

2021

REPORT







TABLE OF CONTENTS

- 05/About the Report
- 07/ Letter from the CEO
- 11/ Tüpraş Sustainability
 Journey

- Tüpraş Sustainability
 Priorities
- Tüpraş' Climate and Environmental Management
- 69/ Tüpraş Management Approach

- Human Focus at Tüpraş
- Social Development
- R&D, Innovation & Digitalization at Tüpraş

Responsible Value Chain Management at Tüpraş

Annexes

ABOUT THE **REPORT**

As Türkiye Petrol Rafinerileri A.Ş. (Tüpraş), Turkey's largest industrial enterprise, we are fully aware of our responsibilities not only for the economic value we produce, but also for environmental and social issues. In this context, our highest priority is to ensure Tüpraş maintains its leading position in the sector through its efforts in pursuit of sustainability.

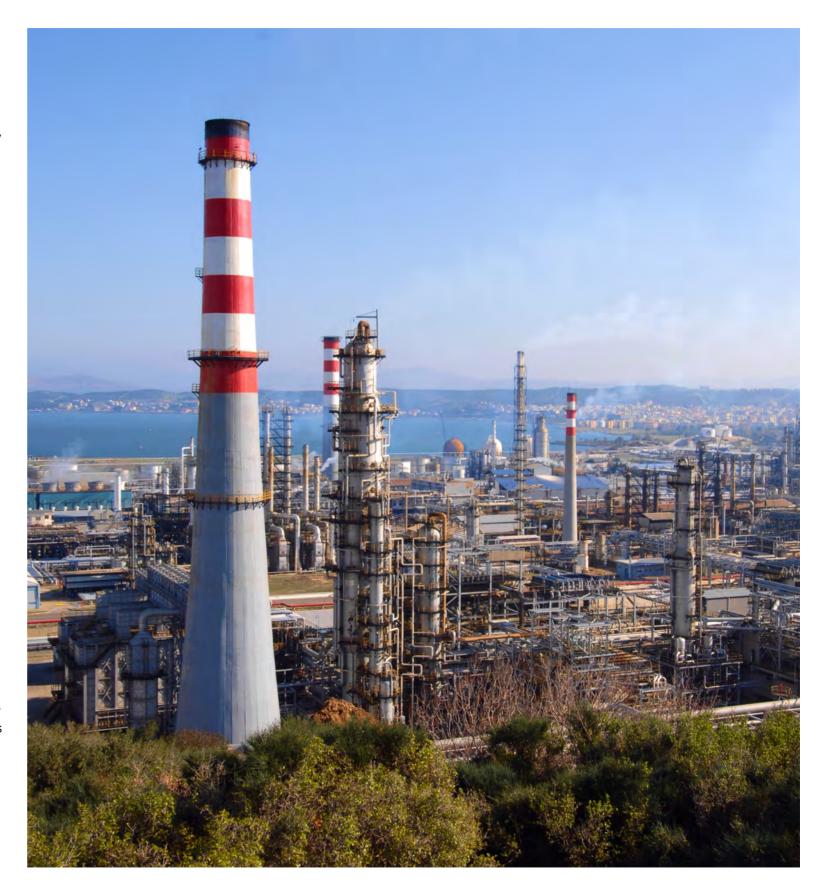
At Tüpraş, we consider sustainability not merely to be a reporting issue, but also as a management element that steers our decisions. We systematically manage the social, economic and environmental impacts of all the processes we carry out, and present our work and results to all our stakeholders in the light of the positive impact we seek to create in these areas.

Scope of the Report

The information contained within this report covers the refining activities carried out in Turkey by Tüpraş between January 1, 2021 and December 31, 2021. The report also includes general information about the Tüpraş subsidiaries Opet Petrolcülük A.Ş., Körfez Ulaştırma A.Ş., Ditaş Deniz İşletmeciliği ve Tankerciliği A.Ş. and Tüpraş Trading Ltd., in which the corporate values are reflected. In line with the financial reporting principles we follow, we have included the financial data of our subsidiaries in the Tüpraş performance figures.

Principles and Standards

This report has been prepared in compliance with the "Basic" level GRI Standards. In the clarifications made within the report, we have taken into account the requirements of the United Nations Global Compact (UNGC) Progress Report, as well as the subjects and descriptions stipulated by the GRI Standards. We have also included a progress report produced in accordance with the UN Women's Empowerment Principles (UN WEPs), to which Tüpraş is a signatory. The report is based on the performance indicators that are broadly recognized in the sector, and includes Tüpraş's contributions to the United Nations Sustainable Development Goals. In this section, the compliance of the company with the principles of the CMB (Capital Markets Board) Sustainability Principles Compliance Framework, which is prepared with a "comply" or "explain" approach, is explained in detail. Evaluations of the principles that have not yet been fully complied with are included in the Statement of Compliance with the Sustainability Principles in the Corporate Governance section.





LETTER FROM THE CEO



Dear Stakeholders,

Over the last two years, global climate change, or, in other words, the climate crisis, has become one of the most important agenda items around the world, and the pandemic has exacerbated the issue. This global problem that is facing humanity has once again shown us the value of life, and the need for change and transformation not only in our sector, but in all areas of business, and for sustainability to be at the very core of our lives.

According to the IEA World Energy Outlook 2020 report, solar and wind energy, electric vehicles and other low carbon technologies have gained prominence in the world, where a new global energy economy is emerging. In 2020, nuclear energy and renewable energy sourced 5% and 16% of the world's energy supply respectively. The remaining 79% was supplied from fossil fuels, whereas oil formed 29% of the total energy supply.

In 2021, on the other hand, we saw a recovery in energy demand; the demand for fossil fuels increased in parallel to the increased demand in all other fuels by the slowdown impact of the pandemic. This demonstrated the importance of energy supply security along within the energy transition. For this reason, it is vital that we ensure this transition takes place in a balanced and planned manner, otherwise the negative effects that consumers will experience will be inevitable.

Together with the different insights of regarding the future of the energy market,, there is one thing that they all agree upon: low-carbon alternative energy resources will gradually replace oil,

although it will continue to be an important energy resource for many years to come, albeit following a decreasing trend.

The magnitude and seriousness of what has to be achieved in this respect have been clearly indicated in scenario studies and theoretical investigations of the investments required to achieve net zero emissions by 2050, in line with the Paris Agreement. In other words, there is still a long and challenging journey ahead of us toward our clean energy transition. Tüpraş and Koç were pleased to see the Turkish Grand National Assembly sign the Paris Agreement on October 6, to which 197 countries are party around the world. We closely follow policies and applications that put global- and national-scale climate and sustainability at the core, including, in particular, the EU Green Deal. Under the "Fit for 55" plan declared under the EU Green Deal process, we meticulously monitor and examine the effects of the Carbon Border Adjustment Mechanism on the global competitiveness of Turkish industry. We see that, in our country, the green transition has recently gained momentum and offers many opportunities for us to achieve our goals. Our country holds a special place as a neighbor of the European Union – the heart of the green transition – and has a domestic market demand that continues to grow. Throughout the pandemic, we fulfilled our duty in meeting the oil needs in our country without interruption and with great success, as required by our national responsibility approach, and we worked, and continue to work with the aim of ensuring that the energy needs of our nation are satisfied in all four corners of the country.

As Turkey's largest industrial company, we are aware of the magnitude of our corporate sphere of influence. Our long-established past, and our experienced workforce are the biggest drivers of our efforts to introduce the requirements of the time and current technologies to our country. While continuing with our uninterrupted meeting of national energy needs, we have also made it a core element of our strategy to establish low carbon business models that will be recognized as the value-creating initiatives of the future. We remain fully aware of the importance of fulfilling our responsibilities on this journey to a low carbon economy.

The design and prioritization of factors that will have the greatest impact on the business results of our stakeholders and our strategic goals are at the core of our sustainability strategy. As part of the materiality analysis, in which we are working with different groups from our broad range of stakeholders, we included the priorities of our stakeholders in our analysis, thus shaping our strategic roadmap.

We have made it our principle to create positive value for all our stakeholders as part of our responsibility toward future generations. In our Strategic Transformation Plan, which was made public in 2021, we declared our main goal as being to transform into a carbon-neutral industrial company with new technologies, and to lead the way for our country in the clean energy transition. To support such a transition, we will prioritize increasing the competitiveness and profitability of our existing resources and will use the generated income to invest in new areas that comply with our sustainability

approach and offer strong opportunities for profit. This will allow us to strengthen our operational excellence and reduce carbon emissions from our refinery activities in the near future, while at the same time elevating us as an important player that makes use of alternative energy production methods.

Using resources efficiently in all our processes to create balance in life will allow us to contribute to the circular economy, and to work to improve the environmental and social impacts of our value chain. Through our sustainable development approach we aim to contribute to the generation of social welfare and progress, guided by the United Nations Sustainable Development Goals (SDGs).

While managing the risks of climate change in our business processes, we also closely follow national and international legislation. As in previous years, we attended the 26th Climate Change Conference of the Parties, held this year in Glasgow, and have shaped our future plans in the light of the discussions at the event. Furthermore, we have recently joined the ranks of global companies that support the Task Force on Climate-related Financial Disclosures (TCFD).

As part of the plans we have prepared based on our knowledge of the critical role of Tüpraş in helping Turkey achieve its net zero goal by 2053, we commit to reducing the Scope 1 and 2 emissions arising out of our production processes by 27% by 2030 and by 35% by 2035 compared to 2017 level. In short, by 2050, we are determined to offer a more diversified product portfolio, to be carbonneutral in our Scope 1 and 2 emissions, and to become Turkey's leading industrial company.

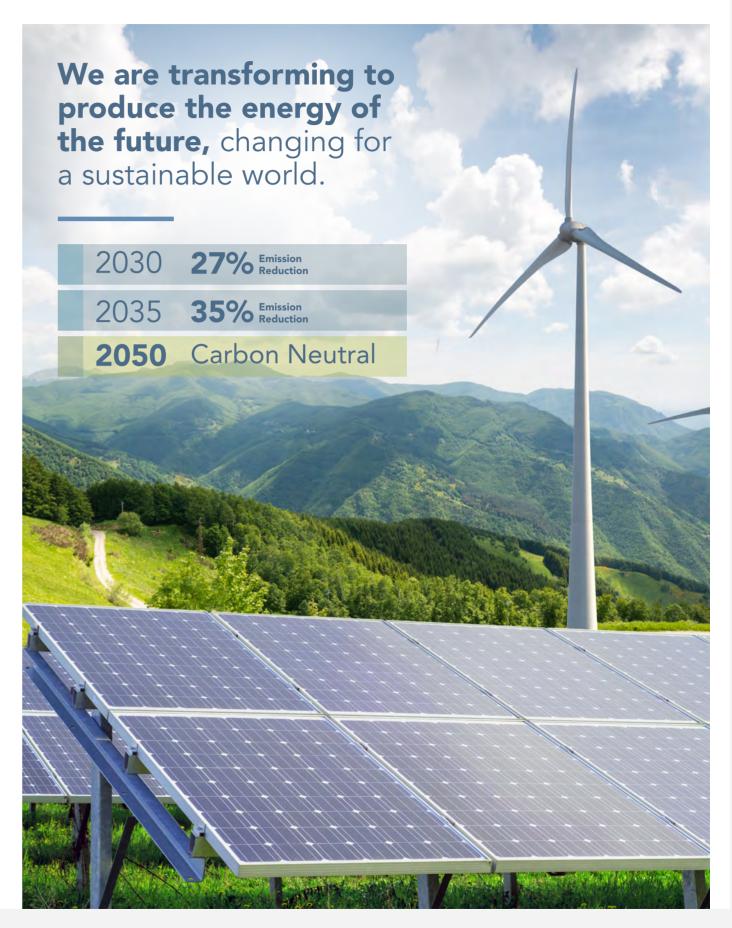
In light of our roadmap, we also plan to benefit from green finance that have recently witnessed significant growth. We incorporate sustainability into all of our business processes, from our supply chain to our after-sales operations, and have made it a part of our corporate culture. Our goal is ultimately to make Tüpraş, as well as all of its subsidiaries and value chain, carbon free.

As we realize the necessary transition for the energy of the future, we act with a peopleoriented approach based on our awareness that our employees are our most valuable asset. We have created an egalitarian, inclusive and fair working environment in which human rights are respected, keeping a safe working approach at the core of all our processes. To be in accord with the business models of the future, we are raising a workforce with all the necessary knowledge and skills. We have been a signatory company to the United Nations Women's Empowerment Principles (UN WEPs) since 2017, and as part of our efforts to become an inclusive and egalitarian workplace, we work to ensure that women are represented equally in the field. Our efforts in this regard have carried Tüpras onto Bloomberg's 2022 Global Equality Index (GEI), which includes only seven companies from Turkey.

The year 2021 was a turning point for our company, opening the door to a new era in our sustainability adventure. We have set out on a journey of transformation in which sustainability is maintained at the core of what we do, and transparency is ensured when it comes to environmental issues. At the same time, we are offering a more profitable and diversified energy portfolio. The entire Tüpraş team is very excited about this transtion, as we consider it our responsibility to leave a sustainable world for future generations, and pledge with the motto "Energy to the Future" to do our best in this regard.

Talking advantage of our responsible producer identity, we will continue to create value for all our stakeholders, as well as our nation and the world as a whole.

İbrahim Yelmenoğlu CEO





Journey Priorities Management Approach Digitalization Management 2008 2009 2012 2010 The Contractor Management In compliance with the GRI Reporting The Tüpraş Code of Ethics was revised. Caustic Neutralization Unit System was commissioned. Framework, the first corporate social was commissioned at the responsibility report was published. İzmir Refinery. Waste Management Automation The Customer Relationship Software was commissioned. Management System (CRM) was launched. 2015 2014 2016 2013 The ISO 50001:2011 Energy The Tüpraş Supplier Portal was launched. Tüpraş took part in the 21st Climate Tüpras was listed on the Borsa Management System Certification was The EBRD extended a US\$150 million loan Change Conference (COP21), Istanbul Sustainability Index (BIST). obtained. to Tüpras within the scope of environment during which the Paris Agreement and energy efficiency. was accepted. The ISO/IEC 27001:2005 Information Tüpraş took part in the 22nd Climate Security Management Systems Change Conference (COP22). Certification was obtained. 2019 2018 2017 Tüpraş took part in the 23rd Climate A global cooperation agreement was signed between UN Change Conference (COP23), making • Körfez Transportation entered into an agreement Women, Tüpraş and Fenerbahçe Sports Club related to the provision of support for the "HeForShe" movement of the two presentations. related to Turkey's first hybrid locomotives. UN Women's Empowerment United Nations Women's Unit (UN Women). Principles (WEPs) were signed. Ditaş installed flue gas scrubbers on 3 of its tankers Tüpraş made a presentation at the 24th Climate Change Conference (COP24). ISO 10002 Customer Satisfaction to ensure compliance with 2020 International Management System certification was Maritime Organization rules. The Tüpraş Solution Center was established as part of obtained. efforts to improve customer satisfaction. 2022 2021 2020 Tüpraş announced its "Strategic Transformation Considering the expectations of the stakeholder A long-term cooperation agreement was signed with the groups, priority issues in ESG areas were determined and a Tüpraş 2021 Materiality Plan" in accordance with its carbon neutral goal. ISO 45001:2018 Occupational Health and Safety Management System Certificate was obtained. Environmentally friendly, safe and user-friendly high Emerald Industrial Innovation Fund – an international venture Analysis was conducted.

The process for the establishment of a capital fund. Basic-Level Zero Waste Certification was obtained for the Sustainability Committee was initiated.
Within the scope of the Climate-Related Financial bitumen emulsions were added to the product refineries. The "International 16-Day Activism" campaign under the "Our portfolio with the "Emuphal-T" project, carried out Statements Task Force (TCFD) established by the Financial Stability Board (FSB) of the G-20, the Energy for Equality Never Ends" project, carried out in cooperation with the UN Women's Unit HeForShe Movement within the scope of an in-house enterprise program. climate-related financial risks of Tüpraş were and Fenerbahçe Sports Club, received support. evaluated and Tüpraş has become a TCFD Our Customer Notification Management software was launched. supporter. **2050 CARBON NEUTRAL** You can access detailed information on the Sustainability Journey from Annex-2.

Tüpraş 2021 Sustainability Report

R&D,

Innovation &

Social

Development

Human Focus

at Tüpras

Responsible

Value Chain

Annexes

14

Climate and

Environmental

Tüpraş

Management

Tüpraş

Sustainability

Letter from the

CEO

About

the Report

13

Tüpraş

Sustainability

A NEW ERA

for Tüpraş

The Tüpraş Strategic
Transformation Journey has been initiated with the aim of becoming a carbon-neutral energy company by 2050, while transforming with investments toward a low-carbon economy.

Under the plan, it is aimed to reduce Scope 1 and Scope 2 emissions by

27% by 2030.

At Tüpraş the share of sustainability investments in total investments was

55% in 2021.



65 energy efficiency projects have been realized
Energy savings of 1,925 TJ and 107,000 tons of
CO₂ emissions have been achieved.



In the Industrial Energy Efficiency Project Competition, Kırıkkale Refinery was awarded 2nd place and the İzmit Refinery was awarded 3rd place in Category-3 Projects aimed at Increasing Energy Efficiency in Industry.

As a result of the energy efficiency projects and modernization works carried out to date, Tüpraş's energy intensity value has been reduced to 93.5.

16.7 m³ of water was recovered. Compared to the previous year, the ratio of water consumption to crude oil has been reduced by 22%

"The Diversity, Equality and Inclusion Committee" was established.

A waste recovery rate of

85% was realized.
25.3 million TL has been saved due to waste recovery and industrial symbiosis.





The SPP (Solar

Refinery.

Power Plant) was

commissioned at the Batman

A NEW ERA

for Tüpraş

An average

22% increase has been achieved in the scores obtained in the evaluations of such indices as FTSE4Good, MSCI ESG Rating, BIST SE (Refinitiv), Sustainalytics and Vigeo Eiris.

Based on the findings of the comprehensive stakeholder analysis carried out in 2021,

the Tüpraş Materiality Matrix 2021

has been created.



Supplier satisfaction was **83%.**

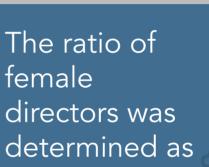
Tüpraş has been a **TCFD supporter**.

In 2021, the "Tüpraş Leadership Schools" won the gold award in the "Best Mixed Training Program" category and the silver award in the "Best Leadership Development Program" category at the Brandon Hall HCM (Human Capital Management) Excellence Awards.



Internal training was provided to

2,218 employees by Tüpraş Academy.



17%.

76% of company employees are members of the Petrol-İş union.

A total of

165 students were provided with internship places at Tüpraş.

A total of **292,712**hours of OHS
training was provided.

As a part of its transformation into a digital refinery with focus on sustainable efficiency, the

"Terminal Automation System"

(TAS) was unveiled at the Wagon Filling Unit of the İzmit Refinery in Region B.

A NEW ERA

for Tüpraş

TL 47.5 million TL has been allocated to R&D activities.

Within the scope of its social responsibility activities,

3 million TL was provided in the form of donations and sponsorships.

A total of 3 patent applications (2 national and 1 international) were filed.

48 international and national scientific articles were published.



Tüpraş became the most successful Turkish industrial organization by obtaining

7.83 million EUR in grant support for a total of 17 projects

completed or ongoing within the scope of Horizon 2020.

With the social responsibility project entitled "Our Energy is for the Future: I Code, Model, Produce", robotic coding, threedimensional modeling and production skills classes were established in 41 secondary schools.

Tüpraş was awarded **3rd** place at the 8th R&D and Design Centers and Technology Development Zones Summit, hosted by the Ministry of Industry and Technology.

Tüpras has announced that it will allocate

50 million USD in

venture capital to start-ups and investors by 2030 in the areas of green hydrogen, carbon capture, utilization, renewable energy and fuels, industry 4.0 and waste management in the scope of new technologies and business models in energy transition.

94% of the purchases made

during the reporting period were made from local suppliers.

Contractor satisfaction

was **76%**

A local purchase rate of 69% was realized.

Customer satisfaction was 86%.

42.5 tons of Molybdenum, 6.3 tons of Nickel and 7.0 tons of Tungsten metal have been recovered and put to use in the production processes of different sectors.



TÜPRAŞ SUSTAINABILITY PRIORITIES

TÜPRAŞ SUSTAINABILITY PRIORITIES

Sustainability Management

Tüpraş adopts an effective sustainability management model, with full awareness of the economic, social and environmental impacts it creates in the locations in which it does business. While managing all of these impacts, the Company acts according to the principle of "value creation". Recognizing its responsibility to society and the environment while generating power for Turkey, the Company maintains a sustainability-based production mindset, and follows the United Nations Sustainable Development Goals (SDGs) for 2030 in its practices. In line with these efforts, studies are underway to determine and establish a Sustainability Committee and the relevant necessary subgroups.

Environmental, Social Governance (ESG) policies at Tüpraş are approved and put into effect by the Board of Directors, and the policies announced on the Public Disclosure Platform can be found on the Company's corporate website. Decisions on the statements made under the sustainability principles are taken by the Corporate Governance Committee and reported to the Board of Directors within the maximum periods stipulated for the annual activity reports to be disclosed to the public, as set out by the Capital Markets Board in the relevant regulations.

In 2021, Tüpraş announced a "Strategic Transformation Plan" to become the nation's leading carbon-neutral energy company. This plan is based on investing in new areas that support the sustainability approach and pioneering the transition of the energy sector in our country, increasing the competitive power and profitability of the refineries, and maintaining a balanced and diversified clean energy portfolio. The Strategic Transformation Plan focuses on four business areas, which are Sustainable Refining, Biofuels, Zero-Carbon Electricity and Green Hydrogen.

Goals for 2022-2035

"The first period of the "Strategic Transformation Plan", covering the period from 2022 to 2035, includes projects that involve the following investments:

- Energy efficiency and decarbonization projects that increase operational efficiency while reducing Scope 1 and Scope 2 emissions for sustainable refining;
- Green hydrogen production plants;
- Biofuel production plants, in particular for Sustainable Aviation Fuel (SAF);
- Wind, solar and other zero-carbon power plants;

For these goals to be achieved, plans are in place to invest about 350 million USD annually amounting to a total investment of 5 billion USD for the period in question.

Tüpraş aims to increase its investments in Sustainable Aviation Fuel, Zero-Carbon Electricity and Green Hydrogen projects and initiatives to 70% by 2035.

It is estimated that 90% of Tüpraş's operating profit will come from Sustainable Refining by 2030, with a figure of 70% expected for the 2030–2035 period. A large proportion of the resources obtained from refining will be transferred to new areas and used to reduce the Company's carbon footprint.

	2022-	2030	2031-2035		
	Investment Share	EBITDA Share	Investment Share	EBITDA Share	
Sustainable Refining	~60%	~90%	~30%	~70%	
Sustainable Aviation Fuel					
Zero-Carbon Electricity	~40%	~10%	~70%	~30%	
Green Hydrogen					

Goals for 2035-2050

From 2035 to 2050, which is the second period in the Strategic Transformation Plan, it is planned to invest some 300 million USD annually and 5 billion USD in total, amounting to 10 billion USD of investment by 2050.

Tüpraş ESG Score Table

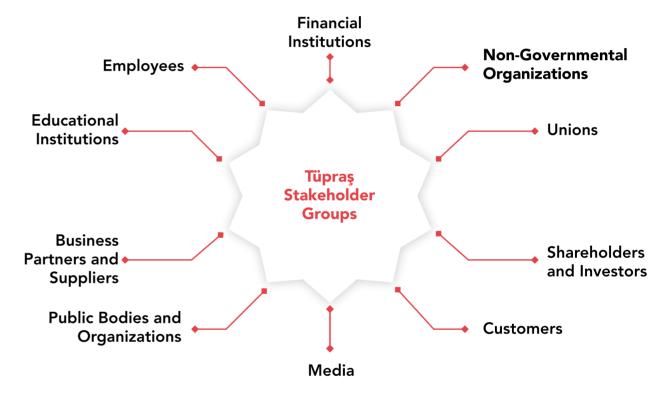
As a result of the work of the "Sustainability Agile Team" in 2021, the Company's ranking in indexes such as FTSE4Good, MSCI ESG Rating, BIST SE (Refinitiv), Sustainalytics, Vigeo Eiris and Bloomberg GEI, improved by 22 percent on average in the assessment scores. The Company continues in its efforts to reinforce this position and to continuously improve performance. The aim is to improve assessment scores by an average of 20 percent for 2022.

	2020	2021			ESG	Rating	Score	Card		Progress
FTSEGood	2.2	3.4		0-5			%55			
MSCI ESG Rating	3.9(BB)	4.3(BB)	0-10			%10				
V.E. (Moody's)	40	49	Wea			mited 19/100	Rob 50-59		vanced +/100	%23
Sustainalytics	36.9	33	Risk Band	Neglio		Low 10/20	Medium 20/30	Hiç 30/	Severe	%11
BIST SE (Refinitiv)	61.07	69.3	We:			orable 5-50	God 50 -7		cellent 5-100	%13
Bloomberg Bloomberg GEI Index		63.3								

Stakeholder Analysis

Tüpraş adopts a management approach that focuses on stakeholder engagement, which leads the Company to apply various stakeholder communication mechanisms and to take the opinions and recommendations of its stakeholders into account in its decision-making and implementation processes.

The frequency of communication with different stakeholders is determined based on the nature, expectations and needs of the target group. Communication methods tailored to each stakeholder group are aimed to enrich decisions and practices based on the opinions of stakeholders, and to inform stakeholders about the activities of Tüpraş and their impact.





For details of the stakeholder communication methods determined by Tüpraş, go to Annex-3 Tüpraş Stakeholders and Communication Methods.

The latest version of the Tüpras Information Policy, which details the lines of communication Tüpras maintains with its stakeholders, can be found on the **Company's website**

TÜPRAŞ' IMPACT ON THE SUSTAINABLE DEVELOPMENT GOALS

Tüpraş

Journey

Sustainability



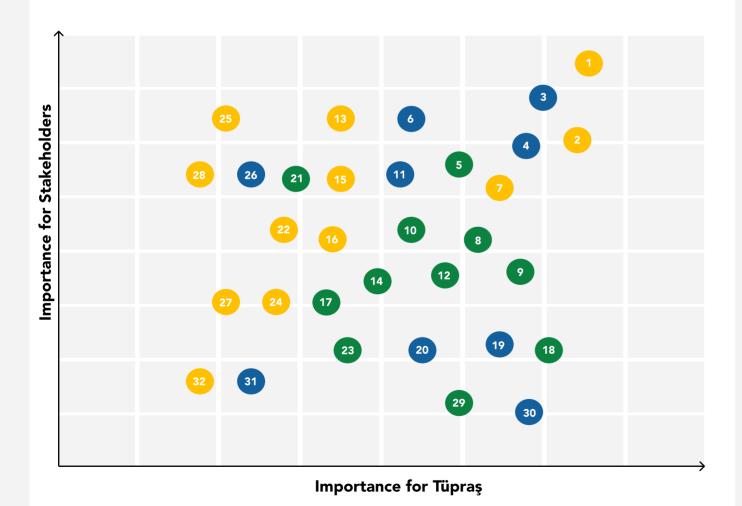
29

Tüpraş 2021 Materiality Analysis

Tüpraş regularly reviews its sustainability priorities in line with its environmental, social and governance strategies, evolving stakeholder expectations and global trends.

In accordance with the current strategies set out by Tüpraş, it was decided to conduct a new materiality analysis, and the necessary studies were initiated accordingly. The external trend analysis conducted immediately before the stakeholder analysis allowed the Company to review sector-specific and global reports, sustainability reporting standards, the priorities of the initiatives on Tüpraş's agenda, as well as the priorities of other companies in the sector. Using the list of material topics determined through the said analysis, Tüpraş reached out to internal and certain key external stakeholders through an online survey to garner their opinions. Following the conducted studies, material subjects in ESG areas were determined taking into account the expectations of the different stakeholder groups, which led to the creation of the Tüpraş Materiality Matrix 2021, and the subjects on this matrix serve the Strategic Transformation Plan created by Tüpraş in 2021 and the Sustainable Development Goals.

Projects and topics focusing primarily on sustainability are measured with an every two year reputation study of all internal and external stakeholders.



ENVIRONMENTAL

- **5** Air Quality
- 8 Energy Efficiency
- **9** Reducing Greenhouse Gas Emissions
- **10** Responsible Waste Management
- **12** Transition to Low Carbon Economy
- **14** Utilizing New Low Carbon Technologies
- 17 Climate Related Physical Risks
- **18** Waste Water Treatment
- 21 Biodiversity Loss and Deforestation Related Risks
- **23** Constituting Partnerships Towards Climate Goals
- 29 Water Quality and Responsible Water Management

SOCIAL

- 1 Health and Safety
- **2** Process Security
- 7 Compliance with Human Rights
- 13 Producing Goods and Services That Prioritize Environmental and Social Contribution
- **15** Customer Satisfaction and Loyalty
- 16 Employee Training, Talent and Career Development
- **22** Digitalization
- 24 Completing Integration, Strengthening Database and Improving Service Quality
- **25** Structuring Sustainable Supply Chain Processes
- **27** Protecting Employee Rights and Improving Employee Welfare
- 28 Improving Existing Goods and Services
- **32** Including Employee Opinions

GOVERNANCE

- **3** Compliance with Work Ethics and Laws
- 4 Tüpraş Brand Value and Reputation
- **6** Strong Economic Performance
- **11** Responsible Investments
- 19 Integrity and Accountability
- **20** Efficient Risk and Crisis Management
- 26 Inclusiveness, Equality, Diversity
- **30** Effective Ethics and Integrity Management
- 31 Increasing Market Share



Tüpraş's Vision on Climate Change and Adaptation Strategy

Tüpraş has made it its mission to conserve and make optimum use of natural resources while meeting Turkey's demand for oil products. It is its objective to manage environmental risks in an effective manner and to constantly improve its processes by closely following technologies and offering solutions to the environmental issues specific to the sector. Tüpraş's environmental management seeks to "minimize losses of any kind that may be incurred by the environment, our employees, contractor's employees, customers, the public at large, and all persons who may be affected by our operations.

Tüpraş has been continuing its journey toward the transition to a low carbon economy and coping with the climate crisis, in parallel with the vision outlined by Koç Holding.

Through the "ENERGY TO THE FUTURE" project, Tüpraş has embarked on a journey of strategic transformation in support of the efforts to create a sustainable world and balanced life, and aims at cutting its Scope 1 and Scope 2 emissions by 27% by 2030 compared to 2017 levels, to be further decreased by 35% by 2035 through ongoing investments. The ultimate goal is to become a carbon-neutral energy company by 2050.

In this context, Tüpraş keeps close tabs on the national and international agenda concerning climate change. It takes part in working groups, meetings and seminars organized by relevant organizations and civil society organizations, including the Ministry of Environment, Urbanization and Climate Change, TÜSİAD, the UN Climate Change Conference of the Parties and the Climate-Related Financial Disclosure Task Force (TCFD), lending its support to efforts to fight against climate change.

Tüpraş, a leading industrial organization that supports TCFD, fully integrates climate risks into its business processes and updates its targets accordingly. Evaluating the transition and physical risks stemming from climate change before the strategic transformation plan is completed, it has identified the steps to be taken for the management of the risks and opportunities that will arise as a result of its strategy. Climate and environmental performance are monitored constantly through objectives and targets, and climate and environmental legislation requirements are controlled in internal audit processes.

Tüpraş monitors all of its operations in accordance with the ISO 14001 Environment Management System, and periodically carries out certification programs.

Tüpraş's environmental practices and performance are subject to inspections by agencies and independent organizations authorized by the Ministry of Environment, Urbanization and Climate Change, as well as Koç Group's Environmental Audit process. A form for "Corrective and Remedial Action" is created for the findings of environmental audits, and problems are resolved. All results are presented to the senior management at annual Management Review Meetings, and operational goals for the coming year are set.



Aims to become a carbon neutral energy company by 2050 in line with its "ENERGY TO THE FUTURE" strategic transformation journey which was created through considerations on the balance of a sustainable world and life

Tüpraş carries out local and international projects focusing on environmental sustainability and climate. To improve the environmental performance of the Company and support long-term development, multi-stakeholder collaborations involving technology development, material development and application studies in different focus areas are implemented.

You can access detailed information about the projects and collaborations in which Tüpraş is engaged with a focus on environmental sustainability in the "R&D, Innovation and Digitalization" section of this report.

Tüpraş constantly monitors its climate and environmental performance in terms of objectives and goals, and the requirements of Climate and Environmental Legislation are checked as part of the internal audit process. Environmental and climate change risks and opportunities are identified.



388 million TL has been spent on environmental investments during the year.

Tüpraş 2021 Sustainability Report 36

Letter from the CEO

Tüpraş Sustainability Journey

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpras Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes



- Tüpraş attended the COP26 conference held in Glasgow in 2021 in connection with the UN Climate Change Conference, of which it has been an active participant since 2015, and made presentations as part of Partnership for Market Readiness, sharing its experiences with the international participants.
- Tüpraş contributes to all related components of the PMR (Partnership for Market Readiness) Project being carried out by the Ministry of Environment, Urbanization and Climate Change. Tüpraş has lent support to the development of the legal and organizational infrastructure as part of the project, the first and second phases of which have been completed; the determination of upper emission limits; the creation of allocation plans and an ETS (Emission Trade System) registry system; and the development of a simulation application for the emission trading system.
- When assessing its investment projects, Tüpraş takes into account internal carbon pricing as a parameter in its feasibility studies. The shadow price approach is used to ensure investment projects are assessed with and without carbon price, and the carbon price is revised periodically based on studies undertaken by survey firms for the prediction of the carbon price, the international carbon price and country expectations.

- Tüpraş is among the companies that support the Task Force on Climate-related Financial Disclosures (TCFD), and analyzes the risks and opportunities arising from climate change, reporting the results to its stakeholders regularly.
- Significant developments at national and international levels were witnessed in 2021, and the Paris Agreement was ratified by the Turkish Grand National Assembly and put into force. Tüpraş participated in the Climate Council studies that will serve as a basis for the Climate Law. The Draft Industrial Air Pollution Control Regulation (in line with the EU 2010/75 EED and 2015/2193 MCPD Legislation) was published by the Ministry of Environment, Urbanization and Climate Change, and a detailed opinion and evaluation of the draft were submitted to the Ministry. Turkey's Green Accord Action Plan was unveiled in 2021 as part of the EU's Green Deal and the EU Commission released the "Fit for 55" draft law in the same year. Turkey is closely following all such developments.
- Tüpraş contributes to the efforts of its NGOs to combat climate change. In this context, Tüpraş, as part of the TÜSİAD Green Reconciliation Task Force, contributed to the preparation of the "New Climate Regime Report from the Lens of Economic Indicators". The report reveals the possible effects of the Green Deal on the sectors exporting from Turkey to the EU, as well as its reflections on the Turkish economy.
- Tüpraş contributed to the preparation of the Koç Group Evaluation Note within the framework of the EU Border Adjustment Mechanism (CBAM) Public Consultation Process, which was one of the most important developments of 2020 within the scope of the Green Agreement, and shared it with the relevant organizations through Koç Group.
- Within its Strategic Transformation project, the efforts to become a Carbon Neutral energy company have been completed and shared with the public and all stakeholders.

Task Force on Climate-Related Financial Disclosures (TCFD)

The "Task Force on Climate-related Financial Disclosures (TCFD)" initiative was established based on the findings of studies initiated by the Financial Stability Board (FSB) established by the G-20 countries investigating how to deal with climate-related risks. The TCFD aims to create a transparent and comparable technical platform based on certain criteria by presenting to its stakeholders how institutions should define and analyze the risks and opportunities arising from climate change. Tüpraş carried out its TCFD analysis studies in parallel with its strategic transformation plan studies in 2021. The Strategic Transformation Plan has been evaluated in terms of risks and opportunities in the light of the TCFD recommendations.

TCFD Recommendations are made in four basic areas: governance, strategy, risk management, and targets and metrics.

TCFD Future Leadership Areas (Recommendations)



Statement of the organization's governance structure regarding climate-related risks and opportunities

• Frequency at which the board of directors and/or board committees are briefed about climate-related risks



Disclosing the impact of possible climate-related risks and opportunities on the strategic planning of the organization

- Explaining potential climate-related problems in the short, medium and long term
- Describing how climate-related risks and opportunities may affect the organization's strategy
- Assessing the potential climate-related impacts on ongoing works
- Disclosure of information on the potential impacts of climate-related risks and opportunities
- Conducting climate scenario analyses to assess resilience, and inform about the organization's strategy and financial planning
- Explaining how resilient the organization's strategies are to climate-related risks and opportunities



Risk Management Announcing how the organization identifies, assesses and manages climate-related risks

- Processes for identifying climate-related risks, and identifying the potential size and extent of the identified risks
- Explanations of the processes used to manage physical climate-related risks (acute and/or chronic)



Goals and
Metrics

Announcing which criteria and goals, and the relevant climate risks and opportunities, are evaluated and managed

- Discloses quantitative information on financial results on the criteria used to assess climate-related risks and opportunities
- Quantitative explanations of climate-related opportunities, such as revenues from products and services designed to contribute to a low-carbon economy
- Incorporating performance metrics into compensation policies
- Explanation of industry-specific greenhouse gas (GHG) efficiency rates
- GHG (Greenhouse Gas) targets
- Climate change non-GHG targets: water, energy, land use and waste management objectives (where relevant and appropriate)

Climate-related risks are those with potential to have adverse effects on an organization. The TCFD divides these risks into two main groups: transitional risks and physical risks. Transitional risks are related to policy and regulatory risks, technology changes, market reactions and reputational issues. Climate-related physical risks are acute event-oriented risks, such as increased severity of extreme weather events (e.g., cyclones, droughts, floods and fires), and long-term chronic risks related to precipitation and temperature.

