Getting to zero deforestation in the Amazon by 2030

Amazon deforestation in Brazil reached a 12-year high in 2020, and over 95 per cent of it is illegal. Governments and markets must radically revalue the rainforest’s natural services and stimulate a green economy to avoid a nightmare scenario.

The Amazon Basin is fast approaching an irreversible tipping point. That should concern everyone, because what happens in the Amazon has planetary implications.

Spanning eight South American countries and French Guiana, the Amazon contains over 60 per cent of the world’s tropical forests, 20 per cent of its fresh water, and about 10 per cent of biodiversity.

As a result of land speculation and insatiable global demand for meat, soy, gold, and other commodities, roughly 20 per cent of the world’s largest tropical forest has already been

razed.

A further 5 per cent rise in deforestation levels could trigger catastrophic dieback, essentially dooming the 2015 Paris climate agreement.

Some fear this process may already have started. The current prognosis is not good: Amazon deforestation in Brazil reached a 12-year high in 2020, and over 95 per cent of it is illegal.

Unless governments and markets radically revalue the rainforest's natural services, this nightmare scenario may be unavoidable.

Dieback in the Amazon Basin could release the equivalent of a decade's worth of global greenhouse-gas emissions. The forest would also lose its ability to absorb billions of tons of carbon dioxide, disrupting hydrological cycles, evapotranspiration, and ocean currents.

The agro-industrial sector could collapse, and the loss of biodiversity could be staggering. Hydroelectric facilities would be shuttered, declining water tables would make cities unlivable, and fisheries would become unviable.

Preventing this outcome requires achieving zero deforestation in the Amazon by 2030. And that, in turn, requires a clearheaded scientific assessment and science-based targets.

The Science Panel for the Amazon, a coalition of about 200 leading scientists from the region, should become permanent. And, given the extraordinary wealth potential of preserving the forest's biodiversity, the best way to protect this resource is by stimulating the emergence of a green economy.

For starters, this will require a crackdown on illegal deforestation and the networks that sustain it. Brazil's environmental enforcement agency, Ibama, handed out 20 per

cent fewer fines in 2020 than in 2019, owing to funding cuts and reduced sanctions – and less than 3 per cent of fines are paid.

Reinforcing Ibama, a federal agency, is essential, as is bolstering state-level institutions on the frontlines of environmental crime, such as police, firefighters, and land registration offices.

Illegal deforestation occurs in several ways, but typically involves unlawful land invasions, followed by forest clearance for commercial agriculture and ranching.

Another encroachment, wildcat mining, mostly for gold, undermines local ecosystems and human health, while wildlife trafficking, fueled by unrelenting global demand for rare birds, reptiles, and mammals, also affects forest health.

Currently, two-thirds of global supply chains have no policies on illegal deforestation. Massive investment in high-resolution remote sensing and artificial intelligence-based alert systems is essential, as is tracking illegally extracted commodities in global supply chains and strengthening investigation and prosecution.

One of the most important priorities in the Amazon is developing a transparent and accountable system that allows property titles and land demarcations to be registered and monitored properly over time.

Given the considerable fraud and corruption in most Amazonian countries' land registries, creating a digitised, accessible, and up-to-date ledger is critical to enforcing existing laws and stimulating legal markets.

Developing an online dispute-resolution process to address outstanding legacy litigation related to competing land claims is no less vital. And establishing a blockchain verification system for land registries to demonstrate a clear

chain of ownership and custody, while difficult, would greatly improve the prospects for a green economy.

Another priority is accelerating reforestation and land regeneration. In Brazil, home to 60 per cent of the Amazon, the state of Pará is an obvious location for such efforts. In Colombia, Peru, and Ecuador, which together contain roughly 23 per cent of the Amazon, the states of Amazonas, Loreto, and Pastaza, respectively, stand out.

The key is to build a predictable pipeline of reforestation, biodiversity conservation, and sustainable forest management projects that can scale rapidly.

The Reducing Emissions from Deforestation and Forest Degradation initiative could accelerate funding for such efforts. International financing from the Amazon Fund, US President Joe Biden's administration, and tools such as green bonds would help, while local financing also could play a significant role.

So, too, could initiatives such as the Global Commons Alliance and 1t.org, along with investor activism, including from sovereign wealth and pension funds. In 2019, some 230 global investors, managing a total of more than $16 trillion in assets, called on companies to meet their deforestation commitments or risk adverse economic consequences.

Most important are innovations to bolster the green economy and support the communities that are the custodians of the Amazon Basin. Such initiatives could be accelerated by a Brazilian equivalent to the US government's Defense Advanced Research Projects Agency to ramp up research and development, as well as related regulatory frameworks to enable an inclusive bioeconomy in the Amazon.

