

Sustainability Report

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ABOUT THE REPORT

Tüpraş, Turkey's largest industrial enterprise holds a leading position in Turkish economy not only through the economical added value it generates, but also with pioneering practices it performs.

As of 2019 we leave behind the eleventh year of the works that we systematically manage by taking sustainability into consideration as an element of management in addition to reporting practices and we hereby present the social, economic and environmental impacts of our activities and the results we have obtained from our efforts in these areas to our stakeholders.

This report has been prepared in accordance with GRI Standards: "Core" option. The prioritized issues that form the basis of the report content were obtained as a result of processes carried out in accordance with the reporting principles specified in GRI Standards. While explaining the issues included to the report, the requirements of UN Global Compact Progress Report were taken into consideration as well as the "subject" and "explanations" in GRI Standards. In addition, performance indicators accepted throughout the industry are included in the report.

The information contained in the report cover refining activities carried out in Turkey by Tüpraş during the period between January 1, 2019 and December 31, 2019. The report does also include general information about Opet Petrolcülük A.Ş., Körfez Ulaştırma A.Ş. and Ditaş, subsidiaries of Tüpraş, in order to maintain the corporate integrity. Financial data of subsidiaries are included in Tüpraş performance figures in accordance with the financial reporting principles being applied.

You can access PDF version of the report and previous reports at www.tupras.com.tr.



Message from the General Manager

Dear Stakeholders,

The significance of issues like responsible consumption, economic inequality, climate change, digitalization, and innovation is increasing with every passing day. The COVID-19 pandemic has shaken the entire world to its core, and this reminds us that we must put the sustainability perspective, which we consider is the solution to all these problems, on our agenda, both as a company and as individuals.

Despite this challenging period in the world, we continue to ceaselessly, fulfill the energy needs of our country with our sustainability-based production policies and corporate responsibility approach.

We place the United Nations Sustainable Development Goals at the center of our sustainability understanding that we have been developing since 2008. As our operations continue uninterrupted, we integrate sustainability into all our processes, from our supply chain to our after-sales operations.

We continue to train and prepare our qualified workforce of the future and develop a safe working environment for our employees, who are a crucial part of this process and that we always consider our most valuable asset. We keep our human resources and occupational health and safety at the center of all our processes as we continue to live up to our “My Safety is My Future” philosophy.

Meanwhile, we have been a supporter and follower of creating an inclusive business environment for many years in a male-dominated sector such as refining. Corroborating our practices that support this approach in 2019, we included women field operators and technicians for the first time in our country's refinery industry.

We aim to be an exemplary company in our industry with efficiency-oriented and innovative practices in both our production processes and products, acting as a responsible manufacturer. Accordingly, we spent 268 million Turkish lira on environmental management and investments.

We continued utilizing the most advanced energy saving technologies and programs during the reporting period. Owing to our energy-saving projects and modernization efforts, we reduced our energy density index from 99.1 in 2018 to 98.4 in 2019.

In our refineries, we protect water resources with practices that reduce water consumption and reuse wastewater, as well as work to reduce the adverse impact on the biodiversity value of the natural receiving environment. While the coverage ratio from the recovery of water requirement was 41 percent, we reduced water consumption per processed crude oil to 0.6 cubic meters per ton. Regarding waste management, we primarily aim to reduce the amount of waste, recycle the generated waste at its source, and contribute to the circular economy.

We holistically manage digital transformation, R&D, intrapreneurship, and open innovation strategies. In this context, we continue making a difference by focusing on developing environmentally-friendly products and production technologies. In 2019, we transferred a total of 43.5 million Turkish lira to R&D studies.

With our projects supported by the European Union's Horizon 2020 research and innovation program, we concentrate on focus areas such as waste management, energy and carbon capture, and development of efficient technologies. Our R&D Center made us proud be becoming Turkey's most successful industrial enterprise in this field by securing a total of €6.02 million in support with a total of 12 European Horizon 2020 projects.

Within the scope of our innovation studies, we continue providing added value by evaluating new technologies and business models that are developing in the world, creating a field of application for these innovations in our operations.

We have built our strategy and implementation steps in the field of digital transformation on developing technologies that support refinery processes and production, and do not compromise on safety and cybersecurity. In this context, we focused on “Digitalization,” “Data Analytics in Industry 4.0 Applications,” “Optimization,” and “Production and Field Activities.” While making the data-based decision-making discipline an indispensable element of our working culture, we implemented trailblazing applications in Industry 4.0.

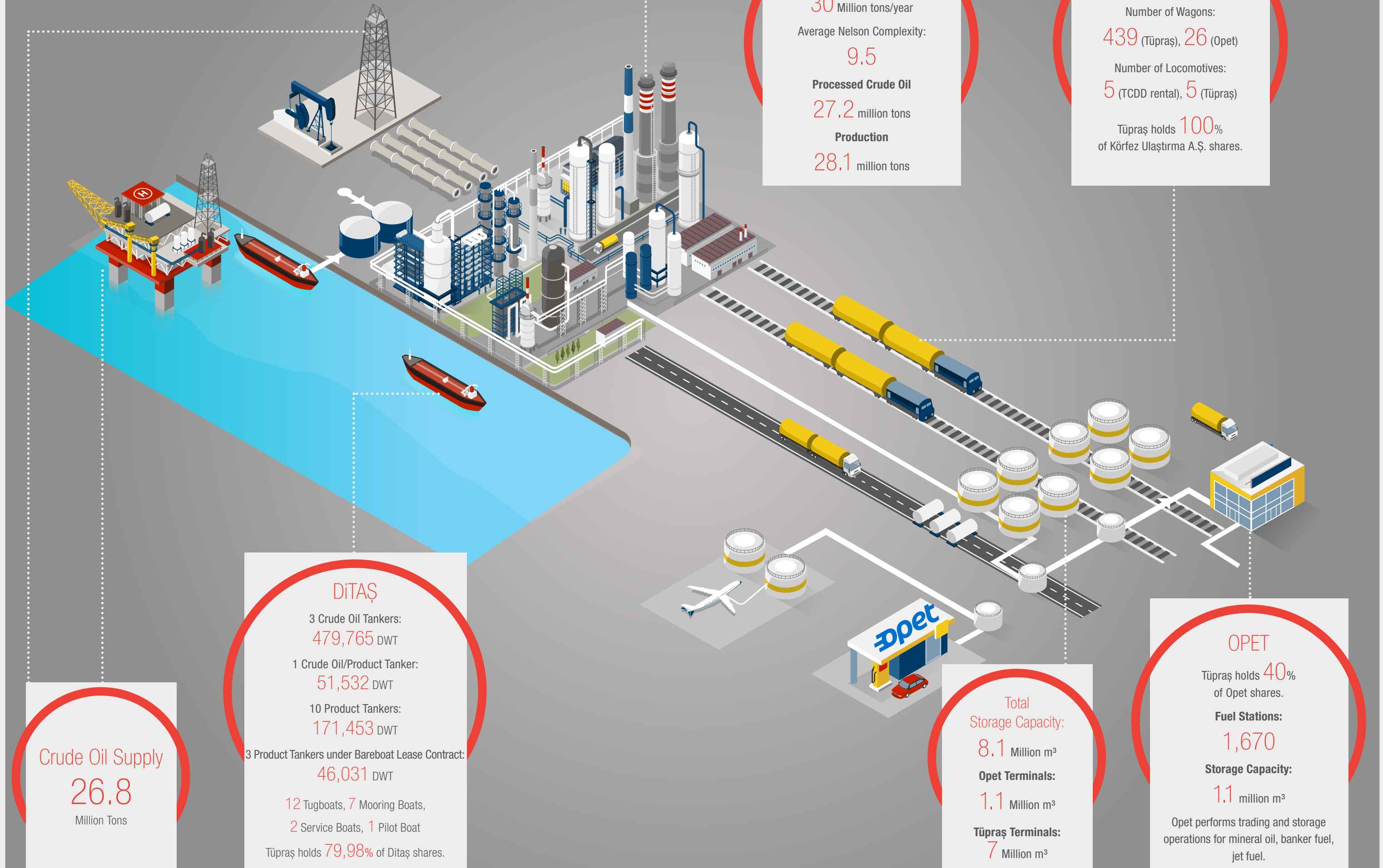
We are working to enhance the environmental and social impacts of our supply chain and logistics operations, which are a crucial component of our value chain, and improve their social impact. We ensure the sustainability of our operations through regular evaluation, inspection, and communication. We continued to contribute to our country's economy by achieving a local sourcing rate of 80 percent in 2019. In compliance with the rule of the International Maritime Organization's (IMO) that mandates a maximum sulfur content of 0.5 percent in marine fuels, we invested in scrubbers in our three tankers. We signed an agreement for Turkey's first hybrid locomotives.

Besides the responsibility we undertake to fulfill Turkey's energy needs, we are carrying out projects to support the social development as a responsible corporate citizen. In this regard, to improve the access of new generations to technology, we have implemented the project “Our Energy for the Future: I code, I model, I produce” in cooperation with the Turkish Ministry of National Education. Our project was chosen among many successful projects and won Koç Holding's prestigious “For My Country” Award. We continue our collaboration with the HeForShe, a global solidarity movement for the advancement of gender equality, initiated by the UN Women, and Fenerbahçe Sports Club, to raise awareness in the field of gender mainstreaming, guided by our slogan, Our Energy for Equality. Consistent with our sustainability approach, which we have adopted as our business model, we will continue to work with all our strength to leave a more livable world for future generations.

I extend my thanks to all our stakeholders, especially our employees, suppliers, and business partners, who supported us on our sustainability journey and contributed to reaching our goals.

İbrahim Yelmenoğlu

2019 TÜPRAŞ IN FIGURES



OUR ACHIEVEMENTS SINCE 2008

ECONOMIC IMPACTS

335.6

Billion TL Tax Payment

+1.5

Increase in Corporate Governance Rating

11.5*

Billion TL Supply Operation

of which

66%*

From Local Suppliers

*Crude oil and petroleum byproduct/ product supply are excluded.

281.5

Million Tons of Crude Oil Processed

279.5

Million Tons in Total Production

315

Million Tons of Products Sold

329.5

Million TL R&D Investment Realized

SOCIAL IMPACTS

76.5%

Increase in the Number of Female Employees

14,378

Number of Internships

2.9

Million Person x Hour Training

1.2

Million Person x Hour Occupational Health Safety Training

208.7

Million TL in Donations and Sponsorships

ENVIRONMENTAL IMPACTS

98.4

Energy Intensity

2.6

Billion TL Environmental Expenditure and Investment Realized

45.5%

Reduction in Crude Water Use Ratio per Processed Crude Oil

160,200

by Planting Saplings

60,083

Tons/Year GHG Reduction

7.3%

Increase in Recycled Water Use Ratio per Processed Crude Oil

11.5%

Solid Waste Recovery Rate

Increased Through

503

Energy Efficiency Projects

34,953

TJ Energy Saving and

2,4

Million Tons CO₂e GHG Reduction

TÜPRAŞ 2020 TARGETS AND 2030 UN SUSTAINABLE DEVELOPMENT GOALS

Tüpraş has been sharing its environmental, social and corporate governance performance and practices with its stakeholders annually since 2008.

Company considers sustainability as a management element and prioritizes in all its processes from investment to working methods.

In this regard, Tüpraş considers Sustainable Development Goals as an important guide for generating creative solutions to

global problems. In line with its business goals and sustainability strategy, it carries out studies to determine the areas where it will contribute to these goals.

In line with transparency and accountability principles, Company plans to enable its stakeholders to follow the performance of its sustainability practices with concrete targets, thereby realizing more responsible and effective reporting practices.

GOVERNANCE APPROACH

SDG	2019 Targets	Realized in 2019	2020 Targets
  	Keep the rate of Women's Representation constant in Senior and Mid-Level Management	17% Women's Representation in Senior and Mid-Level Management 18% Women's Representation in the Board of Directors	Keep the rate of Women's Representation in Senior and Mid-Level Management at 17%
	Dissemination of Business Ethics Principles within the institution through Tüpraş Code of Ethics and Implementation Principles Guide	Dissemination of Tüpraş Code of Ethics and Implementation Principles Guide continued.	Organizing Ethics Training for Employees
	Continuing to be listed in BIST Sustainability Index	Continued to be listed in BIST Sustainability Index.	Continuing to be listed in BIST Sustainability Index
	Carrying out Works with the Concept of Creating Sustainable Value and Continuous Improvement	Kalder EFQM Excellence Management Model at the General Directorate and İzmit Refinery was increased to 5-star Competency Level.	Building a Company Value Creation Model in Parallel to UN Sustainable Development Goals
	Works to update Risk Management Tracking Module (SAP GRC)	The Scope of Risk Management was determined, and Risk Inventory was updated.	Comprehensive assessment and analysis of risks and key risk indicators within the framework of the determined standards in accordance with the scope of Corporate Risk Management methodology, thereby managing the risks and opportunities of the Company management in accordance with the risk appetite in line with company strategies.






TALENT MANAGEMENT

SDG	2019 Targets	Realized in 2019	2020 Targets
 	Conducting Projects in accordance with United Nations Women's Empowerment Principles (WEPs)	A Fair and Inclusive Workplace Model was developed, and projects were created.	Dissemination of Applications to All Refineries and Implementation of New Projects
  	Implementation of Female Field Workers Project	Female field workers started working at refineries.	Evaluation of Female Field Workers Project
  	Increasing Leadership Trainings	719 employees received leadership training.	Continuing on Leadership Trainings








R&D, INNOVATION AND DIGITAL TRANSFORMATION

SDG	2019 Targets	Realized in 2019	2020 Targets
 	Increasing Collaborations and Number of Projects in R&D	20 International and National Project Applications 3 Projects Accepted	Increasing the Number of National and International Project Applications and Accepted Projects
 	Increasing the Number of Projects for Horizon 2020 Program	With 12 project and 6.02 Million Euros, Company became the most successful Turkish industrial enterprise in Horizon 2020 Program.	Realization of Targets of Continuing Projects and Implementation of New Projects Completing Horizon 2020 Program as the Most Successful Turkish Industrial Enterprise
 	Applying for Projects in Carbon Capture and Utilization - CCU	CCU projects COZMOS and MOF4AIR were launched within the scope of Horizon 2020 Program.	Applying for Horizon 2020 Project for adding Demo-scale New Technologies into Different Refinery Fields (İzmir, Kırıkkale) in regard to CCUS (Carbon Capture, Utilization and Storage)
	Increasing the number of Innovation Volunteers, which is 55 Persons Currently	124 Innovation Volunteers	Increasing the Number of Innovation Volunteers and Developing Special Programs
	Establishment of Intrapreneurship In-House Entrepreneur Mentorship Program	Internal mentoring trainings and development programs were organized for selected in-house entrepreneurs.	Active Assignment of Internal Mentors in Intrapreneurship Program and Open Innovation Studies
 	Starting Open Innovation Activities	Acceleration programs were supported. Demos /POCs of domestic and overseas startups were held.Startup evaluation team was created. Acceleration program for Tüpraş focus areas was launched with KWORKS, İnowhatif with Tüpraş Program.	Cooperation with International Open Innovation Programs Managing Collaborations with National and International Open Innovation Activities under one Parent Program
 	Getting prepared to Industry 4.0 through METU and ITU Technopark Tüpraş Data Analysis Centers to closely monitor the developments in data analytics	A new digitalization vision has been created focusing on 4 main areas: connected employees, connected processes, connected refinery and connected field operations.	Making digital and analytical structures widespread and increasing their use.
	Training Analysts to Work in the Field of Data Analytics	"Analytics Tüpraş" Training Program was created. Data Analytics workshops were organized.	Creating Training Content, Application Alternatives and Infrastructure Needs of Analytics Tüpraş Improving the Project Processes with Data Analysts From Different Departments
 	Establishment of Big Data System	Installation of Big Data System	Increase the Number of Structures That Use Big Data System and Use of Pentaho Software
 	Evaluation of Digital Transformation Studies in International Platforms	The Global Lighthouse application process was tracked, where companies evaluated the maturity of Industry 4.0 in World Economic Forum (WEF).	Determination of Global Light House Application Projects
	Cyber Security Studies	Investments in developing technologies in cyber security continued. A special team working on the topic of Operational Technologies (OT) was formed. Processes and policies were implemented.	Continuing Processes Uninterruptedly by Establishing On-site Wireless Networks in Refinery Process Units and Increasing the Work of Digital Processes in the OT Area

OCCUPATIONAL HEALTH AND SAFETY

SDG	2019 Targets	Realized in 2019	2020 Targets
 	Strengthening Employees' Perception of Safety	<p>Through Competence Management Workshop development areas were determined.</p> <p>Safety campaigns have been organized on the root causes of recurring events and the issues that stand out in field observations.</p> <p>Critical case studies / actions and lessons learned were shared with the employees.</p>	<p>Continue to have Safety Campaigns and Awareness Trainings, Process Safety Awareness Trainings, Workshops, Critical Case Studies/ Actions and lessons learnt for Tüpraş and Contractor Employees</p>
  	Developing Practices for Preventing Accidents by Pre-Assessing Risks	<p>Joint Health Security Unit Implementation studies were started for contractors.</p> <p>Risk analysis and health risk assessment revisions were made in the Hazard and Effects Management Process.</p> <p>The frequency and quality of field controls before work permit were increased.</p> <p>Process Safety external audits were conducted.</p> <p>MOC was strictly monitored thanks to TPY – MOC integration.</p>	<p>Health and Safety Units in All Refineries</p> <p>Electronic Work Permit Pilot Studies</p> <p>Placement of Control of Work Systematics</p> <p>Continuation of the Process Safety Auditing and Starting Cross-Refinery Internal Audits</p>















