CLIMATE REVIEW

TSKB Economic Research

GREEN SWAN PLATFORM
A TSKB INITIATIVE

Issue No: 7
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Forests and Soil:
Deforestation, Land Degradation, Land Biodiversity

Children's Climate Resilience Index by UNICEF

Increasing Food Security Risk

See page 10

The content of Climate Review was written by Onur Bülbül
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About Green Swan Platform

The concept of "Green Swan", which expresses the low probability but high destructive risks related to climate, occupies the first rank globally in the agenda with the increasing effects of the climate crisis every day. Today, the climate crisis stands against us as the biggest obstacle to sustainable and inclusive development.

The industrial Development Bank of Turkey, which has been working for Turkey's economic, development and social development for 70 years, established "Green Swan Platform" in order to produce solutions to this global threat.

Aiming to bring public-private sector and NGO representatives, international organizations, academics, students and the press together, the Platform invites all stakeholders to think together and produce solutions in order to achieve "Green Economic Recovery".

About TSKB Advisory Services

While TSKB supports Turkish private sector investments with its thematic loans and innovative financing products, we continue to create added value for the business world and all of the drivers of development with our sector specific advisory services which we have been offering for 35 years. With our advisory teams consisting of financial advisors, engineers and economists, we guide the companies operating in the sectors driving the Turkish economy in its journey of transformation, development and sustainability. TSKB supports businesses to assess the risks and opportunities with data-based methods associated with environmental, social and governance (ESG) policy and to analyse the public and political expectations.
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Happily Situated

Welcome to the seventh issue of our Climate Review!

We devote our current issue to the subjects of "forests and soil". Although we will be presenting these topics through the lens of economic development, personally I can't help thinking of an emotional dimension when trees and forests are concerned.

That was also the very reason why I found it difficult to decide how to start the piece for this issue, feeling divided between cold numeric facts and emotions. I chose the latter, and would hence like to tell you about forests and soil through the words of Jane Austin.

The Legendary Miss Elizabeth Bennet of the Austin's Pride and Prejudice, is very fond of "woods". As her fans, we occasionally had the pleasure of being her acquittance during her walks in the forest. Seeing Mr. Darcy's adagial estate Pemberley for the first time and impressed greatly, Miss Bennet can't help saying:

*- I have never seen such a happily situated house before.**

What makes Miss Bennet speak like this is not the greatness of the estate, but its location within a large area of woodland. That is indeed the very reason why I start my piece by mentioning the link between trees, forest, nature and happiness, which is supported by evidence from scientific studies as well. Did you know that a 15-minute walk in a forest will support your mental health? Spare a moment to think just how far you'd need to go from your home if you wanted to take a walk in the forest. For instance, in my case, I would need to drive for more than 15 minutes to reach a forest. It is not the happiest of settings, is it?

It is estimated that 70% of the world's population will live in cities. The question now appears more obvious; for the sake of an easy 15-minute walk in the forest, are we ready to integrate our urban living with forests? Or should we ask the question in another way? Are we ready to discuss the need for urbanization, reverse migration, the relocation of industries, the trend towards services and perhaps re-consider them from the scratch?

So, here we go back to the square one, where I referred to the subjects in this issue being forests and soil. Let me re-word myself. If we want to talk about forests and soil, the subjects in this issue of the Climate Review are in fact population management, urbanization, fires, biodiversity, land destruction, desertification, climate change, food inflation, the nutrition of children, the participation of women in the labour force, employment and happiness.

To sum, we invite you to take this opportunity to think about forests and soil, by rethinking the aforementioned subjects. Indeed, the purpose is to protect nature, our forests, our soil and to be 'happily situated' in life. Shall we?

*line from 1995 BBC adaptation

Related Events

2nd UN Ocean Conference will be held between 27 June and 1 July 2022 in Lisbon, Portugal

The 3rd Global Soil Biodiversity Conference will be held between 13 and 15 March 2023 in Dublin, Ireland

IPCC Warns of Grim Climate Outlook in a Business-as-Usual Scenario

The International Panel on Climate Change (IPCC) released the third and final part of its Sixth Assessment Cycle of the climate crisis on April 4th. Building on its previous version released eight years ago, the report outlines the grim consequences that human inaction would have on the current crisis and sets out future projections on the impacts of potential behavioral changes - which should be "collective" as the Panel emphasizes. A striking finding of the report is that global average temperatures are set to rise by 3.2°C above their preindustrial levels by 2100 if the world stays on its current track. The Panel also warns that we have only around 500 more gigatons of "carbon budget" left (equivalent to a decade of carbon at the current rate of emissions) if we are to have a 50% chance of limiting global warming to 1.5°C by the end of the century. Efforts to remain within the target of 2°C warming, on the other hand, would mean that global greenhouse emissions should peak by 2025, before being cut drastically by around half by 2030 and then reaching net-zero by 2070. The report also specifically warns that even if the target of 1.5°C in warming is missed, each 0.1°C on top of it would matter in order to avoid the catastrophic consequences of passing the 2°C target set out in the Paris Agreement.

While the report recognizes the huge cost of the transition, it also highlights the devastating cost of inaction, which goes beyond an economic dimension. It is estimated, for instance, that necessary additional efforts to keep the global warming to within 2°C could result in a global decline in GDP of between 1.3% and 2.7% by 2050, whereas the damage caused by extreme weather events on top of lost lives and livelihoods would far exceed the estimated decline in GDP. Regarding such efforts, the report makes a distinction between the required investments in the green transition (e.g. transforming the electricity sector would require around $2.3 trillion per year between 2023 and 2052) and "demand side reduction" referring to a switch to less carbon emitting lifestyles.

