

Issue No: 3
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CLIMATE REVIEW

TSKB

Economic Research

 **GREEN SWAN
PLATFORM**
A TSKB INITIATIVE

Food Security in Disinflation

Food Security Will be
Considered Among Tools
to Tackle Macroeconomic
Problems

“App” Revolution in Food Waste Management

**30% of R&D Budget of
European Union will be
Allocated to Innovations
in Organic Farming**

**On the Watch
of
Food Security**

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► The Greatest Thing Since Sliced Bread

Time flies... It feels like yesterday when the TSKB Economic Research published its quarterly Climate Review with the goal of creating climate risk awareness among stakeholders. The first issue focused on low probability—high impact climate risks – the Green Swans. In the second issue, we discussed the importance of water security, referring to water as the next diamond. In the current issue, we call on you to preserve our ‘food’.

Due to the multidimensional nature of the subject we want to underline three important headlines¹:

1. **Food Security²:** According to the World Bank, one third of food produced globally is either lost or wasted. There are around 600 million cases of food-borne illnesses worldwide each year, mainly affecting children and the poor.
2. **Climate Smart Agriculture³:** When compared to other sectors, growth in the agricultural sector is two to four times more effective in supporting income among the poorest in society. On the other hand, agriculture accounts for 70% of global water use and 30% of emissions. Therefore, climate smart agriculture is important not only to spread the good but also to limit the negative externalities.
3. **Shaping Agricultural Value Chains and Supporting Employment:** Supporting small and medium size enterprises, encouraging inclusion of women and young people and contributing to employee skills will be important in supporting development.

One can also link the subject to inflation, which offers a very popular and much needed perspective. While high food prices tend to punish low-income groups the most, food inflation also presents a problem for monetary policy management through its second-round effects. Children working in the fields without access to a regular education and society's increasing search of healthy food should be other issues on the table.

It is estimated that 690 million people around the world are living with hunger and it is thought that some 83 to 132 million were added to this figure in 2020 due to the COVID-19 pandemic. It is with this in mind that when preparing the Climate Review this month, we at TSKB Economic Research thought that if miracles could happen, the best thing to choose would be securing equal access to bread for everyone in the world. In this sense, the greatest thing since sliced bread could only be coming together around the same table to support sustainable and climate-smart agriculture. Better today than tomorrow!

Burcu ÜNÜVAR

Upcoming Events

15. International Conference on Climate Change, Global Warming and Greenhouse Gases will be held on May 27-28 2021

United Nations (UN) Food Systems Pre-Summit will be held in Rome, Italy on July,19-21 2021.

¹ <https://www.worldbank.org/en/topic/agriculture>

² <https://www.worldbank.org/en/topic/climate-smart-agriculture>

³ <https://www.worldbank.org/en/topic/agriculture/overview#1>

⁴ <https://www.worldbank.org/en/topic/agribusiness>

⁵ <https://www.worldbank.org/en/topic/food-system-jobs>

Food Security in Disinflation



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Even though food security is a crucial issue in development economics, it has recently attained a place on the macroeconomic agenda with its direct and indirect impacts. In this respect, the volatility in food prices places food security as a vital issue in Turkey due to its impact on the efforts to bring down inflation.

Food prices and overall inflation developments during the last decade have highlighted the importance of food security. The annual rate of inflation in food prices averaged 9.2% between 2010 and 2016, with a contribution of 2.3 percentage points to the overall rate of inflation. However, the annual rate of inflation in food prices increased to 16.2% on average between 2017 and 2020, with its contribution to the overall rate of inflation surging to 3.7 percentage points over the same period. In addition to all cost factors, food price inflation has gained momentum as a result of supply side constraints brought about by some adverse weather conditions and an unexpected increase in foreign demand for some food products. Meanwhile, the weight of food items in the overall inflation basket has also increased.

Furthermore, in addition to permanent increase in food prices, another complication in the efforts to tackle inflation has come in the form of the increased volatility in food price inflation. With a weaker Turkish lira driving up production costs in the food sector and with the sharp rise in foreign demand over the last four years, cyclical volatility in food inflation has doubled in Turkey. Empirical findings indicate that one fifth of food price inflation is a result of exchange rate movements with nearly half of food price inflation volatility stemming from exchange rate volatility. When taking these outcomes into account, we would suggest that an "Early Warning System" could serve as an important tool in tackling inflation in the short-term with macroeconomic policies to reduce volatility in the currency markets.