RESPONSIBLE VALUE CHAIN MANAGEMENT

SDG	2019 Targets	Realized in 2019	2020 Targets
 	Auditing 765 suppliers	841 suppliers were audited.	Continue to Supplier Audit Practices
	Improving Customer Portal to ensure ease of use and establishing a call center	Ease of use and speed were provided after digitalization of Customer Portal. The Customer Website was launched and the scope of the call center was expanded.	Designing a New Software in SAP-CRM to Manage Customer Notifications More Actively and in line with Standards and to measure 360° Customer Experience
 	2020 International Maritime Organization (IMO) Compliance Studies	Ditaş installed flue gas scrubbers for 3 of its tankers to comply with 2020 International Maritime Organization rules.	Continuation of Compliance Studies and Installing Scrubber to One More Tanker
 	Reducing the Ratio of Road Transportation in Domestic Product Transportation	The ratio of road transportation was reduced to 3% in domestic product transportation and railway transportation was increased.	Continuation of Studies

RESPONSIBLE PRODUCTION

SDG	2019 Targets	Realized in 2019	2020 Targets
  	Establishing and Monitoring Zero Waste Management System	Project studies initiated.	Obtaining Zero Waste Certificates for Refineries
  	Collaboration with International Institutions and Platforms for Combating the Climate Change	Participation to COP25 United Nations Climate Change Conference for Parties.	Keep Monitoring Trends and Technologies in Energy Industry
   	-0.64 Reduction in Energy Intensity (delta)	-0.5 Reduction in Energy Intensity (delta)	-0.85 Reduction in Energy Intensity (delta)
 	Setting Wastewater Recovery Targets in order to Reduce Consumption of Natural Resources	Water Risk Evaluation Methods were determined	Starting Pilot-Scale Applications of Determined Methods
 	Projects Contributing to Circular Economy	Wastes were reused as raw materials with in industrial symbiosis projects.	Continue in Circular Economy Projects

COMMUNITY DEVELOPMENT

SDG	2019 Targets	Realized in 2019	2020 Targets
  	Contributing to Students to Learn Next Generation Technologies and Digital Skills	12,000 students were reached with Our Energy for the Future; I Code, I Model and I Produce Project.	Implementation of the Project in New Schools Where Company Operates
  	Providing Students the Opportunity to Access STEM (Science, Technology, Mathematics) Education	3,000 students were reached with Our Energy for Students Project.	Reaching More Students by Transforming Experiment Kits to Online Trainings
  	Raising Awareness in the Community on Gender Equality with Our Energy for Equality Project: Collaboration with UNWomen's HeForShe global solidarity movement and Fenerbahçe Sports Club	During the Gender equality trainings by AÇEV, reached 1,068 volunteers from Fenerbahçe Sports Club.	Executing Projects to increase Awareness among Tüpraş Employees on Gender Equality
 	Cooperation for the Protection of Culture & Art Assets	Anatolian Civilizations Series was prepared with Yapı Kredi Culture, Arts and Publishing	Increasing Awareness on the Protection of Culture & Art Assets in Public
  	Protection of Biodiversity in Seas	Waste was collected in cooperation with TURMEPA Turkish Marine Environment Protection Association.	Raising Awareness About Environment in Public

SUSTAINABILITY JOURNEY



2008

- Railway transportation started as a result of the agreement signed with TCDD.
- Construction of Fuel Oil Conversion Facility has begun.
- OSAR- Risk Assessment Table was activated.
- First corporate responsibility report in line with GRI Reporting Guidelines was published.
- Corporate Governance Rating was updated to 8.20.



2009

- Contractor Management System was commissioned.
- Customer Relationship Management System (CRM) was initiated.

2010

- R&D Center was launched.
- Tüpraş Ethical Values were updated.
- Waste Management Automation Software was commissioned.



2013

- ISO 50001: 2011 Energy Management System Standard certification was realized.
- ISO / IEC 27001: 2005 Information Security Management System Standard certification was realized.



2014

- İzmit Refinery Fuel Oil Conversion Facility was completed.
- The Company is started to be listed in Borsa İstanbul Sustainability Index.
- R&D Center Campus was launched.



2015

- Tüpraş participated in 21st Climate Change Conference (COP21) where Paris Agreement was accepted.



2016

- Gray Water Treatment Plant was commissioned to treat the discharge water of İSU Körfez Wastewater Plant and use for industrial purposes in İzmit Refinery.
- Kırıkkale Refinery Wagon Repair and Maintenance Workshop has been Turkey's most comprehensive Wagon Repair and Maintenance Workshop by taking the Unit Responsible for Maintenance Certificate.
- Tüpraş Supplier Portal was commissioned.
- Three projects of Tüpraş R&D Center were accepted to Ufuk2020 Multinational Research and Innovation Program with peak evaluation points.
- EBRD granted a loan, amounting to 150 million USD to Tüpraş for environment and energy efficiency.
- Tüpraş participated in the 22nd Climate Change Conference (COP22).

2017

- Tüpraş has become Turkey's first private railway train operator with Körfez Transportation A.Ş.
- The first catalyst pilot plant for R&D Center was established.
- Tüpraş participated in the 23rd Climate Change Conference (COP23) with two presentations.
- Tüpraş signed United Nations Women Empowerment Principles (WEPs).
- ISO 10002 Customer Satisfaction Management System certification was realized.
- Innovation Directorate was established and the Idea Unit Portal was launched.



2019

- Körfez Transportation received 5 new locomotives.
- Körfez Transportation made an agreement for Turkey's first hybrid locomotives.
- Tüpraş became the "Most Successful Turkish Industrial Organization" of the EU R&D and Innovation Program Horizon 2020. "MOFAIR", "MACBETH", "FACTLOG" and "HYDROPTICS" projects were entitled to receive support.
- Kırıkkale Refinery New Power Plant was awarded with the Project of the Year at the 8th ICCI Energy Awards.
- Ditaş installed flue gas scrubbers for its 3 tankers to comply with 2020 International Maritime Organization rules.
- 12,000 students received robotic coding and 3D modelling trainings as a part of Our Energy for the Future: I Code, I Model, I Produce Project.
- 3,000 students were reached with 260 experiments as a part of Our Energy for Students Project.



2018

- Corporate Governance Rating has increased to 9.48.
- UN Women, Tüpraş and Fenerbahçe Sports Club signed a global cooperation agreement to support the UN Women's HeForShe movement.
- Tüpraş has made a presentation in the 24th Climate Change Conference (COP24).
- Tüpraş Solution Center has been founded as a part of customer satisfaction improvement works.
- London Trading Office is opened.
- Data Analytics Centers have been launched in METU and ITU Technopark.
- Tüpraş has been included in the Turkish Corporate Entrepreneur Platform.



SPECIAL SECTION: OUR ENERGY FOR EQUALITY

The increasing participation of women in the workforce creates a driving force in the economic development of countries. With this perspective, Tüpraş moves beyond sectoral habits and idea patterns and considers being an inclusive workplace as one of the material issues of its sustainability strategy.

The company continued to carry out studies in the reporting period, with the motto “Our Energy for Equality”, aiming to become an inclusive and diverse workplace on every platform.



 **723**

Number of Female Employees*

 **12%**

Female Employee Rate*

 **80** Hours

of Training per Female Employees

*Including subcontractors

Tüpraş considers the subject of creating inclusive workplace and equal opportunities as an important item on its agenda. For this purpose, the company aims to increase the number of female employees by preventing all kinds of discrimination in the workplace, supporting the presence of women at all levels, improving development opportunities for women, and strengthening the professional working life.

As a result of these efforts, the number of female employees has increased by 76.5% since 2008, and the rate of female employees has reached 12% as of 2019. *

The company by prioritizing to have more women at all management levels offers training and development programs for women. In line with its targets, company carried out development and leadership programs in which six female managers participated in mentorship, 2 female employees participated in coaching programs and 3,487-person hour leadership training was given for female employees in 2019.

By signing United Nations Women’s Empowerment Principles (WEPs) in 2017, Tüpraş announced its goal of becoming an inclusive workplace in the energy sector, while continuing to carry out pioneering projects that will raise awareness and start transformation in the society. With this approach, the company aims to contribute to the Goal Number 5; “Gender Equality” of the UN Sustainable Development Goals.

Tüpraş has also been supporting the United Nations Women’s HeForShe global solidarity movement, that started in 2015 and that invites men around the world to advocate gender equality with women.



In support of

WOMEN’S EMPOWERMENT PRINCIPLES

Established by UN Women and the UN Global Compact Office





Female Field Operators and Technicians

Tüpraş, moving towards the goal of becoming an inclusive workplace, has developed a project and employed female field operators and technicians in its refinery sites.

With this project, Tüpraş aims to create difference in its sector where sites structurally hold a smaller number of female operators and technicians. Therefore, new female field operators and technicians became one of the forerunners working in this field, in Turkey.

The project started in Batman Refinery and followed in Kırıkkale and İzmit Refinery in 2019. The efforts to strengthen women's employment in the field will also continue in 2020. With the women employees at sites, company has restructured the physical conditions as well.

Pınar Eroğlu

Batman Refinery, Technical Safety and Environment Department, Workplace Doctor Office, Officer

"I have been working in the Technical Safety and Environment Directorate since 2011. There were some difficulties at early days of my profession, which I chose with the influence of my teachers. I overcame these difficulties by loving and working meticulously in my job. I find the support of my company for women employees very valuable."

Gülşen Dal

Batman Refinery Production Department Operator

"I have been working as a filling operator for 9 months. The first person who encouraged me to do this job was again a woman, my mother. Although the idea of being one of the first female operators at first was a little scary, but this feeling turned into excitement over time. With the support of my managers, supervisors and colleagues, who supported the project, I love my work. I work in a department that was previously comprised by male employees. During this process, everyone is trying to adapt to each other. I believe that we will become a stronger society by working together in mutual understanding and tolerance."



"My Energy is My Refinery" Refinery Mothers Mentoring Program

As a part of the program carried out with the motto "My Energy is My Refinery", experienced

working mothers in Tüpraş have become mentors to new mothers and mothers-to-be.

In 2019, 5 mentors and 5 mentees matched at Batman Refinery. At Kırıkkale Refinery, 10 employees received mentoring training.

Suggestion Boxes for "Our Energy for Equality"

During the International Women's Day, company placed idea boxes to gather suggestions from its employees about gender equality applications in all offices and sites. In 2019, 153 suggestions were received, 72 different suggestions were examined under four main titles, action plans were prepared and the projects started to be implemented.

Father Support Program in Refineries

Father Support Program (FSP), which was first launched at the Batman Refinery at the end of 2018 in cooperation with Mother Child Education Foundation, was put into practice in 2019 in İzmit, İzmir and then in Kırıkkale Refinery.

As a part of this program, it is aimed that fathers or fathers-to-be take responsibility in childcare and establish a democratic relationship with their children and support their development effectively. 112 Tüpraş employees attended the program, which lasted for 10 weeks.

Fatma Nur Haskılıç

Kırıkkale Refinery, Utility Units Production Department Filling Unit, Operator

"I have been working as a Chemical Technician at Auxiliary Production Directorate for 6 months. When I started working in this department, I had a lot of fear. However, the work environment and my colleagues have facilitated my adaptation process. While at first, suppliers thought that we were not suitable for the job and we could not do it, as time passed, they started to be pleased with our meticulous work. The most important thing in overcoming this challenge was patience and perseverance. We knew we could."

Gül Şen

İzmir Refinery, Quality Systems Department, Lab technician

"My biggest dream was to work in Tüpraş and I graduated from Refinery and Petrochemistry Department. I had a little difficulty in adaptation during my first job. It took me a while to get used to the heavy working environment due to the intensity of the tasks that require physical strength. However, I was able to handle these intense and heavy jobs by performing at the highest level. We, as women and mothers, have the power to deal with all kinds of difficulties in our lives."



17%

Female
Representation
in Senior and
Mid-Level
Management



18%

Female
Representation
in the Board of
Directors



9.5

Corporate
Governance
Rating



GOVERNANCE APPROACH

Tüpraş presents a fair, transparent and accountable corporate governance approach. Tüpraş Corporate Governance Model, shaped by Corporate Governance Principles determined by the Capital Markets Board and international management norms, is constantly being developed.

CORPORATE GOVERNANCE APPROACH

Board of Directors of Tüpraş consists of 11 members, 4 of whom are independent, elected by the General Assembly for certain periods of office.

There are no executive members among the members of the Board of Directors. The posts of Chairman of the Board and General Manager are held by different individuals. Corporate Governance Committee, Risk Management Committee, Audit Committee, Executive Committee and Ethics Committee serve to increase efficiency in Tüpraş Board of Directors' duties.

31 senior executives, who have proven their expertise and professional competencies in various fields, take charge in the top management of Tüpraş. The top management, headed by the General Manager, is responsible for the implementation of strategic plans and corporate policies developed by the Board of Directors.



2 of Board members of Tüpraş, which supports the participation of female employees at all levels of business life, are women. In addition, **38** female managers work in mid-level and senior management.

RISK MANAGEMENT

Corporate Risk Management and Existing Committees

Corporate Risk Management process is developed to manage risks and opportunities by protecting the existing values of the Company and creating new values for the stakeholders and enable the communication between the processes regarding risks identified in all functions in accordance with the risk appetite assessed as acceptable by the Board of Directors and the top management of the Company.

Tüpraş strengthens its corporate culture and implements governance practices by establishing statements and policies within the framework of Corporate Governance Principles and Ethical Values.

A. Early Detection of Risk Committee

In order to; i) comply with the 378th Article of the Turkish Code of Commerce n. 6102 that entered into force on 1 July 2012, and the Capital Markets Board's Corporate Governance Communiqué, ii) make sure that the committees under the Board of Directors function effectively, decision was taken at Tüpraş's Board of Directors meeting held on 28 July 2010, and Early Detection of Risk Committee was established with the aim of early detecting the risks that can endanger the Company's existence, development and continuity, implementing the necessary measures related to the identified risks, and performing tasks to manage the risks.

B. Risk Monitoring Committee

Risk Monitoring Committee, which monitors the Corporate Risk Management practices, functions under the General Manager. Committee members are the General Manager, Assistant General Managers, Risk Management and Audit Manager. The aims of the Committee are; early detection of all risks that can endanger the Company's existence and sustainability, taking necessary measures regarding the identified risks, developing policies and practices necessary to effectively carry out corporate risk management processes, and monitoring risk-related action plans and risk trends periodically via key risk indicators.

C. Information Security Committee

Tüpraş promises to safeguard the confidentiality, integrity and availability of all physical and electronic information of the Company, and to protect its commercial and corporate image maintaining regulatory compliance.

In order to practice information safety properly and to increase information safety awareness, the Information Safety Committee was established as per the Article n.5.3. "Corporate Roles, Responsibilities and Powers" of the ISO 27001 Standard. In addition to this committee, sub-committees have been established in all Refineries in order to ensure that the decisions taken by the Operational Technologies Cyber Security Committee are carried out in a healthy way.

D. Tüpraş Risk Inventory and Management Process

After the risk assessment, Tüpraş categorized its risks under 7 main titles:

- 1- Technical Safety and Environmental Risks
- 2- Financial Risks
- 3- Commercial Risks
- 4- Operational Risks
- 5- Strategic Risks
- 6- Compliance and Legal Risks
- 7- Reputation Risks

1- Technical Safety and Environmental Risks

1.a – Technical Safety Risks

Tüpraş continues its development in line with its goals of defining and eliminating risks and reducing them to acceptable levels within the frame of national and international norms in all its operational activities. In this context, Process Safety leading and lagging Key Performance Indicators (KPIs) are being monitored on a monthly basis in accordance with international standards and practices.

1.b – Environmental Risks

In addition to meeting the requirements of national environmental regulations, Tüpraş monitors and adopts international environmental legislation relevant to its industry and manages Environmental Risks by evaluating sustainability of the Company and environmental impact of its investments.

2- Financial Risks

Tüpraş cares about keeping its Strategic Financial Management approach required to maintain business sustainability and regard it as a critical component of corporate culture.

Tüpraş attaches importance to sustain its Strategic Finance Management approach, which is essential to ensure business continuity, and to make this its corporate culture. Financial resources and risks are being managed proactively within existing policies.

Foreign Exchange (FX) Risks

FX risk may arise due to financial liabilities in foreign currency and raw material imports. In tackling with the FX risk, foreign currency position limits are identified and derivative instruments are used.

Liquidity Risks

The Company's liquidity is monitored and managed daily through effective cash flow planning and active-passive management against the risk of not meeting the liabilities due with cash or cash equivalents at hand.

Counterparty Risk

The risk of counterparty, which may occur in case the collection ability of overdue receivables disappears, is managed by taking guarantee.

Corporate Governance Rating, which was determined as 7.91 in the Corporate Governance Index of Tüpraş in 2007, was increased to **9.5*** in 2019 in line with the developments provided over the years.

*SAHA Corporate Governance and Credit Rating Services A.S.

3- Commercial Risks

Commodity Price Risk

Tüpraş holds a significant quantity of crude oil, mid-product and product inventory as required by its operations. There is a risk of impairment in value of inventory due to reduction of crude oil and product prices. Within the frame of hedging policies for impairment of inventory value, inventory amount which is subject to price risk is being hedged through various derivative instruments at the beginning of the year.