This approach would include applied research to collect and map Amazon biodiversity – with scientists studying fruits, nuts, plant extracts, and fibers, and using drones to sample

biodiversity in hard-to-reach areas – along with digital platforms to secure biological assets for the public good.

To ensure that indigenous and local populations are included and benefit, clear and enforceable data-sharing rules and safeguards to promote local value creation and retention must accompany these efforts. In addition, establishing low- and high-tech innovation hubs in selected countries can stimulate local innovation, harness traditional knowledge, and ensure local ownership.

Advancing the green economy and achieving zero deforestation in the Amazon will depend on the combined efforts of governments, the private sector, and civil society. In Brazil, several groups – including the Concert for the Amazon and the Brazilian Coalition on Climate, Forests, and Agriculture – are playing a pivotal role in shaping the agenda and connecting stakeholders. And with the country's federal government missing in action on this issue, local governments also are stepping up.

Concerted international and regional efforts – such as the Leticia Pact – combined with national and subnational interventions could create a brighter future for the Amazon. The health of the planet depends on it.

Robert Muggah, Juan Carlos Castilla-Rubio, and Julia Sekula contributed to this commentary.

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Big brands join $1bn forest conservation push for SE Asia

Major household brands and palm-oil buyers Nestle and PepsiCo have backed a scheme that aims to invest $1bn in forest conservation across Southeast Asia over 25 years. The Rimba Collective, developed by Lestari Capital, a Singapore-based impact investment firm, will fund projects that protect and restore more than 500,000 hectares (1.2mn acres) of tropical forests in Indonesia and the region. “By linking conservation funding directly with company operations, it has the potential to be a game-changer for forest protection and restoration,” Michal Zrust, Lestari Capital co-founder, told a virtual launch event this week. The initiative will complement eff orts by other groups to build more sustainable palm-oil supply chains, he added. In 2020, tropical forest losses around the world equalled the size of the Netherlands, according to monitoring service Global Forest Watch.

Green groups blame production of commodities like palm oil and minerals for much of the destruction of forests, as they are cleared for plantations, ranches, farms and mines. Cutting down forests has major implications for global goals to curb climate change, as trees absorb about a third of the planet-warming emissions produced worldwide, but release carbon back into the air when they rot or are burned. Forests also provide food and livelihoods, and are an essential habitat for wildlife. Indonesia is home to the world's third-largest tropical forests but is also its biggest producer of palm oil, an edible oil used in everything from margarine to soap and fuel. Many big buyers of palm oil, besides purchasing certified sustainable oil, have invested in technologies to monitor their supply chains and help stop deforestation, but with limited success so far. The Rimba Collective will have an initial focus on projects in Indonesia and aims to be the largest businessled conservation initiative in the region. Its founding partners are consumer goods companies Nestle, PepsiCo, Procter & Gamble and Singapore-based agribusiness Wilmar International.

They will contribute funding managed by Lestari Capital for a portfolio of forest conservation projects in Southeast Asia. It is hoped more investors, such as commodity traders, palm oil processors and growers, consumer goods firms and manufacturers, will join the scheme before the first payments are made in December. Projects will be selected based on their potential to protect and restore large areas of natural ecosystems and critical habitats such as rainforest, peatland and mangroves. Other priorities are to generate measurable ecosystem benefits – including carbon sequestration, water purification and soil health – and decent livelihoods for local communities. Benjamin Ware, global head of sustainable sourcing and climate delivery at Nestle, said the firm's involvement would "enable us to speed up our proactive eff orts to protect forests and peatlands as well as human rights", beyond its supply chain.

Last year, well-known brands launched a fresh push to stop commodity supply chains fuelling forest loss. It was met with scepticism by many green groups after the same set of companies failed to meet a 2020 target to purchase only sustainably produced commodities. Environmentalists urged firms in the Rimba Collective to ensure their entire supply chains are not linked to deforestation and to transparently report on progress. Grant Rosoman, senior adviser at Greenpeace International, said more finance for forest conservation, especially led by communities, was desperately needed. He welcomed the long-term nature of the new scheme and the fact that its results will be verified independently. But transparency around how it works, including its costs, payments and the organisation running it, are crucial, he added. “We are also concerned that with carbon sequestration as one of the stated benefits, carbon credits may be claimed and sold to climate polluters,” he told the Thomson Reuters Foundation. Marcus Colchester, a senior policy advisor at the UK-based Forest Peoples Programme, called the Rimba project “innovative” and urged Indonesia to help by simplifying its onerous process for recognising customary land rights. Kevin Woods, a senior policy analyst at Washington-based nonprofit Forest Trends, said studies showed results are poor when forest conservation does not support those rights. “This can be best achieved by funds going through local organisations that work closely with forest-based communities on…conservation,” he said.

