2017 to bear the same burden as the US or Saudi Arabia, with their respective per capita emissions of 16 and 17.5 tonnes.

The least costly way to reduce global emissions would be to give every country similar incentives. While India should not keep building more dirty coal plants as it grows, Europe should be closing down the plants it already has. But each country will want to reduce emissions in its own way – some through taxation, others through regulation. The question, then, is how to balance national-level priorities with global needs so that we can save the one world we have.

The economic solution is simple: a global carbon incentive (GCI). Every country that emits more than the global average of around five tonnes per capita would pay annually into a global incentive fund, with the amount calculated by multiplying the excess emissions per capita by the population and the GCI. If the GCI started at \$10 per tonne, the US would pay around \$36 billion, and Saudi Arabia would pay \$4.6 billion.

Meanwhile, countries below the global per capita average would receive a commensurate payout (Uganda, for example, would receive around \$2.1 billion). This way, every country would face an effective loss of \$10 per capita for every additional tonne that it emits per capita, regardless of whether it started at a high, low, or average level. There would no longer be a free-rider problem, because Uganda would have the same incentives to economise on emissions as the US.

The GCI also would address the fairness problem. Low emitters, which are often the poorest countries and the ones most vulnerable to climatic changes they did not cause, would receive a payment with which they could help their people adapt. If the GCI is raised over time, the collective sums paid out would approach the \$100 billion per year that rich countries promised to poor countries at COP15 in 2009. That would far exceed the meagre sums that have been made available

thus far. Better still, the GCI would assign responsibility for payments in a feasible way, because big emitters typically are in the best position to pay.

Moreover, the GCI would not snuff out domestic experimentation. It recognises that what a country does domestically is its own business. Instead of levying a politically unpopular carbon tax, one country might impose prohibitive regulations on coal, another might tax energy inputs, and a third might incentivise renewables. Each one charts its own course, while the GCI supplements whatever moral incentives are already driving action at the country level.

The beauty of the GCI is its simplicity and self-financing structure. But it would require one adjustment in how per capita emissions are computed. What is consumed is as important as how it is produced, so there will need to be some accounting for the portion of emissions embedded in imported goods; these will need to be added to the importer's emissions tally and subtracted from the exporter's.

Also, most experts would regard a \$10 GCI as too low. But the point is to start small in order to get the scheme going and iron out the kinks. After that, the GCI can easily be raised by common agreement (or reduced, if there were some miraculous breakthrough in emissions-reduction technology). But to avoid creating uncertainty after an initial period of calibration, changes might be considered only every five years or so.

What about alternative proposals that have global effects? Some industrialised countries plan to impose a domestic carbon tax alongside a border-adjustment tax, effectively applying the same tax rate to goods coming in from countries that do not have a carbon tax. The border taxes might push other countries to impose their own carbon taxes, but it certainly would not improve fairness. On the contrary, they would let large importing countries impose their tax preferences on poor exporting countries and might serve as a Trojan horse for protectionism.

To be sure, the bureaucrats who dominate international

meetings will want to dismiss this proposal as “interesting but simplistic” (or words to that effect). The most powerful countries are also the biggest emitters, and few want to pay into a global fund, especially in these times of massive budget overruns.

But a GCI is by far the best option available. As rich countries cast about for remedies to domestic inequality, they should spare a thought for inequality between countries, which the pandemic and the unequal vaccine rollout will only worsen. Developing countries feel abandoned today. A fair proposal for reducing emissions would go some way toward reassuring them that they do not live on another planet. And it would give everyone a greater incentive to save this one.

– Project Syndicate

- *Raghuram G Rajan, former governor of the Reserve Bank of India, is Professor of Finance at the University of Chicago Booth School of Business and the author, most recently, of The Third Pillar: How Markets and the State Leave the Community Behind.*

Le premier parc solaire flottant en haute altitude au monde est en Suisse



Dans les Alpes valaisannes en Suisse, le lac des Toules accueille le premier parc solaire flottant en haute altitude au monde. Ses panneaux produisent 50% d'énergie en plus que ceux installés en vallée.

“Ce projet pilote produit 800 000 kWh par an,” explique Maxime Ramstein, responsable de projets chez Romande Energie, l'entreprise, premier fournisseur d'électricité de Suisse romande, qui est à l'origine de cette installation. *“Ce qui correspond aux besoins de 220 foyers,”* précise l'ingénieur.

Des conditions avantageuses en montagne

A 1810 mètres d'altitude, les coûts de mise en place plus élevés sur l'eau qu'au sol sont en partie compensés par des conditions plus avantageuses : en effet, en montagne, le rayonnement solaire est plus fort.

“Le rayonnement solaire est meilleur en montagne,” souligne Maxime Ramstein. *“Les températures plus faibles entraînent de meilleures performances et il y a aussi l'albédo, cet effet réfléchissant du rayonnement solaire, qui est très élevé au*

sol, sur la glace et sur la neige,” fait-il remarquer.