4- Operational Risks

Operational risk is defined as the possibility of loss or damage that may arise from: i) errors and fraud going unnoticed due to deficiencies in internal controls, ii) the company management and personnel's failure to act in accordance with the time and conditions, iii) faults in the management of the company, iv) faults and failures in information technology systems, and v) disasters such as earthquake, fire, flood and etc.

Supply/Transportation

The supply process in Tüpraş consists of crude oil, semi-product, final product and material supply operations. Purchase operations of raw materials have been optimized; in order to diversify supply sources, distribute risk in supply chain, provide advantage in price and freight costs; and to increase operational capability of the Company.

Product Analyses in Production and Sales Processes

Laboratories accredited by the Turkish Accreditation Agency carry out activities in Tüpraş refineries. The scope of the accreditation covers all analyses included in the specifications of the products for sale. These laboratories make the necessary measurements in each phase of production and sales, and eliminate the risk of producing and selling defective products.

Information Technologies Risks

All risks related with Information Technologies and Operational Technologies are reviewed under this risk topic. Practices regarding the management of possible risks that may arise in the field of Information Technologies are defined in the Standard for Information Assets and IT Risk Management.

5- Strategic Risks

Inherent risks that may prevent Tüpraş from reaching its targets set for short-, medium- or long-term can be classified within the scope of this heading. Possible strategic risks that Tüpraş may be exposed to also include country risk and alternative energy sources. In addition, innovations and developments in the transportation sector, including electric vehicles, are monitored within this process.

6- Compliance and Legal Risks

The possibility of rights to be lower than expected and liabilities to be higher than expected as a consequence of risks created by a regulation change that has a negative impact on activities, misinterpretation of regulations and insufficient or incorrect documentation.

7- Reputational Risks

Reputational risk can be defined as a potential negative reputation about the practices of organizations. In order to keep prestige and corporate reputation of Tüpraş strong at all times, crisis management processes are specified and implemented through various policies.

INTERNAL AUDIT AND CONTROL

Audits in Tüpraş are conducted by the specialized team of the Tüpraş Risk Management and Audit Management, using a proactive methodology based on the International Internal Audit Standards and Tüpraş Code of Ethics, in terms of the headings: financial, operational, risk, process, legal compliance, business ethics, and misconduct.

The audit issues determined are shared with the relevant units of the Company at the beginning of each year, and annual risk-based audit plans are prepared. Basic financial and process audits are conducted twice a year in all Tüpraş's operational centers.

Any facts found during internal audits regularly conducted for ensuring effective, reliable and permanent operation of Tüpraş activities and for completeness, consistency, reliability, timely availability, and safety of information received from the accounting and financial reporting system of Tüpraş, are shared with the Company's management and activities to improve the processes are accompanied. Audit findings are published within the Company without any delay and necessary corrective measures are taken. The corrections and improvement suggestions regarding the audits are monitored through Risk and Action Portal. Actions are monitored more systematically according to their severity thanks to this platform.

The Audit Committee was informed about the findings and results of the audits during the year. Tüpraş Audit Committee convenes at least 4 times a year and more frequently if necessary. 7 meetings were held in 2019.

BUSINESS ETHICS AND ANTI-CORRUPTION

While continuing its activities, Tüpraş strictly adheres to legal regulations and business ethics principles. The "Tüpraş Anti-Corruption Policy" and its attachment "Anti-Corruption Guidelines" and "Foreign Trade Control Implementation Guide" were put into effect in July 2017 in line with Ethical Code of Conduct to ensure the Company's existence and business continuity, protect its reputation and manage compliance risks.

All employees, the subsidiaries of Tüpraş and all employees of these subsidiaries, third parties doing business on behalf of Tüpraş are obliged to read and comprehend the relevant policies and they must comply with these policies. In particular, it should be noted that these policies are implemented to cover all Company employees and executives, regardless of their position in the corporate hierarchy.

Tüpraş Ethics Committee reporting to the Board of Directors is responsible to ensure that ethical rules are followed and necessary actions are taken in case of violation of ethical rules. If ethical rules are violated, the Company's Risk Management and Audit Directorate is involved in the process, and necessary investigations are carried out.

The document of Ethical Rules do also regulate the issues regarding anti-bribery and anti-corruption. If a risk against anti-bribery and anti-corruption is detected during the audits, the issue is examined and escalated to Tüpraş Ethics Committee. Necessary sanctions are applied and corrective / preventive actions are carried out immediately in accordance with the decision of Ethics Committee.

All Tüpraş employees are obliged to report when they encounter an ethical violation or suspicion of bribery and corruption. Various communication channels have been created to enable employees and other relevant stakeholders to report suspicious situations about violation of ethical rules to Risk Management and Audit Department. These reports are handled confidentially. Tüpraş employees are not sanctioned due to their reports.

Tüpraş is not a party to any religious, political or ideological thought, notion or organization and it does not directly or indirectly support the activities or campaigns of any political party, politician and candidates. It is not permitted to use company's operational areas or resources for such works and to carry out lobbying for the company's private interest. Tüpraş mutually exchanges information and responds to information requests about the industry within the framework of transparent relationships it establishes with public institutions.



It supports the works of industrial non- governmental organizations and contributes to the solution of problems in the industry. It acts in full compliance with free competition rules and legal procedures in cases where public institutions are in the position of customers and in case of tendered procurements.

In 2019, there were no reports regarding the cases of violation of Tüpraş Ethical Values and universal human rights or for any corruption. Likewise, there were no legal proceedings filed against the company due to

any incompliance with laws and regulations during the same period.

Online software are being used to identify compliance risks and, particularly, counterparties that are subject to international sanctions. If the status of any of these counterparties changes as a banned institution or person, a warning message is sent to the Company by these software and so, the status of all addressees in terms of legislations pertaining to sanctions is monitored throughout the duration of business relationship.

SUSTAINABILITY MANAGEMENT

Tüpraş acts with the awareness of economic, social and environmental impact areas it creates in its operational geography in order to have an effective sustainability management model. It works within the framework of the principle of “creating value” that it adopts while managing all these effects.

Sustainability priorities have been determined through the prioritization process carried out by Tüpraş Sustainability Working Group. Stakeholder expectations, risk areas and opportunities, company strategies and opinions of external experts are taken into consideration in determining the priorities.

A subject universe consisting of social, economic and environmental issues was designed with a preliminary assessment also involving the company's senior executives. Prioritized issues identified within the subject universe were evaluated once again by Sustainability Working Group and the prioritized issues portfolio was finalized. Initially the opinions of experts were taken on prioritized subjects during the reporting period and no changes were found necessary following the evaluation.

TÜPRAŞ SUSTAINABILITY PRIORITIES	SUSTAINABLE DEVELOPMENT GOALS						
Occupational Health and Safety							
Innovation, R&D and Digitalization							
Gender Equality							
Environment, Climate and Energy							
INSTITUTIONAL PRINCIPLES							
Customer Satisfaction		Asset Management and Availability		Legal Compliance			

STAKEHOLDER ENGAGEMENT

Tüpraş adopts a management approach based on stakeholder engagement. Participation of stakeholders in decision and implementation processes is encouraged in several ways. Various stakeholder communication mechanisms have been created in order to allow stakeholders to convey their opinions and suggestions. The communication methods determined specifically for the stakeholder group are serving to inform the stakeholders about Tüpraş activities and the effects arising from them, while contributing to enrichment of the decisions and practices in line with the opinions of stakeholders.

Employees	Sustainability Report (annual), Annual Report (annual), Employee Loyalty Survey (annual), Internal Communication Meetings (annual), Performance Evaluation Meetings (annual), Occupational Health and Safety Boards (monthly), Technical Safety Bulletins (weekly / monthly), Internal Information Announcements (instant), Social Projects (continuous), Social Activity Clubs (continuous), Refined Suggestions System (continuous), Recognition, Appreciation and Rewarding System (continuous), Tüpraş Ethical Principles (continuous), Collective Bargaining Agreement (continuous), Employee Trainings (continuous), Website (continuous), Refinery Knowledge Base (continuous), Stakeholder Communication Management System (continuous), Corporate Portal (continuous) and Corporate Reputation and Perception Researches (biannual)
Shareholders and Investors	Sustainability Report (annual), Annual Report (annual), General Assembly Meetings (annual), Interim Reports (quarterly), Briefing and Material Disclosures (instant), Roadshow and Investor Presentations (upon request), Meetings and Interviews (upon request), Analyst Presentations and Teleconferences (upon request), Tüpraş Code of Ethics (continuous), Website (continuous), Stakeholder Communication Management System (continuous) and Corporate Reputation and Perception Researches (biannual)
Customers	Sustainability Report (annual), Customer Satisfaction Survey (annual), Meetings and Interviews (upon request), Customer Portal (continuous), Customer Relations Management System (continuous), Tüpraş Ethical Principles (continuous), Tüpraş Solution Center (continuous), Stakeholder Communication Management System (continuous) and Corporate Reputation and Perception Researches (biannual)
Business Partners and Suppliers	Sustainability Report (annual), Supplier Satisfaction Survey (annual), Technical Safety Bulletins (weekly / monthly), Meetings and Interviews (upon request), Tüpraş Ethical Principles (continuous), Business Partner HSE-S (continuous), Website (continuous), Stakeholder Communication Management System (continuous) and Corporate Reputation and Perception Researches (biannual)
Indirect Employees	Technical Safety Bulletins (weekly / monthly), Meetings and Interviews (on request), Tüpraş Ethical Principles (continuous), Business Partner HSE-S (continuous), Employee Trainings (continuous), Website (continuous), Stakeholder Communication Management System (continuous) and Corporate Reputation and Perception Researches (biannual)
Trade Unions	Sustainability Report (annual), Annual Report (annual), Occupational Health and Safety Boards (monthly), Meetings and Interviews (continuous), Collective Bargaining Agreement (continuous), Website (continuous), Stakeholder Communication Management System (continuous) and Corporate Reputation and Perception Researches (biannual)
Public institutions and organizations	Sustainability Report (annual), Annual Report (annual), Audits (periodic / instant), Meetings and Interviews (on request), Joint Projects (on request), Incentives (on request), Website (continuous), Stakeholder Communication Management System (continuous) and Corporate Reputation and Perception Researches (biannual)
Non-Governmental Organizations	Sustainability Report (annual), Annual Report (annual), Meetings and Interviews (on request), Joint Projects (on request), Donations and Sponsorships (on request), Memberships (continuous), Website (continuous), Stakeholder Communication Management System (continuous) and Corporate Reputation and Perception Researches (biannual)
Educational Institutions	R&D Partnerships (on project basis), Donations and Sponsorships (on request), Infrastructure and Trainer Supports (on request), Master's and Sectoral Expertise Programs (continuous), Website (continuous), Stakeholder Communication Management System (continuous) and Corporate Reputation and Perception Researches (biannual)
Media	Sustainability Report (annual), Annual Report (annual), Meetings and Interviews (on request), Press Conferences and Bulletins (instant), Website (continuous), Stakeholder Communication Management System (continuous) and Corporate Reputation and Perception Researches (biannual)
Local Communities	Kurumsal İtibar ve Algı Araştırmaları (iki yıllık), Toplantı ve Görüşmeler (talep üzerine), Duyurular (anlık), Toplumsal Projeler ve Altyapı Destekleri (sürekli), İnternet Sitesi (sürekli), Paydaş İletişim Yönetimi Sistemi (sürekli)
Society	Corporate Reputation and Perception Research (biannual), Announcements (instant), Social Projects and Infrastructure Supports (continuous), Website (continuous), Stakeholder Communication Management System (continuous)



QUALITY MANAGEMENT

Tüpraş follows international quality and management standards as well as internal standards set for the purpose of ensuring standardization in products and services. Adopting the business excellence model, Tüpraş manages its activities in accordance with Integrated Quality Management System, composed of ISO 14001, ISO 9001 Quality Management System, ISO 14001 Environmental Management System, OHSAS 18001 Occupational Health and Safety Management System and ISO 50001 Energy Management System standards. Integrated Management System Internal Audits were carried out at the Head Office and refineries in 2019.

All Tüpraş laboratories have ISO 17025 Laboratory Accreditation Certificate, which is a certificate of international recognition and acceptability. Tüpraş uses ISO 27001 Information Security Management System, which constantly analyzes the hazards against information assets, decides which controls to apply against risks and monitors that these controls are operated correctly in order to ensure information security.

The operability of Tüpraş's quality management systems is guaranteed not only by international certifications, but also by internal and external audits conducted at the Head Office and refineries.

Additionally, Lean Six Sigma Studies are carried out as a part of quality management.

"National Quality Movement Goodwill Declaration" was signed with KalDer in 2019. EFQM Model (European Foundation for Quality Management) enables combined management of all improvement activities and performance evaluation tools of companies; and it is seen as a benchmarking tool comparing the organization with its competitors and other leading organizations.

External evaluation of EFQM Excellence Management Model was performed by KalDer at the Head Office and İzmit Refinery and the rating of perfection in excellence has increased to 5 stars.

EFQM Excellence Model fundamental approach includes corporate culture, corporate and individual leadership, awareness of business related external environment, stakeholder focus, managing change and transformation, superior performance, sustainable value creation and continuous improvement.

The EFQM model has been updated with a focus on transformation by taking global trends, United Nations Sustainable Development Goals and the concept of ecosystems into consideration. The target of Tüpraş for 2020 is to be the first company in Turkey to implement this new version of EFQM Model, and to be a company that sustains excellent performance in the changing world order by expanding continuous improvement culture and the approaches which this model includes.



12%

Female Employee
Ratio*



100%

in Hourly Employees
Unionization Ratio



201,813

Person x hour OHS
Training



44

Average Training Hour
per Person

**Including subcontractors*



TALENT MANAGEMENT

Tüpraş continues to train the qualified workforce of the future with its endless energy. The essence of Tüpraş Human Resources Policy is the philosophy of “Our most valuable asset is our human resources”. In line with this philosophy, Tüpraş places its at the center and offers a work environment that is fair, inclusive, respectful to human rights, healthy and safe work environment that places its employees at the center.

Investing in the development of its employees consistently, Company does also continue its activities to recruit creative, dynamic, knowledgeable, highly motivated, effective and efficient human resources. Human resources processes are carried out using objective systems and standards in parallel with international norms and legal regulations.

EMPLOYEE RIGHTS

Tüpraş acts in accordance with UN Global Compact Principles that it has adopted while implementing its employee rights practices. The Company does never be a party to human rights violations and supports the promotion of human rights within its area of influence. In addition to its employees, Tüpraş expects its suppliers and business partners to adopt identical principles with Tüpraş. Having common values in establishing and maintaining business relationships is accepted as a basic criterion.

All employees have equal opportunities regardless of age, gender, belief, ethnicity or other personal characteristics and discriminating practices or practices that evoke discrimination are not allowed in Tüpraş, which has adopted an objective approach throughout all human resources processes starting from recruitment. Within the scope of its activities, Tüpraş does not allow child labor, forced or compulsory labor, abuse of employee rights, or situations that evoke these practices. It requires that these principles are also adopted by its suppliers and business partners.

Tüpraş adopts the principle of “equal pay for equal work” in remuneration of employees. Wage differences between employees are only based on seniority or performance differences. The principles to be followed in pricing are clearly regulated in purchasing agreements with suppliers and are audited within the scope of visits.

Tüpraş respects the union rights of employees and allows them to exercise these rights freely. Employees are encouraged to become members of unions and non-governmental organizations, provided that they are organized under the laws. As of 2019, all hourly employees in Tüpraş and 76% of all employees work under collective bargaining agreements. At the same time, as of 2019, 33 Tüpraş employees take part in the management of the unions in which they are members. Tüpraş expects its suppliers and business partners to adopt this rigorous approach for the protection of union rights and suppliers and partners are monitored to ensure that they fully implement such union rights in their operations.



Benefits Provided to Employees

Tüpraş promises a satisfying work environment that supports employee loyalty and happiness. For this purpose, it provides various opportunities that will contribute to raising the living standards and welfare of employees and their families. Employee benefits are determined by taking the mutual interests of Tüpraş and its employees into consideration.

Tüpraş employees can take advantage of the products and services offered by Koç Group companies throughout their retirement as a part of KoçAilem Program. In addition, Tüpraş employees and their families can optionally benefit from Koç Holding Retirement and Aid Fund, Health Insurance. All Tüpraş employees are covered by complementary health insurance under Extended Health Insurance Program. Employees are offered the opportunity to benefit from private health institutions for themselves and their families with an affordable cost as a part of this program.

Employee Support Program is a professional program that serves for the lifestyles and individual needs of Tüpraş employees and their families. The program includes financial, legal and psychological counseling and offers fast solutions for special needs in daily life. Providing an auxiliary research assistant, the program provides 24/7 uninterrupted service.