Inevitable fragments of a

carbonneutral society: Natural gas coupled with CCUS, renewables, and hydrogen

As global society keeps pursuing a zero-carbon energy system, hydrogen’s role is becoming more notable. Updates and progress around the topic are now being broadcasted at an increasing pace, extending to areas that promise a significant role for hydrogen. Just a couple of years ago, everyone had agreed that hydrogen would gain a meaningful share by around 2050. However, these days, due to sanctioned projects and the advancement of the related technologies with a set of adopted strategies, it is believed that the hydrogen era will materialise much earlier.

Hydrogen is not the only piece of the puzzle to achieve carbon

neutrality, but it is the one that promises a feasible pathway towards net zero-emission through complementing other routes such as electrification and natural gas coupled with CCUS (carbon capture, utilisation and storage). The supremacy of hydrogen is based on the possibility that it can be employed to decarbonise the so-called hard-to-abate sectors or in sectors in which other decarbonisation pathways, such as electrification, are challenged. These sectors include but are not limited to steel, iron and cement, as well as heavy long-haul vehicles, aviation, and maritime and railways transportation. The GECF Hydrogen Scenario encompasses some of these recent developments in its latest update, which was published in February 2021. The Scenario has taken into consideration the latest updates and strategies adopted by countries and groups and assessed their impacts.

Currently, several countries have officially published their hydrogen strategies or hydrogen roadmaps. In some of the roadmaps and strategies such as the EU Hydrogen Strategy, the main priority has been attached to renewable hydrogen. While in some others, such as for Japan, Russia, and South Korea, blue hydrogen is envisaged to take a meaningful role. In certain strategies, definite and clear targets are set, like for the EU Hydrogen Strategy that considers a minimum of 40 GW installed renewable hydrogen electrolyser or 10mn tonnes (mt) of renewable hydrogen by 2030. Within the EU Hydrogen Strategy, another 40 GW is also defined as a target to install in the neighbouring countries and import to the EU. According to the latest results from the updated GECF Hydrogen Scenario which assumes a practical penetration of hydrogen into the future of the energy system, the demand for hydrogen by 2050 will increase by more than four times. However, the carbon saving through this hydrogen penetration is forecasted to be less than six (6) GtCO2 – far below the amount needed to achieve the Paris Agreement goals.

This result emphasises that, firstly, the hydrogen production

supply chain needs to advance in all parts, and the cost should be reduced to gain more share in the future of the energy system. Secondly, the result highlights that hydrogen could not be the only solution in the carbon neutrality pathway, and other clean and decarbonised options, such as the application of natural gas coupled with CCUS has to be seriously taken into consideration by all stakeholders. Henceforth, let’s take a look at some results and forecasts from the Reference Case Scenario (RCS) of the latest GECF Global Gas Outlook 2050 (GGO 2050), as it will enable a clear view of the potential needs to fully decarbonise the hard-to-abate energy sectors when hydrogen is hypothetically assumed to take a sole role. According to the RCS results, the total EU transport demand in so-called hard-to-abate sectors will be reduced from 217mn tonnes of oil equivalent (mtoe); in 2019 and pre-Covid-19 pandemic situation, to around 150 mtoe by 2050. This reduction is primarily due to the energy efficiency enhancement of the fleets. In order to produce 150 mtoe of energy, around 52mt of hydrogen is needed, requiring more than 500 GW of electrolyser. This should be added to the demand from the iron, steel, and cement industry (other assumed hard-to-abate sectors.) The fossil fuel demand (coal, natural gas and oil products) from these sectors in the EU is forecasted to stand at 24 mtoe by 2050. To meet this level of demand only with green hydrogen, around 70 GW of the electrolyser must be installed. Based on the forecasted demand levels, the EU will need around 570 GW of electrolyser capacity to decarbonise the aforementioned hard-to-abate sectors in case that the green hydrogen is assumed to be the only solution. Based on technical circumstances and the policy, in the EU Hydrogen Strategy, the target was set to 2 x 40 GW renewable hydrogen by 2030. Therefore, the needed electrolyser capacity for 2050 seems to be challenging but feasible in the EU. However, we still need to bear in mind some other salient points. The first point is that these results are based on assuming a successful effort in enhancing energy efficiency, and the level is subject to uncertainty. The second is that this is

the volume needed only to decarbonise the referenced hard-to-abate sectors. Several other consuming sectors are supposed to be decarbonised through other pathways such as electrification.