Transitional Risk

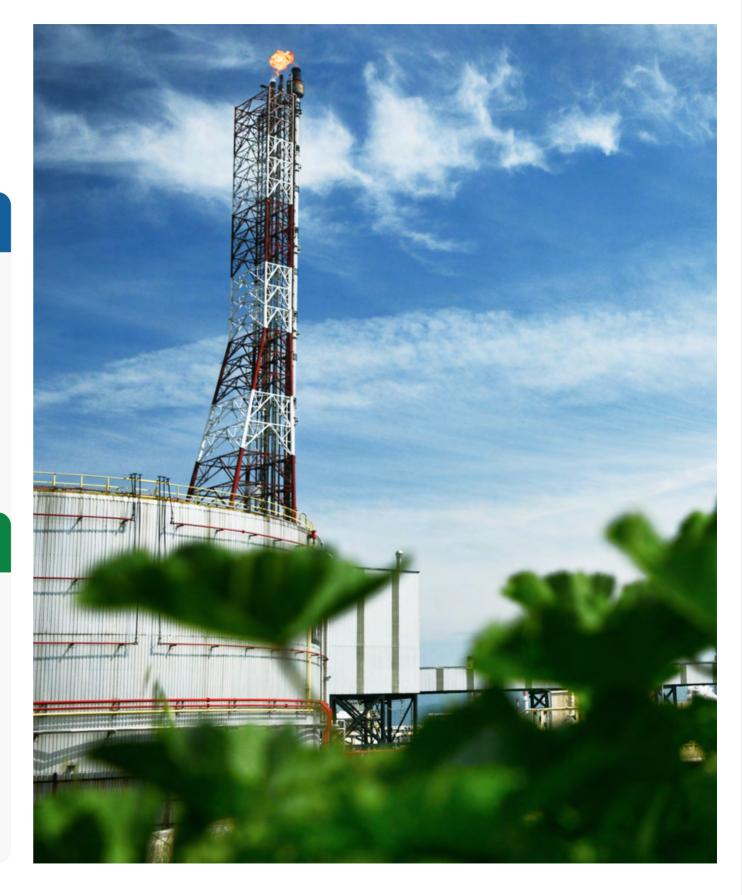
- Policy/Regulatory Risks (Risks Induced by Climate Policies)
- Market Risk
- Reputation Risk
- Technology Risk



Physical Risk

- Acute
- Chronic





Climate and

Environmental

Management

Tüpraş

Priorities

Sustainability

Tüpraş

Journey

Sustainability

Letter from the

CEO

About

the Report

Tüpraş

Management

Approach

Human Focus

at Tüpras

Social

Development

R&D,

Innovation &

Digitalization

Responsible

Value Chain

Management

Annexes

Tüpraş 2021 Sustainability Report 44

Climate and

Environmental

Management

Tüpraş

Management

Approach

R&D,

Innovation &

Digitalization

Social

Development

Human Focus

at Tüpras

Responsible

Value Chain

Management

Annexes

Tüpraş

Priorities

Sustainability

Tüpraş

Journey

Sustainability

Letter from the

CEO

About

the Report

Tüpraş 2021 Sustainability Report 46

Emission Management

As the effects on the climate are rapidly becoming more severe, there have been numerous developments aimed at reducing emissions, and ensuring circularity and the efficient use of resources at national and international levels. In line with the objective to stabilize global warming at 1.5 °C, as stipulated in the Paris Agreement, monitoring the greenhouse gases that cause global warming and preventing emissions has become more critical than ever. Tüpraş makes a commitment in its Environment Management Policy to constantly monitor its omissions as part of the fight against climate change and for the control of air quality. In sharing its goal to become Carbon Neutral in 2050, and its road map to that end, in its Strategic Transformation Plan unveiled in 2021, its aim is to become a leading carbon-neutral energy company.

Certification companies accredited by the Ministry of Environment, Urbanization and Climate Change pursuant to the Monitoring Reporting and Verification (MRV) Directive and independent third parties, as well as the results of audits conducted voluntarily by the Company as part of ISO 14064-1, have confirmed its Scope 1 and Scope 2 greenhouse gas emissions, which are among the environmental indicators.

The reduction in the quantity of greenhouse gas emissions accomplished through selected energy efficiency projects has been verified by independent third parties in accordance with ISO 14064-2, and verified data is made public. With the energy efficiency projects commissioned in 2021, a reduction of 106,700 tons of CO₂ emissions was achieved. It continues to work with a specialist consultancy firm for the calculation of Scope 3 emissions.

Scope 1 and Scope 2 Emissions							
	2017	2018	2019	2020	2021		
Scope 1 Greenhouse Gas Emissions (ton CO ₂ e/year)	7,249,964	6,720,186	6,172,574	5,724,407	5,875,393*		
Scope 2 Greenhouse Gas Emissions (ton CO₂e/year)	79,386	38,044	32,905*	24,518	48,368*		
Greenhouse Gas Intensity (ton CO ₂ e/ton Processed Crude Oil)	0.26	0.28	0.23	0.26	0.24		
Greenhouse Gas Intensity (ton CO₂e/ton Charge)	0.24	0.25	0.21	0.23	0.23		

*ISO14064 Data verification process has yet to be completed.

Tüpraş monitors the emissions of its refineries and ensures its compliance with the applicable legislation. The Ministry of Environment, Urbanization and Climate Change undertakes the online monitoring of the flue gas emissions from 31 stacks of different refineries, and compliance with all requirements set forth in the legislation is ensured. Efforts are being made to ensure the compliance of flue gas emissions with European Union legislation. As per the mandatory legal requirements, companies accredited and authorized by the Ministry of Environment, Urbanization and Climate Change carried out emission and air quality emission studies of all refineries in 2021, and compliance with national legislation was confirmed through those reports. The current best practices and the highest standards are applied for the minimization of emissions stemming from operations. Emission values are fairly well below the national limits, and compliance with internationally recognized limits is ensured by many sources.



Studies within the Scope of Emission Reduction

Utilization of Clean Fuels:

The energy needed for processes is mostly supplied from natural gas and refinery gas. Thus, SO₂ and particulate emissions are reduced.

Flare gas is recovered and used as fuel in the furnaces. Contributions are thus made to the reduction of emissions and the saving of resources.

Reduction of NOx Emissions:

Burners achieving NOx emissions are used to generate the power needed for refinery operations, operating conditions are controlled by means of new technologies and NOx emissions are reduced.

Reduction of Volatile Organic Emissions (VOC)

Proactive measures are taken to prevent potential leakages as part of the efforts to reduce VOC emissions. In addition, potential sources of VOC leaks are controlled through the use of leak detection and repair (LDAR) technologies. Closed sampling systems are used at a wider scale and floating ceilings with double walls are used for the reduction of VOCs released from tanks. The installation of steam recovery systems is included within the scope of investments, and emissions stemming from filling processes are decreased.

R&D Efforts as Part of Emission Management

MOF4AIR (Metal-Organic Frameworks for carbon dioxide Adsorption processes in power production and energy Intensive industries)

Flue Gas to be Captured from Batman Oil Refinery/Technical and Economic Investigation of the Most Appropriate Business Model for Injection of Carbon Dioxide into the Batı Raman Field

Real-Time Monitoring and Optimization of Exchanger Networks Project.

In the EU project supported by the Horizon 2020 Research and Innovation program, technologies for the capturing of carbon from flue gas will be tested in a demo-scale facility for the first time at a refinery site.

The technical and economic feasibility of capturing the waste carbon dioxide gas in the flue gases of Batman Refinery, transporting it to the Batı Raman field and injecting it into the field with the improved oil recovery method will be evaluated. It is aimed to reduce carbon dioxide emissions and to ensure the continuity of domestic crude oil production in the Batı Raman field.

A control system that reduces fuel consumption and carbon emission by increasing the quantity of heat exchange in exchanger networks and reducing furnace load has been developed



Energy Management

Tüpraş is committed to continuous improvement by keeping abreast of new technologies aimed at increasing energy efficiency in line with its Energy Management Policy; earmarking funds for projects intended to boost energy efficiency; and protecting the environment by minimizing its carbon footprint as part of its energy management approach. It follows national and international regulations related to energy and energy efficiency that are applicable to Tüpraş. Energy processes are of great importance throughout Tüpraş's operations, and are followed by energy management teams specific to refineries. The energy performance of the refineries and units, new investments and technologies, and coordination and benchmarking studies are managed by the Head Office Energy Management Department under the coordination of the refineries. Intra-company and international standards are followed for the management of these issues. All relevant operations are carried out through processes that comply with the ISO 50001 Energy Management System Standard.



Energy Efficiency Projects

Tüpraş attaches importance to ensuring energy efficiency in its purchases of products and services, new investments and designs, and its production and all other processes. To this end, efficiency projects are planned and carried out after analyzing the instantaneous energy values monitored in all refineries using the common calculation criteria applied in accordance with international standards. The greenhouse gas reductions of selected energy efficiency projects carried out in refineries since 2018 are certified under ISO 14064-2.

A total of 65 energy efficiency projects have been carried out as part of the energy efficiency activities in all Tüpraş refineries, with six such projects being put into operation as planned projects, while 59 others were quick-win projects that were designed after identifying inefficiencies. These energy efficiency projects achieved 460,024 Gcal of energy savings and reduced CO2 emissions by 106,708 tons. Emissions were reduced by 89,549 tons through quick-win projects, while the corresponding figure for planned projects was 17,159 tons. Tüpraş's first renewable energy project entered into operation in Batman Refinery in 2021.



A total of **65 energy efficiency** projects were successfully carried out in 2021, and the energy savings achieved as a result were **2.5 times higher** than in the previous year.



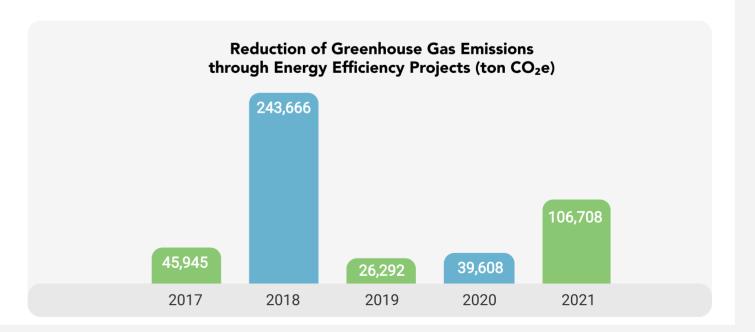
The solar power plant put into operation in Batman Refinery in June 2021 generated **1,738 MW of electric energy.**

Energy efficiency projects ensured energy savings equivalent to the annual energy consumption of 192,000 households and reduced the CO₂ equivalent to the planting of 259,000 trees annually.

Awards received in the field of energy efficiency:

Energy-Saving Projects in
Kırıkkale Refinery: Projects for
Energy Efficiency in Industry
Competition: Second prize in
Category-3, recognizing Projects
Aimed at Increasing Energy
Efficiency in Industry

İzmit Refinery "Operational Energy Efficiency Projects: Projects for Energy Efficiency in Industry Competition: Third prize in Category-3 for Projects Aimed at Increasing Energy Efficiency in Industry



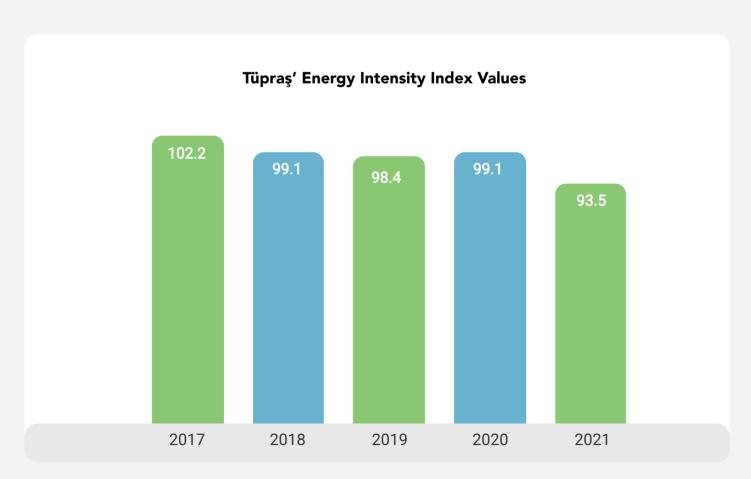
Renewable Energy Project in 2021							
Project Title	Project Summary	Gain					
Batman Refinery Solar Power Plant	The Batman Refinery Solar Power Plant entered into operation upon the energizing of the entire system in June 2021. The power plant is intended to meet a significant part or even 100% of daytime power demand.	The project cost 1.36 million USD and is one of the building blocks of Tüpraş's renewable energy strategy. Based on an assessment of its four-month production performance, it is envisaged to generate up to 3,422 MW annually. The value of this output is calculated as 0.3 million USD.					
Energy Efficiency Projects in 2021							
Project Title	Project Summary	Gain					
Replacement of Fan Blades in the Cooling Towers of İzmit Refinery	A total of 14 fans in four cooling towers in İzmit Refinery were replaced with new, lighter blades to reduce electricity consumption. In addition to the replacement of the blades with new blades with a different aerodynamic structure and higher efficiency, the diameter of the hub to which the blades are attached was reduced.	The new blades achieved the same air flow but with less energy. The project cut energy consumption by 4,333 Gcal, meaning a financial contribution of 0.8 million TL.					
İzmir Refinery U-9400 Naphtha Splitter Column Revision Project	The trays of the T-9401 Naphta Splitter columns in the U-9400 unit were replaced with high-performance trays as part of the project. The quantity of MP stage steam used in the reboiler exchanger was reduced to average 4–5 ton/h while improving product separation ratios.	The improvements led to annual energy savings equal to 34,108 Gcal. The project's financial effect is equal to 8.3 million TL.					
Switching the E-1215 Steam Generator in the Plant-1200 Vacuum Unit of Kirikkale Refinery to LP Mode	There are four steam generators in the Plant-1200 Vacuum Distillation Unit. An E-1215 B steam generator can produce steam only in LP mode due to its design, while the remaining three steam generators can produce steam in both LP and MP steam modes.	After evaluations, the E-1215 steam generator was switched from MP steam mode to LP steam mode, and the net steam production in the unit subsequently increased, reducing the load on the boiler by approximately 5 tons per hour.					

Energy Intensity Index

The energy intensity index value, which is used to measure the energy efficiency performance of refineries around the world, is one of the main indicators used for monitoring energy performance in Tüpraş. Tüpraş' energy intensity index reduced to 93.5 in 2021 as a result of its energy efficiency and modernization works. Thus, from 2008 on, an improvement of 26 points have been achieved.



At Tüpraş' energy intensity index an improvement of 26 points have been achieved from the year 2008 to the end of 2021.





Environmental Management

By adopting a responsible and respectful approach toward the environment, Tüpraş focuses on increasing its environmental performance and reducing its negative environmental impact throughout its operations. The company fulfills its responsibilities within the scope of its environmental obligations by implementing projects that reduce and continuously improve the environmental impact of its production processes. In the design of the projects, technology and process selections are made in accordance with EU standards, taking into account all environmental effects.

Environmental management focuses mainly on climate change, monitoring and reducing greenhouse gas and air emissions, ensuring water efficiency, waste reduction, the conservation of biodiversity and the minimization of all other environmental effects considering integrated pollution prevention and control principles. It also aims at raising environmental awareness among employees and the public at large, the conservation and development of wildlife and ensuring cyclicality in production. It is Tüpraş's objective to raise environmental awareness among the employees of its business partners and the public at large. In this context, 9,676 and 2,971 person x hours of training have been provided, respectively, to Tüpraş employees and those of its contractors in 2021. In addition, 250 person x hours of environmental training has been organized for primary school students in order to raise environmental awareness.

Tüpraş's operations do not have an adverse effect on the biodiversity of the natural receiving water bodies, and a Biodiversity Road Map has been drawn up following works undertaken in this scope.

The environmental effects of a product throughout its life cycle, including all stages from the extraction of the raw materials to production, use and end of life, can be analyzed in detail throughout all production processes with a Life Cycle Analysis, allowing the processes that have the highest environmental impact during the production phase to be determined and the necessary improvements to be made.

There are ongoing efforts to manage the environmental impacts of operations and planned investments based on an integrated approach through Sustainability and Life Cycle Analysis (LCA) in line with the Sustainable Development Goals.

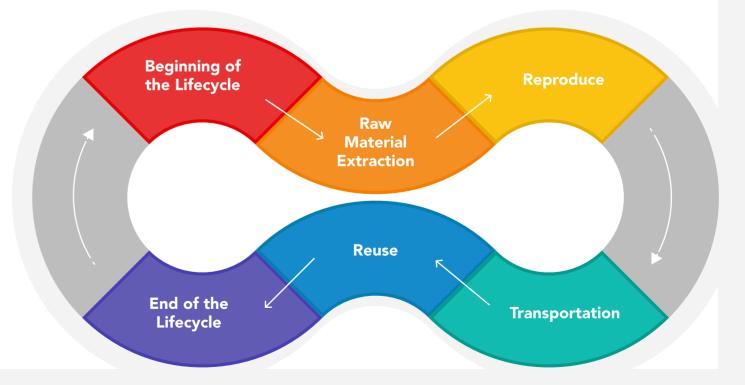
Tüpraş is able to observe all the environmental effects of its processes through the effective use of Life Cycle Analysis (LCA) in its projects, and identifies processes with high environmental effects before carrying out improvements. LCAs are also used for feasibility studies related to future projects to determine the environmental impact of individual projects.

Life Cycle Analysis Conducted in 2021

- Two courses on life-cycle thinking and analysis were organized to internalize life cycle thinking for all process teams.
- The process pertaining to the catalyst innovation developed under the 2020 "CO2-to-fuels" R&D Center project for the production of methane and dimethyl ether (DME) from carbon dioxide has been modeled for integration with existing hydrogen units in 2021, with commercial-scale eco-efficiency criteria and life cycle in mind. Ancillary facilities and the catalyst quantities needed for application in the field were determined for the calculation of net carbon emissions.
- An "environmental opinion" is necessary for projects proposed to be included in Tüpraş's investment program as part of its internal procedures, for which "control criteria and warnings" documents were drafted and made available for use in the pre-feasibility and feasibility stages of its investment program so that the opinion in question can be considered equally for all refineries. It will thus be possible for the consumption of resources by individual projects in the investment program and their environmental burdens to be standardized and assessed by considering life cycle.



The Life-Cycle Analysis of four units in the İzmit Refinery has been completed as part of Sustainable Refining Efforts.



Water Management

It is Tüpraş's main principle to use water – as a limited resource that constitutes the basis of life – with maximum efficiency; to reduce the consumption of fresh water through recovery methods and reduce the quantity of waste water; and to discharge waste water in accordance with the pollution load limits specified in permits, without causing harm to the biodiversity in the receiving water bodies. With the extraction of raw water and thus consumption of natural resources reduced in 2021, the ratio of water consumption to crude oil decreased by 22% when compared with the preceding year, ensuring the sustainable utilization of natural resources, preserving the structure of biological diversity and providing economic benefits. Furthermore, the quality of the water treated in the Wastewater Treatment Unit prior to discharge is constantly monitored and controlled in accordance with national and international legislation. SuAgile teamwork, which functions with the agile principle, was also applied in 2021 for the systematic monitoring and dissemination between refineries of best practices related to the saving of water.



Tüpraş was shortlisted for the finals in the "Water Management" category of the 2021 Sustainable Business Awards Competition for its "İzmir Refinery Waste Water Recovery Practices and Reduction of Consumption of Natural Resources" project.

Tüpraş' Water Saving Practices

Recovery of refinery and urban waste water flows through the Waste Water Recovery Unit

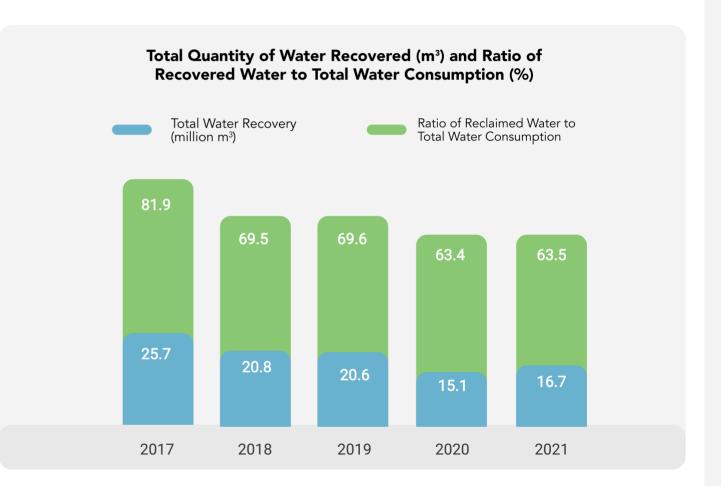
Reuse of recovered waste water in production units

Reduction of consumption of natural resources in refineries through the optimization of the water needed for cooling towers

Utilization of condensed steam flows as a source of water



Tüpraş consumed **26.3 million cubic meters** of water as part of its operations in 2021, while water consumption per cubic meter of crude oil processed declined by **22% on the previous year.**





Water in a quantity equal to that consumed by a city with a population of 2.5 million annually was saved as a result of investments into the recovery of wastewater and water efficiency projects.

Tüpraş 2021 Sustainability Report 60

A risk-based assessment was carried out employing the internationally recognized WRI Aqueduct method for the basins in which the İzmit and Batman refineries are located as part of a project on the "Identification of Water Risks", the results of which were assessed alongside reports drawn up at a national scale. A basin-based risk assessment for all refineries was completed in 2020 and 2021.

Tüpraş leads the Water and Waste Water Management Group under the Environment Board of the Koç Group. This Working Group is responsible for the preparation, implementation and follow-up of Water and Waste Water Management Standards and technical guidelines, and for the establishment of principles of integrated water and waste water management based on a systematic approach applied within the group's companies.



R&D Efforts as Part of Water Management

AquaSPICE (Advancing Sustainability of Process Industries through Digital and Circular Water Use Innovations)

A pilot system will be established to recycle the two waste water tanks in the İzmit Refinery, which can only be treated with periodic and manual interventions, through innovative treatment technology and sensor integration.

Monitoring and Analysis of Pollution in Membranes

In line with the objective of digitalizing waste water systems, works related to the "Monitoring and Analysis of Pollution in Membranes" were completed in the İzmit and İzmir refineries in 2021 and the systems were entered into operation. As a result, the quantity of reclaimed water was increased (approximately 50 cubic meters per hour) while the consumption of raw water was reduced (400,000 cubic meters per year).

Waste Management

Tüpraş is committed to ensuring that waste in all of its workplaces is reduced and recycled in order to attain the goals of its Environment Management Policy. The main principle to which Tüpras adheres regarding the management of waste resulting from its operations is to minimize the quantity of waste resulting from its operations, sorting such waste at its source and recycling it, and the disposal of waste that cannot be recycled through appropriate methods. Tüpraş's Waste Management Standard, established in line with the legal requirements, lays down the principles and methods to be used in its waste management processes. The Waste Management Program is used for monitoring waste management processes, for the verification of compliance with the applicable legislation and for reporting. In 2021, the new Headquarters Building Waste Management System was established and personnel training was provided.

The current waste management systems applied in all of Tüpraş's refineries have been modified in accordance with the Zero Waste Management System, and have received Basic Level Zero Waste Certificates. Upon the Ministry's determination of the procedures and principles, an application will be made for a silver, gold or platinum Qualified Zero Waste Certificate.*

*The Zero Waste Certificate is issued at four levels: basic, silver, gold and platinum. Silver, gold and platinum levels, which are defined as Qualified Certificates, are applied within the framework of the procedures and principles determined by the Ministry, 24 months after the receipt of the zero waste certificate at the basic level.

Tüpraş Waste Management Process Map

Responsible production and consumption are adopted as a waste management approach in all refineries to contribute to the circular economy – one of the key components of environmental sustainability. Tüpraş carries out projects that qualify as best practices at an international level through reduction at source, recycling at source and industrial symbioses.



Activities Carried Out in 2021 in Line with the Circular Economy Concept

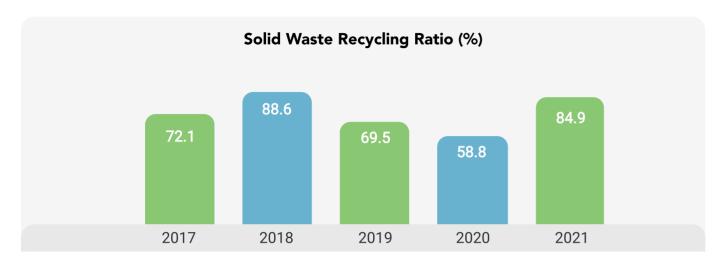
- New industrial symbioses were established in 2021, and catalyst waste, waste containing hydrocarbon, vegetative waste, waste refractory materials and used activated carbons were recycled and reintegrated through a circular economy. The composting of waste food began at a pilot level.
- A member of Business Community Plastic Initiative (BCPI), Koç Holding has committed to eliminate its use of disposable plastics by 2023. The campaign to reduce disposable plastics launched by Tüpraş in 2021 will continue in 2022.
- The recovery of catalysts with alumina content, activated carbons, waste refractory materials, waste blasting sand, absorbents, waste sludge and spent caustic, and their use as secondary raw materials is supported through R&D projects, and new cooperation areas are identified.
- In 2021, 1,563 tons of spent catalysts containing precious metals such as cobalt, molybdenum, nickel and tungsten, and 103 tons of catalysts containing precious metals, including platinum and rhenium, were sent for recycling rather than being disposed of in sanitary landfills, and a license for exporting hazardous waste was obtained in line with legal requirements.
- Trainings and optimization efforts are under way to promote the "zero waste" concept in all operations.



The waste recycling ratio increased to 85% in 2021 through industrial symbioses and recycling projects, and recycled waste was channeled into the circular economy.

Tüpraş 2021 Sustainability Report 64

Waste Recycling Ratio



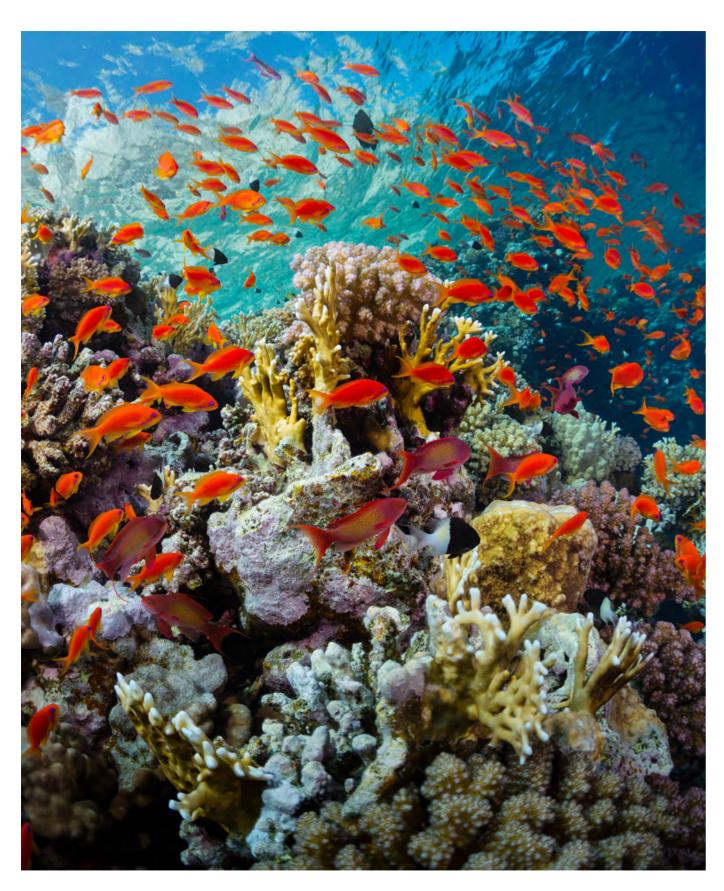
R&D Efforts as Part of Waste Management

EPC-EqTech (an innovative turnkey solution to process spent caustic created in the Oil&Gas sector at low cost and that meets wastewater regulations)

First-hand trial of an innovative electrochemical technology to be used for the treatment of spent caustics from the Kırıkkale refinery will be conducted as part of EPC-EqTech.

Utilization of Refinery Waste Oxide-based Materials as Raw Materials in the Refractory Sector The project has ensured that approximately 1,000 tons of oxide-based waste material was recycled, contributing to a sustainable environment and the circular economy. A project has created a considerable opportunity for industrial symbiosis.





Preservation of Biodiversity

Being aware of the adverse effects of industrial operations on the environment, Tüpraş is committed to managing its environmental impact and minimizing all kinds of harm to living creatures that may be affected by its operations. The benefits offered by biodiversity to agriculture and technology are of crucial importance to the continuation of human life and ecological balance, and the Tüpraş Biodiversity Guide has been drawn up taking this into account.

All of Tüpraş's refineries are located in areas allocated for industrial operations. There is no level 1 protected natural area, areas earmarked for environmental protection, RAMSAR (an international agreement on the conservation and sustainable use of wetlands) or wetlands with high value in terms of biodiversity within the boundaries of its physical impact zones.

Works Undertaken with Regard to Biodiversity

- Flora and fauna inventories evaluated as part of EIA surveys are reviewed in all Tüpraş refineries based on the biodiversity road map drawn up in accordance with the United Nations Convention on Biological Diversity, and it is confirmed that operations are carried out in line with the obligations outlined in the IUCN (International Union for Conservation of Nature's Red List of Threatened Species), Bern (Berne Convention on the Conservation of European Wildlife and Natural Habitats) and CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora).
- Meetings were held with various NGOs in 2021 to discuss the joint creation of projects. One such NGO, the Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA), is planned to initiate studies into the combating of erosion at the İzmir Refinery in 2022.
- Waste collection has been carried out for 5 years by TDO Fethiye Boat in Fethiye Bay, in conjunction with the Marine Environment Protection Association (TURMEPA).



TÜPRAŞ MANAGEMENT APPROACH



You can access Our Policies by scanning this QR code.

Corporate Governance

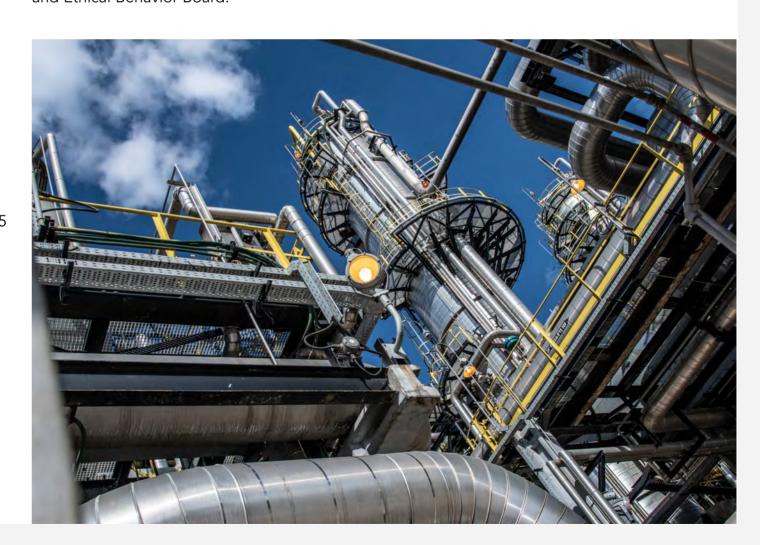
Tüpraş joined the BIST (Istanbul Stock Exchange) Corporate Governance Index in 2007, as one of the first companies to be included in the Index. The Company adopts the equality, transparency, accountability and responsibility concepts set out in the Corporate Governance Principles published by the Capital Markets Board ("CMB").

Compliance with the Corporate Governance Principles regulated by the Capital Markets Board ("CMB") is of paramount importance for the Company. In 2021, we complied fully with all the mandatory principles and most of the non-mandatory principles stipulated in Corporate Governance Communiqué ("Communiqué") No. II–17.1.

Most of the aspects that Tüpraş manages under the strategy "Energy to the Future" as part of its sustainability efforts are aligned with the principles set out in the "Sustainability Principles Compliance Framework" brought into effect by the CMB in 2020. Accordingly, Tüpras complies with many of the non-mandatory principles set out in the "Sustainability Principles Compliance Framework" developed by the CMB using the approach Observe or Explain. Moving forward, there is a goal to implement the principles that have yet to be complied with in full in a manner that will contribute to our Company's goal to create sustainable value. Tüpraş's Sustainability Strategy and associated Environmental, Social and Governance (ESG) policies have entered into force after being approved by the board of directors.

In early 2021, the Tüpras Board of Directors' Policy of Diversity was approved, which is aimed at increasing female representation on the Company's Board of Directors to 25 percent within 5 years. During the year, the Board of Directors approved Human Rights, Donations and Sponsorships, Anti-Bribery and Anti-Corruption, Supply Chain Compliance, Competition Law Compliance, Sanctions and Export Controls, Social Investment, Gifts and Entertainment, Enlightenment, Compliance Policies and Codes of Ethics with the aim being to ensure the more efficient management of the Company's compliance risks, and to better respond to Company's domestic and international stakeholders' expectations in terms of compliance. These have been published on Public Disclosure Platform and the Company's www.tupras.com.tr website.

The management structure of Tüpraş comprises a single-stage system headed by a Board of Directors elected by the General Assembly. The Board of Directors comprises 12 members, four of whom are independent. As a company that strongly supports female employment at all levels of business life, Tüpraş has two female members on its Board of Directors. There are no executive members on the Board of Directors, and the Chair of the Board of Directors and the General Manager are different people. The Board of Directors of Tüpraş benefits from various corporate governance tools and the efficient organizational structure when fulfilling its roles and responsibilities, and is supported by expert boards and committees, i.e. the Corporate Governance Committee, Risk Management Committee, Audit Committee, Steering Committee and Ethical Behavior Board.



71 72 Tüpraş 2021 Sustainability Report

Investor Composition in Tüpraş Shares

A total of 49% of Tüpraş's shares are traded on the Istanbul Stock Exchange (BIST). Diversity and richness in the investment portfolio is considered an indicator of trustworhtiness and stability by investors. As an indicator of this, the share of international corporate investment banks, funds and foreign institutions in Tüpraş's public shares had reached 57% by the end of 2021, which is 9 basis points above the previous year.

Corporate Governance at Tüpraş

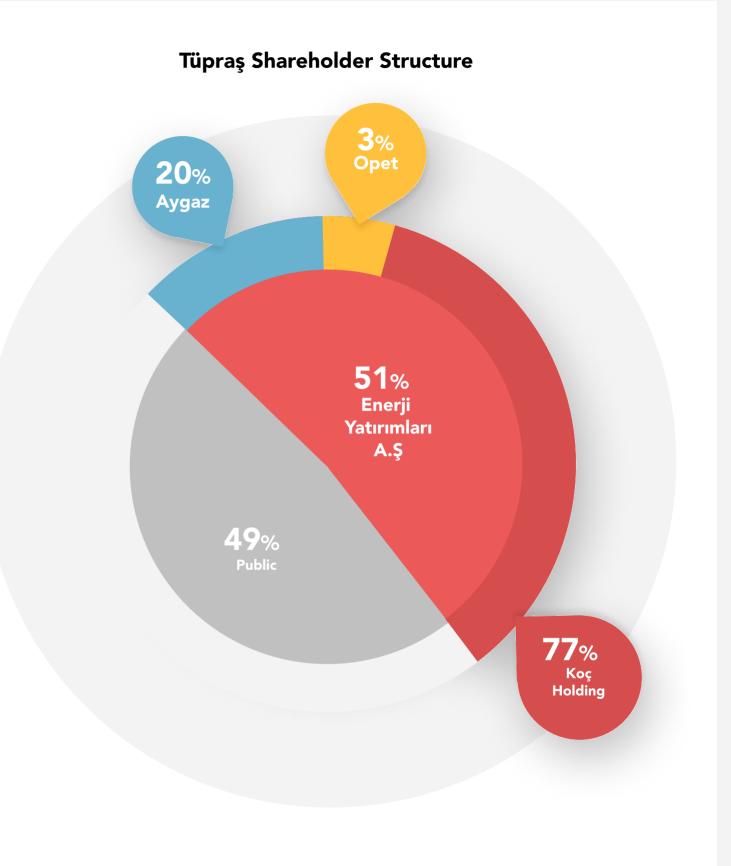
When Tüpraş joined the Corporate Governance Index in 2007, its Corporate Governance Rating Score was 7.91 on October 8, 2007, and this has continued to improve, reaching 9.58 in 2020 and 9.62 in 2021.

Tüpraş was listed in the first group in the World Corporate Governance Index published by SAHA Kurumsal Yönetim ve Kredi Derecelendirme Hizmetleri A.Ş. on March 10, 2021. This index ranks companies based on their level of compliance with corporate governance principles, and the development level of their organizations related to corporate governance.

BIST Sustainability Index

BIST Sustainability Index
The BIST Sustainability Index (XUSRD)
created by BIST in November 2014
listing companies with high
performance in corporate sustainability
offers companies the opportunity to
assess their economic, environmental
and social performances, and to
improve their corporate transparency
and accountability, as well as their risk
management skills with regard to
sustainability.

Assessing the companies on the Istanbul Stock Exchange based on international sustainability criteria, Tüpraş was included in the BIST Sustainability Index in 2014, which is the year the said index was established. According to this index, the assessment completed by Refinitiv in 2021 determined Tüpraş's ranking as 69.3.