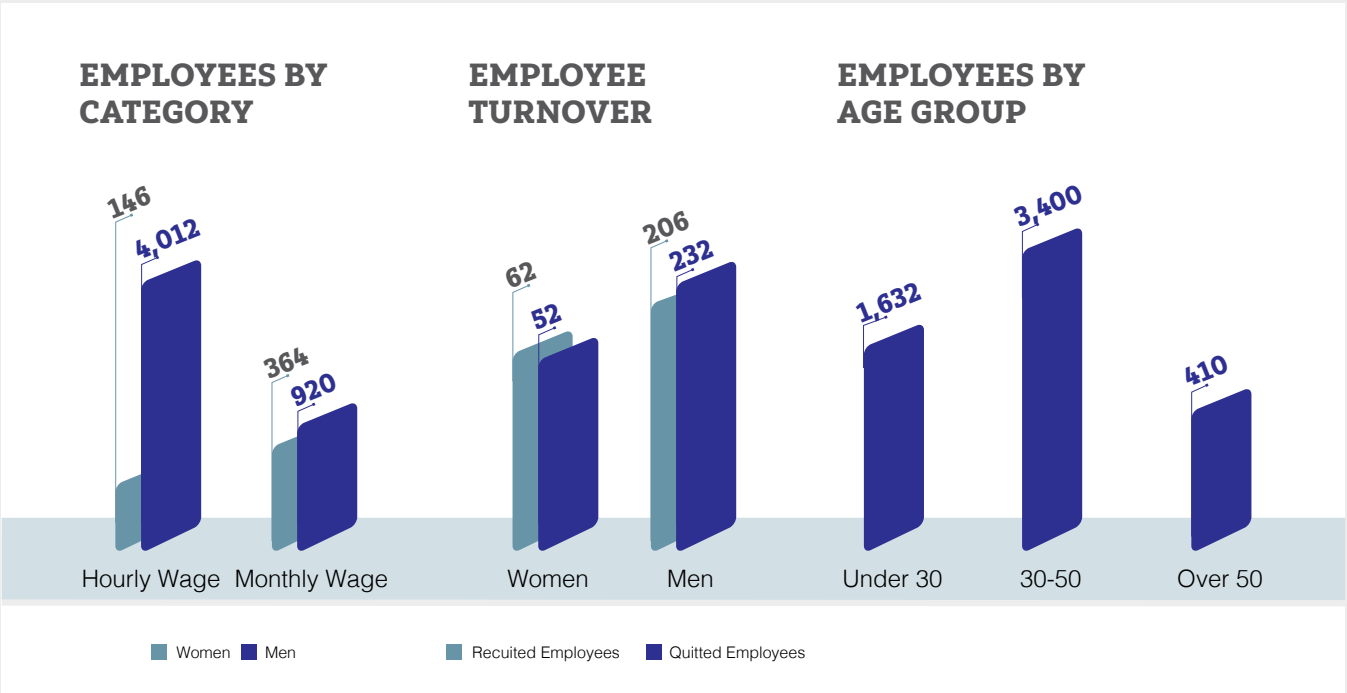
With Flextra Package, a flexible additional benefits application, employees choose from a pool of benefits added to their existing benefits. Employees have the option to change their benefit packages according to their lifestyles and unique needs as part of the program, which includes options such as life insurance, gift and discount vouchers, and private pension schemes.

An Orientation Support Program is carried for the first 3 months of recruitment to ensure that new Tüpraş employees adapt to corporate culture and his/her job quickly.

Nursery Aid Benefits Package is offered to female employees in order to support work-private life balance and career development. 71 women employees benefited from the nursery aid application during the period.

Screenings and trainings are carried out by industrial psychologists at all refineries and individual psychological support is given to employees by Support at Work Program. Contents in the program are diversified from year to year.

Monthly wage employees can arrange starting and ending hours of their daily and weekly working hours by informing the management in advance and in accordance with certain limits thanks to Flexible Working Hours practice.



EMPLOYEE DEVELOPMENT

Tüpraş aims to evaluate the talents in the most efficient way by attracting qualified workforce and prepares training plans for the development of professional and personal knowledge, skills as well as, behavioral competencies of its employees. Company supports employees in the most accurate way in their career path with the programs designed specifically for Tüpraş. In this context, training and development activities, project studies, on-the-job learning and rotation processes are designed with industry-leading business schools and university collaborations. Development programs aiming at improving the leadership competencies of employees cover effective communication, coaching and development, collaboration development, and future oriented development. 719 employees benefited from leadership training in 2019.

Training activities are managed in accordance with Company's Internal Training Management Standard and processes are followed by training experts. These programs are focused on the development of skills and competencies of employees. After the training is carried out, the content of the training is evaluated, and the efficiency of the training operation is measured by surveys.

Development Dialogue

Designing the Development Dialogue process, in which employee and manager meets based on a development focused approach to meet the expectations of employees continues. As a part of this process, solutions are created to improve technical, professional and behavioral competencies of monthly paid employees. Qualifications expected from positions and trainings that should be taken in order to have these qualifications are determined in Qualification Matrix prepared for Technical and Professional Development as a part of Development Dialogue. Additionally, Training and Development Catalogue, mapped with the competencies prioritized by Tüpraş for development is provided to strengthen behavioral competencies. Training and development processes are carried out through Tüpraş's online training platform, Enerjik.



Performance Management

An important part of employee development is a well-structured performance and career management system. The target card systematic is used in evaluating the performance of office employees. Employees receive feedbacks on their performance through annual performance evaluation meetings. Field workers are provided with feedbacks on the results and target expectations by senior management.

EMPLOYEE TRAININGS	2019
Total Training Hours (personxhour)	238,168
By Category	
Hourly Paid Employees	113,061
Monthly Paid Employees	125,107
By Gender	
Women	40,919
Men	197,249
Average Training Hours per Employee	44
By Category	
Hourly Paid Employees	27
Monthly Paid Employees	98
By Gender	
Women	80
Men	40

Talent Management

Talent management process ensures that human resources are evaluated in the most efficient way and the development needs are determined correctly. Data obtained during the talent management process are reviewed at annual strategic human resources meetings.

Performance evaluations of monthly paid employees are made, and backup plans are prepared for executive positions in these meetings. Leadership competencies are measured by using Tüpraş Leadership Competency Sets and employees are directed to development programs accordingly.

Critical positions and backup plans are created through internal backup system and a potential talent pool is identified. It is aimed to find talented employees in Tüpraş with talent pools designed for different levels. Two levels of talent programs were launched in 2019 for development of employees for First Level and Mid-Level managerial roles.



Tüpraş, in cooperation with universities, supports graduate programs, in order to contribute to the training of the qualified workforce needed by the refining sector and to enrich the studies in the sector with academic knowledge. Employees' participation in these programs is supported. In addition to its employees, students who want to continue their academic education also participate in the programs.

Tüpraş carries on Refinery Training Program so that field workers can do their jobs safely. The program is constantly updated to provide ease of application with an innovative approach.

The efforts to establish a Technical Training Center at the Kırıkkale Refinery, which was launched so that the field employees can receive technical and vocational training, continued in 2019. The center, where the workshops, education classes, conference hall and library will be located, is planned to be commissioned in 2020.

Company contributes to strengthening vocational education with the projects it conducts for business partner employees, high school and university students. 479 students had the opportunity to be interns at its refineries in 2019.

Nextremers Program

Nextremers, a long-term project-based internship program aimed at contributing to the professional development of university students, was launched in 2019. Throughout the company, 25 undergraduate students from various universities (Information Technologies (Analytical), Maintenance, Engineering, R&D, Product or Service Design, Sales, Financial Transactions, Project Management, Corporate Communications) have successfully completed the 3-month program. Nextremers Program is successfully in progress with 17 project students, who continue their education in leading universities of Turkey.

EMPLOYEE ENGAGEMENT

Employee engagement in decision-making processes plays an important role in strengthening employee loyalty and commitment. There are various mechanisms established in Tüpraş to ensure that employees take an active role in the company. Employees' opinions are collected through target dissemination meetings, OHS board meetings, suggestion systems, surveys, collective bargaining agreements and social activity clubs and evaluated in process improvement studies. The behaviors and efforts of the employees that contribute to the company's success are rewarded through Recognition, Appreciation and Reward System.

Creativity and productivity skills are supported by getting improvement suggestions from the employees with the Refined Suggestions System, which is one of the employee participation tools. Tüpraş employees made 254 suggestions as a part of Refined Suggestions System in 2019 and 33 of these suggestions were put into practice and work on other suggestions is continuing.

Tüpraş encourages its employees to volunteer in social responsibility projects within the scope of employee participation practices. Employees can also organize activities that favor social benefit through social activity clubs at refineries.

Employee Loyalty

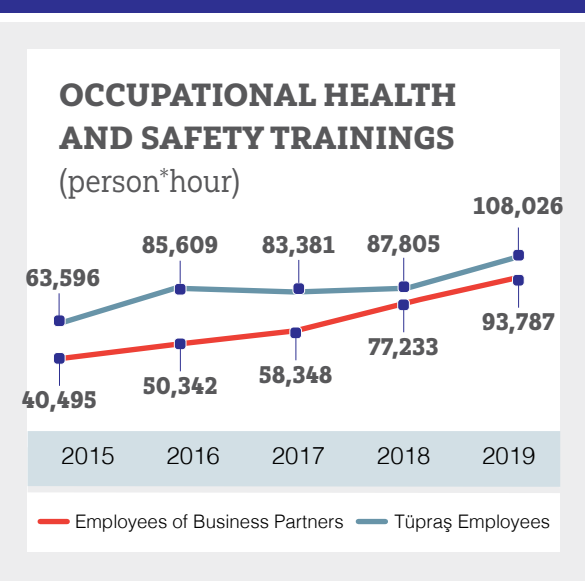
Employee Loyalty Survey is carried annually with the participation of all employees in Tüpraş by an international independent research company. Practices to increase employee satisfaction and loyalty are implemented in accordance with the feedbacks received from the survey. According to the Employee Loyalty Survey results conducted in 2019, the loyalty score of monthly paid employees was 52.9% and the loyalty score of hourly paid employees was 29.1%. Tüpraş Loyalty Score is 35.8%.



OCCUPATIONAL HEALTH AND SAFETY

The main goal in Tüpraş's occupational health and safety approach is to prevent health and risks or to reduce the risks to an acceptable level within the framework of standards. HSE (Health, Safety, Environment) Policy has been established for the safety of all employees and stakeholders in Tüpraş's field of activity, and to ensure an accident-free work environment. Tüpraş expects its employees and solution partners to comply with this policy without compromise.

The subject of occupational health and safety is managed in accordance with OHSAS 18001 Standard and legal requirements. Occupational health and safety performance is monitored monthly and annually and reviewed in Technical Safety Assessment Meetings. In addition, OHS performance is evaluated with OHS Coordination meetings, where all refineries are included, twice a year.



OHS Practices

- Tüpraş carried out various practices in 2019 in order to improve the safety perception of its employees and to prevent possible unsafe situations and accidents by evaluating the risks beforehand. For this purpose, Tüpraş;
- Started to transfer “Competence Management” studies, which are widely used in the international oil-gas industry, to its own operations,
 - Accelerated Safety Campaigns on certain topics in the field,
 - In order to use the Control of Work system more effectively, implemented more effective identification and control systems with the work conducted jointly by the Operation, Maintenance and OHS teams,
 - Carried out reviews with the users of the system to make the Work Permit System more effective,
 - Employees are included in international certificate programs externally and intensive training and application programs internally,
 - Prepared the ground for the single Joint Health and Safety Unit to enable contractors to benefit from OHS services more effectively and accurately,
 - As the General Maintenance Contractor, more experienced and institutional solution partners were appointed at the refineries, and significant improvements were achieved in the contractor OHS statistics.



There are 35 members, 10 of which are employee representatives, in 5 OHS Boards at Tüpraş Head Office and Tüpraş. Approximately 100 people attend the board meetings. Besides, OHS experts, group comprises experts from refineries, unit managers and representatives from units.

OHS trainings are carried out in order to increase the occupational health and safety knowledge of Tüpraş employees and contractor employees, and to ensure that they act responsibly in the field of activity. Tüpraş employees received 108,026 person*hour, the contractor employees received 93,787 person*hour of OHS trainings in 2019.

Tüpraş shares its gains, experience and best practices in the fields of OHS, process safety and emergency response in congresses and symposiums with its reliable and leading corporate identity in the energy industry.

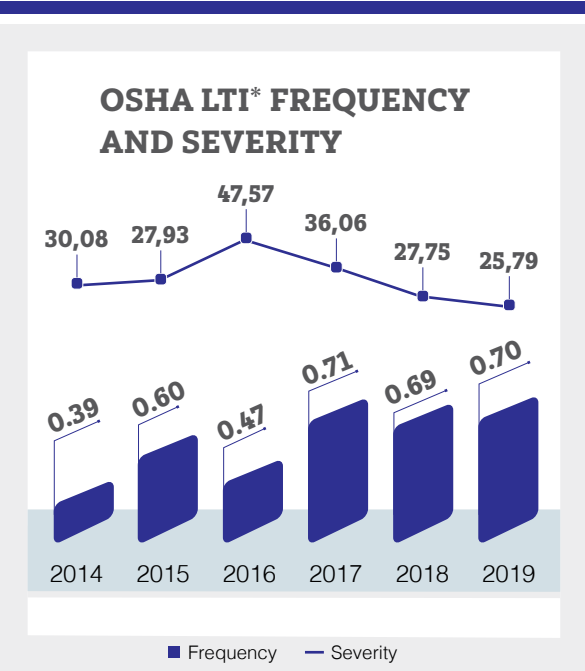


Occupational Safety

The basic rules and principles of occupational safety that must be followed within the fields of operation of Tüpraş are determined by Tüpraş Safety Principles and the Tüpraş Basic Working Rules “10 core principles of safety&health in Tüpraş”. Weekly Accident Sharing and Safety Speech, “Couldn't We Prevent These Accidents?” meetings are held in order to strengthen the occupational safety culture and ensure the continuity of communication on this issue.

“Visible Leadership” practice is implemented in order to build a productive and sustainable safety culture, reinforce positive safe behaviors, increase OHS awareness and follow field practices of safety standards. As a part of this practice “Visible Leadership” is exhibited with active participation of managers by conducting behavior-oriented safety tours. Positive safety behaviors of employees are appreciated and encouraged, risks in behavior and working conditions of people are identified and corrected , communication and dialogue are strengthened for a safe working environment, awareness is raised and an environment is created where employees can share their opinions and observations about safety through this practice.

Tüpraş adopts an approach that aims to minimize risks in occupational safety and raise the level of precaution against potential risks. It manages occupational health and safety processes with risk assessment and continuous learning understanding.



* LTI fr= Loss time injury per 1 million manhour = LTI*1M/mh
**LTI Sev= Days of LTI per 1 million manhour = Days*1M/mh

For this purpose, safety risks are eliminated by following risk evaluation systematic, working procedures and many internal and international standards such as Risk Assessment Scheme (RAS), Hazard and Effects Management Process (HEMP), Case Classification, Research and Reporting (CCRR), Contractor HSE Management System, Tüpraş Tracking System (TTS). Priority was given to realizing and managing risks, conducting health risk assessment studies and transferring resources to critical jobs while preparing risk analyses as a part of HEMP process in 2019.

Occupational Health

Protecting employees' health as well as safety is a priority for Tüpraş. Various measures are taken to protect employees against both occupational diseases and general illnesses. All Tüpraş employees undergo periodic health checks during their employment from recruitment. Various health services are offered to employees and preventive measures such as vaccination are taken. Besides, Health Risk Assessment (HRA) studies are carried out in all refineries. These studies aim to identify the health hazards that may arise from the environment where the employees are located and to evaluate the risks associated with these hazards. In HRA studies, chemical, physical, biological, ergonomic and psychological factors specific to the field are examined in detail.

Tüpraş aims at maintaining a healthy life for families of both its employees and contractor employees. Accordingly, it encourages the families of its employees and employees of its contractors to participate in training programs for healthy life and preventive measures. Thanks to Tüpraş's meticulous approach to employee health, no occupational disease cases occurred among Tüpraş employees or employees of contractors during the reporting period.

Process Safety

Process Safety Management System based on CCPS (Center for Chemical Process Safety) is implemented in Tüpraş refineries. The system is



based on the principle of leadership and ownership of the management and aims Operational Discipline and Business Excellence. 16 preliminary and after-effect performance indicators, which are prepared based on international standards, such as CCPS, OSHA, API754 are monitored monthly. So it is aimed to take precautions before the accidents occur and to learn from the accidents and not to repeat them. With the Process Safety Management System, all areas such as maintenance and control activities that can lead to process safety accidents, operational procedures, change management, process hazard analysis, training and competence, contractor management are evaluated together according to Tüpraş safety requirements. Process Safety Event Frequency was realized as 0.87 in Tüpraş in 2019.

	2014	2015	2016	2017	2018	2019
LTI	17	14	14	15	16	17
LTI fr	0.39	0.60	0.47	0.71	0.69	0.70
LTI Days	1315	651	996	764	646	625
LTI Severity	30.08	27.93	47.57	36.06	27.75	25.79
Manhours	43,719,384	23,308,809	20,939,650	21,186,894	23,276,864	24,236,448

Disaster and Emergency Management

Modern safety management practices in accordance with Tüpraş Security Policy, Security Management Standard, National Marker related Technical Safety, Environment and Security Measures Standard, Search and Rescue Standard, Electronic Security Systems Standard and Standard Emergency Management Center Standard as well as national and international security norms are taken as basis for disaster and emergency management. Technical Safety Directorate at the Head Office and Technical Safety and Environment Departments at the refineries are responsible for disaster and emergency management. Applications and plans to be implemented against all extraordinary conditions and disasters such as fire, energy and water shortage, work accident, earthquake, flood, terrorism and sabotage have been predetermined.