They also create a massive volume of renewable electricity demand. A big question mark here is to gauge if there is a sufficient potential of renewable energies within the EU to accommodate all renewable electricity demand in the sectors and meet the electricity demand of electrolysers to produce green hydrogen. By looking into this subject from a global perspective, it can be observed that much more hydrogen is needed to decarbonise even these so-called hard-to-abate sectors. According to the latest modelling results published in GGO 2050, the global energy demand from hard-to-abate subsectors within transportation will stand at around 1800 mtoe per annum by 2050. In a hypothetical assumption, to provide this amount of energy only through green hydrogen production, more than 6,000 GW of electrolyser will be needed. This level is around five times more than the total current wind and solar installed capacity.

With similar calculations again on the imaginary only-green hydrogen assumption, 1,500 GW of electrolyser should be installed for the decarbonisation of iron, steel, and cement sectors. While numerous sectors are still not included in these calculations, other measures are assumed for the purpose of decarbonisation as well. In conclusion, the undeniable fact is that that there is no sole solution for carbon neutrality. Indeed, a combination of measures needs to be applied to achieve a net-zero emission. Apart from the energy conservation and energy efficiency enhancement that results in a reduction in final energy demand, clean energy supply should be diversely sourced from all clean available potentials. Renewables, natural gas, and CCUS will take greater roles in their original form, and all of them should contribute to the hydrogen production. In closing, renewables, natural gas,

CCUS, and hydrogen are inevitable parts of a fully decarbonised energy system.

Sea-level rise: New study sheds light on responsible ice sheets

Though it is well known that climate-induced sea level rise is a major threat, new research has found that previous ice loss events could have caused sea-level rise at rates of around 3.6m per century. This offers vital clues as to what lies ahead should climate change continue unabated. A team of scientists, led by researchers from Durham University, used geological records of past sea levels to shed light on the ice sheets responsible for a rapid pulse of sea-level rise in Earth's recent past. At the end of the last ice age, around 14,600 years ago, sea levels rose at ten times the current rate due to Meltwater Pulse 1A (MWP-1A); a 500 year, ~18m sea-level rise event.

Until now, the scientific community has not been able to agree about which ice sheet was responsible for this rapid rise, with the massive Antarctic Ice Sheet being a likely suspect, but some evidence pointing towards ice sheets in the Northern Hemisphere. The new study uses detailed geological sea-level data and state-of-the-art modelling techniques to reveal the sources of MWP-1A. Interestingly, most of the meltwater appears to have originated from the former North American and Eurasian ice sheets, with minimal contribution from Antarctica, reconciling formerly disparate views.

In addition to flooding vast areas of low-lying land, this unparalleled discharge of freshwater into the ocean – comparable to melting an ice sheet twice the size of Greenland in only 500 years – will have disrupted ocean circulation, with knock-on effects for global climate. Knowing the source of the meltwater will improve the accuracy of climate models that are used to replicate the past and predict changes in the future.

The results are important for our understanding of ice-ocean-climate interactions which play a significant role in shaping terrestrial weather patterns. The findings are particularly timely with the Greenland ice sheet rapidly melting, contributing to a rise in sea levels and changes to global ocean circulation. Of the findings, lead author Yucheng Lin, in the Department of Geography at Durham University, notes: "Despite being identified over 30 years ago, it has been surprisingly challenging to determine which ice sheet was the major contributor to this dramatic rise in sea levels.

"Previously, scientists tried to work out the source of the sea-level rise based on sea-level data from the tropics, but the majority of those studies disagreed with geological records of ice sheet change. Our study includes novel information from lakes around the coast of Scotland that were isolated from the ocean due to land uplift following the retreat of the British Ice Sheet, allowing us to confidently identify the meltwater sources."

Co-author Dr Pippa Whitehouse, in the Department of Geography

at Durham University, said: “The technique we have used allows us to really dig into the error bars on the data and explore which ice-melt scenarios were most likely. “We found that most of the rapid sea-level rise was due to ice sheet melt across North America and Scandinavia, with a surprisingly small contribution from Antarctica.

“The next big question is to work out what triggered the ice melt, and what impact the massive influx of meltwater had on ocean currents in the North Atlantic. This is very much on our minds today – any disruption to the Gulf Stream, for example due to melting of the Greenland Ice Sheet, will have significant consequences for the UK climate.”

Rising sea levels due to warming climate pose a great risk to society, improving our understanding of why and how fast change could happen; thus helping us plan for the impacts.

Russia has multi-pronged strategy to confront climate change: Official

Russia has a multi-pronged strategy to confront climate change, by further developing its human capital, natural gas, hydrogen, and renewable assets, a senior national energy policymaker said yesterday.