However, the solutions offered by such instruments may remain only temporary unless they are strengthened with steps to limit fluctuations in agricultural production in the long term and to reduce price increases in each circle by shortening the food value chain from farm to fork. Within this context, food security, which stands as a microeconomic issue, may become one of the most important tools in resolving macroeconomic problems.

TSKB Raised the Importance of Water Resources to the Agenda!

Within the framework of the activities held to mark World Water Day on March 22, Ece Börü, the General Manager of TSKB, attended a panel entitled "The Water Future" at the Uludag Economy Summit. In addition, Ece Börü also took part in the session of "Building Water Positive Companies" as a speaker at the Global Hope Festival on March 30.

On February 1, TSKB's Chief Economist, Burcu Ünüvar, discussed the importance of water resources in the "Economy Notes" on A Para TV. Feridun Tur gave a presentation in the event, entitled "Water Management for a Sustainable World" organized by the Denizli Chamber of Industry on March 22. Can Hakyemez was invited as a speaker to the "Water is Our Future, Let's Not Spend Our Future" event organized by the Bilgi University Business Club on March 23 and at the "Protect Water, Protect the World" event hosted by TED University on March 26.

Meat and Food Prices Could Increase due to Water Shortages in Australia

Australian farmers warned the Australian Government that food and meat prices would have to rise due to the recent drought and ineffective water management. Warning of the risk of an increase of up to 30% in prices, farmers stated that they needed solutions which returned used water to irrigation unions.

In March 2021,
the average
precipitation
in Turkey was

19.4 mm
above the seasonal
normal.

According to research published by Nature Food (Crippa et al, 2021), emissions from food systems reached 18 billion tonnes in 2015, corresponding to 34% of total emissions. Detailed outcomes of the research revealed that 35% of the emissions related to food production were of methane gas. In the food production and distribution phases, the process generating the highest emissions is the transportation of agricultural inputs to farms, accounting for 39% of total emissions related to food systems. Accordingly, 38% of emissions are caused by land use practices with 29% due to distribution of food products. Packaging also accounts for 5.4% of total emissions generated by food production.

Crippa, M., Solazzo, E., Guizzardi, D. et al. Food systems are responsible for a third of global anthropogenic GHG emissions. *Nat Food* 2, 198–209 (2021).

**Food Systems
Account for**

30%
**of Global
Emissions**

Will the Water Crisis in Taiwan Disrupt the Global Automotive Market Supply Chain?

Despite the surge in global automotive demand in the last quarter of 2020, suppliers of semiconductors used in the automotive industry struggled to meet this increase in demand. Automotive companies in many regions of the world have suspended production due to difficulties in the procurement of semiconductors. Estimates of how long the supply shortage will last vary, although a key constraint which may affect these predictions is the water shortage in Taiwan.

Half of the semiconductors used by the automotive industry are supplied by a company in Taiwan. However, a water shortage in Taiwan has reduced the amount of water available to industrial companies. Although semiconductor companies are not yet subject to this restriction, statements made by these companies indicate that they are carrying water to their production facilities in tankers to provide the water they need in the production process. There have also been warnings that unless rainfall returns to its seasonal norm in the coming period, there could be disruption in production using the transported water.

One of the prominent trends in the post-pandemic world has been increasing the resilience of the supply chain. Taiwan and the semiconductor crisis reveal that climate risks must also be considered in achieving sustainable supply chains.

Winter Storm in Texas

Millions of people were left without electricity, heat and water due to freezing temperatures across the state of Texas. At first, water pipes began to freeze in Texas leaving houses, not designed for cold weather, without heating. An unplanned surge in demand for electricity put pressure on the grid as electrical heaters were used for heating and thawing water pipes.

Natural gas and electricity supplies were not sufficient to meet the surge in demand. As a result of these chain events, approximately 4 million people were left without electricity in Texas as of February 16 due to the freezing temperatures which started on February 14. The Texas Electricity Reliability Council (ERCOT), responsible for electricity supply security, introduced planned power outages and brought demand for electricity to a level which could be covered. All electricity resources, including renewable energy resources, were affected.

Natural gas production plunged by approximately 45% with the freezing of water pumps and pipes. Natural gas power plants were unable to generate electricity resulted from the decline in natural gas production, whereas nuclear power plants could not generate electricity because of freezing water pumps. These extreme events in Texas served to confirm the importance of renewable energy resources and supporting storage technologies for electricity supply security.