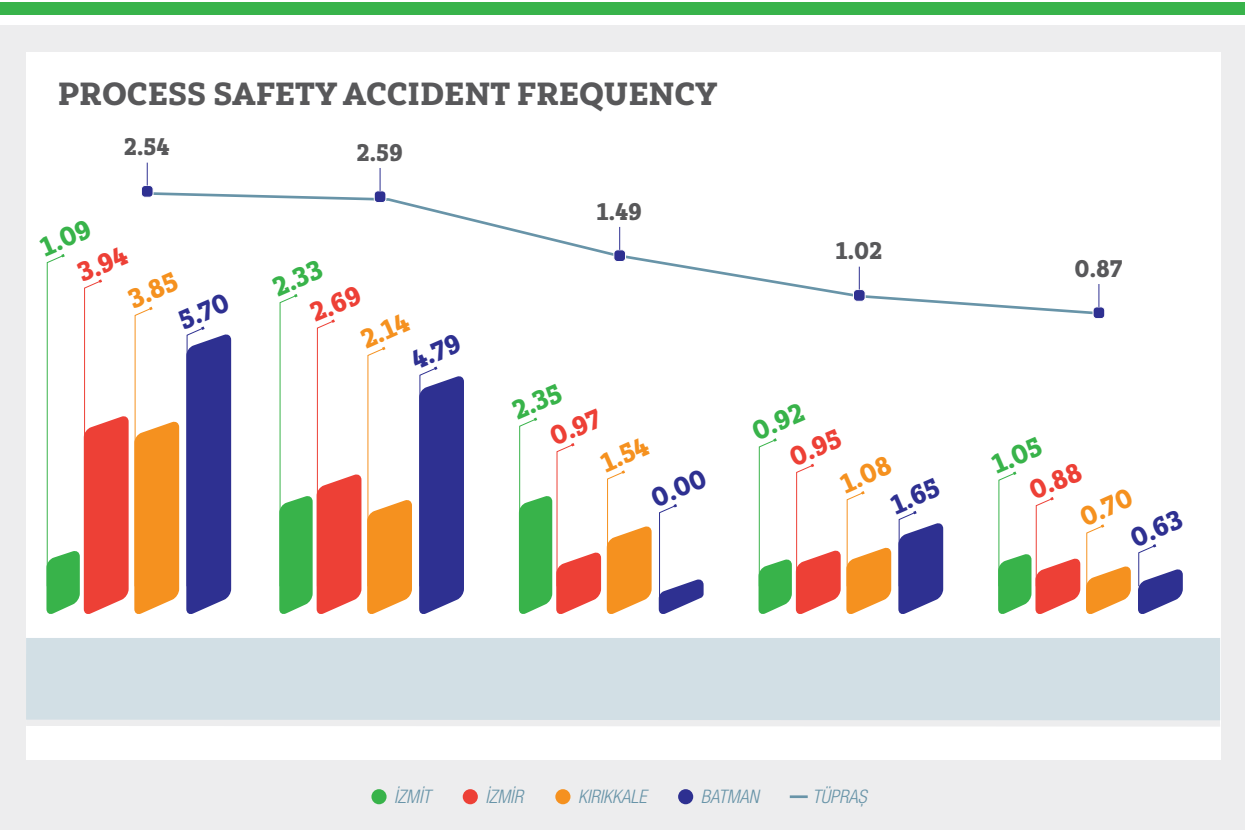
Tüpraş responds to emergencies with state-of-the-art modern equipment and competent staff. National and international standards are taken as reference in modernization and improvement of emergency protection and responding systems and in trainings carried out in order to raise the competency of teams.

The number of drills organized in Tüpraş to strengthen the preparedness for disasters and emergencies is than required by applicable laws. Fire, disaster plan, hydrocarbon cloud / toxic gas emission and environmental spill drills are carried out in all refineries in order to minimize the risks that may arise in emergencies and to respond properly.

Along with public institutions and organizations, neighboring facilities also participate in these drills with their teams and equipment as stakeholders. The performance of these drills is evaluated and the actions determined after the meeting are followed.

Tüpraş takes strict measures against possible emergency risks that may occur in supply operations. It requests suppliers to meet certain standards in the tankers that will be used for transportation ensure the safety of supply. Particularly, marine tankers that meet "ISPS" code (International Ship and Port Facility Security Code) appropriate conditions and have ISO 9001 and class certificates and which can be accepted by ports must be used for importation of crude oil. Thus, the risks that may arise during transportation are greatly reduced. Each refinery does also have necessary equipment to fight against any accident or leakage that may occur despite all these measures.

Numerical risk assessments were conducted in all refineries and critical scenario analyses and actions were determined and Safety Reports were prepared and presented to the Ministry of Labor and Social Security in accordance with Prevention of Major Industrial Accidents and Mitigation of Impacts on Regulation (Seveso- II Directive) in 2019. Office and on-site drills were conducted with relevant units and technical safety staff and preparations for possible emergencies are made in accordance with Scenario Based Emergency Action Plans.





24

Energy Efficiency
Projects



98.4

Energy Intensity



473_{TJ}

Annual Energy
Saving



0.6

m³/Ton Raw Water
Consumption per
Product



69.5%

Solid Waste
Recovery Rate



26.3

Thousand Tons CO₂e
Annual Greenhouse
Gas Reduction



RESPONSIBLE PRODUCTION

Supplying Turkey's demand for petroleum products with reduced environmental impact through efficient and environmentally friendly production processes is one of the priorities of Tüpraş. For this purpose and by being aware of its responsibility towards environment and society, Tüpraş closely monitors national, international and industrial developments and incorporates the best products and production technologies available.

ENVIRONMENTAL MANAGEMENT

Management of environmental impacts is considered as a priority issue within the scope of Tüpraş Risk Management Practices. Potential risks that company activities may pose on nature are identified and precautionary mechanisms are established with these studies. Decisions and approved steps are carried out by specialized departments. In this context, environmental issues are managed by the Environment Department throughout the company. Company-wide and international standards are followed in environmental management issues. All activities are implemented through processes that comply with ISO 14001 Environmental Management System Standard.

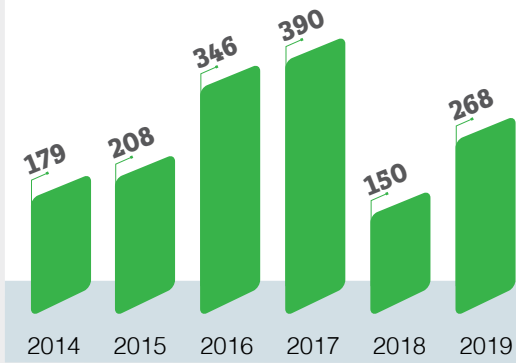
While the management of environmental, climate and energy issues is evaluated broadly, the basic principle is primarily to maintain compliance with applicable legal regulations and legislations.

The main areas of work for environment, climate and energy management are energy and water efficiency, reducing waste and other environmental impacts, monitoring and reducing greenhouse gas and flue emissions, increasing environmental awareness in employees and society, and protection and improvement of natural life.

As one of the important aspects of environmental management is to increase environmental awareness both in its employees, value chain as well as in the society. Company continues its training activities uninterruptedly and 11,092 contractor employees received 14,127 person x hour environmental training.

On the other hand, 268 million TL was invested for environmental management activities during the reporting year.

ENVIRONMENTAL EXPENDITURES (MILLION TL)



268 million TL was invested for environmental management activities during the reporting year.



CLIMATE VISION OF TÜPRAŞ

Company defines its responsibilities in combating climate change and carries out the projects, which can be examples of good practices.

Tüpraş also closely monitors national and international agenda on climate change. Company supports the efforts of combating climate change by participating in working groups, meetings and seminars organized by relevant institutions and non-governmental organizations in Turkey and abroad, especially the Ministry of Environment and Urbanization.

Tüpraş has been an active participant in the UN Climate Change Parties Conference since 2015. Accordingly, company also participated in the 25th Conference of the Parties (COP25) held in Madrid, Spain in 2019.

Tüpraş also supports PMR (The Partnership for Market Readiness) Project run by the Ministry of Environment and Urbanization. Phase 1 of the Project has ended and phase 2 has started. In the second phase of the project, Tüpraş will continue to support the development of legal and institutional infrastructure to be realized, determination of the emission upper limit, creation of allocation plans and ETS registration system, development of the emission trading system simulation application and the work of its components. Besides, company supports combating climate change studies carried out by TUSIAD (Turkish Industry and Business Association).

While evaluating investment projects, Tüpraş considers internal carbon pricing as a parameter in feasibility studies and also ensures that projects are evaluated with internal carbon prices.

Tüpraş refinery facilities are located in areas reserved for industrial activities. Therefore, there are no grade 1 site areas, environmental protection areas, RAMSAR or wetlands with similar biodiversity value in its surrounding physical impact area. When deciding on physical investment locations, it is a criterion to consider that it is far from such special status areas.

Environmental management activities are audited throughout Tüpraş activities, and the performance achieved is constantly monitored. In addition to internal auditing, environmental performance is subject to the audits of Ministry of Environment and Urbanization, external audits conducted by authorized independent organizations and Koç Group's Environmental Audits. There was no lawsuit filed against the company or a significant number of fines imposed due to non-compliance with environmental laws and regulations in 2019.

Tüpraş added Life Cycle Analysis (LCA) to its performance enhancing efforts in line with Sustainable Development Goals in the reporting period. So, it is aimed to evaluate the environmental impacts arising from operations and investments with a more holistic approach. In order to adopt this approach throughout Tüpraş, employees were provided with Sustainability and Life Cycle Thought and Analysis (LCA) training program.

Initial examples of these studies aiming to implement the life cycle thought in operations have been implemented throughout the year. In this context, environmental impacts of the emissions generated by the different fuel scenarios used in production and different emission output limits for the steam recovery units, which are planned to be installed in the refineries were examined from a life cycle perspective and reported. Additionally, it was started to build the infrastructure to use life cycle analysis for "CO₂-to-fuels" R&D Project for production of methanol and dimethyl ether (DME) from carbon dioxide.

Infrastructure studies are underway to evaluate the LCA results of important projects within the scope of the investment program, along with the economic indicators resulting from feasibility studies.



Emission Management

Tüpraş monitors and works to reduce greenhouse gas and flue gas emissions arising out of its activities both in order to combat climate change and to control air quality.

Tüpraş monitors greenhouse gas emissions from its activities for many years in line with the principles recommended by international standards. Within the scope of the “Regulation on Monitoring Greenhouse Gas Emissions”, the annual greenhouse gas emission reports of all refineries are prepared and verified and submitted to the Ministry of Environment and Urbanization. Greenhouse gas reduction amounts provided by some energy efficiency projects selected from 2018 are certified according to ISO 14064-2 Standard.

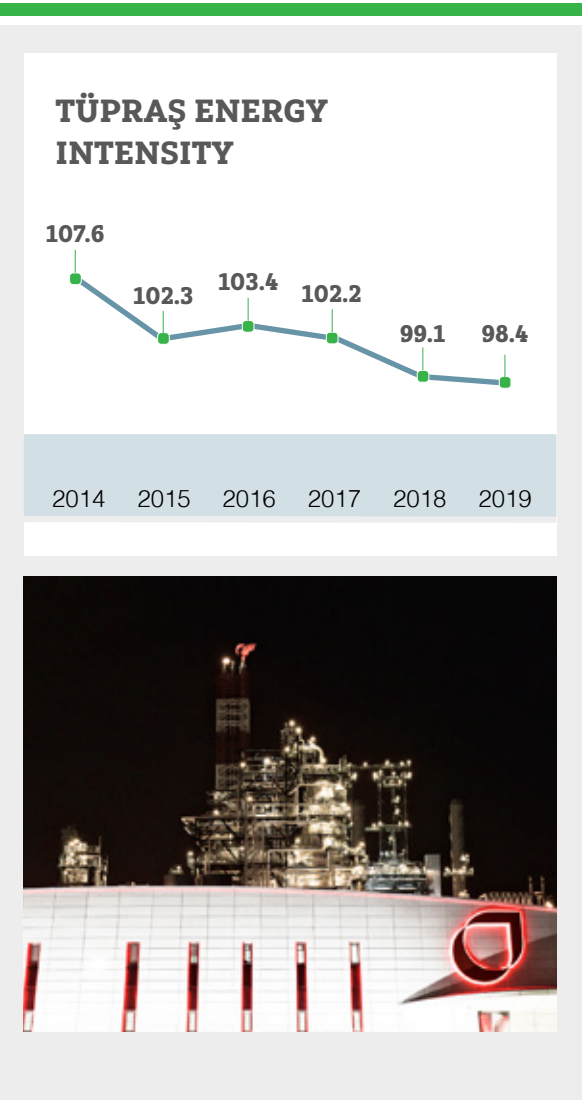
All combustion plants with rated thermal power above 50 MW in Tüpraş refineries are equipped with Continuous Emission Measurement Systems in accordance with the Communiqué on Continuous Emission Measurement Systems. In this context, relevant parameters of 31 chimneys located in refineries are monitored online by the Ministry of Environment and Urbanization. Fully compliant with national legislation in tracking flue gas emissions, harmonization studies with EU legislation are carried out. In addition, emission confirmation and air quality measurements of all refineries are carried out and reported by companies, which are qualified by the Ministry of Environment and Urbanization, in line with legal obligations.

The project of Dokuz Eylül University, named “Facilitating the Practices for Determining and Reducing Air Pollution caused by Industry”, which is lead by the Ministry of Environment and Urbanization, is supported by İzmit and İzmir refineries in the reporting period.

ENERGY MANAGEMENT

Energy efficiency works are the basic tools Tüpraş uses in terms of more efficient production and reduction of greenhouse gases. Energy related issues for all Tüpraş operations are managed by Energy Department under the coordination of refineries. Internal and international standards are followed in management of these issues. For this purpose, all activities are implemented through processes that comply with ISO 50001 Energy Management System Standard. Real-time energy values, monitored in all refineries in accordance with common calculation criteria determined in accordance with international standards are analyzed and efficiency projects are planned and implemented.

Accordingly, 24 energy efficiency projects were implemented in Tüpraş refineries in 2019.



473 TJ energy was saved and 26,292 tons of CO₂e greenhouse gas was reduced thanks to these projects in 2019. So, energy consumption value per crude oil was reduced by 5.3% to 3.55 GJ / Ton.

Energy Intensity calculation method, which is used throughout the world to evaluate energy consumption performance of companies operating

in refining industry, is one of the main indicators used in monitoring energy performance of Tüpraş. Energy efficiency and modernization efforts launched in 2019 had a positive result in Tüpraş's energy intensity. As a result of these efforts, energy intensity, which was 99.1 in 2018, decreased to 98.4 in 2019.



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	Number of Energy Efficiency Projects	Energy Savings (TJ)	Emission Savings (Ton CO ₂ e)
2014	22	1,772	126,442
2015	21	1,031	71,744
2016	18	1,054	77,666
2017	15	830	45,945
2018	21	3,620	243,666
2019	24	473	26,292

Energy Efficiency Projects

Fuel Savings in İzmit Refinery by Reducing 147E-110 By-Pass Valve Opening

Bypass valve opening of 147E-110 heat exchanger in unit 147 of İzmit Refinery has been reduced from 40% to 11%. So, inlet temperature of the 147F-002 furnace has been reduced and inlet temperature of the 147F-101 furnace has been increased. The project, which was implemented in September 2019, saved 2.4 Gcal / hour of energy.

Energy Savings in İzmir Refinery by revision of U-1400 Unit PT-1402 Pump Steam Turbine-Electric Motor

Compared to electric motors, steam turbines are less efficient drive mechanisms. High efficiency electric motors are much more advantageous in terms of ease of maintenance and energy saving. For this purpose, the drive of PT-1402A pump in İzmir Refinery Base Oils Complex has been converted from high-stage steam to an electric motor. The project, which provides an average of 3.1 Gcal / hour energy advantage, was put into operation in August 2019.

Energy Savings by Backing Up Kırıkkale Refinery Plant-1150 Unit E-1154 Heat Exchanger

LSRN charge which enters the furnace with high pressure steam is heated in E-1154 heat exchanger located in Kırıkkale Refinery isomerization unit. Thanks to E-1183 heat exchanger installed as a backup to this heat exchanger as a part of the project, it is ensured that the heat exchangers stay in use efficiently all year round without the need for a unit stop. The project's energy return, which was put into operation in June 2019, is 1.9 Gcal / hour.

Batman Refinery E-1114/E-1115 Heat Exchangers Thermal Integration Project

Batman Refinery crude oil unit E-1114 / E-1115 heat exchangers thermal integration project was put into operation in March 2019. Within the scope of the project, the E-1103 side reflux exchanger, which was in front of the desalter, was moved behind the desalter as the E-1105. E-1114 heat exchanger and E-1101 AE-1102 A / B heat exchangers have been installed for the need for heating before desalter. The project increased the furnace entrance temperature of crude oil by about 25 °C, thus reducing the amount of natural gas used as fuel in the furnace. The total impact of the project, which saves 3.6 Gcal/h of energy, was calculated as 18,835 Gcal in 2019.

WATER MANAGEMENT

Tüpraş's basic approach is to use water, which is a limited resource, with maximum efficiency, and so, to reduce freshwater consumption and wastewater amount with recycling practices and to discharge waste water within pollution load limits specified in legal permits without harming the biodiversity of the receiving environment.

Despite the increased production and crude oil processing amounts in 2019, Tüpraş managed to reduce its total water consumption in operations by 1%, compared to 2018, and reduced total consumption to 29.6 million m³. So, water consumption per processed crude oil has been reduced from 0.7 m³/ton to 0.6 m³/ton.

There are two types of water recovery activities at Tüpraş refineries. The first is to recycle the fresh water used in the operations and return it to production. The other is to process the urban wastewater in advanced recycling facilities, as it is done at the İzmit Refinery, and then charge it for production after making it usable for production. With this practice, both Tüpraş's water needs are met with recycled water and urban wastewater is returned to production instead of being discharged. With İzmit Refinery recovered totally 11.6 million m³ urban wastewater in 2019 thanks to Municipal

Totally

20.6

million m³ water is recovered in Tüpraş's operations in 2019.