Speaking at the 51st edition of the GECF Gas Lecture Series, entitled 'The Russian Federation's climate policy in the energy sector', Alexey Kulapin, director general, Russian Energy Agency, noted that Russia's energy system is underpinned by the vision of a greener energy system on one hand and stability and security on the other.

"Russia's energy policy is based on the need to strike a balance between solving climate problems and the need to further provide the economy and population with affordable energy resources," explained Kulapin.

Calling access to affordable energy a fundamental right, in line with the UN Sustainable Development Goal No. 7, the GECF secretary general commended the steps being taken by many of the forum's 19 member countries to achieve net-zero emissions.

"We heard a lot about Russia today but our other Member Countries are also leading the way in transforming their business model. Qatar, for example, is playing a greater role in the area of environmental, social, and governance (ESG) investments. Yet another member, Egypt, has blanket banned

issuing of all new vehicle licences unless they run on the cleaner natural gas," said Yury Sentyurin.

"Being a world-leading coalition representing more than 70% of an important natural resource (natural gas) brings with it a remarkable weight. We strive to achieve actions that put nature, people, and planet at the heart of value creation."

Echoing these sentiments, Kulapin noted that Russia, as one of the largest players in the international energy markets, fully supports the efforts of the world community to combat climate chance.

He highlighted that in November 2020, the Russian President signed a decree to reduce the country's greenhouse gas emissions (GHGs) as part of Russia's implementation of the Paris Agreement.

However, according to him, until new sources of energy are able to provide uninterrupted energy supply, natural gas, including liquefied natural gas (LNG), will remain the cleanest energy resource and will even serve as a transitional fuel to a low-carbon economy. In this regards, projects such as the Power of Siberia 1 and 2, Turkish Stream, and Nord Stream 2 were highlighted.

Currently, Russia enjoys a total LNG production of nearly 30mn tonnes per year (mtpy), which is set to increase by 2 to 2.5 times to 80-140mn by 2035, in line with the newly-adopted 'Energy Strategy 2035'.

Work is also underway to increase the use of gas in the transport sector. In the period 2018-20, a total of 250 refuelling stations offering compressed natural gas came alive, an increase of 60% on previous capacity.

In the area of electricity, Kulapin asserted that Russian already has one of the cleanest electricity structures, as 80% of generation comes from nuclear, hydroelectric, steam gas, and thermal cogeneration sources. This compares to United States (65%), Germany (57%) and China (below 30%) in terms of low-emission energy sources for electricity generation, he said.

"Despite this, the country has a deliberate policy aimed at

improving the efficiency of energy production and consumption, which allows reducing greenhouse gas emissions in the energy sector.”

On hydrogen, the official noted his optimism on its potential in various fields, as the ‘Energy Strategy 2035’ envisions competitively priced hydrogen exports of up to 7mtpy by 2035 and 33mtpy by 2050.

“Russia can provide competitive hydrogen both in the European and Asia-Pacific markets. The cost of producing low-carbon hydrogen from natural gas in Russia is at $1-1.5/kg, whilst the cost of producing hydrogen electrolysis is $3.5-4/kg. We are ready for mutually-beneficial cooperation with partners overseas,” he said.

World Bank, IMF to consider climate change in debt reduction talks

WASHINGTON (Reuters) – The World Bank is working with the International Monetary Fund (IMF) on ways to factor climate change into the negotiations about reducing the debt burdens of some poor countries, World Bank President David Malpass told Reuters in a Friday interview.

Three countries – Ethiopia, Chad and Zambia – have already initiated negotiations with creditors under a new Common Framework supported by the Group of 20 major economies, a process that may lead to debt reductions in some cases.

Malpass said he expected additional countries to request restructuring of their debts, but declined to give any details.

The coronavirus pandemic has worsened the outlook for many countries that were already heavily indebted before the outbreak, with revenues down, spending up and vaccination rates lagging far behind advanced economies.

China, the United States and other G20 countries initially offered the world's poorest countries temporary payment relief

on debt owed to official creditors under the Debt Service Suspension Initiative (DSSI). In November, the G20 also launched a new framework designed to tackle unsustainable debt stocks.

Malpass said the Bank and the IMF were studying how to twin two global problems – the need to reduce or restructure the heavy debt burden of many poorer countries, and the need to reduce fossil fuel emissions that contribute to climate change.

“There’s a way to put together … the need for debt reduction with the need for climate action by countries around the world, including the poorer countries,” he said, adding that initial efforts could happen under the G20 common framework.