In terms of energy transition, the report explicitly states that the use of coal must decline by 95%, oil use by 60% and gas by 45% by 2050 to stay remain within the 1.5°C target. Achieving these figures would mean a halt to any new fossil-fuel projects while eliminating most existing projects. Demand side reduction, on the other hand, includes a climate justice dimension as well, as the world's richest 10% are responsible for almost 45% of current emissions and hence their efforts to switch to less carbon emitting lifestyles would offer the greatest contribution on the demand side. Perhaps the most striking emphasis in the report is the need for multi-dimensional efforts to mitigate the climate crisis, the need for a full-scale societal transformation for the world to remain within the targets.

Average temperatures in Turkey were recorded

0,2°C

above seasonal averages in May.

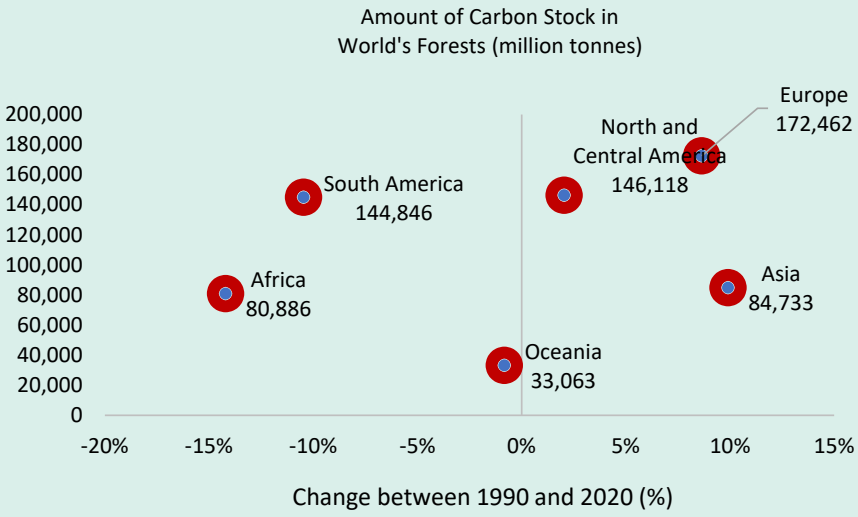
REDD+ Helping Developing Countries Reduce Emissions

United Nations Framework Convention on Climate Change's (UNFCCC) specific forest instrument focused on reducing emissions from deforestation and forest degradation in developing countries (REDD+) is designed to assist in the implementation of national policies and projects to reduce human related forest degradation. Adopted at the COP 19 in December 2013, REDD+ provides financing for initiatives in eligible countries which disclose information on their eligibility for the program. As of January 2020, REDD+ forest reference levels or forest reference emission levels for technical assessment have been submitted to the UNFCCC by 50 developing countries which account for over 70% of the total forest area in developing countries. Six countries out of those 50 are presently found to have met all eligible requirements to seek and obtain results-based finance for REDD+, while a total emission reduction of 6.3-billion tons CO_2 has been attained from the approved REDD+ activities.

The Case for Reforestation

Besides the economic benefits forests provide people, they play vital role for the well-being of our planet via hosting the most biologically diverse habitat on land and as the largest terrestrial carbon sinks. The World Bank indicates that 1.3 billion people depend on the resources generated from forests, keeping 1 out of 11 people out of extreme poverty. The share of forest income generated in developing countries from forests for people living close to forest lands is estimated to be around 22%, second only to crop income as a source of income. It is estimated that 80% of terrestrial species of animals, plants and insects live in forests, and that the loss of around 100 million hectares of tropical forest between 1980 and 2000 has exacerbated the risk of extinction for one million species on land.

Defined as "the conversion of forest to other land uses, such as agriculture and infrastructure", "deforestation" not only results in a loss of land biodiversity but also reverses the ability of forests to hold carbon, even turning forests into greenhouse gas emitters. While it is estimated that forests removed around 7.6 billion tons of carbon from the atmosphere - almost 20% of global emissions - over the last two decades, around 12% of global greenhouse gas emissions have been released due to deforestation and forest degradation. The Food and Agriculture Organization (FAO) estimates that between 1990 and 2020 the world lost around 420 million hectares of forest through deforestation (an area more than twice the size of Libya) mainly due to agriculture. However, due to forest gain through afforestation or natural forest expansion, the net decrease in forested area is calculated to be a mere 178 million hectares between 1990 and 2020. Although the rate of deforestation has been slowing for the last 30 years, the FAO estimates that achieving the SDG 15 target of "halting deforestation" will take another 25 years at the current rate. Another major outcome of global forest loss is the decrease in the global forest carbon stock, which is estimated to have declined from 668 Gt in 1990 to 662 Gt in 2020.



Source: FAO, TSKB Economi Research

According to Turkish Ministry of Agriculture and Forestry, 29% of Türkiye was covered by forest as of 2020, indicating an increase of 2.7 million ha over the last 50 years. In terms of the distribution for their main intended purpose, 42% of forests are designated to serve economic benefit. The global proportion of forest which is designated for production is less than 30%; this proportion is at its highest in the European region (above 50%). The remaining 58% of Türkiye's forests are designated for ecological and sociocultural purposes. As of 2020, the total carbon stock of Türkiye's forests was calculated at around 2 billion tons. Nevertheless, the extraordinary wildfires which ravaged Türkiye in 2021 resulted in the loss of around 205,000 ha of forest area (almost 1% of the country's total forest area) - around five times the annual loss of forested area in Türkiye (around 47,000 ha between 2008 and 2021). Hence, forest regeneration efforts in Türkiye are now more important than ever.