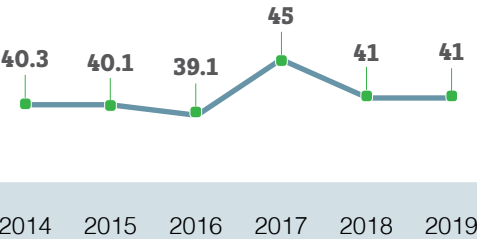
Urban Wastewater Recovery Project and so, the water needs of İzmit Refinery, excluding utility water, covered from recycled water by 99%.

As a result of all these works, a total of 20.6 million m³ water is recovered in Tüpraş's activities in 2019.

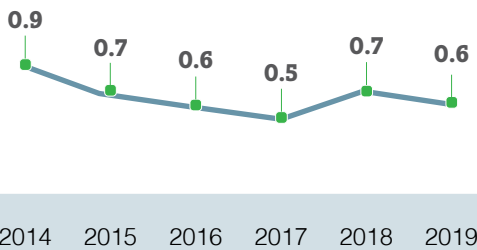
Tüpraş prioritizes to obtain consumed water from recovered waters instead of using natural resources in order to protect natural resources and ensure sustainability. However, since all of the water used in operations cannot be recovered, wastewater is still generated and it's discharged to the natural receiving environment by delivering it with pollution loads far below the limit values specified in applicable legislations and permits. Thus, there is no negative impact on the water resources and the biodiversity value of the natural receiving environment due to Tüpraş operations. Tüpraş refineries discharged 15 million m³ wastewater into natural receiving environment in 2019 in accordance with the limits specified in legal permissions.

Existing risk assessment tools used in the industry were examined as a part of "Determination of Water Risks" study and methods that can be used in refineries were determined.

MEETING THE WATER DEMAND WITH RECOVERED WASTE WATER RATE (%)



RAW WATER CONSUMPTION PER PRODUCT (m³/ton)



WASTE MANAGEMENT

The main principle that Tüpraş follows in management of waste arising from its operations is, firstly, to minimize the amount of waste, separate and recover the waste generated at its source, and dispose non-recoverable waste by appropriate methods. Tüpraş Waste Management Standard, developed within the framework of legal requirements, determines the principles and methods used in the management of waste management processes. Waste Management Program is used to monitor waste management processes, control the compliance with applicable legislations and prepare necessary reports.

As a result of the operations carried out by the company in 2019, a total of 34,433 tons of waste was generated, 22,144 tons of which are hazardous, and 12,290 tons are non-hazardous wastes.

Nearly 70% of these wastes were recycled. Industrial symbiosis studies were carried out as a part of circular economy and some of our wastes are used as raw materials by other companies. Non-recoverable wastes were disposed by licensed companies in accordance with the rules and procedures specified in applicable legislations.

Industrial Symbiosis Project Examples Realized Through a Circular Economy Approach

Sludge Dewatering

•Sludges from canal and manhole cleaning, tank bottom sludges and treatment plant mechanical sludges contain water and oil. Approximately 20% oil in the sludge is recovered by decanter and sent to the tanks. Water is sent to wastewater purification system and then discharged. So, the volume of sludge to be sent for disposal is decreased, disposal cost is reduced, and oils recovered through decanter system are recovered through refining process, thereby contributing to resource efficiency.

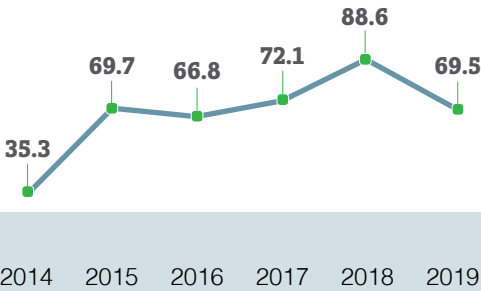
Sand Blasting Waste

•An exemplary study for industrial symbiosis has been conducted as the sand blasting waste sent for disposal was ensured to be used as a source of raw material for cement facilities. Using approximately 250 tons of sand blasting waste, resource was recovered and economic gain was achieved.

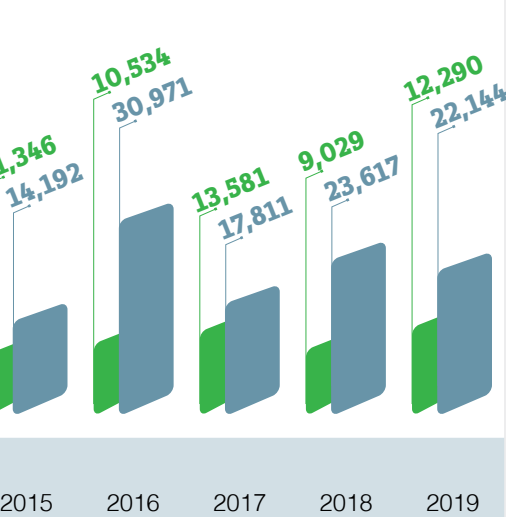
Refractory Waste

•A project was prepared to recover catalysts and refractory wastes for the economy, which are regularly sent for storage, and to reduce their environmental impact. It is ensured through industrial symbiosis economy that they are recovered in refractory brick plants.

SOLID WASTE RECOVERY RATE (%)



SOLID WASTE AMOUNT (TON)



■ Tehlikesiz Atıklar ■ Tehlikeli Atıklar

About

70% of wastes were recovered.





43,5

Million TL
R&D Investment



33

National and
International Scientific
Publications



9

National Patent
Applications



650

Million Row of Data
per Day Processed
with Big Data
Platform Project



+100

Open Innovation
Studies Startups



+80

Internal
Entrepreneurs



R&D, INNOVATION AND DIGITAL TRANSFORMATION

Tüpraş continues to produce its own technology and make a difference by realizing innovative solutions and projects with its R&D activities. Tüpraş, one of the leading companies of Turkey with its technology and R&D investments, manages its internal entrepreneurship, digital transformation, R&D and open innovation strategies in a holistic manner.

PIONEERING R&D STUDIES IN THE INDUSTRY

Tüpraş R&D Center has embedded values of "Safety, Cooperation, Productivity, Transparency, Reassuring, Fair, Creative-Innovative, Questioning, Continuously Developing" at the center of its entire works, since its foundation.

The center, which has prepared its technology roadmaps, risk maps and technological action plans, aims to contribute not only to its own business processes and also to Turkey's energy sector with each project.

The company transferred 43.5 million TL to R&D studies in 2019.

Tüpraş R&D Center has 47 researchers 29 of whom are MSc and 9 of whom are PhD graduates and 16 technicians. 17 researchers continue their PhD studies.

The center consists of 11 teams working in harmony together with refinery teams towards common goals and continues to work with more than 150 devices in an area of 12,950 m² in three buildings comprising design, laboratory and pilot facilities.

Tüpraş R&D Center implemented a new project management system in 2019.. While making evaluations via this system, the following criteria are taken into consideration: industrial R&D content, the level of technology and innovative direction of projects, adequacy of project plan and company infrastructure, and the ability to produce economic benefit through project outcomes for Tüpraş and Turkey. Relevant units and the senior management then evaluate projects determined by R&D Center.

R&D studies focus on reducing the use of resources in production processes and products, ensuring energy efficiency, digitalization, developing innovative technologies such as IOT and data analytics in order to prepare Tüpraş for the future. In addition, R&D Center continues to work on developing new products to meet future energy needs by closely monitoring changes in consumer expectations.

The center uses laboratory and pilot scale reaction systems and hydrocarbon, catalyst and material characterization analyses for renewable / alternative product development / improvement, fuel formulation and material development studies. It also carries out projects in the fields of optimization, modeling, data analytics, sensor and robotic technologies as a part of energy efficiency and process improvement studies.

Intellectual Rights

Tüpraş R&D center attaches a great importance to protect the technologies it develops with patents. 9 national patents and 1 utility model application were made in 2019 as a part of the company's works on intellectual rights.

Therefore, total number of patent applications filed since the establishment of the R&D Center reached to 92, 66 of which are national and 26 are international.

92 total number of patent applications to date,

In line with its environmental efforts, the R&D center carries out projects in reduction of carbon dioxide emissions, clean hydrogen production, water and waste management.

Since its establishment, Tüpraş R&D Center has been involved in 12 HORIZON 2020 projects and has been entitled to receive supports amounting to 6.02m euros in total. Three of these projects have been completed successfully and 9 projects are ongoing. At the end of 2019, with the total support received, Tüpraş has become Turkey's most successful industrial institution in HORIZON 2020 program. Since 2019, Tüpraş has been involved as a partner in the following HORIZON 2020 projects: MACBETH - Membranes and Catalysts Beyond Economic and Technological Hurdles, FACTLOG - Energy- aware Factory Analytics for Process Industries, HYDROPTICS - Photonics sensing platform for process optimization in the oil industry and MOF4AIR - Metal Organic Frameworks for carbon dioxide Adsorption processes in power production and energy Intensive industries.

193 total number of projects complete.

Tüpraş is the **First Turkish Company** included in A.SPIRE Platform

Tüpraş is the first Turkish company to join A.SPIRE (Sustainable Process Industry through Resource and Energy Efficiency) platform, which represents private sector and the members of which are the most important organizations in the process industry.

As a part of the A.SPIRE platform, Tüpraş has the opportunity to shape the future of process industry, join studies to determine R&D requirements, closely follow technological developments, grant programs, European strategic agendas, and establish strategic R&D partnerships with companies that lead future technologies in the same platform.

A.SPIRE platform has been conducting studies since 2018 to guide "Horizon Europe" program, which will start after Horizon 2020. Tüpraş closely follows these studies. Tüpraş R&D Center experts also participated in SPIRE 2050 Roadmap study, which is the most important output of these studies. SPIRE 2050 Roadmap contains many of the fundamental changes that industry must make by 2050 to keep global temperature rise below 2°C, which is also the goal of Paris Agreement. This roadmap was created by joint efforts of the representatives from different industries that address the current status, requirements and developmental aspects of technology. Tüpraş follows SPIRE 2050 Roadmap document as a crucial guide.

Prof. Dr. Hasan Mandal
President of TÜBİTAK



In line with the target of stronger integration with the international community and European Research Area, orientation towards strategic R&D and innovation partnerships that will have an output-oriented, and cost effective impact is of great importance for our country. In this context, Horizon 2020 Program is critical in terms of the harmonization process with European Research Area. Our institutions and organizations should benefit from TÜBİTAK HORIZON 2020 Support and Grant Programs, to which Tüpraş has also applied, in order to increase the participation in HORIZON 2020 Program and maximize the gains from this program. In addition, our researchers can get all kinds of support from TÜBİTAK HORIZON 2020 National Coordination Office both before and during the application. We are proud that Tüpraş is the most successful Turkish industrial organization in HORIZON 2020 Program and I would like to congratulate everyone who has contributed.

Energy Efficiency Projects

While meeting the demand of Turkey for petroleum products, Tüpraş aims to minimize energy consumption by avoiding the energy losses without compromising from its quality and performance, thereby lowering greenhouse gas emissions and contributing to UN Sustainable Development Goals. In line with this purpose and the Technology Road Map, Tüpraş continues to implement innovative projects aimed to increase energy efficiency. The partnership in two European Union Horizon 2020 projects has an important place among the efforts of Tüpraş R&D Center for energy efficiency.

Indus3Es

Indus3Es project aims to develop a system adaptable to different industries to contribute to emission reduction with the energy efficiency achieved by significantly reducing heat losses in the industries.

As part of Indus3Es Project, an innovative absorption heat transformer (AHT) system has been implemented in Tüpraş for the recovery and reuse of low-temperature waste heat generated in industrial processes. Low-temperature waste heat can be raised to higher temperatures and reused in the industry with AHT system and so, 50% of waste heat will be recovered.

AHT System was successfully commissioned at Tüpraş İzmit Refinery Steam Production Unit in 2019 and 150 KW of energy was recovered. Efforts to use this technology to recycle different waste heat sources will continue in the coming years.

BAMBOO

Tüpraş is among the partners of “BAMBOO” (Boosting New Approaches for Flexibility Management by Optimizing Process Off-gas and Waste Use) project for energy efficiency. Tüpraş has become the only Turkish industrial organization in Horizon 2020 program that received the highest amount of incentives to a single project with BAMBOO.

New technologies for the evaluation of waste heat will be implemented in four different energy intensive industries (steel, refining, paper and mineral) as a part of this project, which started in 2018 and is planned to be completed in 2022.

An electricity generation system with a capacity of 2 MW based on “Organic Rankine Cycle (ORC)”

technology will be installed at İzmir Refinery U-100 Crude Oil Unit for this project and electricity will be produced using the waste heat source at the refinery. Preparations for the field installation of the unit continued in 2019. The amount of energy to be produced is approximately 50% of energy requirement of U-100 unit. The amount of greenhouse gas that can be reduced with the project has been determined as 1.6 tons of CO₂e/h.

Studies on Renewable Fuel Technologies

Tüpraş conducts renewable fuel research and development activities in line with its business objectives and within the scope of compliance with European Union Renewable Energy Directive (RED II- Renewable Energy Directive).

These studies serve for the targets to reduce dependence on fossil raw material, expand the product range, and reduce the carbon dioxide emissions arising out of supply chain and production.

Renewable fuel studies consist of four main groups, including biofuels obtained from biomass sources, electro fuels obtained by fermentation or photo electrochemical methods using solar energy, electro fuels obtained by electrochemical methods using electrical energy and renewable hydrogen obtained by electrolysis. Basic refinery processes, such as hydro treating and hydrocracking are also used in renewable fuel production complying with the fuel standards.

Tüpraş develops its knowledge and experience in renewable fuel production technologies with projects in different fields. In 2019, Tüpraş participated as a partner in MICRO-JET project, the only bio- jet fuel project under TÜBİTAK’s ARDEB 1003 Program, aiming to obtain sustainable and economical bio-jet fuel through highly efficient fuel synthesis catalysts by using microalgae biomass suitable for geographical conditions of our country.

Nine project applications were made in 2019 as a part of European Union 2020 program regarding renewable production and product technologies. Three of these projects target the production of biofuels (aviation, marine and land transport fuels), while the other six target the conversion of carbon dioxide and water into C1-C4 hydrocarbons and platform chemicals such as methanol and formaldehyde.

Projects for Capturing, Storage and Conversion of Carbon Dioxide into Valuable Products

Carbon capture and utilization (CCU) studies for mitigating the effects of global climate change and preparing for carbon trading or carbon pricing sanctions that industries may encounter in the near future are within the scope of greenhouse gas reduction studies of Tüpraş.

Although there are many national and international studies at different technological maturity levels, such as laboratory, pilot and demonstration scale , the number of carbon capture and conversion technologies applied on a commercial scale is quite low. For this purpose CCU studies were initiated with the laboratory scale carbon dioxide conversion project as of 2017 by using Tüpraş’s own resources in order to improve technical qualification.

In addition to the conversion of carbon dioxide released from refinery processes, it is aimed to take part in national and international joint projects with universities and industrial organizations specialized in the field of carbon dioxide capture.

R&D Center focuses on project applications to be funded by the European Union by following the promising technologies in line with Tüpraş’ sustainability strategies in the areas of carbon dioxide capture and conversion.

Our project named COZMOS in partnership with 11 international organizations from 9 countries aiming the conversion of carbon dioxide into valuable chemicals and fuels and our project named MOF4AIR in partnership with 14 different international organizations from 8 countries aiming the effective capture of carbon dioxide from flue gases have been entitled to receive incentives from European Union. These projects were initiated as of 2019.

COZMOS

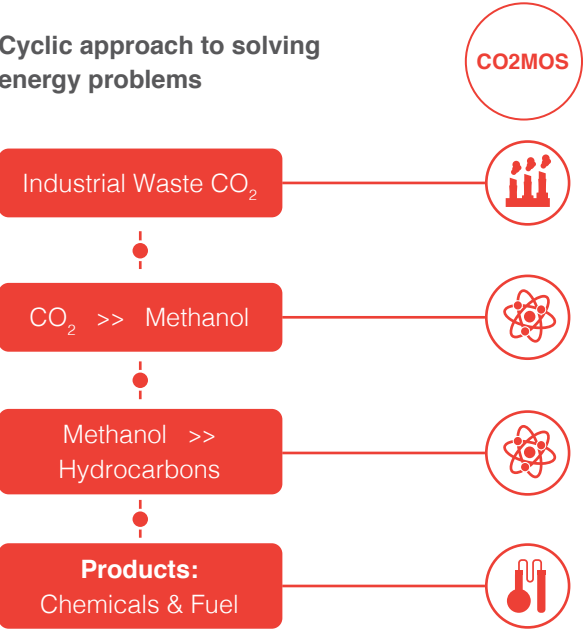
The objective of COZMOS (Efficient CO₂ conversion over multisite Zeolite-Metal nanocatalysts to fuels and OlefinS) project is to develop innovative catalysts for efficient conversion of carbon dioxide from industrial processes to propane / propylene. It is planned to do performance tests of catalysts in R&D Center Pilot Facilities Building. After implementing the technology to be developed in the project it is aimed to reduce at least 1.9 tons of CO₂ per each C₃ ton product and to convert at least 0.4 million tons of CO₂/year as of 2020 and 2.2 million tons of CO₂/year as of 2034.

MOF4AIR

With “MOF4AIR” (Metal Organic Frameworks for carbon dioxide Adsorption processes in power production and energy Intensive industries) project, which Tüpraş is among its partners it is aimed to efficiently capture carbon dioxide released from industrial processes and thus to develop innovative adsorbent materials that will reduce carbon dioxide emission in the scope of “Advanced Carbon Dioxide Capture Technologies” project.