Factoring climate change into the debt restructuring process could help motivate sovereign lenders and even private creditors to write off a certain percentage of the debt of heavily-indebted poorer countries, in exchange for progress toward their sustainable development and climate goals, experts say.

The World Bank and the IMF play an important advisory and consultative role in debt restructuring negotiations since they assess the sustainability of each country’s debt burden.

Many developing countries require huge outlays to shore up their food supplies and infrastructure as a result of climate change. Governments must also spend a large amount on alternative energy projects, but lack the resources to pay for those needed investments.

“There needs to be a moral recognition by the world that the activities in the advanced economies have an impact on the people in the poorer economies,” Malpass said.

“The poorer countries are not really emitting very much in terms of greenhouse gases, but they’re bearing the brunt of

the impact from the rest of the world," he added.

IMF Managing Director Kristalina Georgieva earlier this month told reporters about early-stage discussions underway about linking debt relief to climate resilience and investment in low-carbon energy sources.

Doing so, she said, could help private sector creditors achieve their sustainable development targets, she said.

"You give the country breathing space, and in exchange, you as the creditor can demonstrate that it translates into a commitment in the country that leads to a global public good," she said.

Russia energy stocks get a boost from Biden's green push

Bloomberg /Moscow

US President Joe Biden’s push to slash carbon emissions may inadvertently give a short-term boost to energy companies in one of the world’s biggest polluters.

Investors are betting that Russian oil giants such as Lukoil PJSC, Rosneft PJSC and Tatneft PJSC will rally as they mop up market share from rivals in the US and other countries seeking to switch to clean energy. An index of Russian energy stocks has returned 8% in dollar terms so far this year as crude prices rallied, compared with 2% for European oil and gas companies.

“Governments will likely limit global companies’ capacities to drill and extract resources,” said Eduard Kharin, who helps oversee $1bn of assets at Alfa Capital Asset Management in Moscow. “The global majors are entering a new market, a new industry where there are a lot of unknowns, and the return on capital is unclear.”

Russia is the world’s fourth-biggest carbon emitter, but unlike other major polluters, the government doesn’t have a plan to transition away from fossil fuels. Instead, its state-owned energy companies benefit from some of the world’s lowest production costs and tax breaks, making them well placed to gain in the short term.

Global oil companies will stop investing in exploration and shift to clean energy, “but somebody still needs to produce oil,” said Ekaterina Iliouchenko, a money manager at Union Investment Privatfonds GmbH in Frankfurt, who increased exposure to Russian oil stocks last year. “That’ll be the Russians and Saudi Aramco”.

Rosneft and Lukoil have been among the best performers in Russia’s benchmark equity index so far this year, handing investors total returns of 15% and 12% in dollar terms. They’ve also outperformed an index of global energy stocks.

Of course, any benefits will be short lived if major economies are serious about speeding up the shift to clean energy to limit global warming. Biden is planning to set a net-zero target for the US for 2050, meaning that 70% of the world economy will soon have made commitments to be carbon neutral

by the middle of the century.
Many international funds are also coming under increasing pressure to cut companies that contribute to global warming from their portfolios. President Vladimir Putin was quizzed at an online investment forum late last year over how his country plans to cut emissions, and Swedbank Robur subsequently excluded oil and gas companies from its Russia and Eastern Europe funds.
Rosneft this month signed an agreement with BP Plc to co-operate to produce “low-carbon solutions,” but critics pointed out that the plan is at odds with the Russian company’s focus on expanding hydrocarbon production.
Biden signed an executive order late last month suspending new oil and gas leases on public lands, directing federal agencies to purchase electric cars by the thousands and seeking to end fossil-fuel subsidies.
The move could hurt US shale producers, whose output helped put a cap on gains in global oil prices in recent years.
A raft of European oil companies have recently set climate targets, with BP stunning investors by promising to eliminate emissions from its operations by 2050.

Denmark moves forward on North Sea ‘energy island’

AFP/ Copenhagen

Denmark has said that it has approved plans to build an artificial island in the North Sea that could generate wind power for at least 3mn households.

Parliament in June adopted a political environmental framework aimed at reducing the country's CO2 emissions by 70% by 2030, which included plans for the world's first "energy hubs" on the island of Bornholm in the Baltic Sea and in the North Sea.

On Thursday, parliament went further by approving a plan to place the North Sea hub on an artificial island, with a wind power farm that will initially supply 3GW of electricity.

That could later be scaled up to 10GW – enough for 10mn households – according to the ministry of climate, energy and utilities, much more than needed for Denmark's population of 5.8mn.

"Clearly this is too much for Denmark alone and this also why we see this as a part of a bigger European project," Climate Minister Dan Jorgensen told AFP, adding that Denmark wanted to also export excess energy to the rest of Europe.