Risk Management

The Corporate Risk Management process established by Tüpraş for the protection of its brand value and reputation and the creation of new values for its stakeholders is followed in line with the Company's new strategies and business goals. All factors that may affect the company are assessed in terms of risk and opportunity. Risk managers are identified at a company and business unit level, and a risk inventory is created. In order to carry out an effective risk management process, action points are determined and implemented to reduce the risks identified within the scope of Tüpraş's operations.

Tüpraş risks are defined under seven main headings:

Operational Risks: Operational risks are those with the potential to lead to loss or damage as a result of the failure of the management or personnel of the Company to act in accordance with time and conditions, errors and disruptions in daily activities and governance systems, or those attributable to disasters such as earthquakes, fires or floods.

Financial Risks: The necessary Financial Policies are being created, implemented and updated to ensure business continuity. It is essential to continuously monitor and improve the relevant processes if the financial goals are to be achieved.

Reputation Risks: Reputation risk can be defined as the potential for negative effects on the reputation of institutions related to their practices. Reputation damage may lead a Company to lose social prestige, to decrease the demand for its products and services, and to reduce its competitiveness in the sector.

Commercial Risks: This includes such risks as inventory impairment that a company may experience in commodity transactions, fluctuations in product profit/crack margins, risks arising from third parties with which it has commercial relations, risks that can lead to financial losses, production disruptions or market losses by the company, and an inability to collect receivables.

Strategic Risks: Tüpraş considers possible risks in the short, medium and long term when determining the actions to be followed to achieve its strategic purpose and goals in this direction, within the scope of the publicly announced Strategic Transformation Plan.

Compliance and Legal Risks: This risk refers to the potential that rights will be realized lower than expected and the liabilities will be realized higher than expected as a result of the adverse effects on activities, misinterpretations incomplete or late submission of documentation following changes in legal regulations.

Technical Safety and Environmental Risks: At Tüpraş, our environmental performance is monitored constantly in accordance with its objectives and goals, national environmental legislation requirements are checked during internal audits, and environmental risks and opportunities are identified.



About

The Areas Affected by Risks

Risks	Sub Risk	Environmental	Social	Financial	Corporate	Operational Technological
	1.1 Human Resources Risks					
	1.2 Information Technology Risks					
	1.3 Technology Risks					
1. Operational	1.4 Product Analysis Risks					
	1.5 Project and Investment Risks					
	1.6 Availability Risks					
	1.7 Security Risks					
	2.1 Currency Risk					
2. Financial						
2. Filialiciai	2.2 Liquidity Risk					
	2.3 Interest Risk					
	3.1 Risk of Damage to Company Reputation					
3. Reputation	3.2 Crisis Management Risk					
	3.3 Corporate Communications Management Risk					
4. Commercial	4.1 Commodity Prices and Inventory Impairment Risk					
4. Commercial	4.2 Counterparty and Credit Risk					
	5.1 Risks Related to Strategic Transformations					
	5.2 The Risk of Not Meeting Stakeholders'					
5. Strategic	Expectations within the Scope of ESG 5.3 Risks Related to Legislative Changes that May					
	Affect Market Conditions					
	5.4 Risks of Increasing Preferences for Alternative Fuels					

The Areas Affected by Risks

Risks		Sub Risk	Environmental	Social	Financial	Corporate	Operational	Technological
6. Compliance and Legal		 6.1 Risk of Negative Effects on Operations After Changes in Legal Regulations 6.2 Risk of Misinterpretation of Legal Regulations 6.3 Risk of Incomplete or Late Compliance with Legal Legislation 6.4 Risk of Non-Compliance with Compliance Policies 6.5 Risk of Violation of the Code of Ethics 						
7. Technical Safety	7.1 Technical Safety Risks	 7.1.1 Occupational Accident Risks 7.1.2 Process Safety Risks 7.1.3 Major Industrial Accident Risks (Fire, Explosion, Spill, etc.) 7.1.4 Emergency Response Risks 7.1.5 Change Management System Risks 7.1.6 Pandemic Risk 						
and Environmental	7.2 Environmental Risks	7.2.1 Regulatory Risks 7.2.2 Emission Risks 7.2.3 Water Risks 7.2.4 Waste Risks 7.2.5 Biodiversity Risks 7.2.6 Climate Change Risks						
	7.3 Physical Risks	7.3.1 Physical Risk						



For more detailed information on the risks identified by Tüpraş, you can access the <u>"Risk Management and Risk Management Committee Studies" section in the 2021 Annual Report.</u>

Internal Audit and Control

The internal control system at Tüpraş consists of the standards, job descriptions, authorization system, policies and written procedures included in the workflows. The Risk Management and Audit Directorate of Tüpraş monitors the internal control system proactively following the risk-based audit plans.

The auditing of Tüpraş and its subsidiaries ensures that the Company's operations are controlled in compliance with financial, operational, legal and Company rules. During the audits, control mechanisms are applied to processes for the assessment of the efficiency, adequacy and compliance of the internal controls that are performed with the aim of ensuring that the Company's activities and services are carried out in an efficient, trusted and uninterrupted way, and that the information obtained through the accounting and financial reporting system is complete, consistent, reliable, secure and available on time. These audits are aimed at providing reasonable assurance with regard to the relevant processes.

The audit findings are shared with the Company Management and responsible supervisors, and the necessary corrective measures are taken accordingly. Any audit findings that require action are entered in the Tüpras Risk and Action Portal, and the necessary actions are monitored systematically based on the finding's significance. Compliance with the Code of Ethics is taken into account during all auditing procedures, and special investigations can be made based on audit findings or complaints. Stakeholders can convey their complaints to the Company through various channels, primarily the Tüpraş Stakeholder Communication Management, Ethics Line and Customer Notification Management System, which are platforms that are open to all stakeholders. Complaints submitted to Tüpraş are followed up by the Risk Management and Audit Directorate to make sure that any reports that require action are reviewed in detail in line with privacy principles and in a manner that ensures the person making the report will not be subject to retaliation. If the reports submitted to the Company are related to a violation of the Compliance process or the Special Law, they are reviewed by the Tüpras Lead Legal and Compliance Consultancy Department or the Koc Holding Legal and Compliance Consultancy Department, and if they are related to other subject matters, they are reviewed by Tüpraş Risk Management and Audit Directorate or Koç Holding Audit Group Department.

After the review, if it is determined that there is a violation of the Code of Ethics, members of the Ethics Committee, which reports to the Board of Directors of the Company, convene to make a decision about the incident/situation.

While the Risk Management and Audit Directorate reports to the Company's General Manager at an organizational level, it reports to the Audit Committee at the level of the Board of Directors. The Audit Committee comprises the Independent Members of the Board of Directors and convenes at least four times a year, or more frequently when necessary. In 2021, the Committee held seven meetings. Periodic reports are sent to the Audit Committee with regards to the audits performed.

The selection of an Independent Audit Company responsible for auditing the financial statements is approved at the Tüpraş General Assembly. The rotation of the company responsible for the independent audit and the responsible auditors is carried out in accordance with CMB legislation. Independent auditors make a declaration of independence to the Tüpraş Audit Committee.

Business Ethics and the Fight against Corruption

Tüpraş strives to ensure customer satisfaction, to use limited natural resources efficiently, to offer products and services at global quality levels and standards, and to contribute to economic social development. To this end, it aims to become a symbol of reliability and continuity and to hold a good reputation among all of its national and international stakeholders, including its clients, employees, suppliers and stockholders.

All Tüpraş employees, Tüpraş subsidiaries, employees of these subsidiaries and all third parties doing business on behalf of Tüpraş are obliged to comply with these policies. Regardless of their position, all Tüpraş employees are expected to maintain attitudes and behaviors that safeguard the cultural integrity of the company. In addition to this, all employees are expected to protect and improve the reputation of the brands Koç and Tüpraş and the reliability of their corporate structures.



The Code of Ethics and Conduct and Practicing Principles Guide of Tüpraş was renamed as the "Tüpraş Code of Ethics" in November 2021, in order to manage the Company's compliance risks more efficiently and better meet the compliance expectations of national and international stakeholders. The Tüpraş Ethics Committee reports to the Board of Directors and is responsible for monitoring the implementation of these principles and conducting the required investigation in the event of violations.





You can access detailed information about the <u>Tüpraş Code of Ethics by scanning this QR code.</u>

Tüpraş T Sustainability S Journey P

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

All stakeholders in Tüpraş's supply chain are expected to carry out their activities in compliance with certain rules and working principles. All stakeholders in the Company's supply chain are informed about its corporate policies, such as the Tüpraş Supplier Code of Conduct, Tüpraş Code of Ethics, Tüpraş Information Security Management System Policy, Tüpraş Personal Data Protection and Processing Policy, and the Personal Data Processing Information Letter. They are required to commit to compliance with these rules and to do business according to the same. The Tüpraş Code of Ethics and Tüpraş Anti-Corruption Policy also regulate bribery and corruption issues. The Tüpraş Ethics Committee assesses the potential risks encountered during audits or direct complaints that reach the Company, enforces required sanctions, and applies corrective and preventive measures.

At Tüpraş, a culture in which speaking up about one's concerns is encouraged and supported has been created. For this culture to develop further, an Ethics Hotline was put into use under the leadership of Koç Holding to support the anonymity and privacy of reporters. Based on the reports coming through the Ethics Hotline, the Tüpraş Risk Management and Audit Directorate, Tüpraş Lead Legal and Compliance Consultancy Department or Koç Holding Legal and Compliance Consultancy Department conduct investigations and impose the necessary sanctions.

Tüpraş can never be a proponent of a religious, political or ideological view, trend or organization, or directly or indirectly support the activities or campaigns of political parties, politicians or candidates. The Company does not allow its activity fields or resources to be used for such purposes, nor does it permit lobbying for the Company's private benefits. Tüpraş exchanges information with public bodies as part of the transparent relationships it has established with such bodies, and responds to their information requests about the sector. Tüpraş supports the activities carried out by non-governmental organizations in the sector that contribute to the resolution of the problems that arise. In cases where public bodies are the client and during tenders, it acts in full compliance with free competition rules and legal procedures.

For detailed information about Tüpraş's relationships with public bodies, you can check the section entitled "Counterparty Risks" in the 2021 Annual Report.

In the event of a violation of the Company's Code of Ethics, the relevant procedures are followed and the Ethics Committee is convened to apply the necessary sanctions. There have to date been no suits filed against the Company for non-compliance with laws and regulations as regards to bribery and corruption. Online software is used to monitor, track and detect compliance risks, in particular the counterparties subject to international sanctions. If the status of any counterparty changes to a prohibited organization or person, the abovementioned software sends the Company a warning message, ensuring the status monitoring of the parties regarding sanction legislations throughout our business relationships.

Employees are informed about the reporting methods as part of the applicable compliance policies and ethical principles. Ethics Training is obligatory for employees. In 2021, employees received a total of 1,818 hours of training on ethics, addressing such basic matters as values and principles, corruption, misuse of assets, conflicts of interest, information security, gifts and entertainment, the use of social media and data safety.

To encourage all employees to internalize the Code of Ethics and to take an active role in the preservation of values, the ethical principles and compliance training provided by Koç Academy will be continuing in 2022. In addition, the Lead Legal and Compliance Consultancy Department will also host compliance training courses that will include all in- and out-of-scope employees.

Quality Management

As part of its vision to become a pioneering company in its sector, Tüpraş attaches importance to quality management in all its production and supply processes. The company applies the intra-company standards that it has established, as well as international quality and business management standards, to its operations.

Tüpraş is carrying out all of its operations in accordance with the Integrated Management System, comprising:

- ISO 9001 Quality Management System,
- ISO 14001 Environment Management System,
- OHSAS 18001 Occupational Health and Safety Management System, and
- ISO 50001 Energy Management System.

In 2021, internal audits of the Integrated Management System of the head office and refineries were conducted remotely in a process-oriented fashion. Process maps drawn up on M-Files Process Maps software were reviewed during the audits, findings related to missing processes were reported and the necessary "Corrective and Remedial Actions" were initiated.



Letter from the CEO

Tüpraş Sustainability Journey Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

The following actions were taken in 2021 under the Integrated Management System as a result of the audits:

• In June 2021, external audits of the Integrated Management System in the Kırıkkale Refinery, İzmir Refinery and the head office were conducted remotely.

New certifications were made with regard to the ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 standards covering the period up to October 5, 2024 following the audits.

• An ISO 27001 external audit was conducted in November 2021.

The term of the ISO 27001 certificate was extended to December 14, 2022 as a result of the audit.

- In 2021, Tüpraş's laboratories in İzmit, İzmir, Kırıkkale and Batman, were subjected to audits pertaining to the TS EN IEC/ISO 17025 standard, conducted by the Turkish Accreditation Agency, which certified subsequently that the laboratories were internationally recognized and acceptable.
- External CE certification audits for EN 12591 (Paving Class) and EN 15322 (cut-back) bitumen were conducted in the Batman Refinery in February 2021 and in the İzmir Refinery in March 2021.

EN 12591 and EN 15322 certificates were extended for one year.

- A polymer-modified bitumen EN 14023 audit was conducted in the İzmit Refinery in April 2021, and the continuity of the CE certificate was ensured.
- A certification audit for the ISO 10002 Customer Satisfaction Management System was performed in December 2021.

The term of the ISO 10002:2018 certificate was extended for one year.

Tüpraş is also carrying out works in line with the **European Foundation for Quality Management (EFQM)** model, and is developing a comprehensive and integrated system to advance its efforts to render its high performance sustainable in the changing world order, and to promote the culture of continuous improvement.

In 2020, the EFQM model was updated taking into account global trends, the United Nations Sustainable Development Goals and the ecosystem concept, with focus on transformation. Corporate culture, organizational and individual leadership, awareness of external business environments, being stakeholder-oriented, managing transformation and change, high performance, creating sustainable values, and constant improvement are at the root of the EFQM Perfection Model.



Tüpraş was the first company in Turkey to apply the new version of the EFQM model, which has been updated taking into account the UN Sustainable Development Goals.

Tüpraş initiated its "Journey to Perfection" in 2006 after signing the "National Quality Movement Good Faith Declaration" in collaboration with the Turkish Quality Association (KalDer). It has since carried out numerous improvement projects following the last external assessment in 2019, and continues on its journey after a self-evaluation in 2021 taking advantage of the level of maturity reached.

Other benefits reaped by Tüpraş from the new version of the EFQM model, in addition to improving its understanding of the current situation and allowing stronger focus on the future:

- Increasing our Environmental Social Governance (ESG) score by eliminating environmental, social and organizational risks,
- Measurability of progress toward sustainability (Criteria 1, 2, 3, 4),
- Development of a Company Value Creation Model in parallel with the UN Sustainable Development Goals,
- Ability to monitor and verify that numerous newly initiated/ongoing projects are progressing in parallel and integrated with the Model criteria, and in accordance with the time plan.
- You can access the management system policies and certificates via Tüpraş's website.

Criterion 1:An outstanding organization is one that is defined by a Purpose that inspires, a Vision that is aspirational and a Strategy that delivers.

Criterion 2: In an outstanding organization, leadership is positioned as an activity, not a role. Leadership behaviors are evident across all levels and parts of the organization. This role model leadership behavior inspires others, reinforces, and when necessary, adapts the values and norms, helping to steer the Organizational Culture.

Criterion 3: After identifying Key Stakeholders, and taking account of their importance, the organization determines types and classes, and understands the needs and expectations of key stakeholders with the goal of ensuring loyalty.

Criterion 4: An outstanding organization is aware that creating sustainable value is of vital importance to its long-term success and financial strength.

You can access detailed information on the EFQM Model and its criteria via this link.

Tüpraş 2021 Sustainability Report 86



Tüpraş 2021 Sustainability Report

Tüpraş

Journey

Sustainability

Letter from the

CEO

About

the Report

89

Tüpraş

Priorities

Sustainability

Climate and

Environmental

Management

Tüpraş

Management

Approach

R&D,

Innovation &

Digitalization

Social

Development

Human Focus

at Tüpras

Responsible

Value Chain

Management

Annexes

90

om the Sustainability
Journey

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

In addition to being a world-class refinery company in terms of the service quality it offers, Tüpraş aims to maintain its leading corporate status through the fair, equitable, inclusive, healthy and safe working environment it has created.

Tüpraş's Human Resources Policy, which reflects the company's approach and standards related to human rights, determines the rules that all employees and managers must follow. The Company aims to carry out its activities in accordance with the Human Resources Policy and the Universal Declaration of Human Rights, and undertakes to create a positive and professional working environment for its employees and to adopt an understanding that respects human rights towards stakeholders in the communities in which it operates.



Tüpraş's main practices within the framework of its Human Resources Policy are summarized below:

- Recruitment criteria are determined and announced in writing, and these criteria are followed in all recruitment activities. The intention is to recruit personnel who are qualified and with high potential to take Tüpraş forward.
- Job descriptions, work distributions and performance criteria are determined by the company management and announced to employees.
- Attention is paid to the use of objective data in training, rotation and promotion decisions.
- Great importance is attached to the provision of training aimed at improving the vocational knowledge and skills of employees, as well as their personal abilities.
- Employees are provided with a safe working environment and working conditions, and efforts are made to continuously improve them.
- Decisions taken regarding employees or developments that concern them are announced to the workforce.
- Employees are informed about the Company's financial situation, wages, career, training, health and any other issues that concern them.
- Recognition and reward systems are in place that support both the short- and long-term success of all employees, and ensure performance and an awareness of the created value
- There is no discrimination among employees; a fair, objective and transparent Human Resources Policy is pursued.
- Decisions that may affect employees are notified to them, and to employee representatives.
- The company supports the freedom to found associations and recognizes the right to collective bargaining.
- There is no practice of appointing an indirect representative other than the Human Resources Department to manage relations with employees.

The company maintains a creative, dynamic, knowledgeable, highly motivated, effective and efficient workforce, and is getting stronger day by day as a result of the development programs it has implemented. At Tüpraş, as in other Koç Group companies, the philosophy of "Our Most Valuable Asset is Our Human Resources" constitutes the core of our Human Resources Policy.

Tüpraş's long-term human resources planning has been established to identify employees who are best able to achieve the Company's goals, to increase their leadership skills, to develop their scientific and operational competencies through continuous training, and to draw up their career plans. The human resources processes created within this scope are managed with great care in line with Tüpraş's corporate goals, and are structured to be supported by a technological infrastructure that can strengthen the employee experience. In accordance with the Human Resources Policy, the Human Resources Unit identifies suitable candidates for job openings in terms of qualifications and employee competencies, and evaluations are made without discrimination using appropriate evaluation tools. Employees benefit from equal opportunities throughout their working lives following recruitment.

At Tüpraş, modern, integrated systems that enable the production of our business goals are used in all human resources matters, including the recruitment process, the performance management system, and development, remuneration and dismissal processes.



The Human Focus at Tüpraş

EMPLOYEE RIGHTS

- Diversity & Inclusion
- Ethical Principles
- Collective Labor Agreement
- Employee Support

EMPLOYEE ENGAGEMENT

- Recognition, Appreciation and Reward System
- Employee Loyalty
- Employee Experience

EMPLOYEE DEVELOPMENT

- Talent Management
- Acquisition of New Talents
- Tüpraş Development Dialog

OCCUPATIONAL HEALTH AND SAFETY

- Occupational Health
- Occupational Safety
- Process Safety
- Disaster and

emergency management

94

- Performance management
- Leadership Development

Employee Rights

legal regulations, as well as the United Nations Global Compact and the International Labour Organization (ILO) Convention in all its employee rights implementations. Tüpraş, which is against human rights violations of all kinds, supports the development of human rights within its sphere of influence. The Company expects its employees, suppliers and business partners to adopt the same principles as Tüpraş in this regard, and considers the maintenance of common values a basic criterion in the establishment and maintenance of its business relationship. Tüpraş has prepared its Human Rights Policy and the Tüpras Board of Directors Diversity Policy as part of its adaptation efforts in the field of corporate governance and sustainability. Tüpraş adopts an objective approach in all of its human resources processes, ensuring that equal opportunities are offered to all employees, regardless of age, gender, belief, ethnic origin or any other personal characteristic, and any discriminatory practices are forbidden. Tüpraş forbids the use of child labor, forced and compulsory labor, and abuses of employee rights, as well as any situations that may evoke such practices, and insists that its suppliers and business partners adopt the same principles.

Tüpraş acts in accordance with international norms and

Tüpraş adopts a principle of "equal pay for equal work" in the compensation of its employees. All kinds of rights and fringe benefits granted to a title and position are predefined and are the same for everyone. Within the scope of market wage comparisons, wage structures, position in the market, sectoral wage researches and wage management policies are followed regularly by working with internationally recognized research companies. A transparent wage system is implemented in which contributions to the achievement of the corporate goals are prioritized according to the level of responsibility.



Tüpraş 2021 Sustainability Report

Continuous improvement and development are supported to ensure a safe working environment and conditions for employees. In the refineries, it is aimed to fully ensure occupational health and safety in the workplace and on the job. For that purpose, employees are informed about the rules and instructions, and the need to act in accordance with them and take the necessary precautions. Occupational health and safety issues are discussed on the occupational safety platform, to which the Human Resources management has access, and the necessary actions are taken in line with suggestions. Necessary training is provided regularly in the workplace, the training content of which is reviewed in accordance with current implementations and developments. In addition to these, risk assessments at refineries are made in a timely manner in accordance with legal regulations. Occupational accidents are followed up and reported on a consolidated basis every year.

An "open office" concept is applied throughout the company in order to support and improve communication between the management and the workforce. Complaints, opinions and suggestions of all kinds are shared through open office communication. Employees are informed that they should apply to the Human Resources Department for any management-related problems.



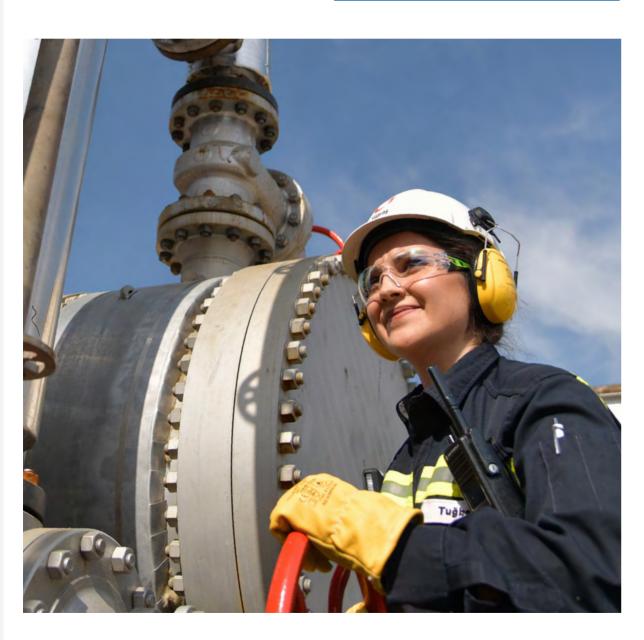


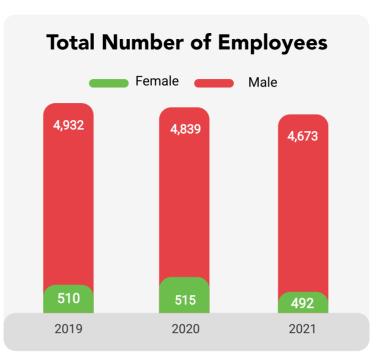
At Tüpraş, an objective, transparent wage and fringe benefits system is applied that reflects the realities of the national and international business world based on the principle of equality and fairness, and wages are paid based on the work done.

Diversity, Equality and Inclusion

Tüpraş considers it important to maintain an inclusive workplace and to ensure equal opportunities to all. To this end, practices are implemented aimed at the prevention of all kinds of discrimination in the workplace, to increase the employment of women at all levels and to support equal opportunities.

The company continued its efforts in 2021 in line with the motto "We Do Not Run Out of Energy for Equality", with a view to creating an inclusive, egalitarian and diversity-supporting workplace on every platform.







As a result of these efforts;

- The ratio of **female employees** has reached **9.5% as of 2021.**
- The ratio of women working in middle and senior management positions was determined as **17%** in 2021.
- The company attaches importance to the appointment of more women in management positions, and supports this with development programs. In line with their priorities in this field, our female colleagues received **2,121** person x hours of leadership training within the scope of the applied development and leadership programs.
- **28.4%** of the employees who received promotions in 2021 were women.

In 2017, Tüpraş signed the United Nations Women's Empowerment Principles (WEPs), and announced its goal of becoming an inclusive and egalitarian employer in the energy sector to its stakeholders, the development of internal practices in this regard, and the initiation of pioneering projects that will raise awareness and trigger transformation in the community. Through this approach, the Company aims also to contribute to "Social Gender Equality".

At the same time, a "Diversity, Equality and Inclusion Committee" was established at Tüpraş in 2021 to manage activities in a more systematic and planned manner with the aim of creating a business environment that supports diversity, equality and inclusion. Tüpraş aims to implement the principles it has determined specifically for the committee, to follow them up through supervision and to create a living organizational culture in this regard.

Ethical Rules

Tüpraş Code of Ethics has been created to guide Tüpraş managers, employees and business partners.* All Tüpraş employees are required to comply with the Code of Ethics of Koç Group and Tüpraş, as well as the legal regulations of the countries in which the company they work, operate or maintain a business relationship. Tüpraş expects its Business Partners to take the necessary measures to comply with the Tüpraş Code of Ethics and related policies to the relevant extent.

*Including suppliers, customers, contractors and any representatives, subcontractors and consultants acting on Tüpraş's behalf and account, as well as other third parties with whom Tüpraş does business.

In the duties, authorities and responsibilities defined in the company, the aim is to act in accordance with the Company's Articles of Association, Personnel Regulation, Code of Obligations, Tüpraş Values and Working Culture Principles, the Labor Law regulating business life, and the legal order valid and in force on the national platform.

The ethical rules that employees must follow within the company and the matters to which they should pay attention when communicating with each other have also been determined. These matters are referred to in the "Tüpraş Code of Ethics", "Job Descriptions" and "Personnel Regulations, and all employees are informed.

Tüpraş considers the following international standards and principles when dealing with Human Rights issues:

- UN Business and Human Rights Guideline Principles (2011)
- UN Global Compact (2000)
- ILO Declaration of Fundamental Principles and Rights in Work (1998)
- Women's Empowerment Principles (2011)
- Worst Forms of Child Labor Convention (No. 182)
- OECD Multinational Companies Guide (2011)

Collective Labor Agreement

Tüpraş respects the rights of its employees to unionize, and allows the free exercising of these rights. Employees are encouraged to become members of trade unions and non-governmental organizations, provided that they are organized within the framework of the law. A Collective Bargaining Agreement approach has been followed by the Company since its establishment. At Tüpraş, Petrol-İş Sendikası workplace representatives are employed in numbers determined within the framework of the legal regulations.

Collective Labor Agreement negotiations are carried out every 3 years with Petrol-İş Sendikası, of which 76% of the company's employees (3,936 employees) are members. The current Collective Bargaining Agreement is delivered to all union member employees in the form of a booklet, and is kept up to date on the Company's intranet portal. Business processes are managed in accordance with the provisions of the relevant Collective Labor Agreement articles.

During the reporting period, 32 Tüpraş employees have been actively involved in the management of the unions of which they are members. At the same time, 1,229 monthly paid employees take responsibility as employer representatives.

Employee opinions are heard through one-on-one interviews, survey applications and workshops, and are brought to the agenda during Collective Labor Agreement negotiations.

The scope of the Collective Labor Agreement covers such topics as:

- recruitment processes,
- equality in recruitment (gender equality) and inclusivity (religion, language, uncommitted racial discrimination, recruitment of disabled employees, etc.),
- determination of working conditions,
- rotation opportunities,
- compensation and the definition of fringe benefits
- social benefits (food, marriage, birth, nursery, etc.),
- use of annual leave
- Occupational Health and Safety Practices
- offered education and research activities,
- protection of employee rights,
- sensitivity to environmental protection.



Employee Support Implementations

One of the most important commitments made by Tüpraş in the light of its **human-oriented work philosophy is to create a working environment that supports employee loyalty and happiness.** To this end, various employee support practices that contribute to increasing the living standards of employees and their families, as well as their well-being, are determined for the mutual benefit of the company and its employees.

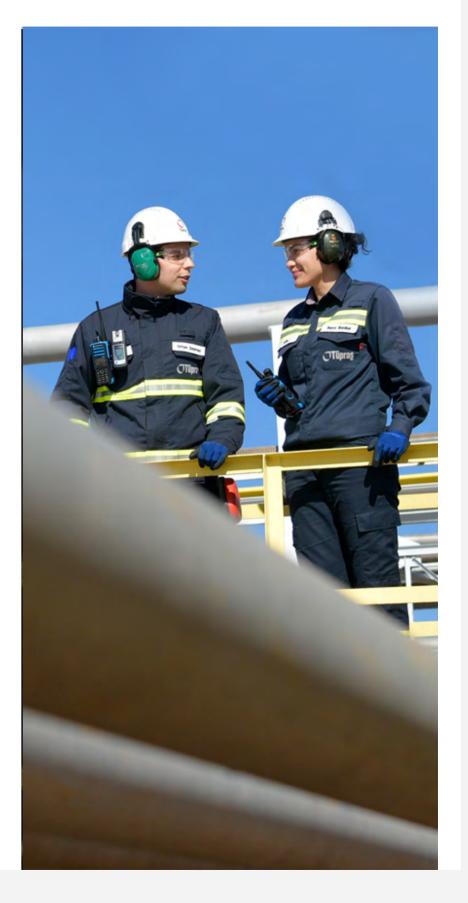
The main support programs and fringe benefits that Tüpraş has implemented for its employees and their families are listed below.

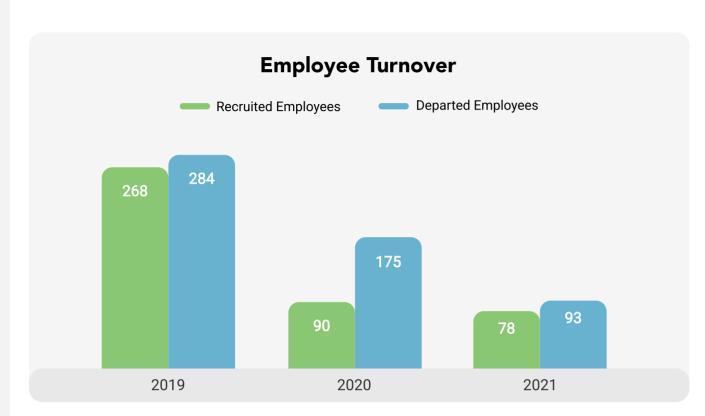
- Employee Support Program: This is a support program operated by a professional team that is fully specialized in providing services related to the lifestyles and individual needs of Tüpraş employees and their families during the pandemic and in the new normal period. With the TİSK Employee Support Program support is offered for the employees and their families during the pandemic and the new normal under these areas:
- o Psychological Counseling
- o Medical Counseling
- o Healthy Nutrition
- o Technical Support Counseling
- **Support Program at Work:** In line with the requirements of the Support at Work Program, which was launched in 2016, screening, training and individual psychological support studies are being carried out by industrial psychologists at the Company's refineries.
- **Expanded Health Insurance Program:** All Tüpraş employees are covered by complementary health insurance. Within the scope of the program, employees and their families are provided with the opportunity to benefit from private healthcare at affordable prices.
- Flexible Working Hours (FWH): Through this application, the monthly paid employees of Tüpraş can organize the start and end times of their daily and weekly working hours according to their personal needs and preferences, within certain limits and with the approval of the management.

- Nursery Aid Assistance Benefit Package: A Nursery Benefits Package program has been devised to support the maintenance of the work-life balance and career development of employees.
- Orientation Guidance Program: The Guide Support Program provides support to newly recruited Tüpraş employees, allowing them to adapt quickly to the corporate culture and their new position within their initial 3-month orientation period.
- Flextra Package: Through this flexible additional benefit program, employees are provided with the option to adjust their benefit packages in accordance with their lifestyle and individual needs by annually selecting the company contribution from a wide pool of benefits (options such as life insurance, gift and discount checks, individual pension programs) in addition to their existing benefits.

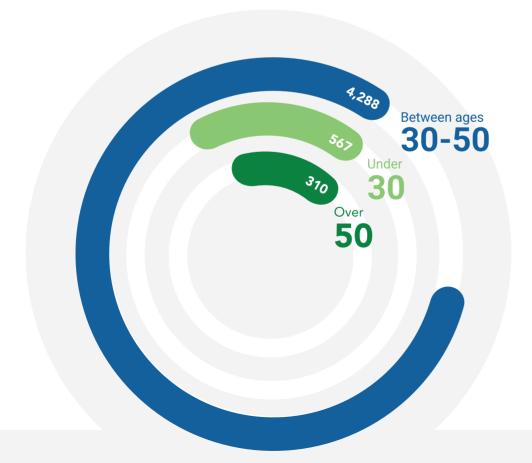
Furthermore, as beneficiaries of the **Koç Family Program**, Tüpraş employees can access the products and services offered by Koç Group companies throughout their retirement.

Tüpraş employees and their families can also choose to benefit from Koç Holding Retirement and Assistance Fund Foundation Health Insurance.





Employee Breakdown by Age Group



Employee Development

Tüpraş, as part of the improvement and structural change efforts in its focused human resources, attaches importance to training and development, aimed at improving both the professional knowledge and skills of its employees and their behavioral competencies, while employing its qualified workforce in the most effective and efficient way.



The activities carried out by Tüpraş in support of employee development in 2021 were as follows:

- The Tüpraş Academy, which is equipped with workshops, classrooms, a conference hall and a library, was established at Kırıkkale Refinery. Working with Tüpraş Academy, training content was prepared with internal trainers on 20 different subjects, and 1.7 million TL was saved. 2,218 employees received internal training.
- In order to develop the "Competencies of 'I Work Safely and with an Agile Mind'", **70** online personal development classes were held covering **14** different topics, with **577** employees in attendance.
- Tüpraş employees are prepared for the competencies of the future through such training programs as "RPA Coaches" and the "Analytical Tüpraş Training and Project Program".
- A total of **819** employees, after making a request through the Employee Development Dialog, underwent technical training in **98** different subjects.
- The E-TECH ACADEMY was established to serve as a comprehensive online platform for the provision of training to international standards, with the goal of improving the technical competencies of the employees of the Company's technical departments, and a total of **227** hours in **57** different training areas were made available to employees. Employees were thus provided with access to technical training without being affected by the pandemic.
- The "Introduction to Refining Program", carried out in an online medium, was launched with the support of internal trainers in order to ensure that all new employees of Tüpraş are aware of the company culture and the business processes of the departments, thus accelerating their adaptation.



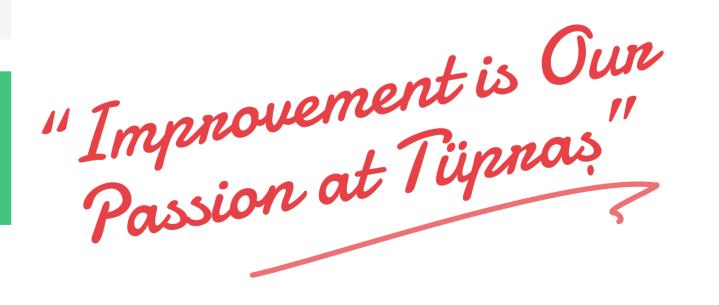
Talent Management

Through the talent management process, the aim is to recruit talented people who can carry Tüpraş into the future, to develop leadership and technical competencies, and to support correct career planning through training and development programs that have been specially designed for Tüpraş. In line with this goal, the leadership development of employees is supported through training and development activities, project studies and on-the-job learning/rotation processes that have been designed in collaboration with the industry's leading business schools and universities, aiming to improve the professional knowledge, skills and personal abilities of employees. The talent management process, which ensures the effective management of human resources and the assessment of development needs, also serves as a guide for job assignments and promotions.

Development of the two-level talent management program that was put into use in 2019 to cover Senior- and Mid-Level managerial roles continued in 2021, and the 3rd level talent pool was commissioned to develop into senior roles. Thus, while creating critical positions and substitution plans with the internal substitution system, the potential talent pool is also determined.



In 2021, "Tüpraş Leadership Schools" won the Gold Award in the "Best Blended Training Program" category, and the Silver Award in the "Best Leadership Development Program" category at the Brandon Hall HCM (Human Capital Management - Human Capital Management) Excellence Awards. In order to identify and develop talents within Tüpraş, talent development programs at three different levels were launched.



Tüpraş, through its talent management approach:

- ensures the identification of talent that will support the achievement of its future strategy and goals,
- devises solutions that meet the expectations and needs of diverse talent profiles,
- ensures sustainable institutional and individual development through interdisciplinary learning.

Acquisition of New Talents

Tüpraş contributes to the strengthening of vocational education with the projects it carries out for its business partner employees, and its high school and university students. The acquisition of talents compatible with the values and competencies of the institution, the ability to equip leaders with interdisciplinary learning opportunities, the attainment of high performance and the support of a culture of cooperation are among the priorities of Tüpraş.

Students worked in groups to develop a Tüpraş Project in Support of the Sustainable Development Goals, making use of the knowledge they gained during the internship program, and went on to develop "innovative ideas that will facilitate the involvement of women in business life in the field". At the end of the program, they presented their ideas to the Tüpraş management.

In 2021, a total of **165** students took advantage of **internship opportunities** at Tüpraş.

Our online internship and project student programs, which were transferred to the digital environment in 2020 as part of the COVID-19 measures, were continued online in 2021 due to the ongoing pandemic, aimed at the development of university students.

In the program, which is managed completely through internal resources, more than 60 Tüpraş employees have allocated approximately 400 hours of support to the development of students through one-to-one training, unit presentations, guidance and mentoring support.