As a part of this project, Tüpraş will take a role in the development of technology to capture waste carbon dioxide in flue gases and will perform field tests of the technology to be developed. With this project, it is aimed to process 2 million Nm³ flue gas and capture 490 tons of CO₂ during the demonstration operations, which are aimed to continue for a minimum of 18 months within the total duration of the project. Demo scale CO₂ capture facility will be established in 3 different locations, one of which is Tüpraş.

Tüpraş continues its technology and material development, tracking and transfer studies based on adsorption and thermocatalytic technologies in the areas of carbon dioxide capture and conversion and aims to take part in international consortia and develop projects in these areas. The aim is to increase the knowledge and experience in this field and to expand the appropriate technological applications in all Tüpraş refineries.



Robotic Studies

Tüpraş aims to implement robotic applications in its refineries in parallel with digitalization and automation technologies and to lead and direct development of these technologies based on end-user perspective.

Thanks to robotic technologies, dangerous and difficult inspection and maintenance works carried out in refineries can be done more safely, quickly and in detail. Robots reduce inspection and maintenance costs, help to extend the life of assets and prevent dangerous accidents. While robotic solutions provide rich data for status and risk assessment, this data also makes it possible to make predictions about the remaining life and possible failures of the equipment. Risk-based inspection and maintenance works of refinery assets are routinely performed in Tüpraş.

In parallel with the studies, Tüpraş presented a problem proposal and collected project suggestions for the solution of the problem, within the scope of ESMERA, a Digital Innovation Hub project that supports SMEs producing robotic solutions and supported by European Union Horizon 2020.

Tüpraş participates in events organized to exchange information with companies developing technology in the field of robotics, academic institutions and technology users. Tüpraş plans to join 3 different subject groups, feeding the European Roadmap of euRobotics, an association that aims to increase robot research, development and innovation in Europe.

It is aimed to take part in European Union projects in the application and development of robotic technologies with the communication network developing in this thematic area. In this process, an application was made to a commercially applicable Horizon 2020 project, which was able to perform complex technical control examinations autonomously with cognitive ability and aims to develop commercially viable, multiple robotic swarms.

Data Analysis and Digitalization Projects

The concept of “Artificial Intelligence”, which has been developed by nurturing people's knowledge with digitalization in our processes and refinery processes, constantly improving itself with the available data, supporting the decisions made by the employees and aiming to improve their skills with the contribution, has come to the fore. The first studies in the field of artificial intelligence in Tüpraş R&D Center started with the research of application issues and techniques commonly used in system development, which can be easily integrated into the refinery environment.

Our R&D projects in this context are briefly summarized below:

- FUDIPO project, which aims to provide a “decision support mechanism” to refinery processes and is supported under the European Union Horizon 2020 program,
- “Big Data” project, which aims to increase the efficiency of refinery processes with advanced data analysis methods by using refinery process data and supported within the scope of TUBITAK TEYDEB 1501 program,
- R&D Center project, which aims to estimate maintenance times in heat exchangers in refineries and is carried out with equity,
- R&D Center project carried out with equity to estimate the required cleaning time in the coking furnaces in the refinery.

Machine learning methods that use the historical data and experiences of the systems are used in our projects aiming predictive maintenance. In this way, the aim is to expand predictive maintenance solutions and decision support systems in our refineries, while our expertise in machine learning techniques is developing. Accordingly, predictive maintenance work is carried out in static equipments such as pumps, membranes and reactors in accordance with PIANISM project, which was launched two years ago under the ITEA call.



Circular Economy Projects

Refinery Waste Ceramic Based Materials

Ceramics used in refineries are generally produced by extracting, treating, shaping and processing mineral based natural resources at high temperatures (T >10000C etc.) However, due to high melting temperatures of ceramics, their reuse as secondary raw materials, such as metallic materials, is not easy and common. Ceramics that turn into waste cause high disposal wastes not to be recycled for the circular economy, the problem of finding space in storage areas and environmental problems arising from storage. Within the scope of the project, it is aimed to contribute to the sustainable environment and cyclical economy by reusing refinery waste ceramic materials in ceramic refractory material industry. Therefore, various contributions were made for Zero Waste Project and environmentally important gains were achieved by preventing regular storage of waste.

Detailed Aromatic Content Analysis of Heavy Vacuum Gasoil Project (HPNA)

Chemicals in heavy vacuum gasoil (HVGO) used as raw materials in diesel and jet fuel production turn into unwanted impurities (HPNA), creating performance problems in hydrocracker units. Within the scope of the project that has been ongoing since 2017, an analysis method was developed for the solution of the problem by investigating the factors forming t HPNA. In line with the results obtained with the developed analysis method, daily refinery operations can be managed and efficiency improvement studies are carried out in the hydrocracker unit. the know-how obtained during the method development studies paved the way for various methods for different studies.



University Collaborations

One of the important factors in the success of Tüpraş R&D Center is to work in close cooperation with internal and external stakeholders. In this context, Tüpraş Energy Center (KUTEM) of Koç University, established with the support of Tüpraş as the first energy center founded with the participation of private sector in Turkey, continued

its studies in 2019 as well. The foundations of 2 new projects on the conversion of gases from refinery processes into valuable products, have been laid as the continuation of previous projects carried out together. In addition, joint studies were carried out in 4 study areas determined to expand the study areas of the research center.

The company continued its collaborations with various academicians and universities in 2019 by being aware of the fact that academic expertise and knowledge in universities are important resources. In this context 14 projects other than Horizon 2020 projects were carried out together with various universities in Turkey and the world. It is targeted to increase the number of these projects by 30% in 2020.

Tüpraş encourages its employees to follow scientific developments and activities with the same approach. In this context, 33 international and national scientific articles were published in 2019 and so the number of scientific publications prepared since the R&D Center started its operation has reached to 294. Increasing the number of scientific articles and publications in 2020 is also among the targets.

INNOVATION



One of the most important parts of Tüpraş's innovation approach is to evaluate the new technology and business models developing in the world and to provide value to these innovations by creating a field of application in their operations. When creating new products, services, processes and business models, the element of creating value is at the center of these activities. Within the scope of Tüpraş innovation strategy, emphasis is given to Intrapreneurship and open innovation efforts. Intrapreneurship and open innovation activities are carried out with the leadership and support of senior management and in line with the Company's strategies and focus areas based on the goals desired to be achieved in short and long term.

Tüpraş has been a volunteer in Koç Innovation Program since 2017. An innovation strategy has been prepared and the strategies and processes have been made widespread throughout the company as a part of this program and internal and external communication and training activities were carried out to support cultural transformation and increase competence.

Innovation Volunteers Team

Innovation Volunteers Teams consisting of employees from different levels have been formed in order to ensure that innovative thinking is a part of the corporate culture and the internal entrepreneurship perspective is expanded throughout the company. Special trainings and programs are designed for the teams on innovation, open innovation and corporate entrepreneurship. All employees who want to support open innovation activities and take a part in intrapreneurship project teams can become an Innovation Volunteer through the Idea Unit portal.

Intrapreneurship Studies

The purpose of intrapreneurship studies is to support new business model ideas that will support growth and development for a future that benefits from new business models. Tüpraş maintains its intrapreneurship program, where its employees carry out their commercial and creative ideas, startup methodologies and commercialization. With the entrepreneurship ecosystem created, it is aimed to provide added value to both Tüpraş and entrepreneurs.

Information and awareness raising activities are organized in all refineries regarding creativity and entrepreneurship. Idea Generation Sessions were held at all locations in 2019 in order to support the emergence of innovative ideas in focus areas.

Tüpraş provides active support to internal entrepreneurs (intrapreneurs) who convey their ideas through the Idea Unit portal in all steps from the idea to the realization phase. Within the scope of intrapreneurship programs, more than 80 internal entrepreneurs have found the opportunity to work on their ideas with methods similar to the way startups work. Internal entrepreneurs included in the program receive entrepreneurship methodologies-intensive training and entrepreneurial mentoring support. At the same time, sponsorship support is given by the top and middle management by closely following the entrepreneurship projects during the maturation of the projects.

Tüpraş is a member of Corporate Entrepreneur Platform of Turkey established with an aim to develop learning across institutions, to increase awareness about successful practices and to expand the systematic practices of in-house entrepreneurship. In addition, Tüpraş is in TÜSIAD Entrepreneurship Ecosystem Working Group, established to develop an entrepreneurship ecosystem in Turkey.

In-House Entrepreneur Mentorship Program

As of 2019, employees identified among internal entrepreneurs have been included in the special training and development program to support projects as internal mentors. The aim is to help them gain competencies to actively mentor internal entrepreneurship activities to be carried out in future. Entrepreneurs included in the program participate in ecosystem events as panelists or speakers and they are get involved with internal events, idea production workshops, and all processes of internal entrepreneurship program.



Open Innovation Studies

Today, it is very important for companies to integrate their own resources with external resources. Collaboration mechanisms that allow the opportunity to get to know different and flexible working cultures feed the corporate culture of Tüpraş. Tüpraş continues its open innovation efforts for today's as well as tomorrow's jobs.

As a part of open innovation strategy for today's business, Tüpraş aims to seek solutions to internal needs primarily and to capture new growth areas by following game changing technologies. The needs of the business units are collected by Innovation Directorate and the solutions achieved from domestic and international startup ecosystem are delivered to relevant units.

The Startup Evaluation Team established within the company with the aim of turning the innovation and entrepreneurship culture within Tüpraş into effective collaborations with startups, continues its activities. Tüpraş is in active communication and cooperation with more than 100 startups as a part of its open innovation areas that have been identified.

At the same time, within the scope of future studies, new technologies and business models that may pose an opportunity or threat to the company are followed through startups through all channels at home and abroad. In this way, the company's strategic plans are supported with the learned startup perspective.

Tüpraş Entrepreneurship Ecosystem Events and Mentorship Studies

Within the scope of integration with the entrepreneurship ecosystem, Tüpraş participates in many activities for early-stage and advanced startups and entrepreneur candidates, organizes programs and provides mentorship support to entrepreneurs.

More than 1000 students and entrepreneurs have been reached through posts about entrepreneurship, innovation and Tüpraş studies at university events. Tüpraş follows the process of turning ideas into initiatives and scaling efforts of enterprises through mentoring studies. Thus, in addition to supporting the development of startups and contributing to the ecosystem, it can also access entrepreneurs with whom it can collaborate.

New Ideas New Businesses

Tüpraş, which became strategic partner of ODTÜ TEKNOKENT's "New Ideas – New Businesses Acceleration Program" in 2018, continued to be a partner and mentor of the program also in 2019 by supporting early-stage entrepreneurs and providing contribution to the development of ecosystem. The processes of transforming ideas to attempts were followed and mentorship support was given to entrepreneurs as a part of this partnership. This program has also provided the opportunity to access to entrepreneurs that can be partnered with. The team of UlakFin, intelligent news analytic platform, received Tüpraş Special Award, given as a part of the event.



Inowhatif with Tüpraş Acceleration Program

"Inowhatif" with Tüpraş program, carried out in conjunction with KWORKS Entrepreneurship Research Center is one of the important centers in Turkey. The program, which is prepared for the potential needs of today and tomorrow in a large industrial company, is an acceleration study and helps the development processes of the enterprises in the areas they need.

Entrepreneurs selected among those who apply to "Inowhatif with Tüpraş" program will have the opportunity to work with a real problem and to get to know the sector closely with Tüpraş and they will also be able to develop business ideas and learn lean entrepreneurship methods.





DIGITAL TRANSFORMATION

Tüpraş closely follows the developments in the world in the field of digitalization and carries out pioneering works in the field of digital technologies and data analytics. Tüpraş aims to spread its digital thinking structure to the corporate culture and to be ready for Industry 4.0 in its digital transformation journey. The internet of things, big data infrastructure and data analysis systems, artificial intelligence, virtual reality and 3-D printers are

subjects that developments are closely followed within the scope of digital transformation studies. Tüpraş develops projects in these areas and works to increase its expertise and knowledge.

Within the scope of the RPA (Robotic Process Automation) project launched in 2018 and within the scope of digitalization studies, more than 50 processes have been carried out by the software robot so far.

Thus, manpower and time are saved, as well as errors are prevented. Technologies using IoT devices such as Corrosion Monitoring System and wearable technologies, field applications of wireless and mobile solutions were tested and solutions that provide added value were put into use in 2019 in accordance with Industry 4.0 principles.

Tüpraş invests in developing technologies in the field of cyber security, one of the biggest risks brought by the digital world. For this purpose a roadmap and strategy aiming to provide the highest level of protection in cybersecurity similar to technical safety were prepared. In this context, a special team working on Operational Technologies (OT) was established, and the processes and policies in this field were created and implemented.

Big Data System Project

Refineries are large-scale industrial facilities where tons of crude oil are transformed into valuable products, such as gasoline, diesel, jet fuel, everyday through different physical and chemical processes. A large amount and variety of field and process data are produced at all stages from the first entry of crude oil to the end products in order to monitor product quality and process safety in such large facilities. At this point, "Big Data" technology, which enables more efficient management and analysis of rapidly growing and diversified data, gains importance in a global framework. Industrial systems also need to be designed to produce excessive data, to store the data safely and properly and to analyze them easily.

In Tüpraş, the "Big Data System" was established in 2019 with the aim of making better, adaptable and predictive logical decisions using the data provided by the technology in the projects produced and making the information obtained available in all processes. In this context, the preparation of the necessary infrastructure for transferring process, laboratory and other related data to

the system, monitoring the data in the system, and making analytical studies on the system has been completed. Pentaho data integration and reporting tool is used, which enables different data sources needed for different applications to access data from a single point by users. Users were provided with Pentaho access, allowing them to conduct their own work.

An infrastructure will be created with Big Data System Project for applications that report, compare and interpret the past and present and provide projections and plans for the future. A data infrastructure and analysis system, which produces accurate and fast analysis results and supports the whole process, have been created as a part of this project. During the project, Gebze Technical University Computer Engineering Faculty Members gave support on the creation of algorithms, machine learning and the application of deep learning techniques accurately and effectively, ensuring the transfer of knowledge and following current developments.



Data Analytics and Analytic Tüpraş

In 2019, Tüpraş revised its digital transformation journey and updated its vision and strategies in this regard. The strategy focusing on "value added solutions in useful areas" in 2015-2018, thus benefiting from new technologies and establishing trust in the corporate culture, has been reshaped in line with the internalization axis of "data-based decision making and action". Tüpraş has placed the keyword "to be connected" to the basis of its new vision of digitalization. For Tüpraş, commitment and being "interconnected" mean moving forward to a common goal with common "data". The new digitization vision consists of 4 main focus areas: connected employees, connected processes, connected refinery, connected field operations.

Tüpraş opened Data Analytics Centers in ITU and METU Technopark in 2018 in order to reach qualified and equipped employees who will work in the field of data analytics in line with the understanding of being an "analytical company" and to be close to technology companies and the academic world. A comprehensive training program has been

established under the name of Analytical Tüpraş in 2019 in order to train analysts.

Senior evaluation committee meetings are held monthly in Tüpraş with the participation of the Digital Transformation Leader and managers related to the projects with the purpose of evaluating, supporting, and directing the projects carried out in the field of data analytics. With the Data Analytics workshops held at the refineries and with employees from all levels, information and awareness raising on data analytics and artificial intelligence are provided throughout the refinery.

In the field of data analytics, projects that provide efficiency and profitability have been implemented by using artificial intelligence projects developed in machine learning in maintenance, production and planning processes. Thanks to these projects, over 50 million TL productivity was achieved in 2019. Shift Optimization, Laboratory Result Prediction, Hydrogen Optimization, Ship Planning and Inventory Management are some projects carried out in different areas of the value chain in this context.





80%

Local
Purchasing



88%

Customer
Satisfaction



86.5%

Supplier
Satisfaction



79.2%

Contractor
Satisfaction



2,060

Indirect Product and
Service Supplier



RESPONSIBLE VALUE CHAIN MANAGEMENT

Refining sector products generate a driving force for the economy thanks to their wide area of use. Due to this characteristic, the continuity of value chain arising from activities of Tüpraş has a strategic importance for Turkish economy.

SUPPLY CHAIN MANAGEMENT

In order to secure production continuity, risk assessment and performance management systems are used and production planning is made. While planning production, variables such as market conditions, product demand, portfolio efficiency projections, refinery configuration and raw material supply are taken into consideration. In addition, short, medium and long-term production targets are evaluated in the light of different scenarios, and necessary investments and practices are implemented. Tüpraş also works to meet the expectations of its customers at the highest level. Ensuring customer satisfaction is among the priority issues of Tüpraş.

Tüpraş places special emphasis on securing the continuity and development of the value chain extending from the supply chain to its customers and managing the effects in the value chain. The difficulties in the supply of refining products adversely affect the transportation and logistics industries as well as many other businesses connected to these industries and their supply chain. Thus, in case of an extraordinary condition that may occur at Tüpraş, the company fulfills its responsibility to keep the national reserve at the amounts specified in the regulations in order to uninterruptedly meeting Turkey's need for fuel products.

Applying to local supply management practices, Tüpraş purchased over 2 billion TL* from 2,060 active suppliers. 80% of purchases during the reporting period were from local suppliers.

In 2019, from

2,060

active suppliers, over

2

billion TL purchasing.

*Excl. Crude oil and oil by-product/product supply.