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32% of Carbon Credits are to Prevent Deforestation

Voluntary Carbon Markets (VCM) are an important tool in bringing down emissions and reaching net zero targets. Projects which reduce carbon emissions in these markets or remove carbon from the atmosphere create carbon credits in line with the amount of carbon emission savings they provide. The carbon credits created are sold to companies which wish to invest in these projects. Thus, the investing companies may move towards becoming carbon neutral by deducting the amount of such carbon credits from their total emissions. Although the discussions about VCM's contribution to the efforts to contain the climate crisis and its operation under the current rules continue, the market continues to be regulated and the market volume continues to grow.

While carbon credit issuances in the VCM rose from USD 185 million in 2020 to USD 344 million in 2021, the market size is estimated to exceed USD 1 billion. Morgan Stanley expects the size of the VCM to reach USD 35 billion by 2030, while the former Governor of the Bank of England, Mark Carney, expects the market to reach a size of USD 50 billion.

A significant majority of the projects registered in the VCM so far consist of projects aimed at preventing carbon emissions. Of the total size of the offset market, 34% is in renewable energy projects, 32% in projects that prevent deforestation, and 18% in projects that increase energy efficiency. The share of projects which remove carbon from the atmosphere in the total is less than 5%.

The overall size of forestry and land use projects in the VCM increased by 159% in 2021 compared to the previous year. 70% of the projects have been undertaken in Asia in countries such as Cambodia, Indonesia, China, with most of the rest carried out in Brazil and Peru. The majority of the carbon credits generated in these projects are geared towards cutting carbon emissions by preventing deforestation and land use changes. About one-fifth focus on expanding those forest areas, carbon sequestration through agricultural practices and improved forest management.

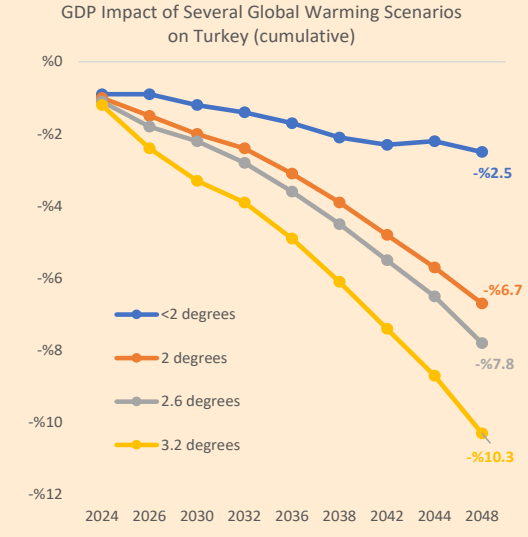
While the price of one carbon offset in the VCM averaged USD 2.50 in 2020, as demand increases, prices vary depending on the offset project types. For example, despite a low share in the total, the price of projects which eliminate carbon has increased by 48% in the recent period, to reach USD 19 per carbon credit as of March 2022. In projects that prevent carbon emissions, the price is around 40% lower than this level. As the pace of institutional arrangements in carbon offset markets continues to grow, the development of the markets is expected to become a vital tool on the road to net zero. Estimates by Bloomberg NEF indicate that carbon credits in VCM could be priced between USD 11 and USD 215 by 2030 and between USD 47 and USD 120 by 2050. The wide range of uncertainty in the short term indicates a market outlook which depends on the pace of the institutional structure building process in the market.

GDP Impact of the Climate Crisis Study by Swiss RE

The world's largest reinsurance company, Swiss RE, published a report introducing a Climate Economics Index that analyses three scenarios of global warming and their effects on global and 48 individual country GDPs that represent around 90% of the world economy. The report finds that despite the divergence in terms of their vulnerability, all countries subject to the report are under increasing economic risk due to global temperature increases, while the world is expected to lose around 10% of total economic value due to climate change by 2050 under a business-as-usual scenario.

Recent global warming trajectory indicates a 2 to 2.6°C increase in temperatures until 2050 with the implementation of mitigation measures. Swiss RE finds that under this scenario, global GDP would be 11% to 14% lower compared to a no warming (0°C) situation, whereas GDP decline is calculated to be at 4.2% in case Paris target is reached. However, the third scenario in which the world does nothing to fight climate crisis and the temperatures rise by 3.2°C by 2050, the global economy is estimated to be 18% smaller than a hypothetical 0°C temperature change.

According to the report, the impacts of climate change on economies would also be uneven among regions, as Southeast Asia and Latin America are expected to be facing more dry conditions whereas many advanced economies in the northern hemisphere are expected to be less exposed to and better prepared for the ramifications of climate change. Türkiye is also among the 48 countries of the Climate Economics Index. While Türkiye's GDP is projected to decline between 2.5% and 10.3% under abovementioned scenarios, in terms of overall climate risk rankings, the country ranks at 15th place for GDP impact, 4th in terms of exposure to extreme dry conditions and 26th to extreme wet conditions. In terms of its current capacity to cope with climate impacts (adaptive capacity) Türkiye ranks 36th out of the 48 countries evaluated in the report.



Source: SwissRe, TSKB Economic Research

Land Degradation: A Major But "Reversible" Issue

A major outcome of deforestation and current agricultural production practices - both completely human related activities - is "land degradation". Referring to "the persistent and long-term loss of land-based natural capital", land degradation leads to poverty, hunger, and pollution in addition to its other overarching negative consequences, including biodiversity loss and extinction. The United Nations Convention to Combat Desertification (UNCCD) indicates that 70% of all land not covered by ice caps have already been transformed by human activity, impacting more than 3.2 billion people, while 90% of land is expected to have human imprints by 2050 if current trends continue. The FAO also estimates that almost 40% of land is already degraded. In terms of its economic value, soil erosion, salinization, wetland drainage as well as deforestation and forest degradation are estimated to result in losses related to ecosystem goods and services amounting to around $6.3 trillion per annum. Soil salinity in particular is estimated to spoil 1.5 million ha of cropland every year – accounting for around 7.6% of arable land in Türkiye as of 2018.