Climate Finance

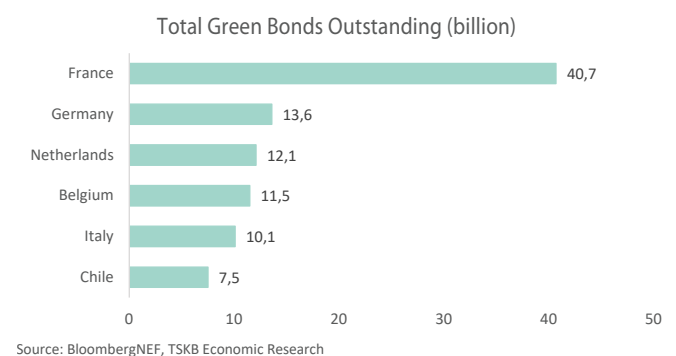
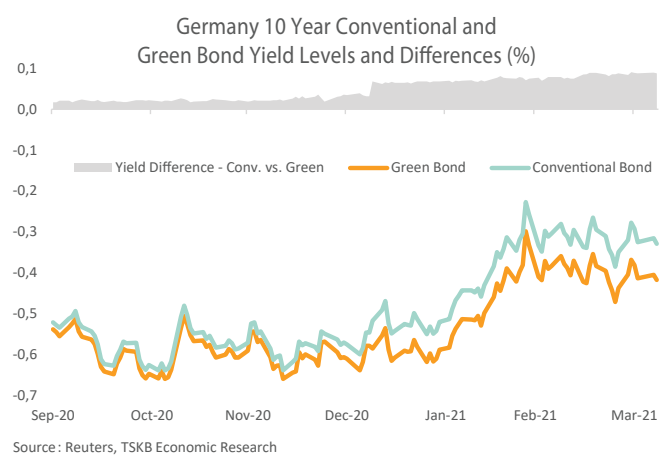
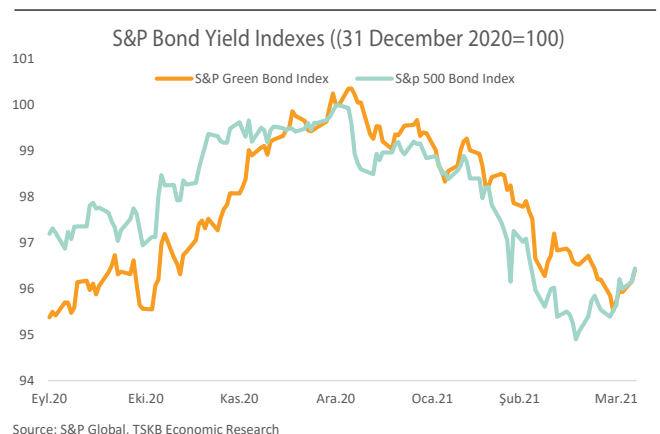
Inflation Concerns Impacted Green Bonds, too

In the first quarter of 2021, both conventional and green bonds faced selling pressure due to inflation worries in the US and throughout the world. The S&P Global Bond Index fell by 4.4% in the first quarter when compared to its 2020 year-end level, while the green bond index posted a 4.3% decline. Both indices staged a moderate recovery in April. A similar pattern can be observed in bond yields. For example, German 10-year benchmark government bond yield, which had stood at -0.58% at the end of last year, rose to -0.29% in March. Yields on green bonds with the same maturity, on the other hand, rose from -0.61% to -0.38% in the same period. Thus, the spread between the two bond types expanded in favor of green bonds.

New Green Bond Issues by France and Italy

France amassed its biggest-ever green bond orderbook in its second sale of EUR 7 billions in new debt, extending its leading position in the market to finance environmental projects. Investors bid over EUR 34.5 billions for the securities maturing in 2044, which is 50% more than for its first such offering in 2017. At the beginning of March, Italy received a record EUR 80 billions in bids for its first green bond. Both issuances reflect the surge in appetite for assets aimed at mitigating climate change.

According to Climate Bonds Initiative data, new green bond issues reached USD 37.7 billions in March. This figure had stood at just USD 5.3 billions in the same period of last year due to the outbreak of the COVID-19 pandemic. In the first quarter of 2021 the market expanded by 98% to USD 84.3 billions.