Plans also include the use of "electrolysis" to extract hydrogen for use in the production of renewable fuels for things like maritime transport.

The island, “the largest construction project in the history of Denmark”, is to be majority owned by the Danish government in partnership with private companies and is expected to cost around 210bn Danish kroner ($34bn, €28bn).

Rather than a traditional offshore wind power farm, the island will function as an “energy hub” allowing connections from other countries’ wind power farms and cables to efficiently distribute the incoming energy.

Its final size is yet to be decided but it is expected to cover between 120,000-460,000sq m, according to the ministry.

The total number of wind turbines has not been finalised either, but estimates range between 200 and 600 units at “a previously unseen scale”, with the tip of the blades reaching as high as 260m (850’) above the sea.

While the project is a step in the plan to provide enough energy to electrify Denmark, Jorgensen also said they hoped the project could offer guidance for bigger countries looking to transition their societies in the face of climate change.

“We know that as a small country, only responsible for about 0.1 percent of the world’s greenhouse gas emissions, it doesn’t matter that much to the climate what we actually do in Denmark,” he said. “We hope that it will have a bigger influence by influencing others.”

The project’s next steps include environmental impact assessments and talks with potential investors, so construction is still some years off.

According to the ministry, initial construction is likely to begin around 2026 and finished sometime between 2030 and 2033.

Overcoming climate challenge

to human development

By Kanni Wignaraja/New York

In his autobiography, Singapore’s founding father, Lee Kuan Yew, told the story of how leadership and grit transformed a tiny nation on a sandbar into an open, competitive, and prosperous metropolis.

In the decades since, Singapore has been governed by a famously efficient and graft-free political class, and it now boasts a highly skilled workforce. In the United Nations Development Programme’s latest Human Development Index (HDI) – first conceived 30 years ago by the Indian Nobel laureate Amartya Sen and the Pakistani economist Mahbub ul Haq – the country ranks eleventh out of 189 overall.

But when the HDI is adjusted to consider carbon dioxide emissions and so-called material footprint (which measures the share of global extraction of raw materials in a country’s final demand), Singapore’s rank drops by 92 positions. No country has ever managed to reach a high level of human development with low resource use, and Singapore, having virtually no natural resources of its own, imports almost all of the commodities it needs. There is nothing unusual about

this; Singapore is emblematic of growth across the planet. But the natural environment cannot sustain this form of growth and development.

The intense pressure that our current development models are putting on local ecosystems is perhaps most clearly illustrated by the Covid-19 pandemic. A tiny pathogen has laid bare massive vulnerabilities and gross inequalities in even the strongest and most prosperous societies, with economic and social imbalances reinforcing the damage inflicted by the pandemic. As the disease spread, we learned that the collective action needed to confront such a challenge becomes far more difficult when domestic divisions and international rivalries prevail over global solidarity.

But while Singapore-style development is not sustainable, nor is it feasible to reframe development as a trade-off between people's livelihoods and saving trees. That is a central argument in the UNDP's new Human Development Report (HDR), which examines new or underused pathways to achieving human and environmental well-being. In the future, we must encourage countries to pursue prosperity while minimising their carbon footprint by applying the knowledge, science, and technology now at our disposal.

The report reimagines the future role of governments, but it is clear that they will not bear sole responsibility for the vital choices that must be made in the coming years. The HDR also calls for a socially and environmentally responsible private sector that regards embracing nature as being in its own interest and helps to reshape norms and incentives for climate action.

Four important areas for action stand out. First, cities – which account for 85% of energy output and 75% of CO2 emissions (estimates vary) – now need to pave the way for green renewal. The HDR highlights a role for cities as theatres for green action: pricing the true social cost of carbon, protecting green spaces and planting trees, and cleaning waterways and seas of the plastic garbage that is devastating marine life.

Second, in addition to action by cities and national pledges – including in the Asia-Pacific region – to become carbon-neutral over the next few decades, ordinary citizens must adapt their ways of life. The HDR urges people to reconsider what they value highly, and to change what they consume and how they produce, commute, and invest. This is not impossible. Throughout history, we have seen that social norms and behaviour can change. Tobacco use, for example, has become socially stigmatised, leading to a decline in smoking, and mask-wearing has become the norm in many places during the Covid-19 pandemic.

Third, while behavioural change can stem from hard incentives (say, higher tobacco taxes) and regulations, it can also be inspired by collective calls to action, such as those urging large and small institutional investors to finance new green technologies.