A survey revealed that **97% of students were highly satisfied** with the program.

The Online Internship Program also took third place in the "Favorite Online Internship Program among Young People" category of the 2021 Youth Awards program hosted by the Youthall Student Platform, which is followed closely by many of Turkey's young talents.

Nextremers Program

The long-term Nextremers Project Student Program, which was launched in 2019 to contribute to the professional and personal development of university students, continued to reach out to young talents in 2021. The Nextremers students who joined Tüpraş in September 2021 continued to develop their career paths by contributing to the project outputs of the teams with which they were involved with the responsibilities and initiatives they took on, while participating in development programs that were specially designed for them.

The Nextremers Project Student Program, the application process of which was restarted in February-March 2021, attracted great interest from university students, with **more than 8,800 students applying to take the first step toward a career at Tüpraş.**

The Nextremers Program entered the Top 100 Talent Program of the TopTalent.Co student platform at the 47th position in 2019, and rose 26 places in 2021 to take the 21st place.



Tüpraş Development Dialogue

In 2020, the "Tüpraş Development Dialogue" tool was launched with a view to establishing an open line of communication between the management and the employees, and supporting the development of employees in line with Human Resource targets.

The behavioral competencies, career development plans and individual development needs of monthly paid employees are evaluated in an environment in which the employee and manager come together and communicate through the "Tüpraş Development Dialogue" tool. The "I Work Safely and with an Agile Mind" initiative devised by Tüpraş is applied in three parts, with the aim being to determine individual development requirements and to support the development of competencies. To this end, current competencies are evaluated to gain a perspective of career development needs, the openness of the employee to rotation, their mobility status and their possible career paths within Tüpraş, taking into account both the behavioral and professional fields.

Responsible Value Chain Management

Annexes

The Tüpraş Development Dialog tool was applied to 93% of employees in 2021, with focus on the development of a perspective that encourages dialog, feedback, rotation, development and looking to the future differently within the company. All employees carried out their training and development planning through the Tüpraş Development Dialog tool, making use of the Training and Development Catalog designed specifically to support behavioral competencies and career development. Employees created their professional/technical development plans simultaneously using the qualification matrix prepared for specific positions in support of their technical and professional development. Subsequently, they were able to follow the Tüpraş Development Dialog forms and their selected trainings through the digital Human Resources portal Enerjik throughout the year.

In line with the development-focused plan, 70 different behavioral competency training courses were held in 14 different subjects with the participation of 577 people, and 98 vocational/ technical training courses were held with the participation of 819 people in the training development catalog and professional development activities provided by Human Resources in 2021.

2021 Total Training Hours	Number of Employees	Total Training Hours	Average Training Hours
Monthly Paid	1,229	71,247	58
Hourly Paid	3,936	71,455	18
Total	5,165	142,702	28

Performance Management

Important contributions can be made to employee development through a well-structured performance and career management system. The performance management of monthly paid employees at Tüpras is carried out via the "Koc Dialog" system, the integration of which started in 2020, followed by its entry into use with all its features in 2021. Koc Dialog is a transparent and dynamic performance system that can be updated throughout the year, being integrated with versatile, structured and instant dialog exchange mechanisms for managers and employees, allowing the adoption of inspiring goals and success criteria with the OKR (Objectives and Key Results) method. All monthly paid employees can see each other's OKRs, including those of the General Manager, and can keep them updated throughout the year. With its flexible OKR structure, which can be updated to suit the dynamics and variability of the agenda, the performance system has become one of the most important parts of the model. At the end of the year, performance development results are shared with employees with feedback covering the whole year. Hourly paid employees, on the other hand, are provided with feedback by the senior management based on the results of the period and the target expectations. The total income for all monthly paid employees consists of the base wage, variable wage (bonus) and fringe benefits. It is updated every year in line with the country's economic indicators, reward market data and company data.

Employee Engagement

The participation of employees in decision-making processes plays an important role in strengthening employee loyalty and commitment. Accordingly, various mechanisms have been established to ensure Tüpraş's employees play an active role within the company.

Recognition, Appreciation and Reward Systems

The opinions of employees are collected through target distribution meetings, OHS board meetings, suggestion systems, surveys, collective agreements and social activity clubs, and are evaluated as part of process improvement practices. The ideas and efforts of employees that contribute to the success of the company are rewarded within the scope of the Recognition, Appreciation and Reward System.



Tüpraş's Success Recognition, Appreciation and Reward System includes six different sub-processes, as listed below:

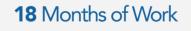
- Awards given each year (Most Successful Tüpraş Employees, Scientific Publication and Innovation, Seniority, etc.)
- Employee Experience Improvement Awards,
- Instantaneous awards,
- HSE (Health, Safety and Environment) awards,
- "Bravo" Platform, which ensures that good practices and behaviors that reflect the company culture and values are appreciated and seen transparently by all employees,
- Evaluating and revealing the good ideas of all employees through models that support the participation of company employees in management, encouraging continuous development and making employees feel "part of the mutual solution"

The "Refined Suggestions" system is implemented to support and encourage employees to share their individual and unique ideas on issues such as process improvements, energy savings, resource savings, production efficiency, environmental protection and occupational safety. Employees are given the opportunity to add value to their work through the Suggestion System.

Employee Loyalty and Employee Experience

EMPLOYEE

EXPERIENCE



463 Employee

Collaborations

86 Experience Team Coordination

14,500 Experience Line

Listening to 1,164 Monthly Paid, 250 Hourly Paid Employees

805 Actions

11 Employee Review and Measurement Surveys

6 Senior Management Meetings



170 Employee Information & Conformity Meetings

184 Management Information & **Conformity Meetings** **4,400** Person x Hours Central TEX Teamwork

8 TEX Sprint Review

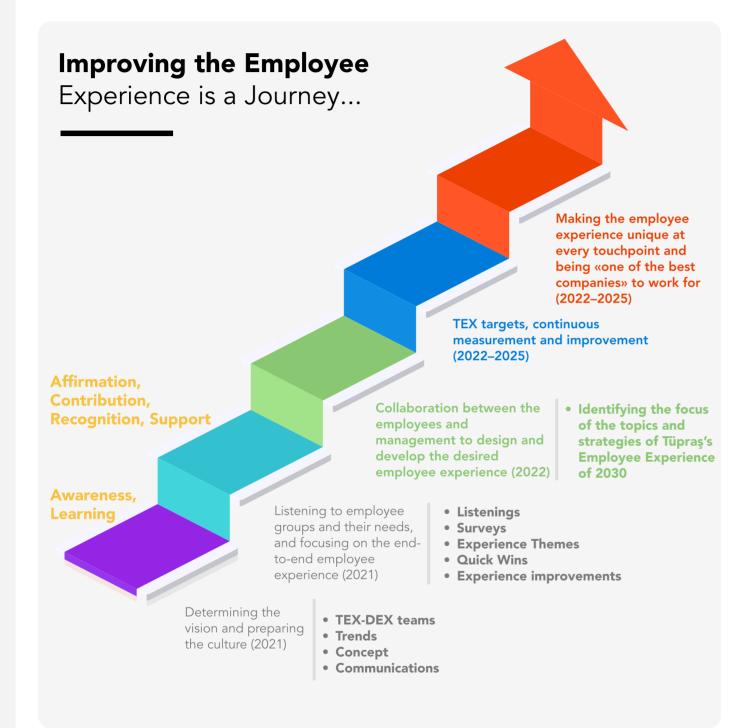
Experience Improvement Budget of **9,237,000 TL**

experience it creates for its employees through employee loyalty and experience surveys, and planned improvements are made in accordance with the feedback it receives from its employees via surveys.

In line with its principle of being a human-oriented company, Tüpraş regularly checks the



111 112 Tüpraş 2021 Sustainability Report







At the beginning of 2021, the unique Tüpraş Employee Experience (TEX) concept was created with the participation of employees to allow the further integration of the employee experience approach into Company processes. To this end, Tüpraş Employee Experience teams launched a process in which employee participation is encouraged, their experiences and expectations are heard, and solutions are designed and implemented accordingly. Within the practices carried out to improve the experiences of Tüpraş employees, the opinions of 1,164 monthly paid and 250 hourly paid employees were heard and noted. For the development of the teams involved in the process, 2,685 person x hours of training was provided. To garner the ideas and opinions of the employees, measurements were made based on 11 questionnaires.



The Tüpraş Employee Experience (TEX) concept took first place as the most successful project in the "Creating Value in the Business Life of the Future" category of the PERYÖN Human Value Awards in November 2021.

Tüpraş Employee Experience: A Unique and Sustainable Approach in Tüpraş

The success of the Tüpraş Employee Experience Concept is a result of its broad team structure, having been created with the participation of employees, as well as its process design, the methods used, the managerial involvement and the sustainable approach applied, all of which ensure the employee experience is embedded in the company culture.

Tüpraş considers improving the employee experience among its top priorities, and the Company has thus been recognized with one of the most prestigious awards in the field of human resources in Turkey.

Values in the Business Life of the Future: The Basis of Tüpraş's Employee Experience Efforts

The value of "Creating together" with a common purpose that stands out in the Business Life of the Future, self-organizing teams, responsible employees, efforts focused on the value chain, agility and a design-oriented approach constitute the basis of Tüpraş's work and the Tüpraş Employee Experience Concept.

Designing the Employee Experience with their Broad Participation, Inclusive Next-Generation Applications

As part of the efforts to improve the employee experience, interviews were held first with the participation of all employees, during which their experiences were listened to and recorded on a digital platform (Employee Experience Portal and Database). The experiences logged in the database were then analyzed, and the five most desired experience themes were identified, with actions determined for the determination of solutions under each experience theme. The determined actions continue to be implemented, among which improvements to the remote working experience and implementations (TEAMS Meeting Announcements, work from home support packages, wireless headsets), appreciation and reward applications (instant check reward amount improvement, executive initiative budget, TEX Awards), open communication and information platforms with employees, and executive team communication practices are examples of the programs that have been implemented to date.

Issues arising out of the results of employee loyalty surveys and areas in need of improvement are also handled via the Employee Experience (EX) approach. Tüpraş aims to implement real actions faster in 2022 by developing faster solutions through teams of managers and agile working methods in the "seven experience themes that need to be improved first". The employee experience, to which Tüpraş attaches great importance, is also among the company targets for 2022.

The improvement steps referred to as the "7 Experience Themes" are issues that are desired to be improved the most according to the survey results, and are as follows:

- Openness and Transparency Expected from the Company,
- Expected Support from Management,
- Feeling Valuable,
- Business Processes that make Life Easier,
- Having a Balanced Work-Private Life,
- Working in Pleasant Environments,
- Continuous Development

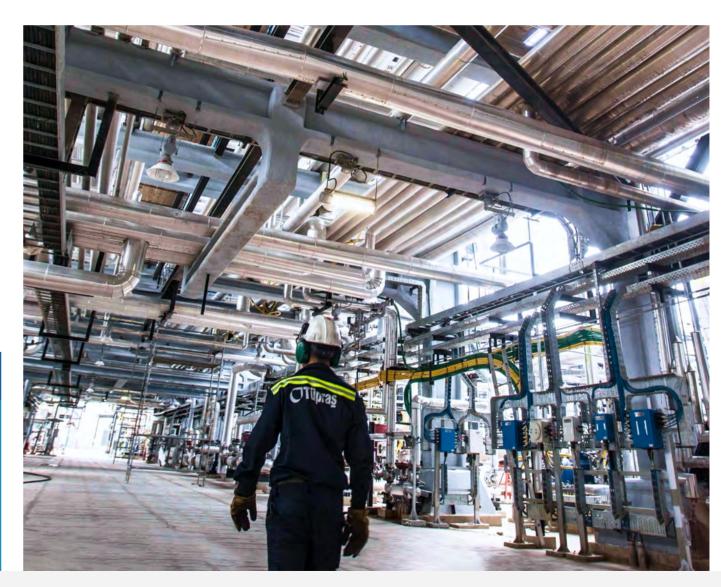
Tüpraş Employee Experience Improvement Awards

In order to highlight and reward the successful work done within the company to improve the employee experience, the Tüpraş Employee Experience Improvement Award platform was implemented.

In this context, the evaluation process was initiated to reward the projects / studies nominated in the following 4 categories.

- Being Hand in Hand
- Work Processes that Make Life Easier
- Feeling Valuable
- Working in Environments that Give Pleasure

Tüpraş Employee Experience Improvement Awards, the first platform for awarding employee experience enhancement projects in the Koç Group, is among the Best Practices in the Community.



UN SDG	Indicators	2020 Achieved	2021 Targeted	2021 Achieved	2022 Targeted	Current Status towards the Target
3 GOND HEALTH BY BECCAM WORK AND COMMON AND	Determining objectives for occupational health and safety	It is targeted to decrease the LTI frequency rate to around 0.3 in 5 years.	It is targeted to decrease the LTI frequency rate to around 0.3 in 5 years.	LTI Frequency rate was 0.41.	Decreasing the LTI frequency value to 0.36	
3 MORDINALING 8 ECCENT WORK AND COMPAGNORY II	Conducting process safety audits	Could not be conducted due to the pandemic.	Conducting an external audit of the İzmit Refinery Process Safety Management system Commissioning of the online SAP-Audit Management System for internal audits to be carried out within the scope of the Process Safety Management System	An external audit of the İzmit Refinery Process Safety Management system was carried out. The online SAP-Audit Management System has been put into operation for internal audits carried out within the scope of the Process Safety Management System. According to the plan prepared within the scope of Process Safety Field Audits, internal audits were carried out at all refineries.	Carrying out internal audits according to the plan prepared within the scope of Process Safety Field Audits An external audit of the İzmit Refinery Process Safety Management System, which was conducted in 2019 from 6 titles, will be conducted for the remaining 12 titles	Positive Development
3 - DORDHEATEN AND AND THE STATE OF THE STAT	Organizing safety campaigns and delivering awareness training to employees of Tüpraş and its contractors	OHS and Process Safety Training Courses were continued online during the pandemic.	Sharing new content on Process Safety and OHS with employees	Online training content has been prepared in 4 subjects determined within the scope of Process Safety training.	Sharing online training prepared within the scope of Process Safety training (4 subjects) with employees Preparation of online training content in 4 new topics determined within the scope of the Process Safety training	

Believing that sustainable development can only be achieved with a healthy environment and business context, Tüpraş is continuing its development in line with its goal of identifying the risk levels of all of its operational activities, and eliminating such risks or reducing them to an acceptable level.

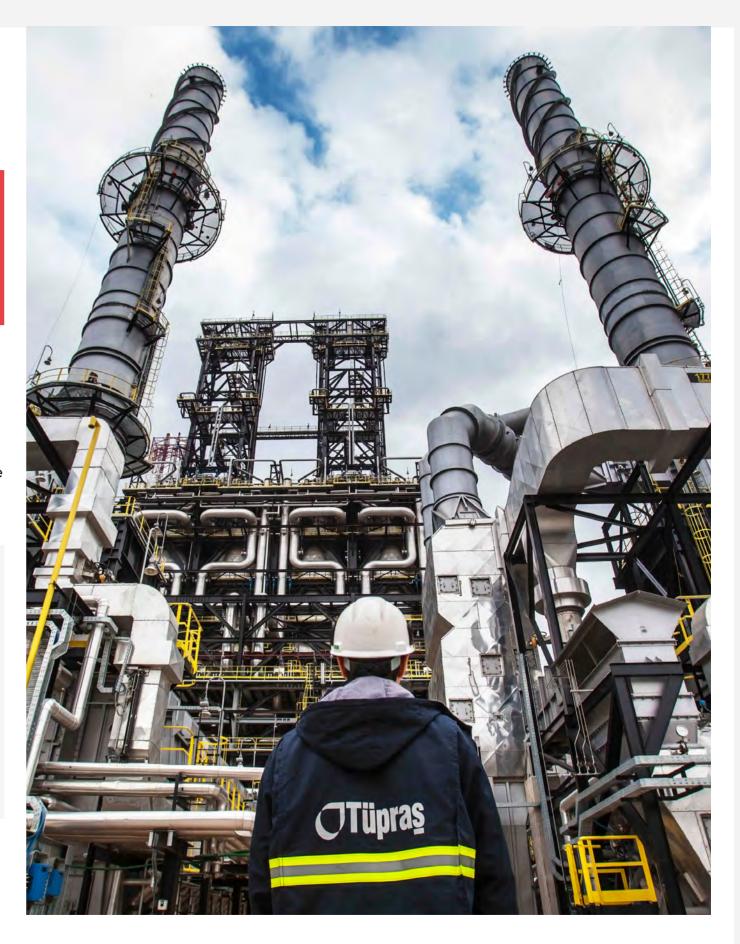
A Health, Safety and Environment (HSE) Policy and Strategy were established to ensure the safety of all employees and stakeholders in Tüpraş's fields of activity, and to create an accident-free working environment.

You can access detailed information on Tüpraş's HSE Policy from this link.

Tüpraş's Occupational Health and Safety (OHS) mission is to ensure its employees return home healthy after work, while its OHS vision is to ensure that they return more healthy and more aware. In line with this mission and vision, Tüpraş makes use of all kinds of applications and technologies to ensure individuals first think about their personal safety, and then that of the people and facilities around them, and take all the necessary actions in terms of OHS.

The primary objective of Tüpraş in its OHS approach is to prevent potential risks or to eliminate them in accordance with standards, or if this is not possible, to reduce them to an acceptable level.

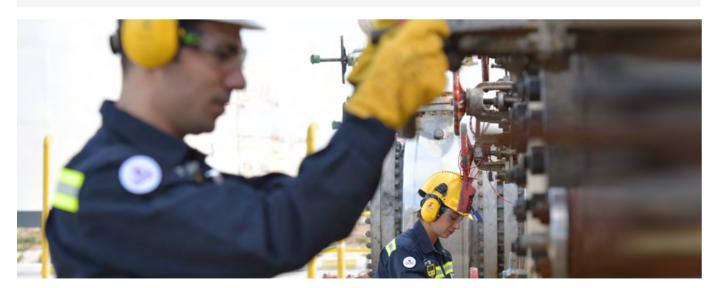
Building on its reputation as a reliable and leading company in the energy sector, Tüpraş shares its achievements, experiences and good practices in the fields of OHS, process safety and emergency response at congresses and symposiums. In 2021, six examples of good practices applied by Tüpraş in its processes were promoted via presentations or posters at national and leading international congresses, such as CCPS (Center for Chemical Process Safety).



Tüpraş 2021 Sustainability Report

OHS Management at Tüpraş

- Tüpraş continues its efforts in line with its goal of identifying the risks arising from its activities and eliminating or reducing to an acceptable level such risks in accordance with national and international standards. In this context, all employees and solution partners are expected to comply with the established HSE and Process Safety Standards without compromise, for which all contractors undergo mandatory OHS training before starting work with Tüpraş.
- The manager with the main responsibility for OHS is the Technical Safety Director, who reports directly to the Tüpraş General Manager.
- OHS performance is monitored monthly and annually in line with the ISO 45001 Standard and the related legal requirements, and the garnered data is among the basic performance indicators of the executive body.
- To instill a safe business culture in its employees and to follow their progress in this regard, Tüpraş gives weight to its HSE score with 10% on the Company's Target Card. Company Target Card performance is used for the calculation of "Variable Wages (Premium)", which forms part of the total wages of employees.
- OHS-related issues are managed in line with the ISO 45001 Standard and the related legal requirements, and OHS performance is monitored monthly and annually, and reviewed at the Technical Safety Evaluation Meetings. OHS performance is also evaluated twice a year at the OHS Coordination meetings, attended by representatives from all refineries. The five OHS Boards at Tüpraş Headquarters and its refineries have a total of 35 members, 10 of whom are employee representatives. Board meetings are attended by around 100 people, including permanent members, OHS experts, unit managers and representatives from the refinery units.

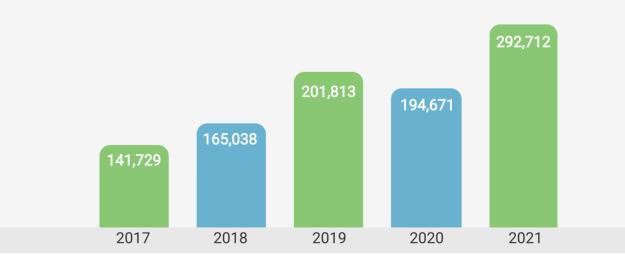




OHS performance is monitored monthly and annually in line with the ISO 45001 Standard and the related legal requirements, and the garnered data is among the basic performance indicators of the executive body.

- OHS issues are also considered and evaluated when planning new projects, operations or process changes. After identifying a potential hazard that may affect employees, the measures to be taken are accounted for in the program and are followed during the design and manufacturing phases. In the event of changes in activities, the effects of newly added equipment, facilities and processes on existing systems are managed based on process hazard analyses conducted as part of the management system.
- For the acceptance, processing, storage and sale of raw materials and auxiliary products in refineries, which are classified as very dangerous workplaces, sufficient resources are allocated to the development of practices to ensure the health and safety of employees in all operational, maintenance and administrative activities with a continuous improvement approach.





Occupational Health and Safety Practices

In 2021, the following activities were conducted to improve general OHS data, to create a safer workplace and to ensure that employees are healthier and more conscious:

- The contractor management system (Single JHSU) was extended to all refineries, whereas Kırıkkale Refinery proceeded to the next phase.
- As part of work control aimed at the Lean Work Permit Standard:
- o A more effective and controlled system was introduced to simplify work permit processes. o Employee participation and effective additional audits were ensured through the sharing of powers and responsibilities.
- o Forms and certificates were simplified.
 o The necessary infrastructure was established for the efforts required for compliance with international good practices.
- As part of digitalization efforts, an electronic work permit pilot study was completed at the İzmit Refinery and the preparation of technical specifications was launched. The procurement process is planned for completion in 2022, followed by the implementation phase.
- Efforts to digitalize documentation processes are continuing, ensuring a more effective data collection and analysis process.
- As part of the efforts to establish a safety culture, individual and team development activities were conducted to raise employee awareness.
- The findings of an audit conducted by the Ministry of Labor, BSI and Koç Holding were evaluated, and most of the issues raised were dealt with immediately. Additional risk assessments were made for long-term actions, and the identified hazards were taken under control until the completion of the main activity.

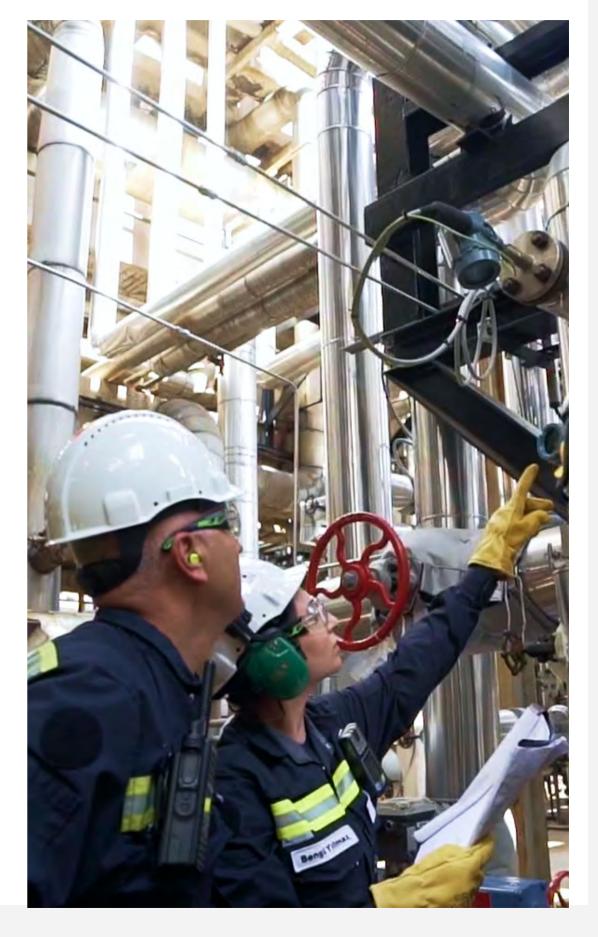
Occupational Health

Tüpraş attaches importance to the health of its employees, and takes various measures to protect them from both occupational and general diseases. Starting from recruitment, all Tüpraş employees undergo periodic health examinations during their employment, and are provided with various health services, including such preventive actions as vaccinations.

Tüpraş attaches priority not only to the physical health of its employees, but also their motivation and mental health. Psychosocial Risk Assessments are made to identify and eliminate any mental risks that employees may encounter in the working environment or due to their work.

Tüpraş's studies into Health-Risk Assessment (HRA) are continuing at all refineries. In HRA studies, site-specific (unit, workshop, laboratory, warehouse, etc.) chemical, physical, biological, ergonomic and psychological factors are analyzed, and technical and administrative measures are taken to prevent employees from being exposed to such factors, or to reduce their exposure to acceptable levels. The obtained results are followed up through periodic controls.

Tüpraş also carries out studies to review and develop existing measures aimed at preventing stakeholders who share the same working environment from being affected materially or morally by activities. Moreover, new reasonable and feasible systematic approaches are being implemented. Tüpraş develops its practices based on benchmarking with International Best Practices, and shares its OHS practices to inspire and provide information to the sector.



Occupational Safety

In accordance with its occupational safety philosophy, Tüpraş considers the health and safety of its employees as a top priority and an indispensable value at the core of its activities. At Tüpraş, the concept of safety is not considered the responsibility of a particular group, but rather an obligation with which everyone must comply. "Safety" is thus not a priority, but a value. Carrying out activities in contravention with the safety culture is forbidden.

Tüpraş adopts an approach that aims to minimize risks to occupational safety and to increase the measures taken to counter potential risks, and manages its OHS processes with an understanding of risk assessment and continuous learning. Safety risks can thus be eliminated by following numerous internal and international standards, risk assessment systematics and working procedures, such as the Risk Assessment Chart (RDT), Hazard and Effects Management Process (TEYS), Incident Classification, Research and Reporting (OSAR), Contractor HSE Management System and Tüpraş Tracking System (TTS). Operational risks are controlled through HAZOP studies, which are reviewed every two years and renewed every four years. Tüpraş aims to reduce the frequency of the occurrence of major accidents during its operations to as low as 1x10-6, although legal regulations stipulate a value of 1x10-4. From reviews of the OHS events that occurred in 2020 and 2021, it can be seen that the number of accidents linked to the facilities or equipment decreased considerably, while those linked to human error continued. Accordingly, studies were carried out in 2021 to improve planning and field control, but also to minimize the effects of "Human Behavior/Errors".



Calculation according to OSHA (Occupational Safety and Health Administration) Criteria;

Tüpraş calculates the LTI frequency rate according to OSHA criteria. After achieving a 0.3 decrease in the frequency rate over the past 5 years, this rate has been pushed back to 0.41. Tüpraş aims to decrease its LTI frequency level to 0.3 by 2025 and to 0.25 by 2030.

OSHA	2017	2018	2019	2020	2021
LTI Frequency Rate - OSHA	0.71	0.68	0.70	0.46	0.41
Tüpraş Employees	0.46	0.69	0.70	0.60	0.23
Business Partner Employees	0.94	0.68	0.70	0.36	0.54
LTI Severity Rate - OSHA	36.1	27.8	25.8	18.9	18.2
Tüpraş Employees	13.5	20.2	17.9	21.5	10.1
Business Partner Employees	54.0	33.7	31.3	17.0	23.6
Total Recorded Injury Rate - OSHA	3.3	4.3	4.0	3.7	3.4
Tüpraş Employees	4.3	3.3	4.6	4.8	4.2
Business Partner Employees	2.6	5.1	3.5	2.9	2.9

(LTI Frequency Rate = number of LTI events x 1 million/working hours)
(LTI Severity = number of LTI workdays x 1 million/working hours)
(TRIR = number of events x 1 million/working hours)

Process Safety

Process safety is among the leading priority areas of Tüpraş. Accordingly, Tüpraş implements a management-led and owned Process Safety Management System in its refineries comprising 14 main topics, and aims at Operational Discipline and Excellence with reference to CCPS and OSHA (Occupational Safety and Health Administration) criteria. This Process Safety Management System allows holistic assessments to be made covering all areas, such as in maintenance and control activities prone to process safety accidents, operating procedures, changes in management, process hazard analyses, training and competence, and contractor management, in line with Tüpraş's safety requirements.

As a result, 16 antecedent and posterior Process Safety performance indicators have been identified, based on international standards and practices (API754, CCPS etc.), and the relevant values are monitored monthly. In this way, it is aimed to take measures before accidents occur, and to learn from accidents as a means of avoiding reoccurrences.

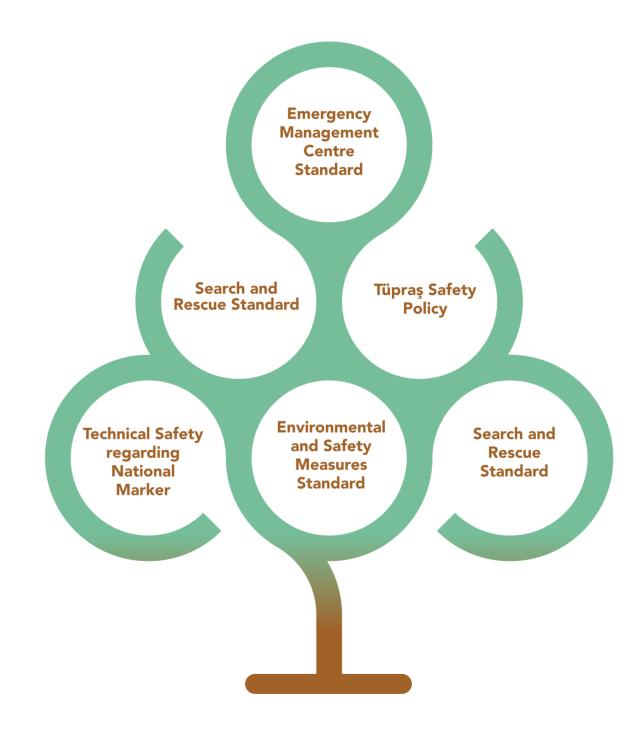
To raise the awareness of employees in process safety and to develop their competencies, internal training courses covering major accident scenarios were continued in 2021, both in classroom environments and online, as was the case in 2020.

Digital Initiatives in Process Safety

Analysis capacity will be extend beyond human capabilities through the use of new technologies, including an automated warning system that highlights potential risk situations in real time and launches preventive measures accordingly. In line with its digitalization studies, Tüpraş implements various projects, such as alarm management, barrier monitoring-Safepool and SU/SD procedure digitalization, which may be effective for the management of process safety risks, and the continuous online monitoring of the effectiveness of barriers and actions that can prevent such risks. Considering the developing and changing processes and potential threats in the world, in our country, and particularly in refineries, cybersecurity and startup risk assessments have started to be integrated into working processes.

Disaster and Emergency Management

Disaster and Emergency Management in Tüpraş is based on contemporary safety management practices and national and international security norms. Responsibility for the management of disasters and emergencies lies with the Technical Safety Directorate in the Headquarters, and with the Technical Safety and Environment Directorates in the refineries.



CEO

Tüpraş Sustainability Journey

Tüpraş Sustainability Priorities

Climate and Environmental Management

Tüpraş Management Approach

Human Focus at Tüpraş

Social Development

R&D, Innovation & Digitalization

Responsible Value Chain Management

Annexes

To mitigate potential emergency risks and to intervene with methods aimed at achieving the objectives, all of our refineries conduct exercises in preparation for such high-level emergencies as fires, search and rescue operations, hydrocarbon cloud/toxic gas emissions, and environmental spills. The necessary measures were taken for the implementation of emergency drills during the pandemic. All refineries conduct Disaster Exercises, which must be applied at least once a year to ensure readiness for large-impact disaster scenarios.

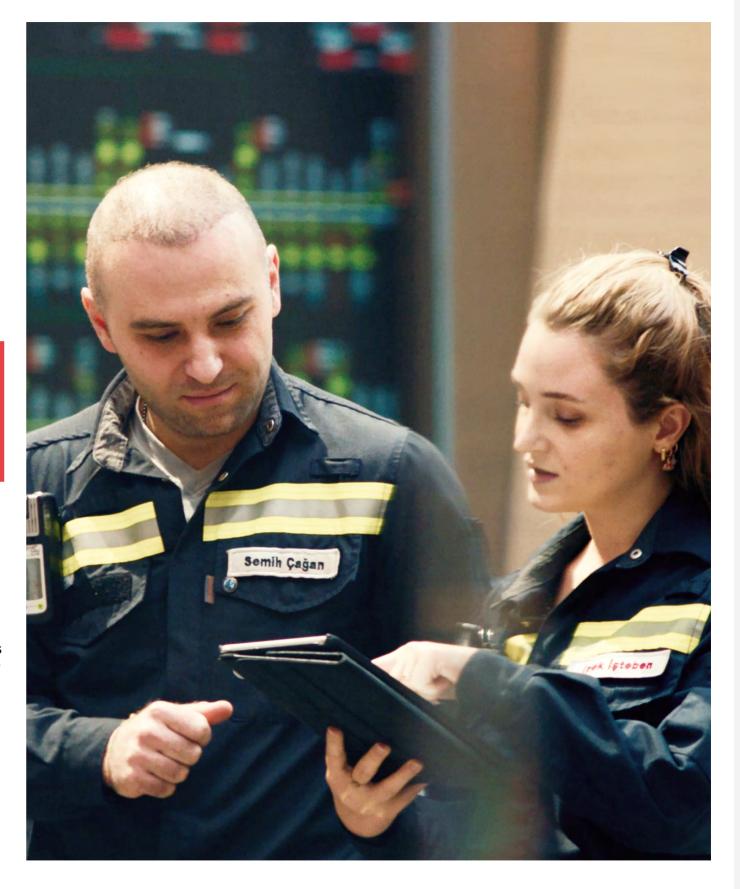
Competent teams equipped with appropriate equipment and materials are maintained to deal with marine and rail-borne spills, and studies are conducted into cooperation with authorized response solution partners. Aside from public institutions and organizations, as stakeholders, neighboring facilities also participate in these exercises with their teams and equipment. Tüpras continuously improves and develops its emergency response processes and preparations by monitoring internal and external audits, and by following and applying the latest technological advances.

Tüpraş responds to emergencies with competent personnel and state-of-the-art equipment.

The plans to be followed and the practices to be implemented in the event of such extreme events and disasters as fire, energy and water outages, occupational accidents, earthquakes, floods, terrorism and sabotage, have already been identified, and the relevant preparations have been made in terms of teams and equipment based on predefined scenarios.

National and international standards are taken as the basis in the modernization and continuous improvement of emergency protection and response systems, and the delivery of training courses to increase the competence of the relevant teams.

Tüpraş takes strict measures against potential emergency risks that may occur during supply operations, and constantly reviews its measures. To ensure the safety of supply, suppliers are requested to meet certain standards regarding the tankers carrying out transportation tasks. Especially in the import of crude oil, the sea tankers used should comply with the requirements of ISO 9001, class certificates and the "ISPS" code (International Ship and Port Facility Security Code), and should be accepted by the ports, thus greatly mitigating the risks associated with the transportation of such materials. Furthermore, Tüpraş maintains the necessary equipment at all its refineries, as well as in its warehouses at certain points along its railway routes, to address any potential accident or spill.





UN SDG	Indicators	2020 Achieved	2021 Targeted	2021 Achieved	2022 Targeted	Current Status towards the Target
4 QUALITY 4 ENCORDIN 10 REDUCED 17 PARTNERSHIPS REDUCED 17 PARTNERSHIPS REDUCED 17 PARTNERSHIPS REDUCED 17 PARTNERSHIPS REDUCED 17 PARTNERSHIPS REDUCED 18 PARTNERSHIPS REDUCE	The project entitled Energy to the Future: I Code, I Model, I Produce; classes for robotics coding, 3D modelling and production skills for 7th and 8th-grade students	During the pandemic, the project was transformed, and with the support of 60 volunteer teachers, 10,000 trench masks were produced for healthcare workers with 3D printers in schools.	Launching the project in more schools	41 school organizations in Batman, Kırıkkale, İzmir, İzmit and Istanbul Training courses for teachers	Events for students, in particular female students	
4 COLUMN 10 MEDIATES 17 PARTICISARS WEDIATES 17 PARTICISARS WHITE THE PARTICISARS WHITE THE PARTICISARS	Energy to the Students; Science Experiments Series for 5th and 6th grade students	The contents of the experiment were prepared during the pandemic	Online preparation of experiments	Transferring experiments to online environment	Sharing with the public	* ‡
5 GENGER 10 REJUCIO FORMULTIS FORMULT FORMULTIS FORMULTIS FORMULTIS FORMULTIS FORMULTIS FORMULT FORMULTIS FORMULTIS FORMULTIS FORMULT FORMULT FORMULT FORMULT FORMULT FORMULT FORMULT FORMULT FORMULT FORMULT FOR	The program titled Women's in Technology and Innovation; training courses on entrepreneurship for university students, in particular female students		Creating the project with universities, NGOs and the entrepreneurial ecosystem	"Feminist Technologies for Generation Equality - Online Internship Program" Collaborations with Universities	Continuation of the project Collaboration with Batman University for the Program "Innovation in Young Minds and the Female Power"	Positive Development
5 GOMES COMMITTY 10 MEMORITIES 17 PARTICISMES WHITE THE PARTICISMES	UN Women HeForShe movement, collaboration with Fenerbahçe Sports Club	The "16 Days of Activism" campaign of the Turkish Office of the UN Women's Unit was supported by the voluntary participation of employees. three "Athlete Workshops" and one "Change Leaders" training session were held.	Providing training in awareness Preparation of Gender- Based Sports Clubs Guide	Training sessions and awareness-raising programs for rowing, boxing, table tennis, swimming and athletics at Fenerbahçe Sports Club	Continuation of training awareness programs	

Tüpraş as a principle maintains respect for people and maintains an environmental consciousness while applying creative and innovative approaches to ensure the uninterrupted supply of energy to Turkey. In line with these values, the Company uses the United Nations Sustainable Development Goals as a guide in the implementation of its industrial power, leadership and energy in projects that support social development. It aims to create a permanent value for society by adopting a business-public-civil society collaboration model in the projects in which it participates with a view to supporting and accelerating sustainable development.