Climate 101

Food Security: State when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

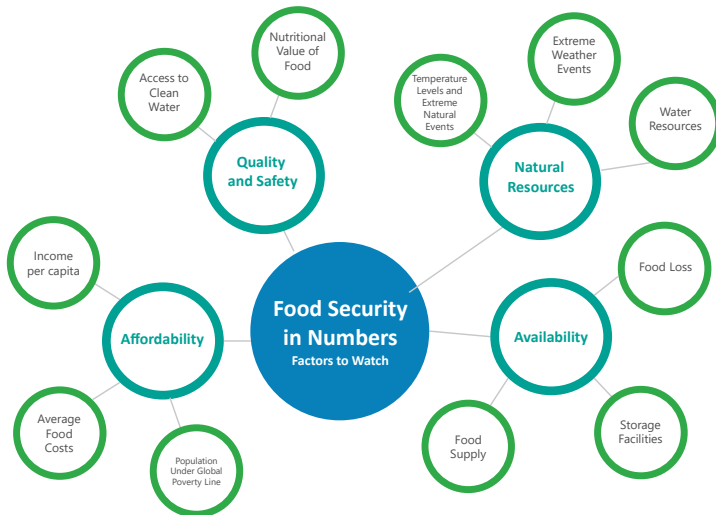
Acute Food Insecurity: Situation when a person's inability to consume adequate food puts their lives or livelihoods in immediate danger.

Food Supply Chain: Refers to the processes that describe how food from a farm ends up on our tables, including production, distribution, consumption and disposal.



On the Watch of Food Security

TSKB Economic Research evaluated the current outlook of food security through multiple dimensions, varying from factors relating to purchasing power to climate events.



Supporting Agri-Food Systems with Innovative Processes Offers Opportunities in terms of Food Security.

There has been tendency to take advantage of the opportunities which the COVID-19 crisis has shone a light on. Within this framework, steps have been taken to develop channels which connect agriculture and food producers and city centers, and e-commerce solutions have been implemented. These practices, which shorten the supply chain, have positive effects on climate change, both by strengthening access through reducing food inflation and reducing environmental impacts throughout the chain. Another important point in food supply chains is the durability and safety of the supply chain. For this purpose, it is important to be able to monitor each stage of the chain with blockchain technology, in terms of both efficiency and in tracking contamination risks. Policies to increase the resilience of the supply chain will help reduce food supply concerns, temper price increases and limit any declines in food quality. A supply chain strategy which will be prepared by understanding economic and structural factors correctly will play an important role in establishing a structure which is more resistant to shocks caused by the environmental and climate crisis.

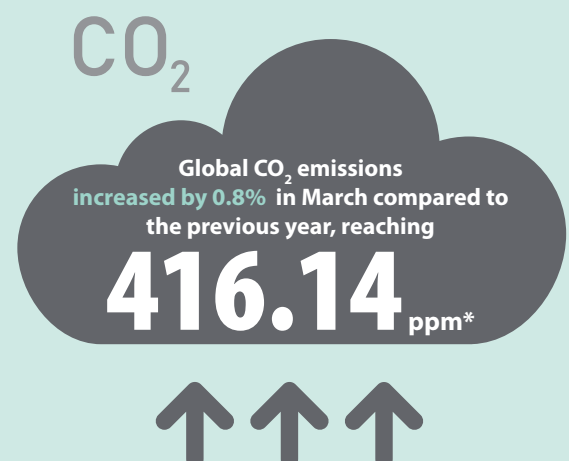
Climate Related Risks under the Spotlight in Economic Scenarios

The European Central Bank (ECB) published the preliminary findings of the first climate stress test in a blog signed by the ECB's Vice-President, Luis de Guindos. In the study, which examines physical and transition risks, the systemic risk which may be arise as a result of climate change has been examined over a 30-year horizon, using data from 4 million companies.

Three basic scenarios are used in the stress test are an "Orderly transition" where climate change measures are applied early and effectively, a "Disorderly transition" where measures are taken late and a "Hot house world" where new measures are not taken at all. In the study, a map setting out the distribution of physical risks by type and a heat map in the country-sector breakdown regarding transition and physical risks was also provided. It was determined that unless measures are taken early and effectively, the probability of default would be higher than a situation where early action is taken. While the results of the study are planned to be announced in the middle of 2021, it was also stated that the ECB's work on climate stress testing would continue.

"Organic Attack" in Europe!

European Commission released its Action Plan to support organic farming on March 25, 2021. The plan aims to increase the share of organic agricultural land in total farmland to 25% by 2030, encourage organic seed usage to enhance organic farming practices, reduce the carbon footprint of the agricultural sector as well as minimizing the use of energy and plastics. The commission also plans to allocate at least 30% of its research and development budget to innovations in organic farming technologies.