Private money must match public funding, reinforced by plugging local and international tax loopholes and withdrawing unnecessary subsidies. The subsidy on fossil fuels alone costs the world economy $5 trillion a year. In the Asia-Pacific region, such subsidies can equal more than 50% of a country's health or education budget. The right taxes on carbon, financial transactions, and extreme wealth can raise an additional $200 billion annually for green investments, according to the Sustainable Development Solutions Network's report on SDG costing and financing for low-income countries. Financial constraints clearly need not impede the transition to a green economy.

Finally, we must understand that nature is not our adversary. The HDR documents 20 cost-effective actions related to forests, wetlands, and grasslands that can lead to 37% of the mitigation needed to keep global temperatures within 2°C of pre-industrial levels. Reforestation alone accounts for two-thirds of this potential. Recognising and protecting the local communities that are nature's stewards will be key. The contribution of the Amazon's indigenous peoples to preserving forest storage capacity, for example, now equals the per

capita greenhouse-gas emissions of the top 1% of global emitters.

Sen and Haq’s original index of human progress introduced a new way to measure how well societies manage to reach their potential. When adjusted for planetary stress today, however, the index shows how their choices are being radically constricted. Instead of passively awaiting our fate, we must use our knowledge, reason, and agency to establish new development models and shape our collective fortunes. – Project Syndicate

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Solar Stocks Have Been Thriving—Here’s Why That Could Continue

The solar industry has been on a tear. Several stocks in the sector hit all-time highs last month. Investors seem eager for more solar companies to go public. But is this surge more sustainable than prior booms?

Earlier boom times ended painfully. Several renewables companies went public in 2014 and 2015—or spun off their operating power-plant units—amid a clean-tech wave. But the collapse of SunEdison Inc.—the world's largest renewables company before its 2016 bankruptcy—stung the solar industry. Some investors began prioritizing profitability over growth. No solar companies went public in the U.S. between late 2016 and early 2019, according to Bloomberg data.

Now, clean-tech companies are going public at a dizzying pace. Since October, at least two solar companies have gone public via initial offerings and another agreed last month to do so through a merger with a blank-check company. They join several electric-vehicle and battery companies that have also gone public with special purpose acquisition companies. There have been 32 clean-tech SPAC deals over the past 12 months, according to Pavel Molchanov, an equity analyst at Raymond James.

One big reason: It became clear early in the pandemic that solar wouldn't just weather this difficult time, but possibly thrive during it. By mid-December, the U.S. was projected to install a record 19 gigawatts of new solar capacity last year, according to Wood Mackenzie and the Solar Energy Industries Association. Meanwhile, a sustainability-focused index that includes some solar companies, the WilderHill Clean Energy Index, last year surged more than 200%, topping the 58% gain in 2019. California-based SunPower Corp. rose as much as 14% on Friday, and is up about 70% this year. And the underlying drivers propelling clean tech look sturdy in the near-term: supportive policies in Europe and the U.S., a push to green electric grids as well as trillions of dollars in funds focused on the energy transition.

“It’s a mega-trend that’s essential for the future of this world,” says Jeff McDermott, head of Nomura Greentech.

But the success and future promise of the industry doesn’t mean that solar has become an easy business for executives—or for investors. Active Solar, for instance, was the best-performing stock-picker in Europe last year with a 183% return, but did so after twice losing most of its investors’ money. Guinness Atkinson Asset Management, an investment management firm, found that the total rate of return of the median stock among solar-equipment companies was 98% last year, but -32% in 2018. In fact, among all of the clean-tech sub-sectors it studied, the total rate of return for solar equipment was the lowest between 2010 and 2020 at 65%.

Installation “volumes are going through the roof, but profitability can be quite different,” Molchanov says. “We have seen countless companies that have grown revenue rapidly over the years but profitability has been pressured.” There remains “relentless commoditization including margin compression” that affects multiple solar segments, including modules, inverters and power-supply agreements.

The overlapping trends of decarbonization and electrification—plus the struggles of oil—attracted many investors to solar last year. That’s a far cry from 2016, when the experience of SunEdison soured many on the industry. The company had fueled its ascent on financial engineering and cheap debt before its 2016 bankruptcy.

Nearly five years later, the price of solar power has fallen markedly, such that the resource is now the cheapest in many markets. (This is obviously a plus for solar’s competitiveness, but not necessarily the best development for manufacturers). Solar companies are increasingly confident that investors will reward them for focusing on just a few things—power-plant ownership, installations, panel-making, or components—rather than feeling the need to be vertically

integrated like once before.

One major change is how clean power and other climate-forward businesses are now seen outside the industry. More than ever before, these companies are seen as a financial opportunity—not just good public relations.

— With assistance by Drew Singer, and Will Wade