Sense of Social Responsibility

In 2021, Tüpraş continued to create added value by transferring its industrial power, leadership and energy to projects that support social development, with education, environment, culture and the arts, and gender equality being among the priorities. In the planning of social projects, the corporate reputation and perception researches carried out through meetings with different stakeholder groups every two years are utilized.

Quality Education

Considering the United Nations Sustainable Development Goals an important guide to the identification of creative solutions to global problems, Tüpraş carries out projects to improve the access of children to quality education; to develop capacities and competencies for science, technology, engineering and mathematics; and to raise generations that produce technology in Turkey with a view to contributing to the "Quality Education" goal, which is the 5th SDG.

The Project "Energy to the Future: I Code, I Model, I Produce"

Carried out as a collaboration of Tüpraş and the General Directorate of Basic Education of the Ministry of National Education, the project entitled "Energy to the Future: I Code, I Model, I Produce" is aimed at improving the access of children to technology and digital education at an early age so as to raise inquisitive generations that have an innovative mindset and problemsolving skills and that have the ability to produce new things.

Under the project, classes had been established for robotics coding and 3D modelling and production skills for 7th and 8th-grade students at 41 schools in Batman, Kırıkkale, İzmir, Istanbul and İzmit by the end of 2021. The measurement and assessment of the project outcomes are carried out with consultancy from the Faculty of Education of Boğaziçi University.

To support the online education of students during the pandemic, a "Virtual Museum Visit" and a "Hands-on Project Development Event" were held for students of the schools in this project to mark National Sovereignty and Children's Day on April 23, 2021, in collaboration with Arter Contemporary Art Museum. The events were broadcast on the Ministry of National Education's EBA TVs and Tüpraş's YouTube channel. This online event was accessed by 130,000 students.



You can access the project video by scanning the QR code.

"Energy to the Students" Project

Under the project entitled "Energy to the Students" conducted in elementary and middle schools in collaboration with the Ministry of National Education, Tüpraş aims to encourage students to become scientists. This project aims to provide students with the understanding that science is integrated with every point in life, and highlights the importance of an inclusive and equal work environment, as well as safe working in the world of science.

The Instructors and implementers involved in the project are all members of a group of volunteers working in the Tüpraş R&D Center. For the classes, the Tüpraş R&D Center employees create a laboratory environment in which students can carry out experiments with readily available materials. A measurement and assessment model has been developed with academic consultant support from the Faculty of Education at Boğaziçi University for the evaluation of the project outcomes.

TEV Scholarship Fund "Our Energy for Equality"

From 2016 to 2021, 19 female students benefited from the Turkish Education Foundation (TEV) "Our Energy for Equality" scholarship fund with the support of Tüpraş aimed at offering equal opportunities to female students in education.

Koç University Anatolian Scholarship Program

Tüpraş continues to support the Anatolian Scholarship Program started by Koç University in 2011 with the aim of offering equal educational opportunities to successful young people in need of scholarships. With the addition of three more students to the program this year, the total number of students who have received scholarships to date under the program has reached 21.





Tüpraş provided 3 million TL in donations and sponsorships in 2021 as part of its social responsibility efforts.

Gender Equality

In 2017, Tüpraş signed the United Nations "Women's Empowerment Principles (UN WEPs), and is working tirelessly toward its goal of becoming an inclusive workplace. Adopting this approach, the Company comes up with pioneering practices while also working on social investment programs to increase social awareness in this regard.

Through this approach and its relevant social investments, the Company contributes to the Gender Equality goal, which is one of the SDGs.

Tüpraş ranked in Bloomberg's Gender Equality Index for 2022 thanks to its efforts in support of gender equality.



HeForShe

WOMEN E

Our Energy for Equality

In 2018, together with Fenerbahçe Sports Club and the United Nations Women's Organization HeForShe Movement, Tüpraş started a global collaboration that is the only large-scale commitment in sports related to the issue of gender equality.

This awareness movement continued from 2018 to 2021 with the slogans "Equal Together" and "Energy is Eternal for Equality", during which Fenerbahçe's football players carried a HeForShe logo on the right arms of their jerseys. Tüpraş took this collaboration one step further and became the jersey sponsor for Fenerbahçe's Olympic teams, including those engaged in rowing, boxing, table tennis, swimming and athletics for the 2021–2022 season. As part of this collaboration, Fenerbahçe Sports Club is currently working on internal training and process development in line with its goal of becoming a gender-sensitive organization.

With the power it gets from the collaboration with the UN Women's Organization HeForShe Movement and Fenerbahçe, Tüpraş also supports the "16 Days of Activism" campaign aimed at preventing cyber violence against women and girls. On March 8, 2021 – International Women's Day – Tüpraş held online events themed around "Generation Equality: The Empowerment of Women and Girls In and Through Sports" together with the UN Women's Organization and Fenerbahçe Sports Club.

In 2021, a "Gender-Sensitive Corporate Guide" was published as part of this collaboration to ensure that sports organizations can implement gender-sensitive projects and support the empowerment of women and girls through sports.

Feminist Technologies for Generation Equality Online Internship Program

In 2021, Tüpraş launched a program entitled "Feminist Technologies for Generation Equality" to support university students in seeing things from the perspective of gender equality and to help them gain awareness of the importance of inclusion and equality.

As part of Tüpraş's online internship program, 200 interns and 15 Nextremers participated in the program, in which the offered training courses allowed students to improve their innovative thinking skills and to carry out 20 innovative projects in total that focused on technologies that made things easier for female employees in the field.

Students attended several training courses including those entitled "I Am Aware of Equality – Gender Mainstreaming" given by the Mother-Child Education Foundation (AÇEV), "Innovative Thinking and Idea Generation" given by the Tüpraş Innovation Directorate, and "UN Sustainable Development Goals and Sustainability" given by the Tüpraş Corporate Communications Directorate.

The Program "Women in Technology and Innovation"

Koç Holding is one of the Technology and Innovation Action Group Leaders in the Generation Equality Forum, which was founded by the United Nations Women's Organization and is expected to guide gender equality efforts for five years.

Tüpraş carries out various projects that contribute to Koç Holding's commitments to gender equality in technology and innovation. Through the projects it develops, Tüpraş aims to increase the level of awareness on entrepreneurship for university students, in particular female students, and to ensure that they are more active in the entrepreneurial ecosystem.

To this end, the Company launched its "Feminist Technologies for Generation Equality Online Internship Program" in 2021, and plans to develop a program entitled "Innovation in Young Minds and Female Power" to launch it at Batman University in 2022.

Culture and Arts

Tüpraş embraces the versatility of sustainable development and supports social and environmental improvement in various areas.

"Our Energy is for Arts" - Arter

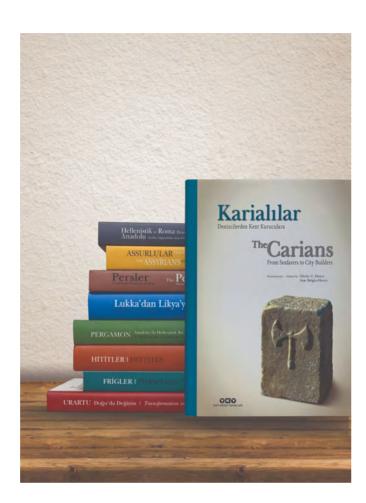
To support the efforts to create an environment in which teenagers and children can freely meet modern art, Tüpraş signed up to be the corporate sponsor of the Arter Contemporary Art Museum for five years, starting in 2019. Arter strives to maintain an accessible and sustainable culture and lifestyle platform through programs that cover all disciplines of the arts. In 2021, Arter attracted 8,000 people to its physical events, while its online shows were accessed by more than 7,000 people.

Anatolian Civilizations Series

Since 2011, Tüpraş's book series "Anatolian Civilizations" (Anadolu Uygarlıkları) has been passing the history of the deep-rooted civilizations that left their traces in the archaic land of Anatolia on to the following generations. To date, 10 such books have been published, working in collaboration with Yapı Kredi Kültür Sanat Yayıncılık.

Istanbul Theater Festival

The Istanbul Theater Festival has been held for 16 years by the Istanbul Foundation for Culture and Arts (İKSV) with the sponsorship of Aygaz, Opet and Tüpraş – the Koç Holding Energy Group companies. The 25th Istanbul Theater Festival was held from October 22–November 20, 2021, during which 30 physical and 10 online plays were staged.



Environment

Striving to create a positive impact in its processes as a responsible producer, Tüpraş makes every effort in support of energy efficiency, the protection of natural resources and waste management, and carries out projects to raise awareness in society in this regard.

DTO Fethiye Waste Reception Vessel in Göcek Gulf

Sponsored by Tüpraş since 2016, the DTO Fethiye liquid waste collection vessel was operated in the Göcek Gulf for the entire 2021 summer season, resulting in the collection of 500,000 liters of wastewater from 1,400 vessels, ensuring 4 million liters of seawater remained clean.



Creating Local Value

Tüpraş attaches importance to the creation of local values in its social development efforts. With this in mind, the Company contributes to projects that support communities in the cities that are host to its refineries.



Batman Sports Club for People with Disabilities

Tüpraş has been supporting the Batman Sports Club Association for People with Disabilities since the 2007–2008 season. The Batman Sports Club Association for People with Disabilities has played in the Premier Turkish Wheelchair Basketball League for 3 years, and continues its premiership run in the 2021–2022 season. The sports club has a total of 51 athletes, of which 22 are playing competitive sports. It has been offering hundreds of young people with disabilities an opportunity to play sports for the last 15 years.



The club competes in the Wheelchair Basketball branch of the Turkish Physically Disabled Sports Federation and continues to play in the 1st League for the 2021-2022 season.

Batman Tüpraşspor Football Club raises young athletes!

Founded in 1995, Tüpraşspor Football Club supports young talented people living in the vicinity of the Batman Refinery with the opportunity to play sports in a healthy environment and to take a step up. Tüpraşspor Football Club is managed by Tüpraş volunteers in collaboration with the Provincial Directorate of Youth and Sports, the Batman Amateur Sports Clubs Federation and the Turkish Football Federation, as well as other clubs. The club is home to 103 athletes aged 13–19, 74 and 29 of whom are licensed and unlicensed players, respectively.

Corporate Citizenship and Volunteering at Tüpraş

Tüpraş encourages its employees to engage in voluntary work as an important part of its corporate culture. Tüpraş employees have contributed to projects developed by local and national NGOs with their knowledge and experience. In 2021, Tüpraş continued to develop and carry out various social responsibility projects with the participation of its volunteers.



International Coastal Cleanup

Tüpraş volunteers supported the DenizTemiz Association/TURMEPA Istanbul Event on the International Coastal Cleanup Day. Held on the shore of Caddebostan in Istanbul, the volunteers collected waste amounting to 23.5 kg of raw materials and 420 kW of energy savings, and delivered it to the Istanbul Metropolitan Municipality.



Tüpraş Refinery Search and Rescue Teams

A three-week training event hosted at the Drill Center of the Search and Rescue Association Directorate of AFAD (Disaster and Emergency Management Presidency) in Sakarya saw the participation of new members of the Refinery Search and Rescue team, made up of volunteer employees from İzmit Refinery, in basic search and rescue training sessions, while further sessions were held during which existing members could reinforce their knowledge.

Support for Wildfires

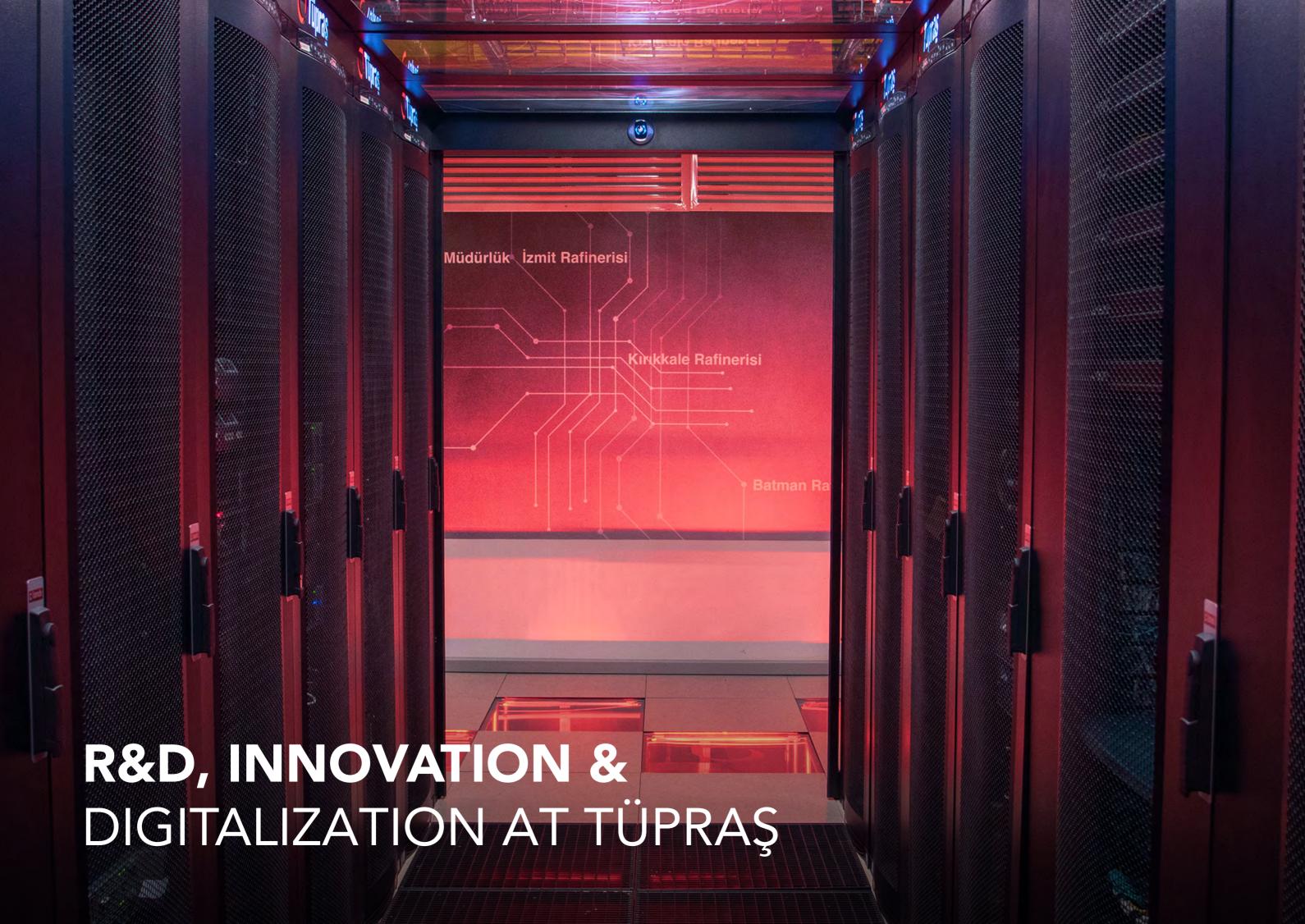
The Company offered assistance to all of the regions affected by the wildfires that broke out in different parts in Turkey in 2021. Tüpraş also participated in Koç Holding's campaign to donate 500,000 saplings as part of the movement started by the TEMA Foundation.





Help for Stray Animals

Tüpraş signed a protocol with Körfez Municipality in Kocaeli and with Aliağa Municipality in İzmir to meet the nutritional needs of stray animals. The Company donates leftover food from the cafeterias in its refineries to the shelters in those regions in support of stray animals.



UN SDG	Indicators	2020 Achieved	2021 Targeted	2021 Achieved	2022 Targeted	Current Status towards the Target
9 ROUSINY MANAGEMENT AND PRESENCEURE	Supporting internal entrepreneurs	Internal mentors started supporting internal entrepreneurship projects.	Increasing the number of internal mentors, and offering active mentorship in internal entrepreneurship and open innovation efforts	Internal mentors have started following up on ongoing in-house entrepreneurship projects and mentoring programs.	Providing direct mentoring support to internal mentors with the start of the new semester of the in-house entrepreneurship program	
9 POLISTICI MANINITIMI 8 DECENTI MORRAMO AND PRINCIPLES 8 DECENTI MORRAMO AND PRIN	Supporting internal entrepreneurs	Two projects were commercialized as part of the internal entrepreneurship program.	Commercializing three projects from the internal entrepreneurship program	1 new project has been commercialized.A total of 3 projects have been commercialized.	Completion of the pilot stage scenarios of 2022 KIG Projects and a final decision on the progress or closure of ongoing projects in the KIG Project Portfolio	
9 NOUSTREAMOUNTER 17 PARTIMENSIPES FOR THE GOLD.S	Increasing the collaborations and idea exchanges aimed at coming up with solutions to the Company's problems	Increased the variety of channels through which domestic and overseas start-ups can be accessed. Started to design an umbrella program for open innovation efforts and collaborations.	Working on a logo and name for the umbrella program and setting out the relevant standards	Inowhatif360 Open Innovation Program has been set up. Meetings were held with the team that provided support to the launch of the program and the technical evaluation.	Increasing the transformation of business partnerships into business results with initiatives that offer solutions in the field of operational excellence	* <u>+</u> + + <u>+</u>
9 NOTIFIC NOTIFICAL TO THE COLLS WHITE COLLS TO THE COLL	Reinforcing bonds with the entrepreneurial ecosystem and increasing the mutual benefits	A long-term collaboration agreement signed with the Emerald Industrial Innovation Fund – an international venture capital fund. Increased the number of startups with which the Company collaborates.	Increasing the number of start-ups with which the Company collaborates, and improving the expertise in terms of co-developing projects/commercialization and investment	More than 35 enterprises from domestic and foreign countries were interviewed in detail. PoC scenarios were prepared with 17 initiatives and a cooperation process was conducted. Investments have been made in 5 start-ups under our LP status through Emerald Technology Ventures.	Diversification of enterprise business development models by making strategic agreements with startups.	Positive Development
9 ACCISTRE PRODUCTION 177 PARTINESCOPES PROTUCE OF PROTUCE OULS ***********************************	Increasing the number of data interpretation technologies as part of the digital transformation	Launched over 15 projects in data analytics. The completed projects resulted in a databased decision-making culture.	Disseminating the projects across different refineries to increase the benefit of the multiplier effect in terms of efficiency and savings	Dissemination and training processes of all projects completed at a refinery in the field of production in the field of Data Analytics in other refineries that are suitable have been started. Online tracking of analytical projects has started and is being systematically developed for regular performance measurement.	Ensuring the sustainability and value-added tracking of completed and expanded analytical projects	

UN SDG	Indicators	2020 Achieved	2021 Targeted	2021 Achieved	2022 Targeted	Current Status towards the Target
9 MUSTIN MONITOR MONITOR JUST PROFESSIONALITY WE PROFESSIONALITY OF THE PROF	Equipping employees with competencies in terms of data as part of the digital transformation	Training courses offered for data-oriented coding, data editing, heuristic data analysis, data processing, modelling and panel creation.	Making basic data analytics training courses available within Tüpraş	In order to increase data analytics competencies and data literacy throughout the company, 111 employees were provided with online training. After completing the online trainings defined at the beginning of the program, a special training camp was organized with 11 field engineers with a high level of analytical knowledge who developed high-value-added project proposals. Project work was started.	Analytical Tüpraş training camp and candidate projects to be completed and the program and project launch to be completed Collection of requests for the semester training program and the initiation of preliminary training processes	
9 ROUSTRIANGUATER AND PROSERVE THE FIRST PARTICES SHE'S FOR THE GOLD'S FOR TH	Increasing the number of data interpretation technologies as part of the digital transformation	Digitalization of processes, ensuring that more than 50 developers at four refineries used Pentaho. Disseminated the use of big data systems.	Developing the continuous integration and continuous distribution (CI/CD) processes	In order to improve the processes for combining the data, descriptive analysis, analytical forecasts and business intelligence components on Pentaho, 11 people were given Pentaho training and 20 projects were brought to life on the platform. The first stage of Pentaho trainings has been completed, during which 10 employees from 4 refineries received training.	By the end of the year, a minimum of 60 employees are to be trained in combining data in Pentaho for 2 days, descriptive analysis, analytical forecasting and business intelligence, so as to improve the current processes	Positive Development
9 REASTREAMONALINE 17 PARTICESSIPES FORTILE GOALS	Becoming part of an organizational network that sets future trends as part of the digital transformation	The expected result was not obtained after the first application to the Global Lighthouse Network.	Becoming a part of the Global Lighthouse Network	The application for participation in the formation of the Global Lighthouse Network has been completed.	Continuation of the process based on the result of the preliminary application	
9 NUISTITE MAGNITUM JACK PRINTING LITTLE AND PRINTING LITTLE	Accelerating the automation processes of all systems as part of the digital transformation	Worked with three new departments on analyses of the processes in which RPA was possible, and process targets were determined. Studies were conducted for 50 RPA processes in five different departments.	Researching new application fields and promising processes for RPA, and including the new units in robotics applications	51 new Robotic automation processes have been commissioned.	Achieving a target of more than 50 numbers by the end of the year	

Tüpraş Sustainability Journey Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus S at Tüpraş D

Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

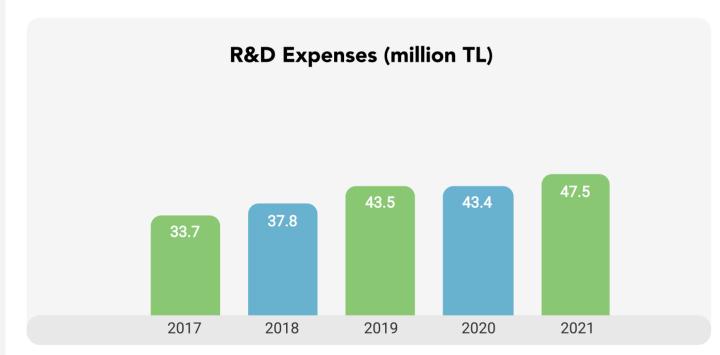
UN SDG	Indicators	2020 Achieved	2021 Targeted	2021 Achieved	2022 Targeted	Current Status towards the Target
7 AFFRICABLE AND 2 POSSTEY NOWING AND PRESENCE LEASE CONSIDERATION AND PRESENCE LEASE AND	Increasing the number of collaborations and projects in R&D	29 international project applications were made. 5 projects were accepted under HORIZON 2020. Total number of national and international applications increased from 20 to 33. Tüpraş became the most successful Turkish industry organization in terms of funding returns from the HORIZON 2020 program.	Increasing the number of national and international project applications and accepted projects	Applications were made to four new funding mechanisms (Türkiye-Hungary & MartERA, EIG Concert-Japan & Tübitak 1005 programs). 3 HORIZON EUROPE applications were made (Bridge4Uni, Dilute, FlexIndustries).	Registration in new platforms for increased number of collaborations in R&D and applying to national/international support programs	
7 AFFRICABLE AND 7 CLEAN BELIEF! 9 MOUSTRY INVOLUTER AND PROCEDURE 12 RESPRECALE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE AND PROCEDURE TO	Increasing the number of project applications and projects within the scope of R&D	11 project applications were made under HORIZON 2020.	HORIZON EUROPE project application for the introduction of demonstration-scale new Carbon Capture, Use and Storage technologies to various refinery sites (İzmir, Kırıkkale)	Involved in the consortium of 2 HORIZON EUROPE projects, application preparations underway (CHOICE, CCUS-ZEN). Application made to TÜBİTAK ARDEB 1005 support program.	Making efforts for the creation of and involvement in a green hydrogen ecosystem in Turkey, and ensuring presence in projects to this end	Positive Development
7 AFFRENDRE AND 7 DESIGN NOVATED AND PROPRIETE TO AND AND PRACTICAL PROPRIETE TO AND AND PRACTICAL PROPRIETE TO AND AND PRODUCT DIS ACTION AND PRODUCT DIS ACTIO	Increasing the number of internationally funded projects and activating ongoing projects	5 projects were accepted under HORIZON 2020.	Realizing the objectives of ongoing projects and activating new projects	As the works of 12 HORIZON 2020 projects remain underway, the EPC- Eqtech project was initiated.	Realizing the initial field applications of ongoing internationally funded projects Introduction of new technologies and solutions compatible with the strategic transformation plan to Tüpraş	

R&D, Innovation and Digitalization

R&D

Tüpraş aims for leadership in the future of the energy sector through the Strategic Transformation Plan it announced, while also planning to reduce carbon emissions in refinery processes in the upcoming period and become an important player in alternative energy production. Under the scope of the Tüpraş Digital Transformation Strategy, digital conversion, sensors and robotic technologies, energy efficiency, renewable fuels, carbon capture, usage and storage, material technologies, hydrogen technologies, water and waste management have been prioritized by the Tüpraş R&D center's study subjects. In addition, operational solutions and improvement works that will increase the profitability of the refinery have been continuing.

The R&D team, where 63% of the members are women and 21% of the research group are PhD holders, support the Tüpraş transformation strategy through research and development efforts.



In **2021**, Tüpraş allocated **47.5 million TL** to its R&D activities.
Tüpraş R&D Center was awarded 3rd place in the C Category (Companies with 51–75 R&D Employees) at the 8th R&D and Design Centers and Technology Development Regions Summit, held by the Ministry of Industry and Technology in 2021.

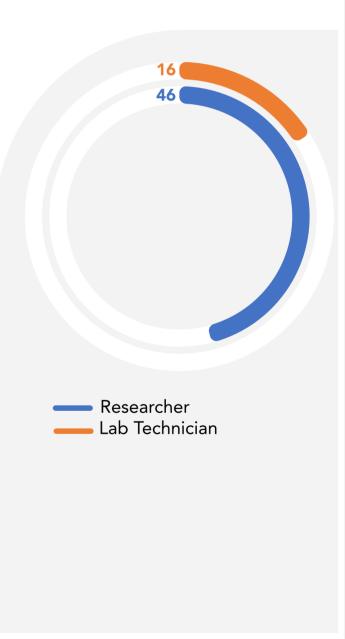
Agile Organizational Structure at R&D

Tüpraş's R&D Center combined various units, functions and competencies and started to work as an agile organization, aiming to increase the value it brings to the Company in the ever-changing world and the fierce competitive market. The new organization incorporates portfolios that are aligned with Tüpraş's priorities and requirements, including purpose/value teams, operational teams and an expertise center.

Why Agile Transformation?

- To shorten project durations;
- To maximize the value on a customer basis;
- To create autonomous and aligned teams that can accelerate the decision-making processes;
- To ensure the development and efficient use of expertise;
- To ensure that teams work with a focus on value, and with less hierarchical structures, allowing them to focus and generate outputs.

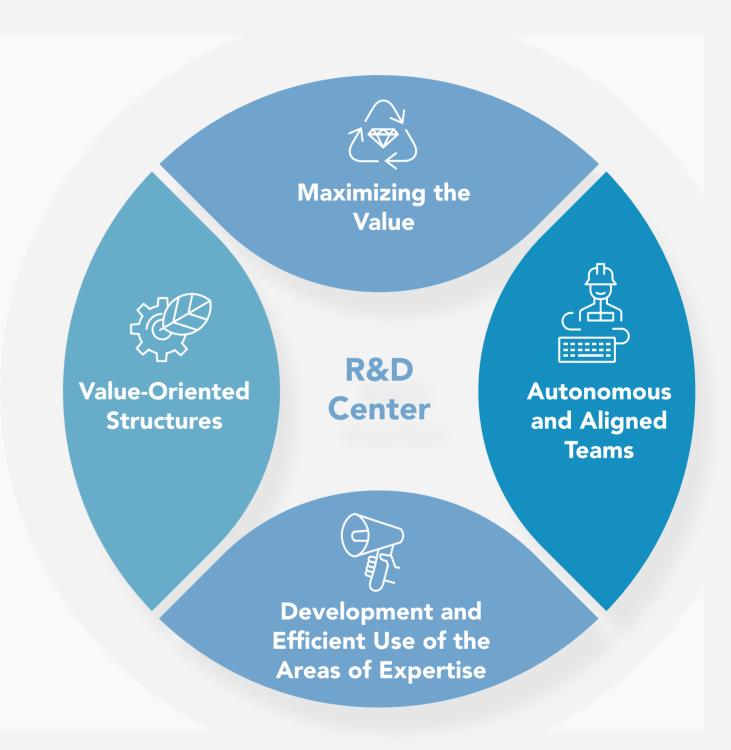
R&D Center Staff Distribution



Management

Organizational Structure of Tüpraş R&D Center

- 46 researchers and 16 laboratory technicians are employed in the R&D Center, 24 of which have graduate degrees while 10 hold PhDs.
- 10 researchers are currently continuing their PhD studies and 6 researchers are studying for their master's degrees.
- Comprising **7 agile teams** who work in alignment with the refinery teams and towards the shared goals, the R&D Center operates with more than 150 devices on a **total area of 12,950 m² in three buildings**, i.e. the office, laboratory and pilot facility.



R&D Collaborations

In 2021 we have transferred 47.5 million TL resources to our R&D efforts. On the other hand, we are a member of the A.SPIRE platform which many of the most important European corporations and institutions are a part of. By participating in permanent working groups of A.SPIRE on the topics of Energy, Process Optimization and CCU, Industrial Urban Symbiosis and Centers for Circularity, Resources and Circularity, Frame Conditions and Digitalization, we are contributing to Europe's efforts of 2050 carbon neutral and circular economy transition.

In 2020, Tüpraş joined the **SPRINT Robotics** initiative, which was established in 2015 as a non-profit organization that promotes the development, usability and application of robotic technology for inspection and maintenance in capital-intensive facilities such as refineries, including companies in the refining sector such as Shell, BP, Chevron, Total, Aramco. Having end users, industrial service providers, system integrators and technology developers in its value chain, this initiative offers considerable advantages for the follow-up of the latest technologies in robotics.

In 2017, Tüpraş became a member of the "Delayed Coking Project" that has been continuing since 1999 under the coordination of the **University of Tulsa.** The project allows access to expertise gained over 20 years, and permits to observation of problems in coking units from different perspectives, thus allowing appropriate improvements to be made.

Hydrogen Europe industrial network. which was established to guide European-oriented hydrogen studies and create consortia, takes an active part in shaping the call titles that will be funded by the European Union in the field of hydrogen in accordance with the priorities of member industrial organizations and establishing project partnerships for these calls. In line with its strategic goals, Tüpraş is a member of the "Hydrogen Europe" platform as of 2022 with the awareness of the importance of Green Hydrogen studies for Tüpraş. The purpose of the Hydrogen Europe platform is to promote hydrogen and hydrogen fuel cell technologies, as well as to support the development of technologies and the implementation of this development on the sites. It aims to enable hydrogen, which has opened a new door to the world in the field of energy, to work as a living ecosystem and to be supported by forwardlooking projects.

A university-industry collaboration project entitled "Development of Technologies for Low Carbon Footprint in the Refinery Integration of Biofuels" involving **Koç University**, and a project entitled "Production of Catalyst/Adsorbent Support Materials to be Used in Refinery Applications" conducted by **Eskişehir Technical University** are continuing under the TÜBİTAK 2244 - Industrial PhD program. These projects are aimed at raising qualified personnel for the sector and for our country by supporting PhD students in study areas determined according to Tüpraş's needs and developments in the sector.

Another of the university-industry collaboration projects in which Tüpraş's R&D unit is involved is a study being conducted in collaboration with **Boğaziçi University** focusing on the potential production of biogas from the refinery's wastewater treatment sludge, involving an assessment of the potential environmental and economic advantages of such a process.

Carried out in collaboration with **Istanbul Technical University**, the project entitled "Crude Oil Processes Optimization" aims to ensure that long-term planning at the refinery can keep pace with daily plans, being able to adapt to instant changes such as the cancellation of a shipment or unit breakdown. The major benefits offered by the project include the ability to make efficient and quick decisions in crude oil tender processes, improvements to stock management for opportunity crude oil, increased operational efficiency and profitability, and easier job transfer rotation.

Led by the METU Petroleum Research
Center and in cooperation with Tüpraş and
the Turkish Petroleum Corporation (TPAO),
the application process of the project
"Research for the Most Suitable Business
Model for the Injection of Flue Gas/Carbon
Dioxide Captured from the Batman Oil
Refinery into the West Raman Field from a
Technical and Economic Point of View" has
been concluded, and the project has been
selected to be supported as a part of the
TUBITAK 1005 – National New Ideas and
Products Research Support Program.

Tüpraş Sustainability Journey Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization

Responsible Value Chain Management

Annexes

Horizon Europe Program

Horizon Europe, the 9th Framework Program of the European Union, was launched on June 24, 2021 with a budget of **95.5 billion Euro** for the provision of support to science and innovation activities between 2021 and 2027. The program is a follow-up to the Horizon2020 project, and in aimed at strengthening the European Union in the fields of science and technology; improving innovation capacity, competitive power and employment in Europe; meeting society's needs; and sustaining the socioeconomic model and values in Europe.

FLEXIndustries (Digitally-enabled FLEXible Industries for reliable energy grids under high penetration of Variable Renewable Energy Sources (VRES)), which is the first project of Tüpraş to be funded under the Horizon Europe Program, will identify the most suitable energy efficiency management and process flexibility practices in seven different energy-intensive sectors (automotive, biofuel, polymers, steel, paper, pharmaceutical, cement). Tüpraş will support the project through replication studies based on each scenario from the refinery that focuses on flexible use of energy and integrated energy management. Feasibility studies will continue to be carried out while assessing the potential adaptation of the developed applications to the refinery.

Tüpraş has become the most successful Turkish industrial organization in the Horizon2020 Program, one of the Framework Programs of the European Union, with grants of 7.83 million Euro awarded for a total of 17 projects, some of which have been completed and some that are still underway.

Numerous projects aimed at environmental sustainability are being carried out under the Horizon Europe Program and in line with Tüpraş's Strategic Transformation Plan.

R&D Projects

Environmental Sustainability Projects

With its innovative projects and research activities, the R&D Center will play an important role in the implementation of the Strategic Transformation Plan, which was created with the aim of "producing different types of energy in a carbon-neutral way through an integrated business model, thus strengthening the Company's position as the largest industrial company in Turkey, pioneering the clean energy transition of the country".

Carbon Capture, ization and Storage

Tüpraş is participating in five projects focused on carbon capture and utilization, two of which are Horizon2020 projects (MOF4AIR, COZMOS).

MOF4AIR (Metal-Organic Frameworks for carbon dioxide Adsorption processes in power production and energy Intensive
industRies)

The aim is to develop adsorbent materials for the effective capturing of carbon dioxide so as to reduce carbon dioxide emissions from industrial processes. Tüpraş will carry out first-hand refinery field tests of the technology designed to capture waste carbon dioxide from flue gases.

COZMOS (Efficient CO2 conversion over multisite Zeolite-Metal nanocatalysts to fuels and OlefinS)

The plan is to develop innovative catalysts for the efficient conversion of carbon dioxide produced by industrial processes into high added value products such as propane and propylene. Performance tests of the catalysts to be developed will be conducted at the pilot facility to be established within the infrastructure of Tüpraş's R&D Center.

MOFAC2CAP (Development of Novel MOF Aerogel Composites to Capture CO₂)

In the MOFAC2CAP project, in which Tüpraş is acting as the national and international coordinator, and L'École normale supérieure (L'ENS) University in France and Koç University from Turkey, are partners, innovative MOF/aerogel composite materials will be developed to selectively capture carbon dioxide from carbon dioxide-rich process gas mixtures and flue gases, and the said materials will then be synthesized and go through performance tests for carbon capture in a laboratory-scale adsorption test system to be built under the project.

Project Start: 2019

Project End: 2023

Project Start: 2019

Project End: 2023

Project End: 2024

Project Start: 2021

Climate and

Environmental

Management

Tüpraş

Management

Approach

Human Focus

at Tüpras

Social

Development

Tüpraş

Priorities

Sustainability

Tüpraş

Journey

Sustainability

Letter from the

About

the Report

R&D.

Innovation &

Digitalization

Responsible

Value Chain

Management

Annexes

Tüpraş Sustainability Sustainability Priorities

Climate and Environmental Management

Tüpraş Management Approach

Social Human Focus at Tüpras Development R&D, Innovation & **Digitalization**

Responsible Value Chain Management

Annexes

Green Hydrogen

Water Treatment and Waste Recovery

In order to move Tüpraş to our goal of becoming "Carbon Neutral", we are continuing to work intensively on our projects of "Green Hydrogen" production and to bring more knowledge on these matters to our company in line with our strategic priorities.

Tüpraş

Journey

Hydrogen Production with Electrochemical Methods

Launched in 2020, the project on the development of green hydrogen technologies is being carried out with Koç University, and the second phase studies are currently ongoing. In the first phase of the project, a prototype was developed for the recovery of the hydrogen spent in the desulfurization process at the refinery, and a patent application was submitted. Studies are currently underway to improve the conversion efficiency of the system and the durability of the electrodes developed in the first phase. While efforts are underway to expand the project portfolio in this area, another step has been taken in expanding the business union network with the membership of Hydrogen Europe platform, the leading stakeholder organization of the European hydrogen market.