*parts per million

Where Climate Scientists See Danger, Russia Sees an Opportunity

Russia, the world's fourth-biggest emitter of greenhouse gases, is bearing witness to one of the most obvious effects of climate change. Permafrost, the frozen ground that covers about half of Russian land, is thawing fast, damaging infrastructure, houses and industrial installations at a cost of up to USD 2.3 billions a year.

The Siberian tundra stores an estimated 1,700 gigatons of carbon dioxide, twice the amount currently in the atmosphere. Much of it could be released as the ground unfreezes. On the other hand, Russia is also home to the world's largest reserves of liquified natural gas (LNG), and melting ice in the Arctic means it can ship more of its most valuable export to other countries as Northern Sea Route serves an opportunity to lower shipping costs. It could also potentially increase oil production, with the possibility of investing in oil-wells in deep waters in the region. Climate experts warn that both activities could accelerate global warming. Russia's climate plan is rated "critically insufficient" by the nonprofit Climate Action Tracker.

Reforms Against Food Loss and Waste Gain Momentum!

The issue of food loss and waste gained a wide focus among action plans to ensure price stability in the Economic Reforms document released by Turkey's Ministry of Finance. The Ministry aims to provide opportunity for unsold agricultural products to be sold to customers on digital platforms, to increase number of cold chain facilities and to support contractual farming practices as well as initiating food banking systems. The Ministry also plans to publish guiding documents for agricultural producers and distributors as well as raise awareness among consumers through social media coverage.

"App" Revolution in Food Waste Management

Food sharing apps are gaining popularity these days. For example, thanks to a food sharing app named "Olio", 3.4 million people shared their leftovers and unused groceries with total strangers free of charge. The scale of the app expanded five-fold on best app lists in 2020. Recently, Tesco, one of the biggest supermarket chains in the United Kingdom (UK), delivered 36,000 tonnes of its unsold food products to those in need for free.

Another app, "Too Good to Go", which allows sale of leftover food for relatively very low prices, has reached 34 million downloads over the last 4 years. According to Food and Agriculture Organization (FAO), agricultural production equivalent to the food produced from 1.4 billion hectares of land, corresponding to 30% of total agricultural land, is dumped without being consumed. Food waste has a carbon footprint so large that it alone would be greater than any country's carbon footprint, except for the USA and China. Hence, food sharing apps will gain more prominence in climate mitigation efforts.

Ralph Lauren to Cut Down on Water Waste with New Dyeing Process

Ralph Lauren Corp. seeks to drastically reduce water waste by changing the way it dyes clothes. The retailer plans to start the new method that will reach 80% of its solid cotton products by 2025. The first phase - which involves a textile treatment developed by Dow Inc. - will cut water use by 40%, with the goal of reaching zero wastewater for cotton dyeing when all phases of the system are fully instituted. Other fashion retailers, such as Chanel and Hermes, are pumping investment into efforts to lessen the industry's environmental impact too. Apparel manufacturing currently produces as much as 10% of global carbon emissions and 20% of the world's wastewater, according to the UN.



Food Security in the Spotlight of Climate Crisis Agenda



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Disruptions in the supply chain brought about by the COVID-19 pandemic in 2020 raised concerns over the sustainability of food production. In parallel with the debate over food security, The Economist Intelligence Unit released its "Global Food Security Index 2020" in February 2021. Each year, the index is calculated under the three distinct categories of "affordability", "availability" and "quality and safety". However, this year a new category of "natural resources and resilience" was added to the index methodology. Under the new methodology, climate events, risks to natural resources resulting from these events and countries' mitigation efforts against these risks will be taken into account in order to determine current situation of food security. Hence, data on climate crises will be evaluated among risk factors when assessing food security.

The report presenting the index results, which indicated the importance of determining structural inequalities in building sustainable food systems, drew attention to the fact that rising temperatures have increased volatility in agricultural production in 49 countries; for example, cereal and vegetable production in Northern Europe virtually halved in 2018 due to the heatwave which gripped the region with the highest temperatures for 50 years. In addition, Australia ranked as one of the ten countries with the lowest food security among 113 countries, having been ravaged by widespread wildfires in 2020. The report also highlighted the importance of the widespread use of climate smart agriculture technologies, as well as initiation of policies supporting efficient water management systems.

According to the report, efforts directed at maintaining food security may also serve to improve existing inequalities. Undoubtedly, gender inequality is the most urgent of these inequalities. Statistics indicate that women are 27% more likely than men to suffer from severe food insecurity, whereas women and girls constitute 60% of the chronically hungry people on the planet. While women are documented to be directly affected by inadequate food systems, policies ensuring women farmers' access to resources is considered crucial for food security. If women in farming had the same access to resources as men, it is estimated that the number of people affected by hunger in the world would decline by up to 150 million.