Drought and desertification, which are at the extreme end of land degradation spectrum, are also exhibiting an expanding trend. The UNCCD indicates that drought affects more people than any natural disaster except flooding, with 1.4 billion victims between 2000 and 2019. Drought not only threatens food security and leads to related health risks but also leads to hunger, forced migration and conflict. For instance, the World Bank estimates the forced migration of up to 216 million people by 2050, mainly due to drought. In terms of its direct economic consequences, severe drought has already been estimated to have decreased India's GDP by between 2% and 5%.

UNITED NATIONS DECADE ON ECOSYSTEM RESTORATION 2021-2030

Against this backdrop, it is estimated that by 2050 the output of agricultural production will have to increase by 50% compared to 2012 to meet the projected global demand in order to achieve the target of "zero hunger by 2030"– hence, turning "land restoration" as the key action to pursue in this area. Land restoration mainly refers to sustainable land and water management practices aimed at conserving or "rewilding" of natural areas, improving food systems, "greening" urban areas, infrastructure, and supply chains. In fact, it is calculated that every dollar invested in land restoration has an economic dividend of between $7 and $30, whereas land restoration funding still lags about $300 billion short of the required level per annum. With such urgency and prospects in mind, the UN declared the period between 2021 and 2030 as the UN Decade on Ecosystem Restoration. Currently more than 115 countries had pledged commitments to restore 1 billion ha of land within this framework, while almost half of the countries (including Türkiye) have also pledged commitments to voluntary land degradation neutrality (LDN) targets which require around $1.6 trillion of investments over the next 10 years..

WMO warns breaching 1.5 °C Threshold is "Likely" within Five Years

A joint report by the World Meteorological Organization (WMO) and the UK Met Office indicates that there is a 48% chance that the warming of our planet will exceed 1.5°C compared to pre-industrial levels within the next five years. Even though Paris Agreement sets a target of keeping global warming to well-below 2°C, the 1.5°C target is established as a point where warming above this threshold would result in major catastrophic environmental disasters, such as flooding, drought and fires which would lead to tragedies such as forced migration, hunger and poverty for billions of people.

The report indicates that the chance of temporarily exceeding the 1.5°C target has been increasing since its 0% level in 2015, with one of the years between 2022 and 2026 on course to be the hottest year ever recorded, pushing 2016 in second place. While it should also be noted that this projection would indicate a "temporary" breach, as the Paris targets are determined as the "long-term" average annual temperatures, it should also be borne in mind that our planet has already warmed around 1.1°C, and the IPCC argues that the long-term rise in average temperatures is likely to reach 1.5°C within the next 20 years.

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Forests Form the Path to Carbon-neutral World

Forests are vital in providing a habitat for species, preventing erosion and contributing to the planet's water cycle. Forests and soil also form natural carbon sinks together with the seas. Annual global CO_2 emissions reached 38.0 Gt in 2019 yet, while natural sinks remove between 9.5 and 11 gigatons of CO_2 per year from the atmosphere.

The EU is one the leading centers of policy for sustainable use of land. The EU is host to 159 million hectares of forest, covering 43.5% of its land area. EU forests absorb the equivalent of 7% of the EU's total greenhouse gas emissions every year. While the European Commission (EC) and European Parliament (EP) have carried out work on "Fit for 55" in the last few years, soil has become one of the main topics of discussion. The land use, land-use change and forestry (LULUCF) sector in the EU provides a net carbon sink of 265 million tonnes of CO_2 (135 million tonnes of emissions, 400 million tonnes of removals). Under the current ineffective policies, the carbon sink capacity of EU forests is forecast to decrease to 225 million tons by 2030. Under these circumstances, in June, members of the EP supported the EC's proposal that the EU 2030 target for net greenhouse gas removals in the LULUCF should be at least 310 million tonnes of CO_2 equivalent. The approved proposal also includes a pledge to plant at least 3 billion additional trees in the EU by 2030.

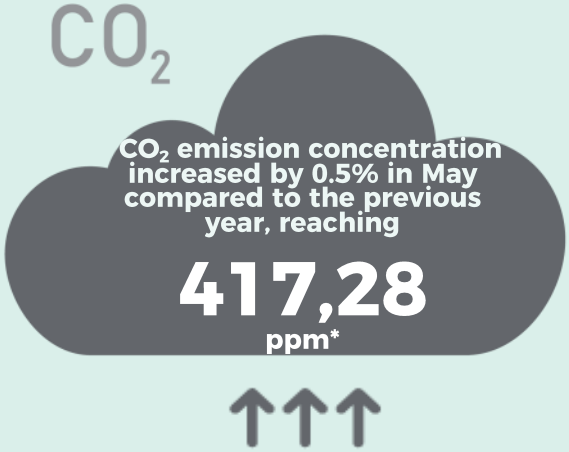
Protecting and restoring forests and other natural ecosystems stands out as the most effective and readily available method to fight climate change. It is also relatively cost effective. Still, nature-based solutions require larger investments to achieve meaningful results. According to calculations carried out by UNEP, LULUCF investments will need to triple from the current level of USD 133 billion/year by 2030.

In order to reach the Paris Climate Goals, there is a pressing need for the LULUCF sector to be a part of the solution. The steps taken towards this will not only determine the progress on climate change but will also be vital for wildlife and the communities which are dependent on it.

Wildfires Becoming More Prolific Around the World

The western U.S. has been ravaged by large-scale wildfires with far-reaching effects in the last decade with around 1.2 million ha of forest razed to the ground in 2022 according to a report in the New York Times. The loss is expected to worsen with the advent of the summer with more frequent and severe heatwaves on the horizon. Wildfire seasons are turning into wildfire years according to some ecologists as the duration of wildfires increases year by year. With human activity being the major cause of the wildfires (around 96% in 2022), potential relief such as winter snow is also less abundant due to global warming.