Project Start: 2020

Project End: 2023

AquaSPICE and CORALIS

The intensive efforts in the project to develop water treatment and waste recovery processes have yielded results. Two projects in which Tüpraş is partnered: AquaSPICE (Advancing Sustainability of Process Industries through Digital and Circular Water Use Innovations) and CORALIS (Creation of new value chain Relations through novel Approaches facilitating Long-term Industrial Symbiosis) have gained funding under the Horizon2020 Program. The two projects will pave the way for efforts taking technologies in waste water recovery processes in refineries one step further, while at the same time focusing on digitalization. Through these projects, Tüpraş will be able to follow the developed technologies first hand, as well as the important environmental benefits that would be achieved should such technologies be put into use.

AquaSPICE **Project Start: 2020**

AquaSPICE **Project End: 2024**

CORALIS

Project Start: 2020

CORALIS

Project End: 2024

Intensive project development efforts in the fields of water treatment and waste recovery have yielded results, and Tüpraş is jointly participating in the 3 HORIZON 2020 projects (AquaSPICE, CORALIS, EPC-EqTech).

EPC-EqTech

Within the scope of the EIC-FTI-2018-2020: Fast Track to Innovation (FTI) call that was launched under the Horizon2020 Program, and that aims to accelerate the commercialization of innovative technologies, the EPC-EqTech (an innovative turnkey solution to process spent caustic created in the Oil&Gas sector at low-cost and that meets wastewater regulations) project has been earmarked for funding. Launched in July 2021, the project will see the development of innovative electrochemical technologies for the treatment of spent caustic materials. Within the project, Tüpraş will have the chance to carry out at Kırıkkale Refinery the first-hand testing of technologies that have the potential to offer major benefits to the environment.

Project Start: 2021

Project End: 2023

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

Light Hydrocarbon Transformation

To support Tüpraş's sustainable transformation, it is necessary to turn the fine hydrocarbon fractions found in intermediate and end products at refineries into valuable chemicals and fuels.

Expected to reach TRL (Technology Readiness Level) levels 7 and 5, these two projects will facilitate the production of petrochemical products based on dehydrogenation reactions through the use of the developed innovative processes and catalysts, while also enabling hydrogen production, which is of critical importance for the refinery.

MACBETH (Membranes and Catalysts Beyond Economic and Technological Hurdles)

The aim is to develop innovative and collectively designed catalytic membrane reactor applications, innovative processes and catalysts. Tüpraş's role in this project is to design and shape high-performing catalyst support materials for the process technologies that will transform propane from the LPG fractions into propylene, which is a more valuable chemical, and then turn the resulting product into a final catalyst. As a further role, Tüpraş will produce the catalysts to be used for the field demonstration.

Project Start: 2019

Project End: 2024

BIZEOLCAT (Bifunctional Zeolite based Catalysts for Sustainable Hydrocarbon Transformation)

The aim is to develop innovative catalysts and processes for the transformation of propane and butane from LPG fractions into olefins such as propylene and butadiene, and into aromatics such as benzene and toluene. In this project we will be responsible for kg-scale production and for the composition design, shaping and pilot-scale testing for the upscaling studies of different types of powder-based catalysts developed, as well as for the validation of the innovative catalysts codeveloped with the project partners in the multifunctional pilot-scale reactor system that has been designed and is due for commissioning.

Project Start: 2019

Project End: 2023

Operational Sustainability and Profit Projects

Tüpraş aims to create value through the efforts of its R&D Center. In this regard, Tüpraş launches sustainability and profitability projects in line with the R&D Center's goals with the aim of making refinery processes easier and maximizing efficiency. The three R&D projects that are currently creating value at Tüpraş's refineries are detailed below.

TÜBİTAK's Order-Based R&D Project

Designed upon the SME Support Call for Order-Based R&D Projects, the RUVIOilDiver (Development of Robotics Applications for Live Tank Base Examination) project has been earmarked for funding. This robotics system – a first in Turkey – will be able to examine the base of the storage tank while the tank is enabled. This will ensure that many difficult tasks performed in risky and challenging environments like refineries, such as the base examination of storage tanks, can be conducted in a safer, more efficient and more detailed manner at lower costs thanks to robotics technologies.

Laboratory-Scale Coking Unit

The Laboratory-Scale Coking Unit was added to the infrastructure of the R&D Center with the aim of ensuring that the existing coking unit can keep running in an appropriate and safe manner. This unit will make it possible to simulate the Coking Unit's operations on a laboratory scale, facilitating the resolution of the unit problems and contributing to production sustainability. The installed mini Coking Unit will allow major steps to be taken in research, and the determination of quick solutions to such requirements as the review of the relationship between charge and products, better understanding the parameters that affect unit performance, and checking the compliance of alternative charging sources with the refinery's way of working.

The Project "Development of Quality Bitumen-Based Products"

Development studies have been conducted for the asphaltic lining materials used in the defense sector, and that may sometimes encounter problems in terms of supply, price and quality, as an imported product. Domestic and continuously available asphaltic linings that met customer expectations were sold for the first time in 2021.

Patents and Scientific Publications

As part of Tüpraş's efforts as regards to intellectual property rights, 3 patent applications, of which two were national and one was international, were submitted in 2021. The total number of patent applications submitted since the R&D Center launched its operations has thus reached 101, 72 of which are national and 29 international. In 2021, Tüpraş submitted seven national trademark applications, and 51 trademark applications in total have been made to date, nine of which are registered internationally (4 EU, 1 WIPO) and 35 nationally.

In 2021, Tüpraş featured in 48 international and national scientific publications, reaching a total of 352 since the Company launched its operations.



Innovation

The entrepreneurial and innovative approach adopted by Tüpraş is also one of the focus areas of the Company's sustainability strategy. The Company draws upon the internal potential of entrepreneurship while also looking for opportunities for collaboration with external businesses. Tüpraş develops innovation-oriented solutions and projects rather than traditional ones that can fall short of resolving the problems encountered today.

Tüpraş has announced that it will allocate 50 million USD to Venture Capital by 2030 to promote the development of new technologies for strategic transformation and business development models.

Entering into long-term partnerships, joint investments will first be made, with direct investments made later.

Tüpraş is engaged in entrepreneurship, innovation, open innovation and start-up integration activities in support of the work processes of both today and tomorrow.

In 2017, Tüpraş became a volunteer in the Koç Innovation Program, for which it has primarily determined its own innovation strategy. Its focus in this regard is on the innovation climate, with efforts to ensure that the strategy and processes are embraced by all employees and the cultural transformation is supported. In 2017, to increase and support innovation within the organization, the Company launched its "Idea Unit" portal with the slogan "The Platform where Raw Ideas Turn into Values", and the Idea Unit internal entrepreneurship program.

Innovation-Oriented Newsletters

The Inowhatif Newsletter, containing news on innovation and entrepreneurship from Turkey and around the world, as well as reports of innovative practices and internal innovation efforts; the Entrepreneurship Newsletter, which reports on developments in the entrepreneurship world regardless of the sector; and the Energy Investments Newsletter, which provides news of start-ups and the activities of the investment lines in the oil and gas sector with focus on energy transition, are shared with employees.

Inowhatif Talks Event Series

Launched with the aim of keeping the entrepreneurship climate alive, the Inowhatif Talks series has continued featuring speakers from within the company who create inspiring content regarding innovation, technology and new business models. In 2021, events were held discussing the titles, jobs and work environments of the future, NFT, blockchain, self-driving cars, innovation in finance, digital intelligence and the data-driven innovation mindset.

Moreover, in 2021, many internal events were held, such as the Inowhatif Meet-up, where start-ups from the global ecosystem with potential for collaboration shared their stories; What I Have Learned that hosted entrepreneurs from various companies; four Demo Days, in collaboration with Keiretsu Forum Turkey, annual Volunteer Meetups and Training for Innovation Volunteers; and the launch of the Inowhatif 360 Program.



Intrapreneurship Efforts

The Company supports the projects that will create new growth areas and new markets with an entrepreneurship-based approach. This supports the company in its efforts to become a sectoral leader, while also ensuring the employees become part of the innovation culture, and consequently, part of the Company's long-term goals and improvement efforts. Under the internal entrepreneurship program, Tüpraş employees use start-up methodologies for the commercialization of their creative and innovative ideas. Under this initiative, entrepreneurship teams are supported with training courses that are focused heavily on entrepreneurship methodologies, as well as entrepreneurship mentorship and senior management sponsorships. Adopting a Design-Oriented Idea and Lean Enterprise methodology, this program implements projects with an agile approach.

In the internal entrepreneurship program entitled "Tüpraş Idea Unit", those involved focus on the Lean Enterprise methodology and use the Build-Measure-Learn loop to develop and mature ideas. In this Internal Entrepreneurship Program, Tüpraş employees work in teams to come up with innovative business development strategies, business models and value propositions. Just as is the case with accomplishments, failures stemming from uncertainty are considered part of the process.

Following a **Build-Measure-Learn loop**, the teams are instilled with a culture in which they measure, learn from and pivot their studies. They confirm their value propositions with customers, and then mature them through basic financial analyses and market and competition studies. In this process, teams that confirm their ideas through customer interviews proceed to demo implementation and sales stages, and shape their business models based on customer feedback.

In this program, which continued throughout 2021, more than 132 internal entrepreneurs to date have had the chance to work with 37 new ideas using methods similar to those applied by start-ups, and of these, 12 internal entrepreneurship projects are continuing.

Internal Mentorship Program

Launched in 2019, the Internal Mentorship Program was actively continued in 2021. Employees selected from among the internal entrepreneurs support the projects as internal mentors. In addition to participating in Company events, idea generation workshops and all processes in the internal entrepreneurship program, they also attend ecosystem events as panelists or speakers.

Innovation Volunteer Team

"Innovation Volunteer" teams comprising of employees from different levels are formed ensuring that all employees of the organization can be part of the innovative mindset culture and can benefit from the internal entrepreneurship approach. The teams have taken part in innovation, open innovation and corporate entrepreneurship-based training courses, as well as the study programs. All employees who want to support open innovation efforts and to be a part of the internal entrepreneurship project teams can become an Innovation Volunteer through the Idea Unit portal. As of the end of 2021, 165 Innovation Volunteers had been signed up from a total of five locations.



Sample Projects

Emuphal-T

Bitumen and bitumen emulsions are among the main ingredients of asphalt. The main area of use of asphalt around the world is as a road topping. As a follow-up to the Modified Bitumen (Tüpraş brand: Modiphal-T) project that was commercialized last year, a Bitumen Emulsions (Tüpraş brand: Emuphal-T) project was carried out in 2021. Under the entrepreneurship program, seven different business units worked in collaboration to develop a business model in which special CEmarked bitumen products were offered, along with laboratory services, and started to be sold at Tüpraş for the first time. The operations are currently being carried out by the Directorate of Sales and Marketing.



Hidrosimo

Developed by the Tüpraş Simulation team, this program eases hydraulic calculation processes, and is planned to be commercialized in 2022.

Secure Logictis

Under the Secure Logistics project, solutions that ensure safety at all stages, from filling to discharge, are developed, and provide real-time location information to logistics companies that transport valuable fluids. The project aims to prevent unwanted losses and leakages during transport and to facilitate location tracking. An agreement was signed with the first customer in 2021, and hardware and software products started to be delivered at the end of 2021.



Bolluca

As the restrictions on sulfur emissions have become stricter, the need for sulfur in the soil has increased in time. Sulfur lowers the pH value of alkaline soil to a suitable level and improves soil quality. An innovative business model for the production of sulfur has been developed by Tüpraş to commercialize production on an agricultural basis.

Collaboration Development Efforts

Tüpraş attends numerous events held for early- and advanced-stage start-ups and prospective entrepreneurs as part of its efforts to integrate with the entrepreneurial ecosystem, while also organizing programs and offering mentorship support to entrepreneurs. The Company has visited universities and attended events held by university student clubs as a panelist or speaker, reaching more than 2,000 students and entrepreneurs with whom information was shared about entrepreneurship, innovation and the innovation efforts of Tüpraş. It offers mentorship support and actively takes part on the juries of acceleration programs, competitions and other entrepreneurship events.

Tüpraş continues to be a part of the Entrepreneur Organizations Turkey Platform, established with the aim of improving learning across organizations, raising awareness of best practices and disseminating the systematic practices of internal entrepreneurship. Tüpraş is a member of the TÜSİAD (Turkish Industry and Business Association) Entrepreneurial Ecosystem Work Group and the Internal Entrepreneurship Work Group.



Open Innovation Efforts

Efforts to promote entrepreneurship and innovation are underway to support sustainable growth and to promote continuity for today and tomorrow in line with the Company's strategies. Open innovation efforts are promoted to support the development of innovative solutions to satisfy Company needs, and to identify new growth areas by following new technologies in support of the energy transition. The aim is to both strengthen the efforts in the achievement of operational excellence in the current business processes and to ensure access to technologies and business models that will create opportunities, or pose a threat to future works, and to establish strategic partnerships accordingly. A broad pool of over 15,000 start-ups and the domestic and global network are continuously scanned, and various collaborations have been launched between the relevant Company units and entrepreneurs.



The Inowhatif 360 Program and the Assessment Team

The Inowhatif360 Program is designed to gain operational benefits through the early implementation of initiatives that may address needs and problems in the field or business processes in the short and medium term, and to ensure that Tüpraş quickly adapts to advances in the sector. To ensure coordination and effective collaboration within for the Inowhatif360 Program, an Inowhatif360 Assessment Team has been established comprising representatives from all locations.

Participants from five locations received training on the basics of entrepreneurship and the development of collaborations with other enterprises. Routine meet-ups are held to assess the enterprises and to exchange information about those with which collaborations have been established. The program has been designed wholly with internal resources, competencies and processes, from the introductory training courses to the start-up interactions and field tests.

Collaborations with enterprises are ongoing, in particular in PoC/demos. In 2021, the Inowhatif360 Assessment Team and several business units collaborated in the conducting of detailed interviews with over 35 domestic and global enterprises related to operational processes. PoC scenarios were created and collaborations were established with 17 enterprises in various areas, such as an innovative valve design, NLP, remote equipment monitoring, wastewater management and robotics solutions.

Collaboration with Emerald Technology Ventures

Tüpraş has partnered with the Emerald Industrial Innovation Fund to start investing in newly established technology companies abroad.

The Emerald Sprint Program, in which the Company is collaborating with Emerald Ventures, was designed to match start-ups selected by decarbonization experts with large corporations with a view to speeding up pilot studies. In line with Tüpraş's Strategic Transformation Plan and taking into account its requirements, the startups selected for the program were reviewed with the participation of all relevant units under the topics of Hydrogen, Carbon Accounting, Carbon Sequestration and Transformation. Enterprises operating in the focus areas were invited for in-depth interviews, and the pilot implementation scenarios were worked on.

Our involvement with Emerald Technology Ventures has led us to invest in four startups under our LP (Limited Partnership) status, and we will invest in another two enterprises in the near future.

Digitalization

Tüpraş, as part of its digitalization efforts, closely follows domestic and international developments. In the light of technological advances, the Company makes continuous improvements to its talent management, customer relations, supply chain management and even the audit processes, and conducts pioneering studies in digitalization. Accordingly, as part of the strategic transformation plan for 2050 which was established with a view to "producing the energy of the future", Tüpraş has also updated its digital strategies and where it can maintain its innovative and pioneering practices in order to strengthen this strategic transformation through digital technologies and adapt to the future of work more quickly in an ever-changing environment. It determines the strategies renewed under the "Interconnected" concept created in 2020.

Through the application of these strategies, the intention is to directly support the Company's main objectives of operational excellence, efficiency, sustainability, low carbon output, technical safety and cybersecurity, and to benefit from operational transparency, high automation, employee efficiency and experience, artificial intelligence and mobility. As part of the developed strategies, a wide range of digitalization initiatives have been implemented for the management of the main processes, such as mobile and wearable technologies for physical activities such as manufacturing processes, as well as maintenance and projects on the refinery field; analytical projects covering robotics, optimization works, predictive maintenance and production planning; and initiatives related to vessel planning, back office and financial operations, and crude oil supply. These digital strategies are detailed on the Company's corporate website.

Operational Cost Optimization Transparency Interconnected Interconnected **High Automation & Efficiency Operations People High Efficiency Operational Employee Efficiency &** Excellence Experience **High Performing Low Carbon Organizations** Cybersecurity & Sustainability Interconnected **Technical Safety Carbon Neutral** Digital Processes High Benefits from AI & **Technical Safety Mobility**

You can access our digital strategies **here.**

The most important areas of focus for Tüpraş related to its digital transformation, in compliance with its determined strategies, are:

- Internet of Things (IoT)
- Big data infrastructure and data analysis systems
- Artificial intelligence
- Virtual reality
- Robots and drones, robotics process automation systems (RPA)
- Mobile and wearable technologies
- Digital twin technologies

Tüpraş has launched projects in these areas to improve its expertise and know-how, and pilot studies for many of these technologies were launched out in 2021. Subsequently, Edge Computing, AR/VR Technologies, IoT Scenarios, Industrial Virtualization, and Asset Management Platform (ASM) and Digital Twin technologies were singled out for development under refinery conditions to increase Company efficiency, so they were designed for the scenarios needed in 2022.

Data Analytics and Analytic Tüpraş

Data analytics scenarios and optimization efforts are the most important tools for the management of the negative impacts of demand fluctuation in the refining sector.

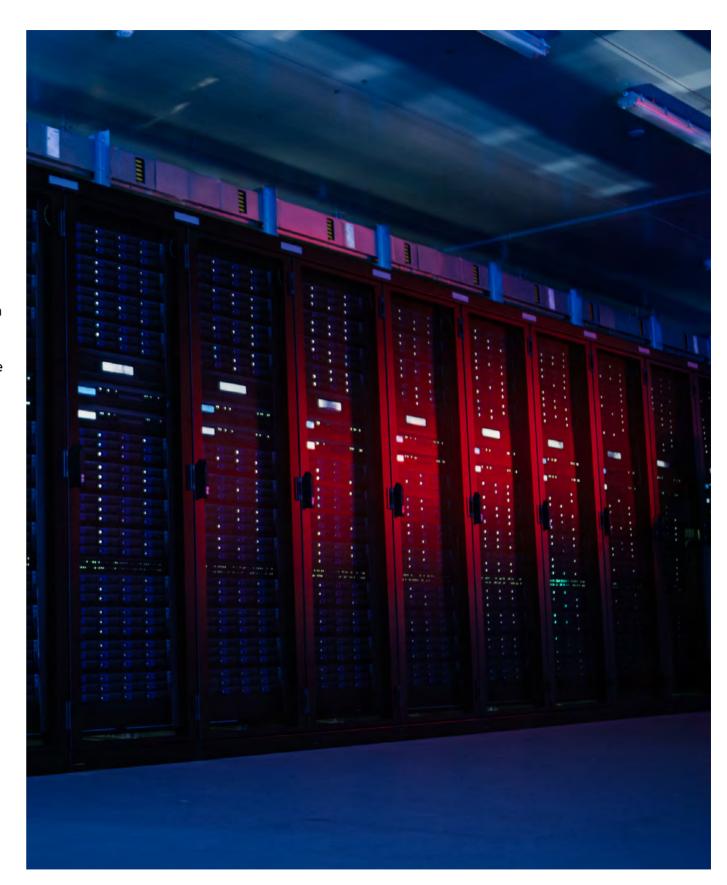
Tüpraş has applied the data science approach and a big data infrastructure to carry out studies of product quality and production parameter estimators, and this has resulted in the commissioning of ProCast – the very first project in which the entire refinery was modeled. The necessary infrastructure has thus been identified for the switch to a proactive manufacturing process, referred to as Refinery 4.0. Launched in 2020, the real-time energy efficiency monitoring studies ensure the integration of carbon emissions into the monitoring system, and the creation of energy twins of the units, supporting the attainment of the Company's "net zero" target.

A maturity study was conducted to individualize data, to determine roles and responsibilities in the attainment of a certain standard, and to ensure data quality and continuity. As a result of this study, a road map was created, and preparations were made for the required infrastructure, training and coordination. Plans are in place to appoint a governance committee in 2022 to disseminate the process across Tüpraş and to ensure continuity.

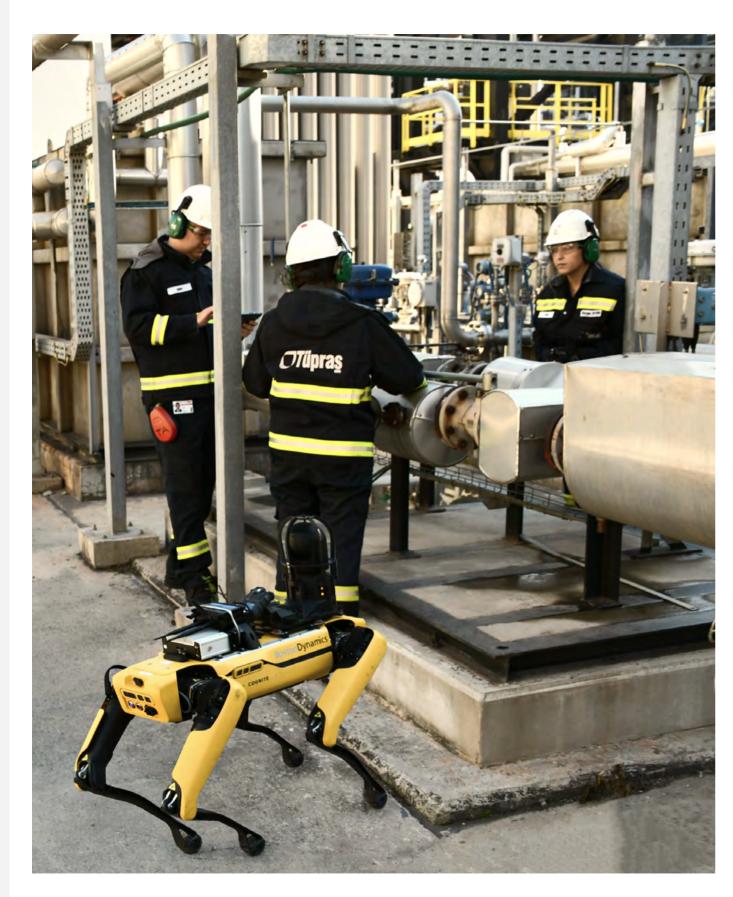
Citizen Analyst and RPA Processes

The citizen analyst initiative seeks to make use of the data at all points of decision-making processes. The intention is to use "single and identical" data at the center of all levels of decisions to ensure its use not only by data analysts but by all Company employees. To this end, big data analysis training courses have been launched for employees in 2021, from which the initial results of the citizen analyst transformation were produced.

The training courses opened with the designed "Analytic Tüpraş Training and Project Program", in which 110 people took part. The aim is to feature citizen analysts in all departments through the training camps and project development efforts that will be continued in 2022. Furthermore, to ingrain the digital mindset into the Company culture, studies are underway to raise "RPA Coaches" who will manage the activities of the RPA (Robotic Process Automation) system that will ensure the digitalization of business models. Through the RPA Coaches who will be appointed from among the volunteers of all departments, a digital workforce will be created that can work 24/7 with the aim being to ensure business continuity and to reduce the operational workload of the business units. Tüpraş is taking steps to becoming an "analytical and digital competitor" by spreading its digital/analytical power and culture across all departments.



Tüpraş 2021 Sustainability Report 180



Robotics Studies

In 2021, the Tüpraş Robotics Team continued their project development efforts in advanced technologies and the digitalization of production. Focusing on safe working in all business processes, Tüpraş completed the testing and commissioning of artificial intelligence-supported autonomous robot applications to operate in high-risk working environments in its refineries.

Having completed trials with pilot robotics technologies for the regular checks of oil storage tanks, measurements and high-risk working areas in its refinery sites, Tüpraş went on to carry out tests in production areas with Spot – a four-legged smart robot produced by the American robotics company Boston Dynamics, which can be remotely controlled. These were the first steps toward the reduction of the workload of the technical teams related to high-risk and repetitive processes, allowing them to apply their skills to different areas.

Field Mobilization Efforts

Tüpraş aims to ensure field operation processes continue without interruption, and that all kinds of data and decision support systems are accessible on site. To this end, the necessary mobile applications and industrial tablets suited to field conditions in terms of safety were successfully tested, and started to be used in field operations in 2021.

Under the project, the necessary infrastructures were installed on sites, and tablets were supplied that were appropriate for the refinery conditions and regulations. As mobile devices are not commonly used on refinery sites due to safety concerns, this project represents a major step towards the digital transformation, and is expected to bring radical advantages in many areas, such as production, business reliability, process safety, maintenance, quality, occupational and technical health and safety, training, remote calls and communication at all times and document sharing.

Terminal Automation System (TAS)

As one of the most important steps in the transformation into a digital refinery and the attainment of sustainable efficiency targets, the product filling and sales systems (Terminal Automation System - TAS) project was commissioned in Areas A and B in İzmit, and the first filling was done with a live order on August 13. For TAS, Tüpraş collaborated with numerous business units, suppliers and solution partners over a period of around two years. When TAS is commissioned at all points together with other refineries, it will allow all business processes within the sales system (vessel, pipe, land, car loading, scrap, etc.) to be switched to a digital environment.

Contactless and Scheduled Sales

Due to the ongoing pandemic, the Company accelerated its "Contactless Sales Platform" efforts, which had been part of its medium-term plans. Furthermore, Scheduled Sales systems were put in use on a product basis in mid-2021, allowing customers to access online services to make appointments as part of the tanker filling order processes. Tanker drivers can now use the "Tüpraş Driver Portal" mobile app to digitally monitor and manage the entire process. This application is a first for the sector, and once it has been linked to the landfilling processes of all refineries, the intention is to integrate it into the pipeline/car and sea filling processes, offering our customers a 360° digital experience in all aspects.



	R&D Projects with Focus on Digital Transformation in 2021						
Project	Project Type	Project Subject	Project Achievements				
Modeling the Physical Characteristics of Crude Oil Unit Products Using Chemometric Methods	R&D Center Project	Estimating the physical and chemical characteristics of intermediate refinery products through chemometric models, to be built using spectroscopic analyses	Increasing the frequency of follow-ups through the implementation of simple and quick spectroscopic techniques, as an alternative to time-consuming and hard to use analytical methods				
Estimating The Physical Characteristics Of The Blend Gasoline At İzmir Refinery Using Chemometric Methods Based On FTIR Spectroscopy	R&D Center Project	Using the spectroscopic analyses obtained from the Gasoline Blending FTIR analyzer to estimate the physical characteristics of the blend gasoline through multivariate calibration modeling	Obtaining frequent and rapid results as an alternative to laboratory analyses, ensuring rapid access to information for planning and sales				
Composition-Based Octane Estimation	R&D Center Project	Determining the molecular composition of products and using the octane number of each hydrocarbon compound in the blend to create linear, non-linear and regression models	Completing the octane analysis using digital methods rather than laboratory tests to obtain easier, faster and cheaper measurement results, increasing the frequency of octane data checks in unit operations, thus ensuring octane/barrel maximization				
Membrane Contamination Monitoring	R&D Center Project	Using sensor data to make an online estimate of the contamination level in the membranes of Wastewater Treatment units, and estimating the ideal washing time	Prolonging the service life of the membranes, ensuring energy savings and increased unit water recovery				
Tank Optimization	R&D Center Project	Developing a decision-support tool that can make recommendations on the optimum tank configuration for the tanks in which the end products, intermediate products and additives are stored at refineries	Reducing unnecessary tank investments and supporting the making of long-term plans in a digital environment for tank service assignments				

Project	Project Type	Projects with Focus on Digital Transformation in 2021 Project Subject	Project Achievements
Optimization of Crude Oil Processes	R&D Center Project	Making long-term optimum crude oil composition estimates to keep up with the daily plans at the refinery	A more efficient and faster decision-making system for the long-term in crude oil tender processes, improved stock management for opportunity crude oil, increased operational efficiency and profitability, easier job transfer in rotation
FUDIPO - Future Directions Of Production Planning And Optimized Energy And Process Industries	EU Project	Developing optimization, control and data- based decision-support tools that contribute to industrial sustainability efforts	Benefiting from digital twins in industrial processes, and ensuring energy and resource efficiency
FACTLOG - Energy-aware Factory Analytics for Process Industries	EU Project	Developing an advanced digital twin platform that optimizes the complex production processes in processing industries, and that is able to process observations, information and experiences in real-time, providing an understanding, and supporting the control of production process behaviors	Ensuring the maintenance of a mutual platform that connects the production and energy efficiency decision-making processes in Tüpraş, which is a requirement for a holistic and cognitive refinery
Hydroptics - Photonics sensing platform for process optimization in the oil industry	EU Project	Developing a sensor platform that carries out multiple monitoring processes based on photonic sensors, and monitoring the cooling water systems at the refineries through the provided data	Leveraging the new advances in photonics to develop a multi-sensor platform using Quantum Cascade Laser (QCL) technologies, thus monitoring the quality of the water used in the oil industry in a correct, reliable and cost-efficient manner
PIANISM - Rule-Based and Predictive Maintenance Automation in Smart Production	TÜBİTAK Project	Developing predictive maintenance techniques to the creation of a production process that is automated end-to-end, and to optimize the value chains	The identification of possible malfunctions in critical rotating equipment at the refinery, reducing unplanned downtimes, optimizing maintenance planning and lowering maintenance costs
RUVI OilDiver - Developing Robotics Applications For Live Tank Base Examination	TÜBİTAK Project	Developing a robotics system to examine the base of atmospheric storage tanks while in use	Ensuring that the base examination of storage tanks, which is currently a risky and challenging task, can be carried out in a safer, more efficient and more detailed way at lower costs through the use of robotics technologies



UN SDG	Indicators	2020 Achieved	2021 Targeted	2021 Achieved	2022 Targeted	Current Status towards the Target
4 DUALITY BUCATION B DECENT WORK AND ECONOMICS GOWTH	Creating awareness about Information Security	Information security awareness training provided in 2019 was switched to an online training platform in 2020.	Conducting awareness and training activities in accordance with the ISO 27001 Information Security Certification standard	As part of the awareness program, information security online training was provided to all Tüpraş personnel. Extensive social engineering tests were carried out. Cyber security bulletins are published quarterly. Monthly information posters were disseminated. Event-based awareness e-mails were sent. Refinery and head office door entry films were renewed and information security issues were addressed.	Preparation of general information security training courses with Tüpraş-specific content, with agency work, within the scope of the awareness program created for the ISO 27001 ISMS Re-certification period. Providing separate training to field workers, producing brief animation videos for specific events. Making online publications on security within Tüpraş. Renewal of information security labels and dissemination in the field and new headquarters. Periodic resumption of social engineering tests, newsletters, and posters. Organization of information security day and competitions with prizes. Quarterly reporting of cyber bulletins. The awareness program for 2022 has been prepared published on the website.	++
3 GOODHALIS ACCOMMENTS 11 SOCIAMARITIES 12 REPORTER CONCOPTER ACCOMMENTS ACCOMMENTS CONCOPTER ACCOMMENTS 13 CLAMER ACCOMMENTS CONCOPTER ACCOMMENTS 14 CLAMER ACCOMMENTS CONCOPTER ACCOMMENTS 15 CLAMER ACCOMMENTS CONCOPTER ACCOMMENTS 16 CLAMER ACCOMMENTS CONCOPTER ACCOMMENTS 17 CLAMER ACCOMMENTS CONCOPTER ACCOMMENTS C	Creating economic, environmental and social benefit by reducing tanker traffic on highways	The highway rate was reduced to 2.5%, rail transport was increased.	Increasing rail transport	The ratio of rail usage in land transportation increased to 94%.	Increasing the ratio of railway transport to 95% by transferring different products to railway transport	Positive Development
6 ALCANWRITER 13 ACTEN 14 LEFT WANTER 15 ACTEN 16 ALCANWRITER 17 ACTEN 18 ACTEN 18 ACTEN 19 ACTEN 19 ACTEN 10 ACTEN 10 ACTEN 10 ACTEN 11 ACTEN	Observing the environmental benefit in the supply chain		Installation of the Ballast Water Treatment unit for vessels to be docked in the dry dock for maintenance under the Ditas, Ballast Water Management Convention	Installation of the Ballast Water Treatment System aboard the T Leyla vessel was completed and the system started to be used.	Planning for the installation of a Ballast Water Treatment System aboard the T. Suna vessel.	
8 RECENT MORE AND EXCHANGE GOWTH AND PROJECTION AND	Ensuring customer satisfaction: Following-up on requests and suggestions made by customers	Customer Notification Management software was launched.	Implementation of the driver portal/mobile app project: Increasing the Tüpraş Solution Center and Tüpraş Customer Portal topics and service area	The driver portal/mobile app project has been implemented. The Tüpraş Solution Center and Tüpraş Customer Portal topics and service area were increased. A Land Fill Contactless Sales Project was commissioned at the İzmit Refinery. A petroleum coke appointment system was launched.	Increasing the Tüpraş Solution Center and Tüpraş Customer Portal topics and service area. Commissioning of the Land Fill Contactless Sales Project at the İzmir, Kırıkkale and Batman Refineries. Switching of all products to the appointment system.	

RESPONSIBLE VALUE CHAIN MANAGEMENT

The refining sector, of which Tüpraş is also a part of, generates a driving force for the local economy with its wide area of use and is of strategic importance for the Turkish economy. Accordingly, the continuity of the value chain arising from Tüpraş activities is of critical importance for the local economy. For a sustainable value chain, the company carries out responsible work that oversees the environmental and social impacts of logistics operations.

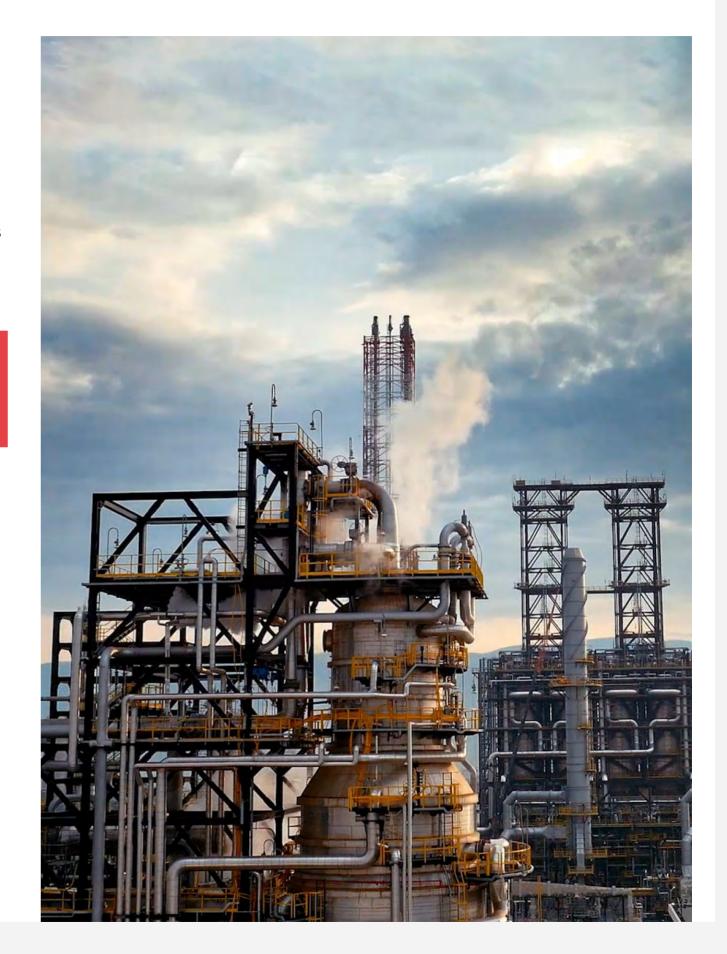
Tüpraş gives great value to ensuring the continuity and development of its value chain extending from its supply chain to its customers and managing the impacts on its value chain.

Tüpraş prioritizes continuity in production and the prevention of problems in the supply of refined products. In the event of a supply problem, the company risk assessment and performance management systems are applied, and production plans are made to secure the sectors that are likely to be affected by the problem, especially in the transportation and logistics sectors. Accordingly, Tüpraş undertakes responsibility for the maintenance of national reserves in the amounts specified in the regulations, ensuring that the need for fuel products can be met throughout Turkey in the event of an emergency.

*Except for crude oil and petroleum intermediate/product supply.

While carrying out production planning at Tüpraş, variables such as market conditions, product demand, product portfolio efficiency projections, refinery configuration and raw material supply are taken into consideration. In addition, the Company evaluates short, medium- and long-term production targets under different scenarios, and makes the necessary investments and practice adjustments. 94% of the purchases made during the reporting period were made from local suppliers.*

Applying local procurement practices within its purchasing activities, Tüpraş purchased goods and services to the value worth over 1.7 billion TL from 1,664 active suppliers in 2021.



Supply Chain Management

Tüpraş considers supply management to be the primary factor in a responsible value chain, and seeks to play a pioneering role in the market as a company whose performance is admired, and that is respectful to the environmental and life values, guiding the sector with innovative practices while meeting the petroleum product needs of our country.

Supply chain management is divided into three main processes, which are;

- crude oil supply, by-product and service types,
- •intermediate and product supply,
- supply of indirect products and services.

The system, rules and principles to be followed while performing these processes are laid out in the Tüpraş Supplier Management Policy.



You can access the Tüpraş Supplier Management Policy from this **link.**

Responsible Unit

The import of the **crude oil** needed by Tüpraş refineries and the purchase of crude oil from domestic producers are controlled by the **Tüpraş Crude Oil Supply Department** and the Domestic **Crude Oil and Operations Department.**

The Tüpraş Foreign Trade Group Management carries out the import of products and intermediate products needed by Tüpraş refineries.

Needs Analysis Method

When sourcing the necessary crude oil for the refineries, the type and amount of crude oil needed are determined through optimization programs.