In summary, the index results point to a growing importance of taking a holistic approach towards food security which takes into consideration the climate crisis, gender equality and recent technological developments in agricultural production.

Corporate Climate Pledges Yet to be Translated to Meaningful Action

Investor Group Climate Action 100+ assessed climate actions of 159 companies responsible for more than 80% of global industrial emissions. The analysis, which considered a range of metrics related to the three key topics of emissions, governance and disclosures, found that only a handful of the companies had set adequate climate targets.

According to the report, 83 of the focus companies had announced an ambition to achieve net-zero by 2050 or sooner. However, roughly half of these commitments (44) do not cover the full scope of the companies' most material emissions. Only 21 companies to have set medium-term targets (2026-2035) meet all of the assessment criteria. While 64 of the assessed companies have a decarbonization strategy, only six companies explicitly commit to aligning their future capital expenditures with their long-term emissions reduction targets, and none of them have committed to aligning future capital expenditure with the goal of limiting the global rise in temperatures to 1.5°C.

World Water Day Marked on March 22

Declared by the United Nations (UN) in 1993, March 22 - World Water Day was marked in order to draw attention to the problem of clean water and encourage concrete steps to be taken in the protection and expansion of potable water resources. World Water Day, which was previously marked under the theme of "Climate Change" in 2020, was marked under the theme of "Valuing Water" in 2021. The Carbon Disclosure Project (CDP), which conducted a study in the report entitled "A Wave of Change", found that companies responding to the water security survey in 2020 faced job losses amounting to USD 301 billion unless they addressed water risks. The same study stated that the total cost of addressing these water risks was USD 55 billions.

In March 2021,
Turkey's average
temperature was below
the long-term March
average by

0.1°C

In Short

CO₂ Levels Now 50% Higher Than Before the Industrial Revolution

According to a study conducted by the Met Office, the concentration of CO₂ in atmosphere exceeded 417 parts per million (ppm) on a few days in February and March 2021. Pre-industrial levels were about 278 ppm.

Carbon Border Tax Should Be Considered as a Last Resort

The US Climate Special Envoy John Kerry told the European Commission (EU) that border carbon taxes should only be considered as a last resort. The statement came at the end of Kerry's 4-day visit to establish an alliance between the USA and the EU on a common approach to the climate crisis ahead of UN Climate Summit in November. Kerry reportedly suggested that the EU should wait until after the COP26 before advancing any further steps in border carbon adjustments.

French Oil Giant Total Backs Start-up Recycling CO₂ into Animal Food

Deep Branch raised EUR 8 millions to build a pilot plant to convert carbon dioxide into feed for livestock. The UK

start-up, Deep Branch, secured funds from backers including the French oil giant Total SE for its plan to convert carbon dioxide emissions into food for chickens, fish and pigs. Deep Branch claims that the carbon emissions generated by its process are 90% lower than would have been generated from traditional agricultural methods.

EUR 40 Million for African Farmers

The German government announced a EUR 40 millions fund to FAO to support the resilience of African farmers against COVID-19 pandemic and climate-induced extreme weather events. The fund will be allocated to Democratic Republic of Congo, Somalia and Yemen, which are currently struggling with an acute hunger crisis.

Hunger Crisis in Kenya

The Kenyan Food Security Committee predicted that 1.4 million people living in dry or semi-dry regions in the country were at risk of acute hunger, as a result of declines in harvests due to cumulatively low levels of rainfall.

Oceans Could Start Emitting Harmful Gases by 2075

Oceans are pools for many gases, including ozone-depleting

chlorofluorocarbons (CFCs). Oceans absorb these gases from the atmosphere and draw them deeply. CFC-11, one of the CFCs held by oceans, is a gas that damages the earth's protective stratospheric ozone layer. According to a study conducted by MIT, the oceans are predicted to release more of CFC-11 than they absorb by 2075. The report also stated that measurable amount of chemicals would be released by 2130, with the increase in ocean temperatures due to climate change accelerating the release of these gases as chemicals.

Requests from Two Oil Companies to Withhold Long-Term Emission Targets Turned Down

The US Securities and Exchange Commission (SEC) rejected the request from ConocoPhillips and Occidental Petroleum that their long-term emission targets should not be voted on during their Annual General Meeting. This was the first time the Commission acted against oil and gas companies and ordered a detailed discussion of their direct and indirect emission reduction plans (Scope 3).

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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