Against this backdrop, in Türkiye's case, the existing fire prevention and suppression budget would need to increase to around $60 million per year to prevent the loss of lives or property on top of the carbon benefits, according to the WB. A new fire suppression investment plan of $314 million to include five plane and 18 helicopter purchases was announced in 2022, after the 2021 wildfire season in Türkiye, following an average annual budget of $21 million for the last decade.



*Parts per million

Climate Finance

Volatile ESG markets in first quarter of 2022 raise concern

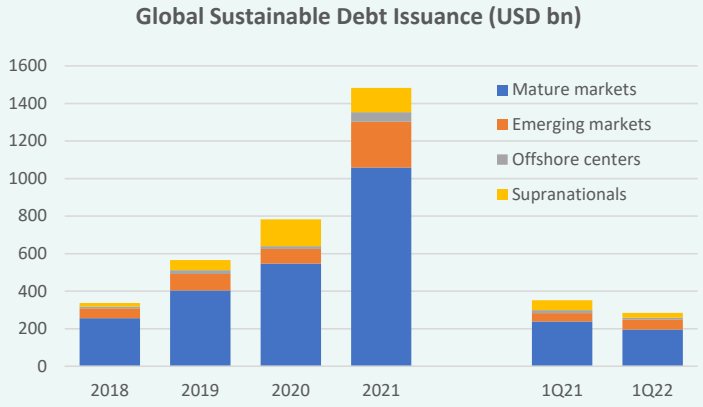
Yet investor demand is expected to remain high

After reaching an all-time high of over half a trillion USD in 2021, the ESG funds market contracted to $75 billion in the first quarter (Q1) of 2022 mainly due to backsliding global risk appetite due to geopolitical tensions, rising inflation and inflation expectations as well as higher borrowing costs. This marks the lowest figure for ESG fund flows since Q2 2020, with the $15 billion value in March 2022 marking the weakest level of ESG inflow since March 2020. Nevertheless, investor demand is expected to remain high due to the acceleration in corporate net-zero pledges amid increasing energy prices leading to a rise in the importance of energy security, hence stimulating the development of clean-energy funds.

According to Institute of International Finance (IIF) a breakdown of ESG flows in Q1 2022 demonstrates that equity funds took the biggest hit mainly due to the high volatility of the technology sector, and attracted around $41 billion cash flows, followed by fixed-income funds which received $14 billion (almost half of $27 billion recorded in Q4 2021), and mixed allocation funds, which received $20 billion in inflows – the slowest rate of inflows since Q4 2020. Despite this decline, it should also be noted that ESG bonds still outperformed conventional bonds in Q1 2022 mainly due to rising interest rates resulting in a decline in overall investor demand for bonds.

On the other hand, the financial sector's endeavor to achieve its net-zero commitments requires ensuring that actual emissions in the real economy are driven lower, translating into reducing and removing GHG emissions from the atmosphere. One of those tools is the Voluntary carbon markets (VCM)

providing offset opportunities to replace carbon emissions, with several such projects with environmentally friendly projects in various parts of the world. While 2021 was a good year for voluntary carbon credits with over 350 million (valued around $1 billion) issued compared to 185 million in 2020, the total issuances appear on course to come in at around 275 million in 2022, marking a 20% decline from the 2021 high. It should also be noted that carbon offset projects are mainly concentrated in emerging markets - apart from the U.S. - and Türkiye ranks sixth in the world on this scale.



Source: IIF, TSKB Economic Research

Climate 101

Carbon Budget: Carbon budget refers to the total cumulative emissions a single entity or the whole world can produce to reach their designated maximum.

Carbon Intensity: Carbon intensity refers to the amount of carbon generated per unit of power generated.

Soil Moisture: Soil moisture is the amount of water stored in soil and depends on precipitation, air and land temperature, soil characteristics, etc.

Land Biodiversity: Refers to the diversity of living organisms on all surfaces out of the oceans, from genes to the ecosystem including soil, and can include live evolutionary, ecological and cultural processes.

Greenwashing: Refers to turning the environmental impacts of projects implemented by countries, companies or any other actors to be seen more "climate friendly" than they really are in terms of their carbon emissions or any other climate dimension

PROGREEN: PROGREEN, the Global Partnership for Sustainable and Resilient Landscapes is a World Bank program supporting efforts to improve livelihoods of the rural poor while tackling climate change, loss of biodiversity and forests, deteriorating land fertility and uncontrolled forest fires.

Sustainable Debt Issuance Retreated in 1Q22

Unfavorable market conditions in the first quarter hit green bonds. Rising interest rates around the world and the uncertainty caused by the conflict in Ukraine created market volatility and thus, sustainable debt issuances lost ground. According to The Institute of International Finance (IIF) data, in 1Q22 sustainable debt issuances shrank 19.2% year-on-year to $284 billion. In this period, green bond formed around 39% of the total sustainable debt issuances and declined 20.6% annually in line with the market.

Emissions Trading System Reform is Under Debate in the EU

European Parliament Could Not Agree on ETS…

The Emissions Trading System (ETS) reform package was not approved at the European Parliament (EP) on June 8th due to a dispute on the start and end date of free allowances. The Progressives at the EP are in the opinion that no deal is better than a bad deal. The disagreement over this article led to a delay in voting on Carbon Border Adjustment Mechanism (CBAM) reform as well, which might result in the full implementation of CBAM to happen sometime between the Commission's proposal of 2036 as and the EP Environment Committee's proposal of 2030.