Limitation de l'impact environnemental

Le parc solaire est installé sur un réservoir artificiel pour la production hydroélectrique et non sur un lac naturel, limitant ainsi son impact environnemental.

“Il se vide chaque année et il se remplit à la fonte des neiges au printemps et en été,” indique le responsable de projets. *“Donc il y a très peu de flore et de faune et l'impact est très faible sur l'environnement,”* dit-il.

“Une durée de vie de 50 ans”

En cas de succès, ce projet pilote mis en service en décembre 2019 sera agrandi pour produire de l'énergie pour couvrir les besoins de plus de 6000 foyers.

“Nous avons développé une structure d'une durée de vie de 50 ans avec deux cycles de 25 ans pour les modules solaires,” déclare Guillaume Fuchs, codirecteur Solutions Energie chez Romande Energie.

“On compte agrandir ce projet sur le lac des Toules, mais aussi reproduire ce type de technologie sur un autre lac,” annonce-t-il.

LNG Makers Get Hint to Go Greener From U.S. Energy

Secretary



The days of promoting liquefied natural gas as “freedom gas” or “molecules of freedom” have ended at the U.S. Department of Energy.

During a Friday visit to Houston, U.S. Secretary of Energy Jennifer Granholm said the Biden administration would rather promote and sell a cleaner version of the superchilled power plant fuel. The statement marks a policy shift from the Trump administration, which rolled back environmental regulations and heavily promoted U.S. LNG around the world.

The energy industry has been under mounting pressure from investors and governments to step up efforts to reduce greenhouse-gas emissions, with some spectacular victories for activists over Big Oil this week. U.S. LNG makers are seeking to green their image in order to land supply deals with environmentally conscious customers in Europe and Asia.

The Biden administration, Granholm said, is looking closely at carbon capture and sequestration technology, which would take

emissions from LNG plants and other facilities, move them by pipeline and then inject them underground.

“We want to be able to promote and sell clean technologies,” Granholm said following a tour at an Air Liquide SA hydrogen plant in La Porte, Texas. “That could be natural gas that has been decarbonized, or that could be natural gas where the methane flaring has been eliminated.”

Houston-based Cheniere Energy Inc., the largest U.S. LNG exporter, recently announced that it would be including carbon emission tags with its cargoes, allowing customers to audit the environmental footprint of a shipment. One of the company’s LNG tankers recently participated in a study analyzing emissions on a roundtrip between Texas and Europe.

Arlington, Virginia-based Venture Global LNG announced Thursday that it plans to implement carbon capture and sequestration at three export terminals in Louisiana, where one is already under construction and expected to produce its first drops of the fuel later this year.

Still seeking to sell enough contracts to support its proposed Rio Grande LNG export terminal in South Texas, Houston-based LNG developer NextDecade Corp. has also pledged to add carbon capture and storage to its plant.

Spain to invest 1.5B euros in ‘green hydrogen’



PHOTO COURTESY OF EC.EUROPA.EU

Spain will spend 1.5 billion euros (\$1.8 billion) from a European Union recovery fund to develop green hydrogen production over the next three years, Prime Minister Pedro Sanchez said Monday.

Spain will spend 1.5 billion euros (\$1.8 billion) from a European Union recovery fund to develop green hydrogen production over the next three years, Prime Minister Pedro Sanchez said Monday.

The goal is for Spain to become Europe's leading hydrogen producer using renewable sources instead of fossil fuels to curb greenhouse gas emissions and create jobs, he said.

"The Spanish government is firmly committed to green hydrogen," the Socialist premier said at a ceremony in Toledo, just south of Madrid.

His government expects the outlay will stimulate 8.9 billion euros of mainly private-sector investment to develop the technology by 2030.

Madrid has already received over 500 "green hydrogen" project proposals from energy firms, a government statement said.

Creating “green” or emissions-free hydrogen is seen as a key step towards developing sustainable energy sources and slashing carbon emissions.

One reason for the strong interest in hydrogen technology is when used to fuel motors, the only emission is water vapour.

But it is expensive to produce and the electricity needed generates a lot of carbon dioxide emissions or other pollutants.

Green hydrogen is produced via electrolysis – an electrical current passing through water – with wind, solar or hydro-electric power providing the electricity.

Europe in particular is anxious to get a handle on the new and still costly fuel, having missed the boat on solar and battery technology, which is dominated by China.

Experts predict green hydrogen using renewable energy will soon plunge in cost and become cheaper than natural gas in many areas.

US engine maker Cummins announced Monday it would spend 50 million euros to build one of the world’s biggest electrolyser plants for the production of green hydrogen in Spain.

The plant, which will be built in the central region of Castilla-La Mancha, is expected to open in 2023.

“Spain offers a strong and dynamic local environment for hydrogen production, and we are excited to invest,” said Cummins chairman Tom Linebarger.

Spain is set to receive 140 billion euros – half in direct payments, half in loans – from the 750 billion-euro recovery plan adopted by EU leaders last year as the economy reeled under virus lockdown restrictions. (AFP)