Product and intermediate product needs are determined by the optimization program.

Agreement Processes

The supply of crude oil supply is covered by annual agreements with the producing countries, and the remaining amount is purchased from companies that actively trade in crude oil in the market through tenders. As of September 2021, all imported spot purchases have been transferred to TTL, and so tenders are no longer held.

Considering the global conjuncture, company strategies, and the nature of the global and local markets, some of the traded products can be sourced through periodic agreements, and all or some can be obtained via the tender method from various companies, or through one-on-one meetings with the Trade Office.

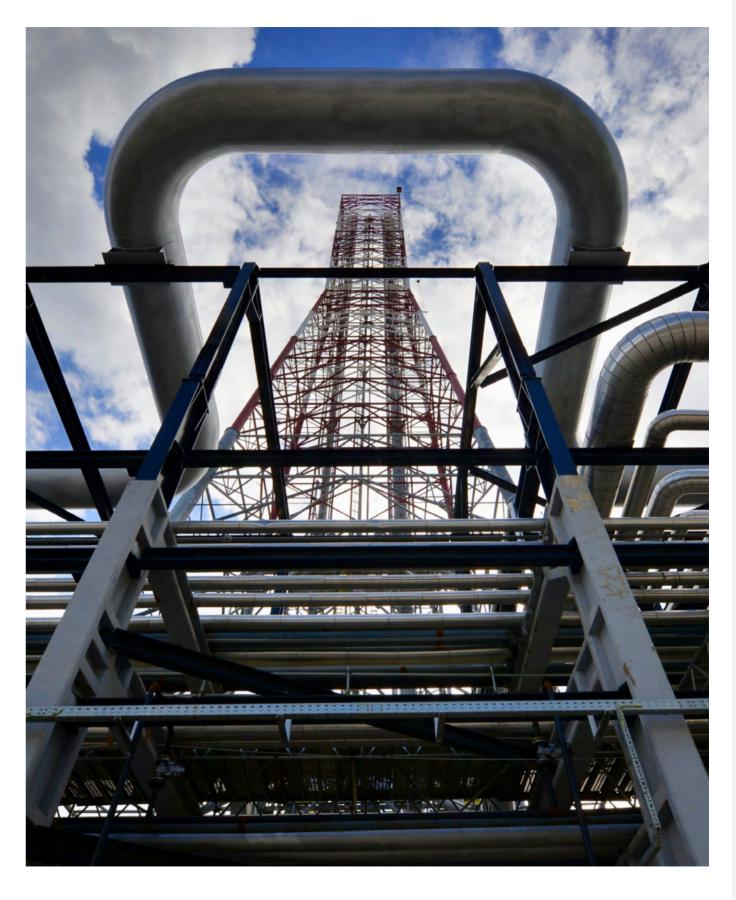
Within the framework of Tüpraş's efforts toward being an environmentally and socially responsible company, all stakeholders in the supply chain are expected to act in line with certain rules and principles. The operability of these rules and principles, which are determined by such policy documents as the Tüpraş Supplier Code of Conduct, is controlled through audits carried out by the Company. Accordingly, all companies that are likely to engage in trade with the company, including suppliers of crude oil, crude oil products and intermediate products, must have completed their registration processes if they are to be included on the Tüpraş supplier list. All suppliers applying for registration are asked to provide company details, details of their commercial activities and financial reports. Such information and documents are then evaluated in terms of commercial and legal compliance, and to ensure the maintenance of compliance, regular checks of both the companies that want to register and those that have already registered are carried out through different routes, including the Thomson Reuters World Check database. Support may be sourced from third-party companies when deemed necessary for legal compliance controls. This process is implemented for all suppliers that provide Tüpraş with direct or indirect products and services.

A "Supplier Preliminary Evaluation Questionnaire" is filled out by suppliers who apply for inclusion in the Tüpraş Supplier Portfolio on the Tüpraş Supplier Portal, or by suppliers who are already registered, to be evaluated by the purchasing units. The questionnaire contains questions relating to the company's financial, commercial, technical, and health, safety and environmental practices and processes, and quality documents are requested.

Suppliers are informed about such corporate policies as the Tüpraş Principles, the Tüpraş Code of Ethics and the Implementation Principles Guide, the Tüpraş Information Security Management System Policy, the Tüpraş Personal Data Processing Policy and the Personal Data Processing Clarification Text, and a commitment to act and execute implementations in accordance with these rules is obtained from them.

The evaluation questionnaires are filled out by all suppliers that will serve at Tüpraş's sites within the scope of the Contractor HSE Management System.

All indirect materials and services used in Tüpraş activities are sourced by the Tüpraş Contracts and **Procurement Directorate**, and are monitored through the creation of purchase requests via the SAP SRM system and the SAP ERP system. All product and service groups are covered by a separate unit that monitors the customs and shipping procedures of purchases made from abroad.

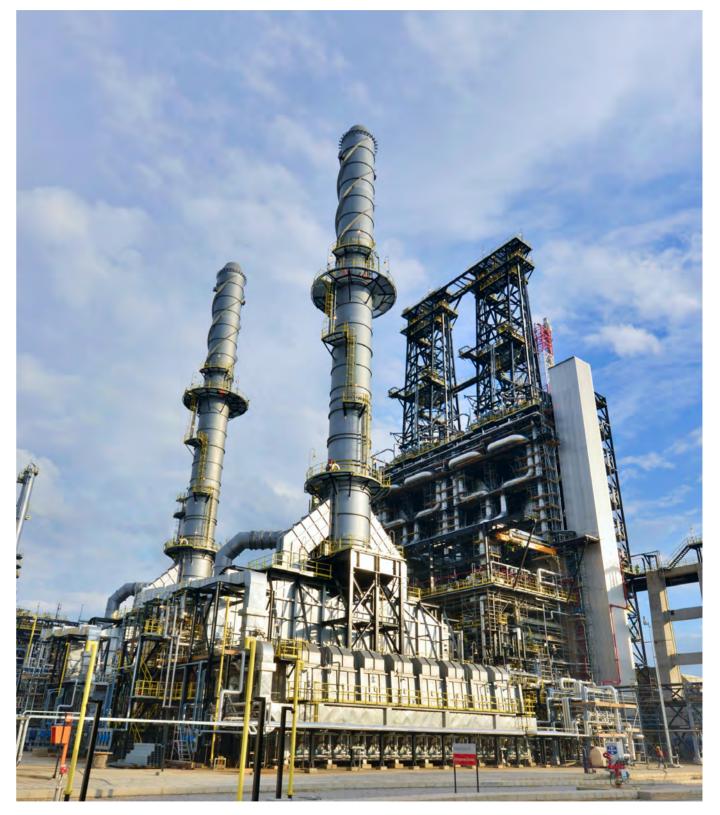


Supply Operations

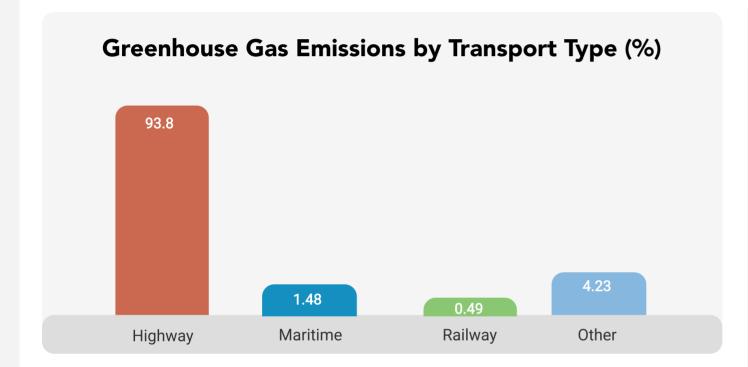
	2017	2018	2019	2020	2021
Indirect Materials and Services					
Supply Operations (million TL)	1,692	1,911	2,017	2,024	1,776
Domestic	1,217	1,164	1,608	1,791	1,210
Custom Manufacturing	4	13	14	10	22
International	471	734	395	224	544
Local Purchase Rate (%)	72.16	61.6	80.43	88.9	69.36

Suppliers are expected to comply with the relevant articles of the United Nations Global Compact and the ILO Conventions in their processes, which are also binding for Tüpraş as its parent company, Koç Holding, is a signatory to these agreements. These principles, which are included in the Supplier Code of Conduct, are also included in any purchasing contracts. A "Supplier Satisfaction Survey" is sent out every year to increase cooperation with suppliers and to increase the efficiency of working processes. Tüpraş considers this study to be of mutual benefit, being aimed at improving processes, increasing efficiency and learning from experiences.





According to the results of the research carried out by the Turkish Statistical Institute (TUIK) in 2019, 93.8% of the greenhouse gas emissions in the transportation sector come from road transport, while the shares of sea routes and railways are is 1.48% and 0.49%, respectively. Due to the high emissions associated with road transportation, sea and rail are preferred for all transport activities.



Railway Transportation

Providing great logistical advantages and convenience to Tüpraş as a fully owned concern of the company with its growing fleet, Körfez Ulaştırma A.Ş. was established as the first private railway operator in Türkiye after launching operations as a Railway Operator (RO) in December 2017.

Körfez Ulaştırma continued its operations in 2021 with a total of eight locomotives. The type approval and registration processes of two dual hybrid locomotives was completed in December, and the locomotives have now entered into operation. As part of Tüpraş DAP transports, there are now two companies that transport diesel between İzmit and the Ankara Güvercinlik facility.

Körfez Ulaştırma used its own trains for the transportation of 86% its fuel and intermediate products in 2021, increasing the total transported load from 1.5 million tons to 1.7 million tons. Operating in its capacity as an organizer, the company increased the amount of iron ore carried from 178,000 tons to 321,000 tons in 2021.

At the end of 2020, Körfez Ulaştırma returned the wagons leased under a long-term agreement with TCDD, switching to the use of 439 wagons purchased from Tüpraş in 2019, and 26 wagons purchased from Opet in 2020 for its operations in 2021.

Körfez Ulaştırma's workforce at the end of 2021 amounted to 82 mechanics employed aboard trains, and 35 office and field personnel based at its Istanbul Headquarters, in the Ankara office, and in the locomotive workshop and warehouse at the Tüpraş Kırıkkale Refinery.

Workshops

Turkey's most comprehensive railroad car maintenance and repair shop, located at Kırıkkale refinery, and operating under the Entity in Charge of Maintenance (ECM) standards, has been providing services to the maintenance of wagons of other companies in 2021. In addition to the investments required for wheel driving in the Kırıkkale Refinery, the company has also completed its investments into a workshop and warehouse for the maintenance of its own locomotives, and has obtained the necessary ECM (Entity in Charge of Maintenance) certificate required for locomotive maintenance.

Record decrease in road transport

The share of road transport in the total land (road and rail) transport has been decreased from 38% in 2017 to 6% in 2021 thanks to the activities of Körfez Ulaştırma. This has provided not only economic benefit, but also environmental and social benefits as a result of the reduction of tanker traffic on the highways.

Locomotive and wagon investments

In December 2021, Körfez Ulaştırma took delivery of seven hybrid locomotives (operating in either diesel or electric modes) from the Swiss company Stadler in 2019. As of December 1, 2021, the first two locomotives have entered into commercial service following the completion of the type approval and registration processes.

The company took delivery of 35 platform wagons in the first quarter of 2021. The type approval and registration procedures for 75 fuel wagons are being followed by the supplier company and are expected to be completed in the first quarter of 2022, after which the wagons will be delivered.

Through its locomotive and wagon investments, Körfez Transportation aims to:

- Expand its operations through the provision of services to third-party companies, on top of the total 2 million tons of rail transportation per year for Tüpraş; and
- Strengthen its position as the largest rail carrier of fuel in Türkiye, and increase its contribution to the country's railway transportation development goals.



Eco-friendly Transportation

The commissioning of closed lines on the railway network in 2021 allowed Körfez Ulaştırma to reduce its CO₂ emissions resulting from the transportation of Tüpraş products by approximately 3,000 tons when compared to the previous year.

• It is aimed to decrease the Scope-1 carbon emissions from transportation operations to zero through the use of hybrid locomotives (which can operate in diesel or electric modes) on electrified lines. GHG emissions from all activities are being monitored and the relevant studies are being carried out to meet the "Net-Zero 2050" target. Accordingly, the company aims to reduce the intensity of the Scope-1 emissions resulting from its activities by 45% by 2030.



The GHG emissions resulting from the transportation of 1 ton of product for 1 km by rail are 1/4 that of road transport when using diesel locomotives, and 1/8 when using electric locomotives.

Maritime Transportation

Ditaş is engaged in the provision of shipping line operation, brokerage/charting, pilotage, tug management, inspection and agency services. Ditaş transports crude oil in line with the needs of Tüpraş, as well as the petroleum products of Tüpraş and other suppliers, using both its own tankers and tankers leased on a time and voyage basis.

The company has more than 45 years of experience, and transported 10.4 million tons of crude oil and 5.3 million tons of petroleum products in 2021, providing operational and cost advantages to Tüpraş. Of the total, 93.3% of the crude oil and 95.7% of the petroleum product shipments were executed in line with the needs of Tüpraş's refineries. Of the total product shipments made by Ditaş in 2021, 1.1% was for THY Opet and 3.2% was for other distribution companies.



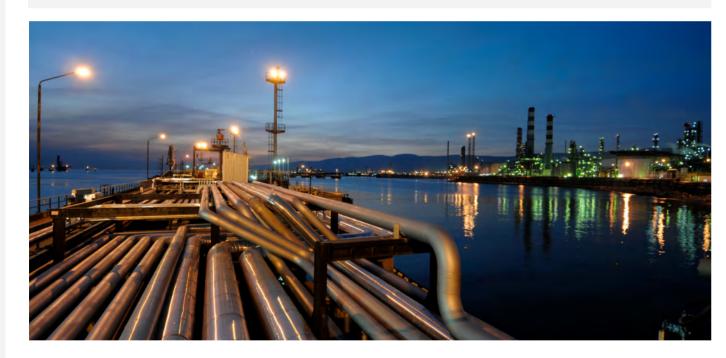
- In 2021, Ditaş carried out its operations with a fleet of 14 tankers with a total capacity of 701,138 DWT. As of the end of 2021, Ditaş is continuing its operations with 12 tankers, including two crude oil tankers of 314,906 DWT, one crude oil/product tanker of 49,990 DWT and 10 product tankers of 171,383 DWT, as well as 13 tugboats, six mooring boats, three service boats and one pilot boat, providing tugboat and mooring services to Tüpraş in the İzmit and Aliağa ports.
- The first Turkish company with an ISPO Certificate: Ditaş has ISM (International Safety Management) code, ISPS (International Ship and Port Facility Security) code and Voluntary MLC (Maritime Labor Convention) Conformity certificates for all of its ships, and has been granted ISO 9001:2015 Quality Management System and ISO 14001:2015 Environmental Management System certificates for its offices, ships and terminals.
- Progress has been made in the ongoing studies into TMSA compliance, which is an important reference in tanker operations that is requested to be implemented by oil companies, under which a TMSA Office Review was conducted by a main oil company in 2021.
- Compliance inspections of the ships operated by Ditaş are conducted by organizations that are members of the OCIMF Sire system. Carrying out its operations with an awareness of its corporate citizenship, Ditaş is also a member of KalDer, the Deniz Temiz Association/TURMEPA and the Baltic and International Maritime Council (BIMCO).

For the pilotage services provided at the İzmir Terminal, Ditaş has been granted a Certificate of Conformity to the International Pilotage Organization Standard (ISPO), being the first company in Turkey and only the 11th company in the world to hold such a certificate.

Objective: Full Compliance with Legislation

With a view to providing high quality, safe and environmentally friendly services, Ditaş follows closely national and international legislation concerning its field of operation, and completes the necessary compliance studies on time. Accordingly, the staff working aboard its ships and at its terminals undergo compulsory training in accordance with Law No.6331 on Occupational Health and Safety and the related regulations. In addition, the risk assessments, emergency action plans and periodic health check procedures required by law are carried out in coordination with occupational safety specialists and occupational physicians. In 2021, an Occupational Health and Safety audit was conducted by a third party assigned by Koç Holding.

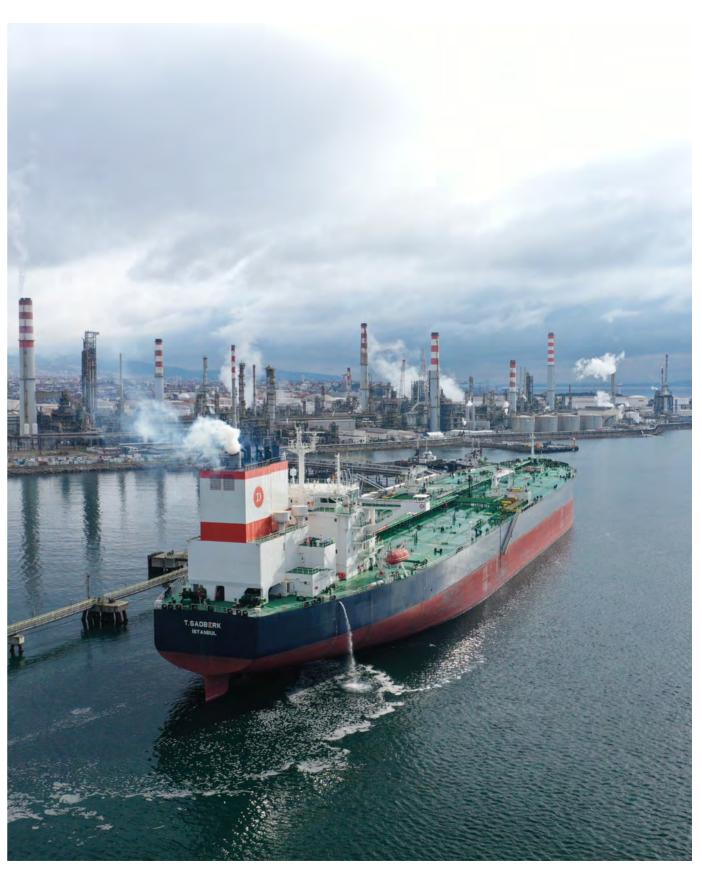
On-board training courses have been given to Ditaş personnel by the Training Inspector since 2021 to improve the safety awareness of personnel.



Since maritime is determined as a critical sector in terms of cybersecurity, our **Corporate Cyber Incident Response Team** continues its activities in accordance with national legislation. As part of its digitalization and sustainability efforts, the Company has started to use a new software program for the management of tankers that operates both on board and in the office.

In 2021, a total of 33 ships underwent inspections* and 305 ships were provided with loading master services at the İzmit and İzmir terminals.

*Due to the pandemic, the number of ship inspections carried out was lower than in previous years. Normal vetting procedures were resumed in September 2021.



Customer Relations Management

To ensure our customers' needs and suggestions are addressed in a timely manner, to manage customer notifications from all platforms, including the website, the Client Portal and the Tüpraş Solution Center, and to ensure compliance with the ISO 10002 Customer Satisfaction Management Standard, Tüpraş uses a specifically designed customer complaint management software that was commissioned last year, and that converts customer notifications into value-added data. Notifications are constantly reviewed under the leadership of agile teams made up of managers from the Headquarters and the Sales and Quality departments of the refineries, who seek to identify the root causes of problems and to ensure the implementation of new sustainable practices that will contribute to customer satisfaction. All processes affecting its stakeholders are simplified by Tüpraş through digitalization projects to make them more user-friendly, and to minimize error rates.

Tüpraş, which opened the door on a new era in customer experience with pioneering technologies and digitalization investments implemented in the energy sector in 2021, launched a Land Filling Contactless Sales application, a Driver Portal Mobile Application and an Appointment System. A unique project focusing on end-to-end digital customer experience has been launched in which the entire process can take place without human contact through kiosks, a mobile application and the Tüpraş Solution Center.

The company has added new applications to its customer portal, thus expanding its scope in line with customer requests. Furthermore, the Company has added Modiphal-T modified bitumen products, niche fuels developed as part of an innovation project and a special section on Spectraf products to its customer website.

The Tüpraş Solution Center offers a wide range of services, from Energy Market Regulatory Authority (EMRA) notification processes to supplier log information searches, and from receiving hotline calls to addressing customer balance refund requests. The topics that are dealt with by the Center are constantly expanded in accordance with customer demands and suggestions.





Customer Satisfaction

Customer satisfaction is a priority for Tüpraş. Adopting a customer-focused approach based on an understanding of the need to provide quality products and services, the company is committed to the application of effective and digital solutions, to treating its customers honestly, equally and fairly and to improving itself regularly. Accordingly, all demands, complaints and suggestions made by customers are considered with great care.



ANNEXES

ANNEX-1: Performance Data

ENVIRONMENTAL PERFORMANCE	2017	2018	2019	2020	2021
Direct Energy Consumption (TJ)	104,749	91.752	96,528	86,613	87,139
Natural Gas	47,306	45,342	51,039	43,842	45,946
Fuel Oil	8,581	3,481	2,292	3,433	1,705
Fuel Gas	46,164	40,562	41,028	37,808	38,282
Coke	2,698	2,367	2,169	1,530	1,206
Indirect Energy Consumption - Electricity (TJ)	315	172	32	-179	-95
Total Energy Consumption (TJ)	105,064	91,924	96,560	86,434	87,044
Change in Energy Consumption (%)	2,85	-12,51	5,04	-10,49	0,71
Energy Consumption per Processed Crude Oil (GJ/ton)	3,69	3,75	3,55	3,83	3,56
Energy Density Index Value (%)	102,22	99,1	98,44	99,1	93,5
Number of Projects Providing Energy Efficiency	15	21	24	30	65
Annual Additional Saving Providing Energy Efficiency (TJ)	830	3,620	473	713	1,925
Savings Providing Energy Efficiency (million USD)	4,9	36	3,8	4,3	13,2
Reduction in Greenhouse Gas Emissions through Energy Efficiency Projects (ton CO₂e)	45,945	243,666	26,292	39,608	106,708
Total Raw Water Consumption (million m³)	15,7	18,2	18	18,6	15,6
Total Water Consumption (million m³)	31,4	29,9	29,6	23,8	26,3
Surface Source	14,4	17,2	17,2	17,8	14,9
Grid	1,2	1,1	0,8	0,7	0,7
Treated Wastewater From the Municipality of Körfez	15,7	11,7	11,6	5,2	10,7
Raw Water Usage Rate per Processed Crude Oil (m³/ton)	0,55	0,74	0,66	0,82	0,64
Raw Water Usage Rate per Production (m³/ton)	0,54	0,71	0,64	0,80	0,62
Total Water Recovery (million m³)	25,7	20,8	20,6	15,1	16,7
Recovered Water to Total Water Consumption Proportion (%)	81,9	69,5	69,6	63,4	63,5
Total Wastewater Discharge (million m³)	14,9	14,3	15,5	11	11,3
Total Solid Waste Amount (ton)	31,392	32,646	34,433	20,372	25,019
Hazardous Waste Amount (ton)	17,811	23,617	22,144	17,224	13,048
Non-Hazardous Waste Amount (ton)	13,581	9,029	12,290	3,148	11,971
Solid Waste by Disposal Method	- '	-	-	-	549
Recycling (ton)	22,618	28,934	23,947	11,978	21,253
Disposal (ton)	8,774	3,712	10,486	8,394	3,766
Solid Waste Recovery Rate (%)	72,1	88,6	69,5	58,8	84,9
Revenue Obtained through Waste Recovery and Industrial Symbioses (million TL)	-	-	-	-	23,3
Saplings Planted as part of Forestation (quantity)	400	920	200	46	500
CO ₂ Emissions Eliminated through Forestation (ton CO ₂ e)	165	380	83	19	206
Environmental, Investment and Operating Expenses (million TL)	390	150	268	238	388
Environmental Training (person x hour)	16,012	10,391	14,127	7,020	12,897
Tüpraş Employee	4,010	4,168	4,200	2,502	9,676
Contractor Employee	11,971	6,223	9,927	4,518	2,971
Society	31	0	0	0	250
Scope 1 Greenhouse Gas Emissions (ton CO₂e/year)	7,249,964	6,720,186	6,172,574	5,724,407	5,875,393*
Scope 2 Greenhouse Gas Emissions (ton CO ₂ e/year)	79,386	38,044	32,905*	24,518	48,368*
Total (S1&2)	7,329,350	6,758,230	6,205,479	5,748,925	5,923,761
Greenhouse Gas Density (ton CO₂e/Processed C.O.)	0,26	0,28	0,23	0,26	0,24
Greenhouse Gas Density (ton CO₂e/Charge)	0,24	0,25	0,21	0,23	0,23
	<i>∨,∠</i> :	0,20	5,21	0,20	0,20

^{*}ISO14064 Data verification is continuing.

Tüpraş Sustainability Journey Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

EMPLOYEE DEMOGRAPHICS	2017	2018	2019	2020	2021
Total Number of Employees	5,185	5,458	5,442	5,354	5,165
Female	453	500	510	515	492
Male	4,732	4,958	4,932	4,839	4,673
Number of Contracting Company Employees	584	630	650	630	565
Female	184	198	213	214	176
Male	400	432	437	416	389
Employees by Contract Type					
Number of Employees on Fixed Term Contracts	5,182	5,454	5,437	5,352	5,165
Female	453	498	508	514	492
Male	4,729	4,956	4,929	4,838	4,673
Number of Employees on Temporary Employment Contracts	3	4	5	2	0
Female	0	2	2	1	0
Male	3	2	3	1	0
Employees by Category					
Number of Hourly Paid Employees	4.042	4,199	4,158	4,077	3,936
Female	136	142	146	142	130
Male	3,906	4,057	4,012	3,935	3,806
Number of Monthly Paid Employees	1,143	1,259	1,284	1,277	1,229
Female	317	358	364	373	362
Male	826	901	920	904	867
Employees by Employment Type					
Number of Full-Time Employees	5,185	5,455	5,438	5,354	5,165
Female	453	498	508	515	492
Male	4,732	4,957	4,930	4,839	4,673
Number of Part-Time Employees	0	3	4	0	0
Female	0	2	2	0	0
Male	0	1	2	0	0
Number of Employees by Age Group		·	_	· ·	•
Under 30	1,633	1,784	1,632	1,288	567
Between 30-50	3,036	3,201	3,400	3,686	4,288
Over 50	516	473	410	380	310
Number of Senior Executives	30	32	31	28	29
Female	1	1	0	0	1
Male	29	31	31	28	28
Number of Mid-Level Executives	178	185	193	218	209
Female	29	36	38	43	40
Male	149	149	155	175	169
Number of New Hires	533	587	268	90	78
Female	62	86	62	36	25
Male	471	501	206	54	53
Number of Those Who Left Employment	327	314	284	175	93
Female	21	39	52	32	27
Male	306	275	232	143	66
Employees under Collective Agreement	4,042	4,199	4,158	4,077	3,936
	20	22	30	32	29
Number of Employees on Maternity Leave	/()	//		3./	79

About

	·				
Total Number of Ethnic Minority Employees	0	0	0	0	0
Total Number of Employees with Disabilities	133	143	142	135	137
Female	19	22	24	23	23
Male	114	121	118	112	114
Average Seniority in Female Employees of the Company	8,0	7,5	7,4	7,8	8,5
Average Seniority in Male Employees of the Company	9,6	9,0	9,3	9,8	10,4
Number of Half-Time Employees (Part Time)	-	3	4	-	-
Number of Half-Time Female Employees (Part Time)	-	2	2	-	-
Number of Half-Time Male Employees (Part Time)	-	1	2	-	-
Employee Turnover %	6	6	5	3	5
Number of Female Employees in STEM positions (R&D)	32	35	37	39	39
Number of Male Employees in STEM positions (R&D)	21	25	24	25	23
Number of Female Employees in Income-Generating Positions*	-	-	-	-	300
Number of Male Employees in Income-Generating Positions*	-	-	-	-	2,767

^{*}Production/Operations, Engineering, Project Management, Financial Operations, General Management, Operational Planning, Purchasing, Strategic Planning, Sales, R&D, Product or Service Design, Marketing, Treasury functions

OCCUPATIONAL HEALTH AND SAFETY PERFORMANCE	2017	2018	2019	2020	2021
Total OHS Training Hours (person x hour)	141,729	165,038	201,813	194,671	292,712
Tüpraş Employees	83,381	87,805	108,026	125,855	108,672
Business Partner Employees	58,348	77,233	93,787	68,816	184,040
LTI Frequency - OSHA (LTI Frequency = number of LTI cases x 1 million/working hour)	0,71	0,68	0,70	0,46	0,41
Tüpraş Employees	0,46	0,69	0,70	0,60	0,23
Business Partner Employees	0,94	0,68	0,70	0,36	0,54
LTI Severity - OSHA (LTI Severity= LTI lost work days x 1 million/working hour)	36,10	27,80	25,80	18,90	18,20
Tüpraş Employees	13,50	20,20	17,90	21,50	10,10
Business Partner Employees	54,00	33,70	31,30	17,00	23,60
Total Recorded Injuries - OSHA (TRIR= number of cases x 1 million/working hour)	3,3	4,3	4,0	3,7	3,4
Tüpraş Employees	4,3	3,3	4,6	4,8	4,2
Business Partner Employees	2,6	5,1	3,5	2,9	2,9
Limited Incapacity OSHA (RWC= Number of cases x 1 million/working hour)	2,44	2,58	1,73	0,88	1,18
Tüpraş Employees	3,8	2,2	2,5	1,3	2,0
Business Partner Employees	1,5	3,6	1,2	0,5	0,6
Occupational Disease (OI= Number of cases x 1 million/working hour)	0	0	0	0	0
Tüpraş Employees	0	0	0	0	0
Business Partner Employees	0	0	0	0	0
Fatality Rate (FR = Number of deaths x 1 million/working hour)	0,19	0,04	0,00	0,05	0,00
Tüpraş Employees	0,00	0,09	0,00	0,12	0,00
Business Partner Employees	0,34	0,00	0,00	0,00	0,00
Traffic Accident Frequency (RTAf = Number of Traffic Accidents x 1 million/km)					2,58

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Total OHS Training Hour (person x hour)	141,729	165,038	201,813	194,671	292,712
Tüpraş Employees	83,381	87,805	108,026	125,855	108,672
Business Partner Employees	58,348	77,233	93,787	68,816	184,040
Number of Reports on Near Miss Incidents - Unsafe Behaviors - Unsafe Situations	4,634	9,710	9,475	11,504	17,699
Number of Management Field Safety Tours	2,412	2,674	2,854	1,393	2,041
Number of Inspections on Work Permit	2,361	2,582	3,166	1,344	5,119
Number of Inspections on Energy Insulation	2,046	2,200	2,549	1,134	2,665
Number of External Inspections	1	2	7	8	15
Level 1&2 Process Case Ratio (Number of cases x 1 million/working hour)	1,49	1,02	0,87	0,59	0,42
Tools and Equipment Conformity Performance %	95	97	96	96	93
HSE Actions Conclusion Rates %	85	89	86	84	80
Number of Safety-Critical Equipment with Delayed Maintenance	1,181	853	1.393	1.060	751
Death due to Work Accident	4	1	0	1	0
Tüpraş Employees	0	1	0	1	0
Business Partner Employees	4	0	0	0	0
Process Safety Accident Frequency	1,49	1,02	0,87	0,59	0,42
Ditaş* - LTI Frequency - OSHA (LTI Frequency= number of LTI cases x 1,000,000/person x hou	ır) -	3,12	2,68	1,04	1,95
Ditaş* - LTI Severity - OSHA (LTI Severity= LTI lost work days x 1,000,000/person x hour)	-	31,8	23,2	24	116,1
Körfez Transport** - LTI Frequency - OSHA (LTI Frequency= number of LTI cases x 200,000/pe	erson x hour)	0	0,8	0,8	0
Körfez Transport** - LTI Severity - OSHA (LTI Severity= LTI lost work days x 200,000/person x	x hour)	0	12,4	11,2	0

SOCIAL PERFORMANCE	2017	2018	2019	2020	2021
Total Training (person x hour)	233,034	384,405	238,168	93,244	142,703
Female	35.601	34,968	40,919	19,017	21,122
Male	197.434	349,437	197,249	74,227	121,581
Monthly Paid Employees	103.864	103,165	125,107	54,171	71,247
Hourly Paid Employees	129.170	281,241	113,061	39,073	71,455
Total Training (average hour per person)	45	70	44	17	28
Female	79	70	80	36	43
Male	42	71	40	15	26
Monthly Paid Employees	91	82	98	42	58
Hourly Paid Employees	32	67	27	10	18
Code of Ethics and Code of Conduct Training Hours (person x hour)	-	-	-	-	549
Employee Loyalty (%)	61	57,2	35,8	61	35
Total Number of Interns	1,063	1,020	724	430	206
Minimum Entry-Level Salary to Minimum Wage Proportion	-	-		-	-
Hourly Paid Employees	2,2	2,2	1,9	1,9	1,9
Monthly Paid Employees	3,3	3,2	3	3	2,8

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş

Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

PERATIONAL PERFORMANCE	2017	2018	2019	2020	2021
Processed Crude Oil (thousand tons)	28,502	24,540	27,238	22,583	24,418
Production (thousand tons)	28,883	25,695	28,112	23,389	25,086
otal Sales (thousand tons)	31,493	29,830	29,197	24,503	27,586
Domestic Sales (thousand tons)	25,689	25,638	22,391	19,831	21,707
nternational Sales (thousand tons)	5,804	4,191	6,807	4,356	5,250
ransit Sales (thousand tons)	-	-	-	316	629
Product Import (thousand tons)	4,388	6,252	2,827	2,927	2,792
Vhite Product Ratio in Production (%)	76,3	77,4	79,0	81,5	81,4
• •	101,4	87,3	90,8	75,3	81,4
Crude Oil Capacity Usage Rate (%)		•	•	•	•
emi-Product Included Capacity Usage Rate (%)	108,1	95,9	97,8	81,8	87,7
ONOMIC AND ADMINISTRATIVE PERFORMANCE	2017	2018	2019	2020	2021
let Sales (million TL)	53,948	88,552	89,601	63,244	150,971
Operating Profit (million TL)	4,857	5,736	2,230	- 619	465
rofit Before Tax (million TL)	4,474	3,724	- 311	- 3,795	2,161
Profit After Tax (million TL)	3,812	3,713	526	- 2,494	3.,319
BITDA (million TL)	5.882	8,908	4,039	545	13,688
let Debt (million TL)	6.249	11,967	8,424	9,420	11,217
Return on Equity (ROE) %	41,3	36,8	4,6	- 16,4	18,9
let Debt/EBITDA %	1,1	1,3	2,1	17,3	0,8
let Working Capital (million TL)	2,966	7,029	- 1,501	- 598	- 3,602
nvestment Expenditures Solo (million USD)	184	138	157	113	112
nvestment Expenditures Consolidated (million USD)	301	165	236	153	152
arnings per Share (TL)	15,22	14,83	2,10	- 9,96	13,25
Dividend per Share Gross (TL)	13,60	15,15	-	-	-
Dividend per Share Net (TL)	11,56	12,88	-	-	-
ax and Similar Liability Payments (million TL)	42,430	31,590	31,262	35,673	15,550
etirement Fund Liabilities (million TL)	89,0	103,9	122,0	136,6	163,3
Oonation and Sponsorships (million TL)	30,0	40,1	3,6	22,7	3,0
Corporate Management Rating	9,47	9,48	9,50	9,58	9,62
itch Ratings Long-Term Exchange Score	BBB- (Stable)	BB+ (Negative)	BB- (Stable)	B+ (Negative)	B+ (Negativ
Moody's Ratings Long-Terms Credit Score	Ba1 (Pozitive)	Ba2 (Negative)	B1 (Negative)	B2 (Negative)	B2 (Negativ
CR-ER Long-Term Foreign and Local Currency Score	-	-	-	-	-
upply Operations (million TL)	1,692	1,911	2,017	2,024	1,776
Domestic	1,217	1,164	1,608	1,791	1,210
Custom Manufacturing	4	13	14	10	22
International	471	734	395	224	544
&D Expenses (million TL)	33,7	37,8	43,5	43,4	47,5

ANNEXES

ANNEX-2: Tüpraş' Sustainability Journey (All Activities)

2008

- All refineries became ready to sell diesel in Euro V standard.
- In line with the agreement signed with TCDD, railway transportation has started.
- Construction of the Fuel Oil Conversion Facility has begun.
- The OSAR-Risk Assessment Table was activated.
- Advanced Process Control (APC) applications were started.
- The first corporate social responsibility report in compliance with the GRI Reporting Framework was published.
- Corporate Governance Rating has been updated to 8.20.

2009

- The investment to improve the gasoline specs of the İzmit Refinery was commissioned.
- İzmit Wastewater Recovery Unit was commissioned, İzmit Refinery started to recycle its own wastewater discharge and use it in its processes.
- All gasoline products sold reached Euro V specs.
- The Contractor Management System was commissioned.
- Switched to the Customer Relationship Management System (CRM).

2010

- Tüpraş R&D Center was opened.
- Tüpraş Ethical Values have been updated.
- Waste Management Automation Software was commissioned.

2012

• Caustic Neutralization Unit was commissioned at Izmir Refinery.

2013

- ISO 50001:2011 Energy Management System Standard certification was carried out.
- ISO/IEC 27001:2005 Information Security Management System Standard certification was carried out.
- Izmir Refinery received the 1st prize in the "Environmental Practice Award" by the Aegean Region Chamber of Industry with its project for the modernization of the furnaces of the base oils complex.
- Batman Refinery was awarded the "Cleanest Industry Award" in the competition organized by the Ministry of Environment and Urbanization.