…Yet Approved Higher Carbon Sink Targets

But the Parliament adopted its position to increase the 2030 target for net greenhouse gas (GHG) emissions reduction by improving natural carbon sinks in the land use, land use change and forestry sectors (LULUCF). The new target for net GHG removals via LULUFC is determined to be at least 310 million ton of CO_2 equivalent, up from 225-million-ton target outlined in the previous EU Climate Law proposal by the EP. Such increase translates into a 2% raise in the EU's 2030 GHG reduction target from 55% to 57%.

Adopted in May 2018, current EU legislation requires the member states to ensure that GHG emissions generated by LULUFC should not exceed the sector's accounted removals (sink capacity) and in case this happens, the relevant member state should increase the sink capacity within the sector by planting trees or via emissions credit transfers (no-debit rule). Furthermore, the EP wants a clear-cut distinction between natural carbon sink capacity and emissions generated by the agricultural sector due to the fragility of natural sinks.

Global Food Security is Under Increasing Pressure

Global food security risks are turning into a perfect storm as the global economy experiences increasing commodity and energy prices, more frequent and severe climate shocks and conflicts which impact the trade in goods related to food supply.

The FAO and the World Food Program (WFP) indicate that the effects of COVID-19 on supply chains followed by the recent disruption in global food and energy markets risk pushing the poorest and most vulnerable communities into extreme poverty while limiting the governments' capacity to fund social safety nets or income supporting measures. In terms of food security, emerging economies are bearing the brunt, with 25% of budgets in emerging economy households being allocated to food, a share that reaches as much as 40% in Saharan Africa. The World Bank, for instance, estimates that "every percentage point increase in global food prices will push another 10 million people more into extreme poverty around the world."

Recent climate shocks on the other side have added to the pain, with China on course for its worst wheat harvest ever due to delayed planting following a lack of rains last year, while in India crops have been damaged by extreme heat. The worst drought for four decades in the Horn of Africa is also among many recent climate shocks leading 2022 be a particularly crisis-laden year for food supply. Against this backdrop, the WFP indicates that "up to a record 49 million people in 46 countries could now be at risk of falling into famine or famine-like conditions".

The situation in Ukraine is another source of concern, where Russia and Ukraine together supply 28% of the world's wheat, 29% of barley, 15% of corn and 75% of sunflower oil globally. The WFP projects that the disruption in supplies from Russia and Ukraine and the spikes in global food and oil prices resulting from this disruption could increase the number of people in the category of being "acute food insecure" by 47 million in 2022. The FAO also warns that between 7.6 and 13.1 million people could join the undernourished category in 2022 and 2023 due to the crisis in Ukraine.

World Bank Türkiye Climate Report Sheds Light on Türkiye's Green Transformation Necessities

The World Bank issued its first Country Climate and Development Report on Türkiye (CCDR) which focuses on the linkages between climate and development. The report outlines several priority areas and potential roadmaps for Türkiye to achieve its net-zero target by 2053. Within its Resilient and Net Zero Pathway (RNZP) for Türkiye, the Bank highlights the decarbonization of the power sector, designing supportive macroeconomic and financial environment, establishing a more efficient energy plan for transportation, buildings, urban industry and waste, maximizing the emission offsetting capabilities of forests, aiming for more resilient and sustainable growth and ensuring a just and inclusive transition as the six short term priority areas.

The report indicates that, as the largest contributor to the country's GHG emissions (three quarters of total emissions) Türkiye's energy industry (including the power, transport, building and industrial sectors) needs substantial transformation. In terms of the energy sector, for instance, the shift from coal power to renewable energy and energy storage are considered to be urgent, as supporting the production and consumption of coal raises the risk that undertaking those investments will become obsolete, even throughout the lifetimes of current and new coal power plants.

RNZP highlights key sectoral milestones for 2030 such as increasing the share of renewable power generation to 75% from 42% in 2020 while decreasing the share of coal to 9% from 32% and installing 10GW of battery storage capacity, which had been non-existent in 2020. In terms of transport, which accounted for 15% of total gross emissions in 2020, increasing the share of rail in total freight transport by 12% and the electrification of cars and busses by 19% are also considered as critical milestones. Transforming buildings, which constitute 12% of Türkiye's gross emissions to achieve Class A energy ratings up from their Class C level in 2021, is also highlighted as a 2030 milestone in the report.

In 9 out of 10 climate vulnerability dimensions including the share of agriculture, forestry, and fishing in GDP, the percentage of population exposed to climate risks, average annual risk to assets and changes in the maize yield by 2050, Türkiye is found to be under high-risk, whereas the median of this figure among other OECD countries is 2 out of 10. In terms of water supply, for instance, the report indicates that a 10% reduction could cost Türkiye around $50 billion, referring to 6% of GDP. Hence, proposed climate actions in CCDR could prove critical.

The net economic impact of the RNZP is estimated to be positive over the 2022-30 period with a $15 billion gain, with a $146 billion gain over 2022-40. Yet, achieving these gains requires an additional $68 billion in investment over the 2022-30 period and $165 billion on top of the current $482 billion needed between 2022-2040.

Land Biodiversity: Nature Based Solutions Can Heal Human Based Problems

Biodiversity is usually understood within an environmental and moral perspective, overlooking its economic dimension, and yet biodiversity also has an unprecedented economic impact. The OECD, for instance, estimates that ecosystem services such as crop pollination, water purification, flood protection, or carbon sequestration, among many other services derived via biodiversity, are worth $125-140 trillion per year globally, amounting to more than one and a half times global GDP.