2014

- İzmit Refinery Fuel Oil Conversion Facility was completed.
- Tüpraş started to enter the Borsa Istanbul Sustainability Index in 2014, when it was created.
- R&D Center Campus was opened.
- The simulation program developed with the aim of "Reducing Refinery Energy Loss with Pollution Monitoring, Dodling, Simulation and Optimal Maintenance Planning of Heat Exchangers" was registered as EU Community Trade Mark (CTM) with the name "HexDon".

2015

- Tüpraş took part in the 21st Climate Change Conference (COP21), where the Paris Agreement was accepted.
- İzmit New Wastewater Recovery Unit was commissioned. İzmit Refinery started to recycle the wastewater discharge of Körfez Municipality and use it in its processes.
- In the Industry Energy Efficiency Project Competition Category-2, Kırıkkale Refinery won the 1st prize, the İzmit Refinery the 2nd, and the İzmir Refinery the 3rd, while Batman Refinery received the Special Jury Award in the Category-3.
- Membrane Dearator received the 1st prize in the Process Category of the European Union Environment Awards Turkey Program with the Project of Energy Recovery with Cold Boiler Feed Water.

2016

- At the Izmit Refinery, the Gray Water Treatment Plant was commissioned to process the discharge water of the İSU Körfez Wastewater Facility at the refinery and use it for industrial purposes.
- Kırıkkale Refinery Wagon Maintenance and Repair Workshop has become the most comprehensive Wagon Maintenance and Repair Workshop in Turkey by receiving the Maintenance Unit Certificate.
- Tüpraş Supplier Portal was launched.
- Three projects of Tüpraş R&D Center were accepted into the European Union Horizon 2020 R&D and Innovation Program with record evaluation scores.
- EBRD granted a loan of \$150 million to Tüpras within the scope of environment and energy efficiency.
- Tüpraş took part in the 22nd Climate Change Conference (COP22).

2017

- Tüpraş has become the first private railway train operator in Turkey with Körfez Transportation A.Ş.
- Tüpraş took part in the 23rd Climate Change Conference (COP23) with two presentations.
- The United Nations Women's Empowerment Principles (WEPs) were signed.
- İzmir Wastewater Recovery Unit was commissioned. İzmir Refinery started to recycle its own wastewater discharge and use it in its processes.
- ISO 10002 Customer Satisfaction Management System certification was carried out.
- The Innovation Directorate was established and the Idea Unit Portal was commissioned.

2018

- Corporate Governance Rating rose to 9.48.
- A global cooperation was signed between UN Women, Tüpraş and Fenerbahçe Sports Club in order to support the "HeForShe" movement carried out by the United Nations Women's Unit (UN Women).
- Tüpraş made a presentation at the 24th Climate Change Conference (COP24).
- Tüpraş Solution Center was established as part of efforts to improve customer satisfaction.
- The London Trade Office was opened.
- Data Analytics Centers were opened in METU and ITU Technopolis.
- Open Innovation Studies for the entrepreneurship ecosystem were initiated.
- EU HORIZON 2020 "BAMBOO" project started.

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

2019

- Körfez Ulaştırma has received 5 new locomotives.
- Körfez Ulaştırma has agreed for Turkey's first hybrid locomotives.
- Tüpraş has become "Most Successful Turkish Industrial Organization" in European Union HORIZON 2020 The EU Framework Programme for Research and Innovation.
- EU HORIZON 2020, "BIZEOLCAT", "COZMOS", "MOF4AIR", "MACBETH", "FACTLOG" AND "HYDROPTICS" projects were initiated.
- Kırıkkale Refinery New Power Central, received project of the year award in 8th ICCI Energy Awards.
- Received first place on "Innovation Strategy" in InovaLIG.
- Scrubbers were installed in 3 tankers of Ditaş, in order to be in compliance with the International Marine Organization regulations.
- Under "Our Energy to the Future: I am Coding, Modelling, Producing Project", 12.000 students were provided with robotic coding and three-dimension modelling trainings.
- Under "Our Energy to the Students Project" with 287 experiments, 3.000 students were reached. Within the scope of the project during 2019, under "Most Successful Koçlular" competition's "Adding Value to Environment and Society" category, 3rd place award was received. With the same project, under 2019 Sustainable Business Awards, became finalist in "Social Impact Human Focused Social Projects" category.
- Kırıkkale Refinery New Power Central Project was awarded with 1st place at the 2019 Sustainable Business Awards under "Energy Management" category.

2020

- A long-term collaboration agreement was signed with international venture capital fund Emerald Industrial Innovation Fund.
- Corporate Governance grade was improved to 9,58.
- Basic Level Zero Waste Certificate for refineries were acquired.
- London Commercial Office was transformed as a subsidiary as Tüprab Trading Ltd.
- In-hose entrepreneurship program "Modiphal-T" project was added to product portfolio.
- AB UFUK 2020, "CORALIS", "AquaSPICE", "EBIO" and "ACHIEF" projects were initiated.
- Tüpraş Academy was formed at Kırıkkale Refinery.
- "International 16 Days of Activism" campaign was supported with the "Our Energy Does Not Discharge for Equality" project with the collaboration of UN Women HeForShe Movement and Fenerbahce.
- Customer Notice Management software was implemented.

2021

- Tüpraş has announced its "Strategic Transformation Plan" in line with its becoming carbon neutral goal.
- Under Energy Efficiency in Industry Project Competition, Increasing Energy Efficiency in Industry Projects Category-3; Kırıkkale Refinery has received second place and Izmit Refinery has received third place.
- As a step for being a digital refinery, "Terminal Automation System" TAS was implemented at İzmit Refinery B Area Railcar Storage Unit.
- İzmit Refinery Plant 7 Unit 7 CC Revamp Project was completed.
- ISO 45001: 2018 Occupational Health and Safety Management Systems Certificate was acquired.
- Körfez Ulaştırma has reveid 7 hybrid locomotives that were ordered from Swiss company Stadler.
- Environment-friendly, safe, and easy to use bitumen emulsions were added to the product portfolio with the "Emuphal-T" project under the scope of in-hose entrepreneurship program.
- EU HORIZON 2020 Program, "EPC EqTech" project was initiated.

2022

- •Protecting the expectations of stakeholder groups, material ESG topics were identified and Tüpraş 2021 Materiality Analysis was completed.
- Structuring of the Sustainabiliy Committee journey has started.
- Task Force on Climate-related Financial Disclosures (TCFD) developed by the Financial Stability Board (FSB) which was formed by G-20 has evaluated Tüpraş's climate related financial risks and Tüpras has become a TCFD supporter.
- The national project which was awarded with funding under the scope of TÜBİTAK 1005 Program, "Researching the Most Suitable Business Model for Catching the Stack Gas/Carbon Dioxide from the Batman Petrol Refinery to inject to West Raman Area" was initiated.
- Became a member of Hydrogen Europe platform.

Tüpraş Sustainability Climate and Environmental Priorities Management

Tüpraş Management Approach

Human Focus at Tüpraş

Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

ANNEXES

ANNEX-3: Tüpraş Stakeholders and Communications Methods

Stakeholder Group	
Employees	Sustainability Report (annual), Activity Report (annual), Employee Loyalty Research (annual), Internal Communication Meetings (annual), Performance Assessment Meetings (annual), Occupational Health and Safety Boards (monthly), Technical Safety Newsletters (weekly/monthly), Internal Information Announcements (instant), Social Projects (constant), Social Activity Clubs (constant), Refinery Suggestions System (constant), Recognition, Appreciation and Reward System (constant), Tüpraş Code of Ethics (constant), Collective Agreement (constant), Employee Training (constant), Website (constant), Refinery Information Bank (constant), Stakeholder Communications Management System (constant) and Corporate Portal (constant) Corporate Reputation and Perception Research Studies (two-year)
Educational Institutions	R&D Partnerships (on project basis), Donations and Sponsorships (upon request), Infrastructure and Trainer Support (upon request), Master's Degree and Sector-Specific Expertise Programs (constant), Website (constant), Stakeholder Communications Management System (constant), Corporate Reputation and Perception Research Studies (two-year)
Business Partners and Suppliers	Sustainability Report (annual), Supplier Satisfaction Research (annual), Technical Safety Newsletters (weekly/monthly), Meetings and Talks (upon request), Tüpraş Code of Ethics (constant), Business Partner HSE-S System (constant), Website (constant), Stakeholder Communications Management System (constant), Corporate Reputation and Perception Research Studies (two-year)
Public Bodies and Organizations	Sustainability Report (annual), Activity Report (annual), Audits (periodic/instant), Meetings and Talks (upon request), Joint Projects (upon request), Incentives (upon request), Website (constant), Stakeholder Communications Management System (constant), Corporate Reputation and Perception Research Studies (two-year)
Media	Sustainability Report (annual), Activity Report (annual), Meetings and Talks (upon request), Press Meetings and Releases (instant), Website (constant), Stakeholder Communications Management System (constant), Corporate Reputation and Perception Research Studies (two-year)
Customers	Sustainability Report (annual), Customer Satisfaction Research (annual), Meetings and Talks (upon request), Customer Portal (constant), Customer Relations Management System (constant), Tüpraş Code of Ethics (constant), Tüpraş Solutions Center (constant), Stakeholder Communications Management System (constant), Corporate Reputation and Perception Research Studies (two-year)
Stakeholders and Investors	Sustainability Report (annual), Activity Report (annual), General Assembly Meetings (annual), Interim Activity Reports (quarterly), Information and Special Circumstances Disclosure (instant), Roadshow and Investor Presentations (upon request), Meeting and Talks (upon request), Analyst Presentations and Teleconferences (quarterly), Tüpraş Code of Ethics (constant), Website (constant), Stakeholder Management System (constant), Corporate Reputation and Perception Research Studies (two-year)
Unions	Sustainability Report (annual), Activity Report (annual), Occupational Health and Safety Boards (monthly), Meetings and Talks (constant), Collective Agreement (constant), Website (constant), Stakeholder Communications Management System (constant), Corporate Reputation and Perception Research Studies (two-year)
Non-Governmental Organizations	Sustainability Report (annual), Activity Report (annual), Meetings and Talks (upon request), Joint Projects (upon request), Donations and Sponsorships (upon request), Memberships (constant), Website (constant), Stakeholder Communications Management System (constant), Corporate Reputation and Perception Research Studies (two-year)

ANNEXES

ANNEX-4: Memberships and Supported Enterprises

Memberships and Supported Enterprises	
SPIRE SUSTAINABLE PROCESS INDUSTRIES	
MARITIME CHAMBER OF COMMERCE/ALIAGA BRANCH	
WORLD ENERGY COUNCIL TURKISH NATIONAL COMMITTEE (WEC-TNC)	
AEGEAN CHAMBER OF INDUSTRY (EBSO)	
ENERGY EFFICIENCY ASSOCIATION (ENVERDER)	
TURKISH ETHICS AND REPUTATION ASSOCIATION (TEID)	
TURKISH ENTREPRENEURS PLATFORM	
KIRIKKALE CHAMBER OF COMMERCE AND INDUSTRY	
KOCAELİ CHAMBER OF INDUSTRY (KSO)	
KOÇ HOLDING PENSION AND SUPPORT FUND FOUNDATION	
CORPORATE COMMUNICATORS ASSOCIATION (KID)	
PROCESS 4PLANET	
TİM MEDITERRANEAN EXPORTER ASSOCIATIONS (AİB)	
INFORMATION SYSTEMS AUDIT AND CONTROL ASSOCIATION (ISACA – ISTANBUL CHAPTER)	
TSE CEN/TC/019/WG 21, 24	
TSE, MTC 1: OIL PRODUCTS, GAS/LIQUID FUEL, OILS AND RELATED PRODUCTS MIRROR COMMITTEE	
TURKISH BRITISH CHAMBER OF COMMERCE AND INDUSTRY (TBCCI)	
BATTERY IMPORTERS AND MANUFACTURERS ASSOCIATION	
TURKEY DISASTER RISK-REDUCTION PLATFORM	
FOREIGN TRADE ASSOCIATION OF TURKEY (TURKTRADE)	
TURKISH SOCIETY FOR QUALITY (KALDER)	
TURKISH SOCIETY OF COGENERATION AND CLEAN ENERGY TECHNOLOGIES (TURKOTED)	
CORPORATE GOVERNANCE ASSOCIATION OF TURKEY (TKYD)	
THE UNION OF CHAMBERS AND COMMODITY EXCHANGES OF TURKEY (TOBB)	
LPG ASSEMBLY LEGISLATION COMMITTEE/LPG ASSEMBLY AUTOGAS COMMITTEE/PETROLEUM ASSEMBLY TECHNICAL COMMITTEE/PETROLEUM ASSEMBLY AHU COMASSEMBLY	MMITTEE/NATURAL GAS
TURKISH INDUSTRY AND BUSINESS ASSOCIATION (TUSIAD)/INVESTMENTS and INCENTIVES/ENERGY/TAX/COMPETITION LAW/ENTREPRENEURSHIP ECOSYSTEM/ENVI CHANGE/CAPITAL MARKETS	RONMENT AND CLIMAT
TURKISH INVESTOR RELATIONS SOCIETY (TÜYİD)	

ANNEX-5: Awards and Achievements

CEO

- Ranked first on Capital 500 list of "Turkey's 500 Largest Industrial Companies".
- Ranked first on the Istanbul Chamber of Industry (ISO)'s list of "Turkey's 500 Largest Industrial Enterprises 2020".
- Ranked first in the chemical substances and products sector and ninth in the general ranking in the research named "Turkey's Top 1000 Exporters 2020" of the Turkish Exporters Assembly (TİM).
- The only Turkish company to be listed on Bloomberg's list of "50 Companies to Watch in 2022".
- Tüpraş General Manager İbrahim Yelmenoğlu ranked seventh in the "Turkey's 50 Sustainability Leaders" list by Fast Company magazine.
- With a total of 17 projects focused on environmental sustainability, and support amounting to 7.83 million Euro, Tüpraş is the leading Turkish industrial company in the European Union's HORIZON 2020 R&D Innovation Program.
- Based on its performance in the "R&D Centers Performance Indexes" of the Ministry of Industry and Technology, Tüpraş was awarded third prize in the category "51-75 R&D Personnel Employment".
- Tüpraş listed on Bloomberg's GEI (Gender Equality Index).
- Tüpraş features on many national and international sustainability indexes, such as BIST SE (Refinitiv), MSCI ESG Rating, FTSE4Good, Sustainalytics and Vigeo Eiris.
- At the Stevie International Business Awards, Tüpraş's Rafine Magazine won the gold prize in the category "Best Corporate Magazine", its "23 April Artery" project won the silver prize in the category "Communication or Public Relations Campaign of the Year", and its "Shielded Mask" project received the bronze prize in the category "Most Valuable Corporate Responsibility".
- As part of Tüpraş's collaboration with UN Women HeForShe and Fenerbahçe Sports Club, a "Gender-Sensitive Corporate Guide" offering a roadmap for sports organizations was published, supporting sports organizations in the implementation of gender-sensitive projects, and supporting female empowerment in and through sports.
- At the Brandon Hall Group's HCM Excellence Awards, "Tüpraş Leadership Schools" received gold prize in the category "Best Mixed Education Program" and silver prize in the category "Best Leadership Development Program".
- Tüpraş won first prize in the 13th PERYÖN Respect for Humanity Awards with its concept "Employee Experience" in the category "Creating Value in the Business Life of Future".
- Tüpraş's Refineries in Kırıkkale and İzmit won the second and third prizes, respectively, in the Projects to Increase Energy Efficiency in Industry Category-3 initiative, as part of the Project Contest themed Energy Efficiency in Industry, organized by the Ministry of Energy and Natural Resources.
- Ditaş received the "Digital Transformation Award of the Year in the Marine Management Sector" from SAP.

Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

ANNEXES ANNEX-6: GLOSSARY

A.SPIRE Platform	A research organization tracing the innovation roadmap on keeping the global temperature below 2 degrees
AÇEV	Mother & Children Education Society
APC	Advanced Process Control
API RP-754	Process Safety Performance Indicators for the Refining & Petrochemical Industries
AR-VR-XR based studies	Augmented Reality - Extended Reality - Virtual Reality
ASA	Waster Water Treatment
Bern Convention	Convention on the Conservation of European Wildlife and Natural Habitats
ВІМСО	Baltic and International Maritime Council
BIST	Borsa Istanbul Sustainability Index
BSI	British Standards Institution
CBAM	Carbon Border Adjustment Mechanism
CCPS	Center for Chemical Process Safety
CITES	Convention on the International Trade in Endangered Species of Wild Flora and Fauna
COP	United Nations Conference of Parties
CRM	Customer Relationship Management
СТМ	European Union Brand
EIA	Environmental Impact Assessment
DAP	Delivered at Place
DİTAŞ	Deniz İşletmeciliği ve Tankerciliği A.Ş.
DKYE	World Corporate Governance Index
DME	Di Metil Eter
DWT	General tonnage expression for tanker size
EBRD	European Bank for Reconstruction and Development
ECM	Entity in Charge of Maintenance
EFQM	European Foundation for Quality Management
FTI	Fast Track to Innovation
EMRA	Republic of Turkey Energy Market Regulatory Authority
FTIR Spectroscopy	Fourier Transform Infrared Spectroscopy
GEI	Global Equality Index
GES	Solar Power Plant
GRI	Global Reporting Initiative
HAZOP	Hazard and Operability Study

НСМ	Human Capital Management
HS	Health and Safety
HSE	Health Safety Environment
ILO	International Labor Organization
ISM	International Safety Management
ISPO	International Pilotage Organization Standard
ISPS	International Ship and Port Facility Security Code
IT - OT	Information Technology - Operational Technology
IUCN	International Union for Conservation of Nature
iksv	İstanbul Kültür ve Sanat Vakfı
İPG	Business World Plastic Initiative
KalDer	Turkey Quality Society
KPI	Key Performance Indicators
KUTEM	Koç University Tüpraş Energy Center
LCA	Life Cycle Assessment
LTI Frequency	Linear, Time Invariant Frequency
MLC	Maritime Labor Convention
NOX	Nitrogen Dioxide
OCIMF	Oil Companies International Marine Forum
OECD	Organization for Economic Co-operation and Development
OKR	Objectives and Key Results
OSAR	Incident Classification, Research and Reporting
OSGB	Joint Health and Safety Unit
OSHA	Occupational Safety and Health Administration
PERYÖN	Turkish Human Management Society
PMR	Ministry of Environment, Urbanization and Climate Carbon Market Readiness Partnership
RAK	Refinery Search and Rescue
RAMSAR	International agreement on protecting and promoting sustainable use of wetlands.
Refractory Waste	Materials that are highly heat tolerant including substances such as Niobium (nb) , Molybdenum (mo), Tantalum (ta) ve Tungsten (w).
RPA	Robots, drones and robotic process automation systems
RTD	Risk Evaluation Table
S&P Global SAM	Climate Strategy Grade
SAP ERP	Enterprise Resource Planning
SAP SRM	Supplier Relationship Management
SDG	Sustainable Development Goals
SO ₂	Sulfur Dioxide

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

SOME	Cyber Incident Intervention Team
Spent Kostik	Used sodium hydroxide
СМВ	Capital Market Board of Turkey
SPRINT Robotics	A non-profit organization focusing on capital intensive facilities such as refineries working on examination and maintenance for improving robotic technologies and its utilization and appliance.
SRD	Health and Risk Assessments
SuAgile	Teamwork under agile principle that were formed in order to trace and generalize good practices on water savings between refineries
TAS	Terminal Automation System
TCDD	Republic of Turkey State Railways
TCFD	Task Force on Climate Related Financial Disclosures
TEV	Turkey Education Society
TEX	Tüpraş Employee Experience Concept
TEYS	Hazard and Effects Management Process
TMSA	Tanker Management and Self-Assessment
TPAO	Türkiye Petrolleri Anonim Ortaklığı
TRL	Technology Readiness/Maturity Level
TTS	Tüpraş Tracking System
TURMEPA	Deniz Temiz Derneği
UN Global Compact – UNGC	United Nations Global Compact
UN WEPs	United Nations Principles of Empowerment of Women
VOC	Volatile Organic Compound
WRI Aqueduct method	Water Risk Assessment Method of World Resource Institute's Water Risk Department.

ANNEXES

ANNEX-7: GRI Standards Content Index

As part of the Materiality Disclosures Service, the GRI Services Team reviewed that the GRI content index is clearly included in the report and references to notifications 102 40 102 49 are found at relevant places in the report content. This service has been carried out on the Turkish version of the report.



GRI Standard	Disclosures	Related Title or Description	Page Numbers and References
GRI 101: FOUNDATION (2016)			
GENERAL DISCLOSURES			
	Organizational profile		
	102-1	About the Report	5-6
	102-2	Tüpraş Products	https://www.tupras.com.tr/en/products
	102-3	Contact	259-260
	102-4	Contact	259-260
	102-4	Tüpraş Refineries	https://www.tupras.com.tr/en/rafineries
	102-5	2021 Annual Report	Tüpraş Annual Report (s.171)
	102-6	2021 Annual Report	Tüpraş Annual Report (s.84-91)
	102-7	Performance Data	215-224
		2021 Annual Report	Tüpraş Annual Report (s.22-23, 78, 79)
GRI 102: General Disclosures (2016)	102-8	Performance Data	215-224
GRI 102: General Disclosures (2016)	102-9	Responsible Value Chain Management	195-212
	102-10	Tüpraş Material Disclosures	https://www.tupras.com.tr/en/material-disclosures
		Risk Management	75-80
		Internal Audit and Control	81
	102-11	Sustainability Management	23-24
		Disaster and Emergency Management	128-129
		Climate and Environmental Management	33-68
		Sustainability Journey of Tüpraş	13-14
	102-12	Sustainability Journey of Tüpraş (All Activities)	225-228
	102 12	Sustainability Management	23-24
		Memberships and Supported Enterprises	231-232
	102-13	Memberships and Supported Enterprises	231-232
	Strategy		
	102-14	Letter From The CEO	7-10

GRI 102: General Disclosures (2016)

		Corporate Governance	71-74
	102-15	Risk Management	75-80
		Sustainability Management	23-24
		Tüpraş Sustainability Priorities	23-30
		Tüpraş 2022 Goals and Tüpraş' Impact under the	27-28
		Sustainable Development Goals	33-34, 89-90, 117-118, 133-134, 147-152, 193-194
	Ethics and Integrity		
		Tüpraş Vision-Mission & Values	https://www.tupras.com.tr/en/vision-mission-values
	102-16	Business Ethics and the Fight against Corruption	82-83
		Code Of Ethics	https://tupras.com.tr/code-of-ethics
		Business Ethics and the Fight against Corruption	82-83
	102-17	Code Of Ethics	https://tupras.com.tr/code-of-ethics
		2021 Annual Report	Tüpraş Annual Report (s.186,205-208)
	Governance		
		Corporate Governance	71-74
	102-18	Sustainability Management	23-24
		2021 Annual Report	Tüpraş Annual Report (s.186)
		Corporate Governance	71-74
·)	102-19	Business Ethics and the Fight against Corruption	82-83
		Sustainability Management	23-24
		2021 Annual Report	Tüpraş Annual Report (s.186-187)
		Corporate Governance	71-74
	102-20	Sustainability Management	23-24
		2021 Annual Report	Tüpraş Annual Report (s.186-187)
		Sustainability Management	23-24
	102-21	Tüpraş Sustainability Priorities	23-30
		Stakeholder Engagement	26
	102-22	2021 Annual Report	<u>Tüpraş Annual Report (s.32-37, 176, 182, 214-220)</u>
	102-23	Corporate Governance	71-74
	102-23	2021 Annual Raport	<u>Tüpraş Annual Report (s.32-33, 48-49, 176, 182)</u>
		Corporate Governance	71-74
		Sustainability Management	23-24
	102-26	Tüpraş 2022 Goals and Tüpraş' Impact under	27-28
		the Sustainable Development Goals	33-34, 89-90, 117-118, 133-134, 147-152, 193-194
		2021 Annual Report	<u>Tüpraş Annual Report (s.188-189, 205-209)</u>
		Sustainability Management	23-24
	102-27	Tüpraş Sustainability Priorities	23-30
		2021 Annual Report	<u>Tüpraş Annual Report (s.188-189, 205-209)</u>

Tüpraş 2021 Sustainability Report

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş
Management
Approach
Human Focus
at Tüpraş

Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

	Governance				
		Corporate Governance	71-74		
	102-29	Business Ethics and the Fight against Corruption	82-83		
	102-29	Sustainability Management	23-24		
		2021 Annual Report	Tüpraş Annual Raport (s.205-209)		
	102-30	Risk Management	75-80		
	102-31	2021 Annual Report	Tüpraş Annual Report (s.205-209)		
	102-32	Sustainability Management	23-24		
		Tüpraş Sustainability Priorities	23-30		
		Sustainability Management	23-24		
	102-33	Tüpraş Sustainability Priorities	23-30		
	102 33	Stakeholder Engagement	26		
		Memberships and Supported Enterprises	231-232		
	102-35	Remuneration Policy	Remuneration Policy		
	102-36	Performance Management	109		
	102 30	Remuneration Policy	Remuneration Policy		
	102-38	2021 Annual Report	<u>Tüpraş Annual Report (s.229, 252-266, 278)</u>		
GRI 102: General Disclosures (2016)	Stakeholder Engagement				
GRI 102. General Disclosures (2010)	102-40	Stakeholder Engagement	26		
		Memberships and Supported Enterprises	231-232		
	102-41	Employee Rights	95-96		
	102-42	Stakeholder Engagement	26		
	102-43	Tüpraş Sustainability Priorities	23-30		
	102-43	Stakeholder Engagement	2-83 3-24 ipraş Annual Raport (s.205-209) 5-80 ipraş Annual Report (s.205-209) 3-24 3-30 3-24 3-30 3-31-232 imuneration Policy ipraş Annual Report (s.229, 252-266, 278) 3-3-30		
		Sustainability Management	23-24		
	102-44	Tüpraş Sustainability Priorities	23-30		
	102-44	Stakeholder Engagement	26		
		Customer Satisfaction	212		
	Reporting Practice				
	102-45	About the Report	5		
	102-43	2021 Annual Report	Tüpraş Annual Report (s.171, 229-230)		
	102-46	About the Report	5		
		Sustainability Management	23-24		
		Tüpraş Sustainability Priorities	23-30		
	102-47	Sustainability Management	23-24		
	102-47	Tüpraş Sustainability Priorities	23-30		

	Reporting Practice			
GRI 102: General Disclosures (2016)	102-48	No rearrangement was made.	No rearrangement was made.	
	102-49	Tüpraş Sustainability Priorities	23-30	
	102-50	About the Report	5	
	102-51	2020 Sustainability Report (1 January 2019-31 December 2019)	2020 Sustainability Report	
	102-52	Annual	Annual	
	102-53	Contact	259-260	
	102-54	About the Report	5	
	102-55	GRI Content Index	241-259	
	102-56	No external assurance service was received.	No external assurance service was received.	
GRI 200: Economic Standard Series				
Indirect Economic Impacts				
		Sustainability Management	23-24	
	103-1	Tüpraş Sustainability Priorities	23-30	
GRI 103: Management Approach (2016)		R&D, Innovation & Digitalization	147-190	
	103-2	R&D, Innovation & Digitalization	147-190	
	103-3	R&D, Innovation & Digitalization	147-190	
CDI 202: Indinant Formania Immente (2014)	203-1	R&D, Innovation & Digitalization	147-190	
GRI 203: Indirect Economic Impacts (2016)	203-2	R&D, Innovation & Digitalization	147-190	
Anti-corruption				
	103-1	Business Ethics and the Fight against Corruption	82-83	
		Tüpraş Anti-Bribery and Anti-Corruption Policy	Tüpraş Anti-Bribery and Anti-Corruption Policy	
CD1400 M	103-2	Business Ethics and the Fight against Corruption	82-83	
GRI 103: Management Approach (2016)		Tüpraş Anti-Bribery and Anti-Corruption Policy	Tüpraş Anti-Bribery and Anti-Corruption Policy	
	102.2	Business Ethics and the Fight against Corruption	82-83	
	103-3	Tüpraş Anti-Bribery and Anti-Corruption Policy	Tüpraş Anti-Bribery and Anti-Corruption Policy	
	205-1	Business Ethics and the Fight against Corruption	82-83	
GRI 205: Anti-corruption (2016)	205-2	Business Ethics and the Fight against Corruption	82-83	
	205-3	Business Ethics and the Fight against Corruption	82-83	

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

iRI 300: Environmental Standards Series			
Materials			
GRI 103: Management Approach (2016)		Sustainability Management	23-24
	103-1	Tüpraş Sustainability Priorities	23-30
		Climate and Environmental Management	33-68
	103-2	Climate and Environmental Management	33-68
	103-3	Climate and Environmental Management	33-68
GRI 301: Materials (2016)	301-1	A New Era for Tüpraş	15-20
GRI 301. Waterials (2010)	301-1	Performance Data	215-224
Energy			
		Sustainability Management	23-24
	103-1	Tüpraş Sustainability Priorities	23-30
		Climate and Environmental Management	33-68
GRI 103: Management Approach (2016)	103-2	Climate and Environmental Management	33-68
	102.2	Climate and Environmental Management	33-68
	103-3	Performance Data	215-224
	302-1	Performance Data	215-224
	202.2	Energy Management	51-55
GRI 302: Energy (2016)	302-3	Performance Data	215-224
	202.4	Energy Management	51-55
	302-4	Performance Data	215-224
Water and Effluents			
	103-1	Sustainability Management	23-24
		Tüpraş Sustainability Priorities	23-30
		Climate and Environmental Management	33-68
GRI 103: Management Approach (2016)	103-2	Climate and Environmental Management	33-68
	103-3	Climate and Environmental Management	33-68
		Performance Data	215-224
	303.3	Water Management	59-61
GRI 303: Water and Effluents (2018)	303-3	Performance Data	215-224
	303-4	Water Management	59-61
		Performance Data	215-224

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Annexes

Emissions

GRI 103: Management Approach (2016)	103-1	Sustainability Management	23-24
		Tüpraş Sustainability Priorities	23-30
		Climate and Environmental Management	33-68
	103-2	Climate and Environmental Management	33-68
	103-3	Climate and Environmental Management	33-68
		Tüpraş's Vision on Climate Change and Adaptation Strategy	23-30
GRI 305: Emissions (2016)	305-5	Energy Management	51-56
GRI 303. Emissions (2010)	303-3	Emission Management	47-50
		Performance Data	215-224
Waste Water and Effluents			
	103-1	Sustainability Management	23-24
		Tüpraş Sustainability Priorities	23-30
CD1402 M		Climate and Environmental Management	33-68
GRI 103: Management Approach (2016)	103-2	Climate and Environmental Management	33-68
	103-3	Climate and Environmental Management	33-68
		Performance Data	215-224
CDI 20/ Efficients and Wests (2020)	306-3	Waste Management	62-65
GRI 306: Effluents and Waste (2020)		Performance Data	215-224
Environmental Compliance			
	103-1	Sustainability Management	23-24
GRI 103: Management Approach (2016)		Climate and Environmental Management	23-30
		Climate and Environmental Management	33-68
	103-2	Climate and Environmental Management	33-68
	103-3	Climate and Environmental Management	33-68
		Performance Data	215-224
GRI 307: Environmental Compliance (2016)	307-1	Environmental Management	57

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization Responsible Value Chain Management

Supplier Environmental Assessment			
GRI 103: Management Approach (2016)	103-1	Sustainability Management	23-24
	103-2	Responsible Value Chain Management	195-212
	103-3	Responsible Value Chain Management	195-212
GRI 308: Supplier Environmental Assessment (2016)	308-2	Eco-friendly Transportation	206
GRI 400: Social Standards Series			
Employee Engagement			
		Sustainability Management	23-24
	103-1	Tüpraş Sustainability Priorities	23-30
CDI 402: Management Appropriate (2044)		Human Focus at Tüpraş	87-129
GRI 103: Management Approach (2016)	103-2	Tüpraş Sustainability Priorities	87-129
	103-3	Human Focus at Tüpraş	87-129
	103-3	Performance Data	215-224
	401-1	Employee Rights	95-96
		Performance Data	215-224
GRI 401: Employment (2016)	401-2	Employee Rights	95-96
	401-3	Diversity, Equality and Inclusion	97-98
		Performance Data	215-224
Occupational Health and Safety			
	103-1	Sustainability Management	23-24
		Tüpraş Sustainability Priorities	23-30
GRI 103: Management Approach (2016)		Tüpraş Sustainability Priorities	87-129
	103-2	Tüpraş Sustainability Priorities	87-129
	103-3	Tüpraş Sustainability Priorities	87-129
	103-3	Performance Data	215-224
	403-1	Occupational Health and Safety	117-127
	403-2	Occupational Health and Safety	117-127
GRI 403: Occupational Health and	403-3	Occupational Health and Safety	117-127
Safety (2018)	403-4	Occupational Health and Safety	117-127
	403-5	Occupational Health and Safety	117-127
		Performance Data	215-224

		Employee Support Implementations	101-102	
GRI 403: Occupational Health and Safety (2018)	403-6	Employee Loyalty and Employee Experience	111-116	
			117-127	
	402.7	Occupational Health and Safety		
	403-7	Occupational Health and Safety	117-127	
	403-9	Occupational Health and Safety	117-127	
	403-10	Performance Data	215-224	
		Occupational Health and Safety	117-127	
		Performance Data	215-224	
Training and Education				
		Sustainability Management	23-24	
	103-1	Tüpraş Sustainability Priorities	23-30	
GRI 103: Management Approach (2016)		Human Focus at Tüpraş	87-129	
GKI 103: Management Approach (2010)	103-2	Human Focus at Tüpraş	87-129	
		Human Focus at Tüpraş	87-129	
	103-3	Performance Data	215-224	
	404.1	Employee Development	104-105	
GPI 404: Training and Education (2014)	404-1	Performance Data	215-224	
GRI 404: Training and Education (2016)		Employee Development	104-105	
	404-2	Diversity, Equality and Inclusion	97-98	
Diversity and Equal Opportunity				
	103-1	Sustainability Management	23-24	
		Tüpraş Sustainability Priorities	23-30	
		Human Focus at Tüpraş	87-129	
		Diversity, Equality and Inclusion	97-98	
GRI 103: Management Approach (2016)		Human Focus at Tüpraş	87-129	
	103-2	Diversity, Equality and Inclusion	97-98	
		Human Focus at Tüpraş	87-129	
		Diversity, Equality and Inclusion	97-98	
		Performance Data	215-224	
GRI 405: Diversity and Equal Opportunity (2016)	405-1	Corporate Governance	71-74	
		Performance Data	215-224	
	405-2	Remuneration is based on performance and there is no gender discrimination in remuneration.	Remuneration is based on performance and there is no gender discrimination in remuneration.	

Tüpraş Sustainability Priorities Climate and Environmental Management Tüpraş Management Approach

Human Focus at Tüpraş Social Development R&D, Innovation & Digitalization

Responsible Value Chain Management

Non-discrimination			
GRI 103: Management Approach (2016)	103-1	Sustainability Management	23-24
		Tüpraş Sustainability Priorities	23-30
		Human Focus at Tüpraş	87-129
		Diversity, Equality and Inclusion	97-98
	103-2	Human Focus at Tüpraş	87-129
	103-2	Diversity, Equality and Inclusion	97-98
	103-3	Human Focus at Tüpraş	87-129
		Diversity, Equality and Inclusion	97-98
GRI 406: Non-discrimination (2016)	406-1	No such case has occurred.	No such case has occurred.

CONTACT

Tüpraş Head Office



Türkiye Petrol Rafinerileri A.Ş (Tüpraş) Gülbahar Mah. Büyükdere Cad. No: 101/A 34394 Şişli/İstanbul

Phone: 0 (212) 878 90 00 **Fax:** 0 (212) 211 30 81-82 **E-mail:** info@tupras.com.tr

www.tupras.com.tr https://www.tupras.com.tr/sr-raporlari

Strategy and Sustainability

Çağatay Ölken Strategy and Sustainability Director

Email: cagatay.olken@tupras.com.tr

Phone: 0 (212) 878 99 99 **Fax:** 0 (212) 211 30 81-82

Corporate Communications

Çiler Teber
Corporate Communications Manager

Email: ciler.teber@tupras.com.tr

Phone: 0 (212) 878 91 99 **Fax:** 0 (212) 211 30 81-82

Deloitte Turkey Sustainability Services

Murat Günaydın Risk Advisory Director

Deloitte Values House Maslak No: 1 34398

İstanbul, Türkiye

Email: mgunaydin@deloitte.com

Phone: 0 (212) 366 63 25 **Fax:** 0 (212) 366 60 25

Coo Design Studio

Seda Sırmalı Project Director

Evliya Çelebi Mah. Sadi Konuralp Cad. İKSV Vakfı Apt. No: 5/2 34430 Beyoğlu/İstanbul

Email: hello@coodesign.co **Fax:** 0 (536) 412 47 52

"Sustainability Report (Report) is prepared by Türkiye Petrol Rafinerileri A.Ş. ("Tüpraş") in accordance with GRI Standards. This Report is prepared only to provide information to the stakeholders, and it is not intended to form the basis of any investment decision. The opinions and statements regarding estimated figures contained within this Report solely reflect the Company management's views concerning certain future events; thus, the actual results and developments may differ from these estimates depending on the variables and assumptions. Accordingly, neither Tüpraş nor its respective advisors, directors, or employees shall be liable for any direct, indirect or consequential loss or damage suffered by any person as a result of relying on any statement in, or omission from, this Report, or on any other information or communications in connection with the Report. All information and related documents contained in this Report was believed to be accurate at the time of publication. The information is disclosed in good faith and is based on reliable sources. Tüpraş accepts no responsibility for any spelling errors that may occur during the Report's preparation."