Land biodiversity refers to all life forms and the ecological roles which they perform on land including plants, animals, microorganisms and the "associated biodiversity" around them. Forests, for instance, are home to more than 80% of amphibian species, 75% of bird species and 68% of mammal species. Hence, efforts to conserve and improve forest biodiversity stands as a key nature-based solution to many sustainable development challenges, while it is estimated that almost a third of the cuts in greenhouse gas emissions needed to meet the Paris Agreement targets could be derived from "nature based solutions". On the other hand, in terms of soil, it is estimated that a 1% increase in soil organic matter would contribute to the retention of up to 10,800 liters more water per ha of land. Hence, forests and soil turn out to be our most precious resources to retain and improve land biodiversity when it comes to tackling the climate crisis.

Agricultural production stands at the core of biodiversity loss; of around 6,000 plant species being cultivated for food, for instance, just nine account for 66% of total crop production. Therefore, as the UN Convention Biodiversity indicates, a shift to sustainable production methods as well as steps to reduce consumption will be an indispensable part of actions on conservation and the restoration of biodiversity.

Climate Justice

The Climate Dimension of Being Just to the World's Children

UNICEF has introduced a Children's Climate Risk Index (CCRI) which demonstrates the bleak picture for climate justice in terms of the kind of a planet we are will leave to our children. The CCI does not only cover the proportion of children that are (and will be) vulnerable to the repercussions of the climate crisis but also reveals the injustice among children living in different parts of the world.
To start with, the CCRI finds that nearly half of all children – accounting to about 1 billion children in the world – are at "extremely high-risk" of the impacts of climate change. To cite a couple of figures from the CCRI, over one third of children on the planet are highly exposed to heatwaves, over one-third of children are exposed to water scarcity and almost 9 in 10 children are exposed to high levels of air pollution. What is more, 815 million children - more than a third of the world's population of children - are highly exposed to lead pollution due to exposure in contaminated air, water, soil and food.

In terms of geographical distribution, whereas 33 extremely high-risk countries, including the Central African Republic, Chad, Nigeria, Guinea, and Guinea Bissau collectively account for 9% of global CO_2 emissions, only one of the top ten highest emitting countries which account for almost 70% of global emissions is classified as being of "extremely high-risk" in the index.

The report, which is structured under the two central pillars of "exposure to climate and environmental shocks and stresses" and "child vulnerability" states that while we shouldn't fall behind in taking measures to reach net zero by 2050, "unless we invest heavily in adaptation and resilience of social services for the 4.2 billion children born over the next 30 years, they will face increasingly high risks to their survival and well-being."

"The world appears to be sleepwalking to disaster."

- Bill Hare, CEO of Climate Analytics

What Happens in Bonn Stays in Bonn?

The Bonn Climate Conference that was tasked to prepare decisions for adoption at the next UN Climate Change Conference (COP27) to be held in Egypt in November closed on June 16th with no major outcomes. The main disagreement at the conference seems to be on climate financing. More specifically, financing for "Loss and Damage", referring to the ramifications of climate change that go beyond humanity's adaptive capacity or lack of resources to adapt even with the existence of options, has been the major issue of debate. While parties to Paris Agreement consistently fell behind meeting their annual $100 billion financial commitments to help fund developing countries climate financing needs, developing countries' push to include the issue in the formal agenda of COP27 has been unsuccessful at Bonn.

Yet, financing remains a key issue in terms of climate justice as the historical responsibilities and current vulnerabilities of developed and developing nations are antipole. According to Oxfam, out of every $2 of investment needed for extreme weather-related disasters only $1 is provided by UN donor countries.

Another Oxfam report indicates that while UN humanitarian appeals for extreme weather events increased by 800% between 2000 and 2021, there is an estimated $28 to $33 billion deficit as donor nations met only 54% of those appeals on average since 2017. The anti-poverty charity also indicates that loss and damage toll are projected to reach between $290 and $580 billion by 2030, whereas over the past two decades UN appeals only provided relief for only 7.5% of disasters in low and middle-income countries, covering 474 million people out of 3.9 billion affected.

Other proposals introduced at Bonn include closing the ambition gap, enhancing sectoral action, and sharing best practices, among others. Yet, political intervention seems to be required to reach a compromise at COP27 in November.

Company Highlights

The role of the private sector in achieving the SDG goals is immense and several companies are already taking strong steps. The Mondi Group, a company operating in packaging and paper industry, sets a good example in climate action, especially in terms of the preservation and regeneration of forests and water - as the two main resources they utilize. Globally, the company operates at over 100 production sites spread in more than 30 countries and employs more than 26,500 people. Mondi does not only focus on its products and consumers but also pays specific attention to its value chain, placing the "management of forests" as a major goal among its many other climate pledges.

Working towards its net-zero 2050 target, the company currently operates within a 2030 Mondi Action Plan (MAP 2030) which sets specific targets on detailed climate topics ranging from water to forests, as well as overall GHG emissions. The company is on track to reduce Scope 1 and 2 GHG emissions by 72% in 2050 from the 2014 base year while setting a science-based Scope 3 (reducing GHG emissions throughout its value-chain from sourcing to consumers) by 2025. Mondi also maintains a zero-deforestation target in their wood supply, as well as carrying out work to safeguard biodiversity and water resources in their operations and beyond. The company is also working in partnership with the WWF to protect forest landscapes, contributing to the protection of 436,000 ha of forests in Russia and supporting 650,000 ha in Bulgaria to achieve the Forest Stewardship Council certification.

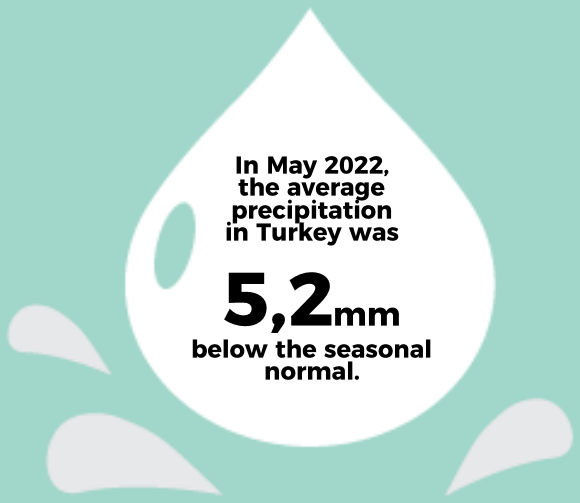
Such efforts have led Mondi to be recognized as a leader in sustainability by several external corporate ratings and indices. These recognitions include the AAA rating for climate change, forest and water security from the CDP, another triple A rating from MSCI ESG and prime status in the ISS ESG corporate rating, among many other awards. In 2021, Mondi gained recorded total sales revenue of USD 9.1 billion with 78% of its revenue derived from reusable, recyclable or compostable products. Mondi is listed on the London Stock Exchange with a market cap of around USD 9.5 billion as of mid-May 2022.

ESG Ratings: A Good Measure for Climate Action?

Tesla was removed from S&P DJI ESG index in May due to reasons such as its lack of low carbon energy and problems with its business conduct, especially relating to the treatment of its workers. ESG scores are used to measure the environmental, social and governance performance of corporations with a focus on financial materiality, hence shaping investor decisions on companies. ESG criteria include a vast number of data points relating to the businesses impact on the planet and their treatment to a wide range of stakeholders such as customers, employees, vendors, partners and neighbors.

On the other hand, in its 2021 Impact Report, Tesla criticized the ESG scoring practices for their focus on "the dollar value of risk / return" rather than "the scope of positive impact" of companies for the world. In other words, Tesla argues that the impact of a single ESG item on the company's profitability is placed ahead of the company's overall impact on the planet. In terms of electric vehicles, for instance, Tesla argues that instead of focusing on the life-cycle emissions of the final products, the ESG scoring mainly concentrates on the scale of the cut in emissions in the manufacturing operations, which may in fact lead to higher ratings for companies which are worsening the climate crisis.

The top 10 largest companies according to their weight in the S&P ESG index include companies such as Apple, Microsoft, Amazon and Exxon Mobil. Regarding other ESG rating agency scores, Tesla has an "average" ESG rating from MSCI Inc., and a "medium risk" rating from Morningstar Inc.



In Short

Electric Vehicles take-up still too slow

The Economist magazine reports that the electric-vehicle market is lagging far behind the required transformation in the transportation industry. While one in 70 of the total 1.2 billion cars on the roads is now electric, this number should be one in six to achieve a cut of one-fifth in the global carbon emissions from the industry. According to the IEA, reaching the goal of net-zero carbon emissions by 2050 would require increasing the share of EVs in new car sales to 60% by 2030, compared to the current projection of between 22% and 35%.

Is the FIFA World Cup Being Greenwashed?

The preparations for the 2022 FIFA World Cup to be held in Qatar in November and December this year are being closely watched. The Carbon Market Watch states that the organizers are underestimating the carbon footprint of the event, which is expected to generate 3.6 million tons of CO_2 equivalent, most of which is expected to be compensated by offsets – meaning investments in green projects elsewhere. Carbon Market Watch claims that currently less than 150,000 tons in offsets have been purchased while the carbon emissions of the full life cycle of six new stadiums are being excluded from the total emissions calculation.

Japan Tested the First Ocean Turbine

Japan tested a giant deep ocean turbine that could provide a constant and steady form of renewable energy, unlike wind or solar energy. Ocean currents are more stable than wind or solar energy, as they flow with little variability, hence their capacity utilization of between 50 and 70%, comparing to around 29% for onshore wind and 15% for solar energy. If successfully implemented, the project could see the country's Kuroshio Current account for 60% of Japan's electricity capacity.

Heatwaves Becoming More Intense

According to a study by the UK Met Office, the likelihood of a record-breaking heatwave in India and Pakistan is 100 times. The study indicates that while a heatwave exceeding the average temperature would take place once every 312 years in 2010, the natural probability of a heatwave has increased such that it could happen every 3.1 years, and is likely to increase to once every 1.15 years under current climate projections. The region already experienced a peak temperature of 51°C in May.

Could Floating Solar Panels be a Better Option?

According to the Nature Magazine, space-intensive solar power which requires at least 20 times more area than conventional fossil-fuel plants to produce each gigawatt (GW) of electricity could also have negative repercussions on land needed for food production and biodiversity conversation. Floating solar panels have been proposed as one solution to tackle this problem, by both allowing the solar panels to operate with 5% more efficiency than land-based panels in terms of staying cool, due to their proximity to water, and shielding the water surface from the sun and resulting in reduced evaporation and hence higher water retention.

Acidity in Oceans at a 26,000-year Peak

In its annual State of the Global Climate report, the World Meteorological Organization states that in 2021 oceans had reached their warmest and most acidic levels, while melting ice sheets had raised sea levels to new heights. Oceans absorb around 90% of our planet's heat and 23% of its CO_2 emissions, yet the increase in emissions has resulted in more absorption in the oceans, increasing their acidity. Sea-levels have risen by 4.5 cm in the last decade, with the annual increase in sea levels in the last decade being double the level seen between 1993 and 2002.

Now the U.S. Turns the Spotlight to a Carbon Border Adjustment Mechanism After the EU

The Clean Competition Act introduced by the U.S. Senate proposes the introduction of a carbon border adjustment mechanism in the U.S. in 2024, with a taxation impact on foreign trade as well. The proposal includes a carbon tax of USD 55 per ton of emissions from carbon intensive industries with a projected annual real increase of 5% on top of this amount.

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