Supply management, which is the first phase of Tüpraş value chain, is divided into three main processes: crude oil supply, by-product and product supply, indirect products and services according to the type of products and services. The system, rules and principles to be followed while performing these processes have been determined with corporate documents such as Tüpraş Supplier Management Policy.

Tüpraş Crude Oil Supply Directorate and Domestic Crude Oil and Operations Directorate are responsible from the field of activity, while the refineries need to import the crude oil and purchase it from domestic producers. The types and quantities of crude oil needed by the refineries are determined by the optimization program and the process is carried out in accordance with the outcomes of this program. Some of the supplied crude oil is covered under annual agreements with the producer countries and remaining amount is purchased through the tender method from companies that actively trade crude oil in the market.

Tüpraş Foreign Trade Group Directorate imports the products and by-products required by the refineries. Product and by-product needs are determined according to optimization program and the process is carried out in accordance with the outcomes of this program. Considering the world conjuncture, company strategies and all the factors in the global and local market, some of the products traded can be carried out under periodic agreements, all or some of them can be carried out through tender method or one-to-one meetings of the Trade Office. Companies that are likely to be traded must have completed their registration process and be included to Tüpraş Suppliers List.

All indirect products and services are purchased by Tüpraş Contract and Purchase Directorate. All requirements are based on a purchase request submitted through SAP SRM system and the SAP ERP system and the process is initiated accordingly.

Tracking customs and transformation procedures of all the product and service groups purchases from abroad, is the responsibility of a different department.

All suppliers are expected to carry out their activities in line with certain rules and working principles. These are specified in various policy documents, primarily Tüpraş Supplier Code of Conduct and the related procedures are followed. The functionality of these principles and procedures is controlled by the audits carried out in the supply chain.

All direct suppliers must apply to register with their portfolios through relevant commercial units before starting a business relationship. Documents regarding the firm's detailed information, commercial activities and financial reports are requested from all suppliers that apply for registration and these information and documents are evaluated for commercial compliance and legal compliance. Within the framework of legal compliance, regular checks of both companies wishing to register and companies that have already registered are checked through different sources, especially Thomson Reuters World Check database. Support for third party companies can be obtained when deemed necessary for legal compliance controls and this process is operated for all direct and indirect products and our service providers.

A "Supplier Preliminary Assessment Questionnaire" is applied to suppliers who apply to Tüpraş Supplier Portal to be registered in Tüpraş Supplier Portfolio or who are already registered but are required to be evaluated by purchasing units. Supplier companies are asked about ISO certificates for health, safety and environmental practices and processes in this survey. Companies that certify these processes would have an advantage in the purchasing process.

As a part of these works, companies are informed about the corporate policies such as Tüpraş Supplier Code of Conduct, Tüpraş Code of Ethical Conduct, Tüpraş Information Security Management System Policy, Tüpraş Personal Data Protection

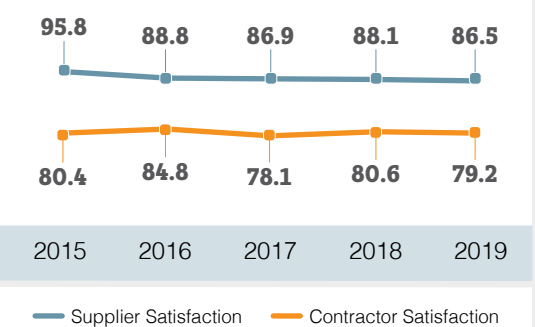
and Processing Policy, and Processing of Personal Data Disclosure Text and they commit to comply with and implement these rules.

Company audits compliance of the supplier behavior principles, production and material quality issues, environment, and occupational health and safety standards during the annual workplace visits. On the other hand, suppliers that will serve at company sites must fill out Tüpraş Contractor HSE Management System assessment survey. 841 companies were inspected as a part of supplier audit practices during the reporting period.

Suppliers are expected to comply with UN Global Compact Principles and related articles of ILO Conventions, which are also binding for Tüpraş as Koç Holding is a signatory too. These principles, which are included in Supplier Code of Conduct, are also included in procurement contracts.

A "Supplier Satisfaction Survey" is held annually to increase cooperation with suppliers and to make the working process more efficient. Tüpraş manages this work as a process of mutually improving processes, increasing efficiency and learning from experiences.

SATISFACTION AT SUPPLY CHAIN (%)



RAILWAY TRANSPORTATION

Preferring safe and environmentally friendly methods in logistics operations, Tüpraş has become Turkey's first private railway train operator with the establishment of Körfez Ulaştırma A.Ş. in 2017.

The company, which carries fuel between Kırıkkale and İzmit Refineries with 5 locomotives that it leased from TCDD in 2018, continued to carry fuel with two trains on each line in 2019 by purchasing 5 new diesel locomotives. The company, which serves bidirectionally on İzmit-Kırıkkale, İzmit-Batman, Kırıkkale-Batman, Kırıkkale-Mersin and Batman-Mersin lines, has started the transportation of terminal delivery sales to Tüpraş fuel customers between İzmit-Güvercinlik (Marşandız). Carrying 1.83 million tons of products / by-products in 2019, Körfez Ulaşım realized 50% of this amount with its own trains.

The company aims to increase its carriages outside of Tüpraş in the near future and to be the largest fuel carrier by undertaking 10% of Turkey's railway freight shipment. For this purpose, the amount of locomotive-wagon investments, which were received or decided to be invested was taken in 2019, exceeds \$ 100 million.

Greener Transportation

92% of greenhouse gas emissions resulted from transportation sector in Turkey is due to road transport, while only 0.5% of it due to rail transport. Transporting 1 ton of product for 1 km by rail way consumes up to 60% less fuel compared to highway transport and therefore less emissions are produced. With the operation of close lines in rail network, Tüpraş aims to reduce its annual CO₂ emission by about 8,300 tons during transportation. In line with its strategy, the company has signed

an agreement with Swiss railway vehicles manufacturer Stadler for 7 locomotives with dual fuel (which can operate in diesel / electric modes). The locomotives to be produced at the Stadler's factory in Spain are planned to be delivered in 2021.

Safer Transportation

Railway transport is a much safer model than roads. In the period of 2018-2019, more than 25,000 tankers were pulled out of the traffic when approximately 633,000 tons of products were transported annually by rail and so total road transportation was reduced by 11 million km. On the other hand, since the hazardous substance load is also far away from settlements and other vehicles, possible risks and potential hazards are significantly reduced and social benefits are created. As of 2019, Tüpraş has reduced the ratio of road transports within domestic dangerous goods transports to 3% and it aims to further decrease this ratio in the coming years.

The high performance of workshop, which is the most comprehensive wagon maintenance and repair workshop serving according to ECM standards in Turkey and which is located in Kırıkkale Refinery, enables wagons operate at maximum efficiency.

In addition, while a technical maintenance team is formed within Kırıkkale Refinery to carry out maintenance activities of company-owned locomotives, investments in this area are still ongoing.

More Affordable Transportation

Railway transport costs less than road transport. In 2019, Tüpraş increased its logistics efficiency by providing substantial savings with railway transports.

1. You can access to the impacts of transportation activities in Turkey on greenhouse gas emission from the website of the Ministry of Environment and Urbanization. A truck with an average load of 25 tons consumes 35 liters of fuel per 100 kilometers.

2. You can access road and railway accident statistics by year from the website of TÜİK.



RESPONSIBLE SEA TRANSPORTATION

The transportation of crude oil and petroleum products by sea is of great importance in Tüpraş's logistics operations. The company's marine transport is carried out by Ditaş Marine Operations and Tanker Management Co., whose 79.98% of shares it owns.

Ditaş constantly monitors national and international legislation concerning its field of work regarding quality, safe and environmentally friendly service and completes necessary compliance studies on time. For this purpose ISO 9001:2015 Quality Management System and ISO 14001: 2015 Environmental Management System certificates are available for Ditaş offices, ships and terminals. Scrubber investment was made in 3 tanks in 2019 in order to comply with IMO's (International Maritime Organization) rule of sulfur content in marine fuels to be less than 0.5%.

Mandatory trainings have been received for ships and terminals according to Occupational Health and Safety Law No. 6331 and related regulations. In addition, studies such as risk assessments, emergency action plans and periodic health checks are carried out together with occupational safety specialists and workplace doctors.

Cyber security studies were completed in vessels and awareness trainings on the safety of information were given in 2019. Since Maritime has been identified as a critical sector in terms of cyber security, a Corporate Cyber Incidents Response Team has been established.

Ditaş has ISM (International Safety Management) code, ISPS (International Ship and Port Facility

Security) code and Voluntary MLC (Maritime Labor Convention) Conformity certificates for ships. Ditaş is the first in Turkey and 11th in the world to have the International Standard for Maritime Pilot Organizations' Compatibility Certificate, which it received for its pilotage, towage and mooring services for İzmir Terminal.

TMSA 3 implementation studies, which are an important reference in tanker operation and are requested by the oil companies, are ongoing. The ships being operated by Ditaş are inspected by the member organizations of OCIMF Sire system and are found compliant.

Electronics was used in all publications, except for publications that require compulsory use of paper, on ships as part of digitalization efforts and the Company's environmental policy. Document tracking has been started through an online program. An agreement was made with an industry- leading international company in digital training for shipping in order to improve the professional competence and safety culture of the ship's personnel.

In 2009, during the operations of crude oil and chemical product ships arriving at Tüpraş offshore terminals, cargo operation captainship services are provided to increase safety; and since 2010, the compliance of arriving ships to national, international rules and Tüpraş standards have been checked and reported. In this context, 129 ships were inspected at İzmit and İzmir terminals in 2019 and 206 ships received loading master service.

CUSTOMER SATISFACTION

Tüpraş works to meet the expectations of its customers at the highest level. Ensuring customer satisfaction is among the priority issues of Tüpraş. All operations that are in contact with customers are executed in accordance with ISO 10002 Customer Satisfaction Management Standard.

Offering high quality products and services that meet the needs and expectations of customers, Tüpraş is committed to establishing transparent and bi-directional communication with customers, treating customers equally and fairly, and ensuring continuous improvement in product and service processes.

A Customer Satisfaction Survey is organized regularly every year in order to monitor the level of customer satisfaction, to identify points that are open to improvement, and thereby to make the necessary improvements. The customer satisfaction level was 88% in 2019. A project group was established in Tüpraş refineries that focused on identifying and eliminating differences in customer-oriented practices during the reporting period. In addition, Tüpraş Solution Center provides daily and fast solutions for all processes that the customers need.

In line with feedback received from the customers, at the end of 2018 Tüpraş Customer Portal upgraded with a mobile application and ease of use and speed for customers is achieved through digitalization. Many new reports were opened to online access through the portal and so document exchange was transferred to digital environment. In addition, announcements made

to the customers were analyzed and made more frequent and it is ensured that the announcements reach instantly to all users via e-mails and SMS.

Again, in line with the feedback from the customers and determined development areas, the customer website was designed. In addition to being a guide for customers, the customer website is intended to be a communication channel where customers can easily submit their complaints, requests and suggestions.





25

Millions;
Number of people
reached in
cooperation with
UN Women -
HeForShe – and
Fenerbahçe



12,000

Number of students
reached through
robotic coding training
within Our Energy for
the Future; I Code,
I Model, I Produce
Project



3,000

Number of students
reached through
science experiments
in Our Energy for
Students Project



SOCIAL DEVELOPMENT

Tüpraş aims to transfer its strength, leadership and energy in the industry to projects that will support social development. The company aims to create sustainable added value by adopting a model of collaboration between the business world, public organizations and civil society in its projects. United Nations Sustainable Development Goals guides Tüpraş while acting with a sustainable development approach in its activities and the projects it conducts, develops and supports.

OUR SOCIAL RESPONSIBILITY APPROACH

Tüpraş, carries out social responsibility projects primarily in the regions where it operates by the responsibility of being a corporate citizen and contributes to social development besides its created economic value.

With this understanding, it aims leading to create environments that will allow the world and humanity a better life. Tüpraş develops projects by the guidance of the UN Sustainable Development Goals and aims to contribute these goals.

Tüpraş acts with the principle of cooperation with the public, non-governmental organizations and the business world while carrying out social responsibility in the fields of education, environment, culture and arts.

Corporate reputation surveys carried out biannually among the stakeholder groups shape the decisions of social responsibility project's themes and structure. In 2019, Tüpraş spent 3.5 million TL in donations and sponsorships as a part of its social responsibility efforts.

CORPORATE CITIZENSHIP AND VOLUNTEERING AT TÜPRAŞ

While working with the aim of being a responsible producer, Tüpraş encourages; voluntary support of its employees for corporate social responsibility projects conducted in light of its corporate culture and values.

Volunteers, consisting of employees and their families, take part in projects carried out by local and national NGOs, and contribute by their experience and knowhow.

The company carried out many social responsibility projects in 2019 with the voluntary participation of its employees.

EDUCATION

Our world has been rapidly digitalized with the widespread use of internet and new technological developments. By the onset of 4.0 revolution, the replacement of human labor is triggered by artificial intelligence, automation and digital innovations. Individuals whom equipped by digital skills and could use technology efficiently are being needed at new business areas.

“Qualified Education”, the fourth of United Nations Sustainable Development Goals, aims to increase the access of children to qualified education by 2030 and to train youth with science, technology, engineering and mathematics competencies.

Tüpraş carries out projects to raise new generations that produce technology in Turkey by its approach of contributing sustainable development.

Our Energy for the Future; I Code, I Model, I Produce Project

By introducing digital technologies, robotic coding trainings provide children developing their problem-solving, cause-effect relationship, psychomotor behavior, critical thinking-questioning, and self-expression skills. Children have the power to understand, explicate and direct the technological world by the help of these trainings.

In light of this information, Tüpraş collaborated with the Ministry of National Education's Director General of Primary Education and developed the “Our Energy is for the Future; I code, I model, I produce” social responsibility project.

The aim of “Our Energy for the Future; I Code, I Model, I Produce” Project is to raise new generations with research, innovative thinking, problem solving and generating skills by increasing the access of children to technology and digital education at early ages.

Dr. Cem Gençoğlu
Director General of Primary
Education - Ministry of National
Education



“When we talk about education, solely the structures focusing on innovative thinking that's beyond what is taught in schools comes to the mind. We do believe increasing the number of Design and Talent Workshops all around the country. Design and Talent Workshops are the investments that encourage students to say: 'Just like I wish.' In this regard, I would like to thank Tüpraş, Koç Holding authorities and to whom contributed to this project.”



Within the scope of project, the Company has established robotic coding, three-dimensional modeling and production skill classes for the 7th and 8th grades in 30 secondary schools in Batman, Kırıkkale, İzmir and İzmit in where the refineries are located. The project is not limited only establishing classes, but it is also carried out by an approach of supplying consumables, providing trainings for students and teachers acquisitions, measuring and reporting the improvement and also aims to be differ based on sustainability. Project's education content and tools are prepared in accordance with the Ministry of Education's official curriculum for "Technology and Design" courses of 7th and 8th grades.

80 teachers have gotten their certificates approved by the Ministry of National Education at the end of the 5 days intensive "Train the Trainer" program and final exam. It is targeted to increase the number of trainers who can use and teach new technologies by sharing their knowledge among their colleagues.

12,000 students have been trained in 2019-2020 academic year. Project measurement report was prepared by Assoc. Prof. Serkan Özel, Instructor at the Boğaziçi University Faculty of Education. Classroom installations will continue in 2020-2021 academic year.

In 2019-2020 academic year

12,000

students received robotic coding training.

Ersen Ertaş
Tüpraş R&D Manager



"In order to contribute the children's scientific development and add multi-dimensional value to their world; as being R&D volunteers in cooperation with Corporate Communication and Human Resources Departments, we have developed our project. On our journey that started with an idea, I am so happy on behalf of my team for touching the hearths of thousands students. Our team has been awarded many times at the technical category of the "Most Successful Koç Employees Competition" however being awarded at the "Adding Value to the Environment and Society" category by the category by "Our Energy for Students Project" was a great motivation for us. I would like wholeheartedly to congratulate my all team."

Our Energy for Students Project

According to the results of Program for International Student Assessment (PISA), Turkey has been below the average in literacy in science among Economic Co-operation and Development Organization countries since 2006.

Acting with the responsibility and belief in sustainable development will be possible by accessing qualified education; Tüpraş has launched the "Our Energy for Students" project in cooperation with the Ministry of National Education. Goal of the Project is encouraging students to become scientists by giving them love of science.

The volunteer group of 25 people who are the staff of Tüpraş R&D Center made the training and implementation of the project.

Volunteer instructors conduct experiments by easily obtained equipment at the high schools. Trainers inform students about the dangers that may occur during the experiments besides important safety, health and environmental knowledge by emphasizing the importance of working men and women together in the scientific world. In order to monitor the social impact of the project, a measurement and evaluation model has been developed by the support of academic

consultancy from the Faculty of Education at Boğaziçi University.

The project, that was started in the second semester of the 2018-2019 academic year, is primarily carried out in 4 schools in Kocaeli. By the "Our Energy for Students" Project, 3,000 students have been reached so far and 260 experiments have been performed.

For My Country: I Design the Future

Koç Group's "For My Country" project focuses on the main issues of our country and this year's theme is devoted to "Digital Transformation". "For My Country" project is based on the idea of not staying behind the change and directing the change in our world that is shaped by the rapidly developing technologies.

Tüpraş realizes its social investments within the framework of this theme and aims to contribute the empowerment of as many people as possible with technology. In this context, "I Design the Future" training presentations were held by the participation of 877 employees in 2019. Koç Holding's "2019 For My Country" award has been presented to Tüpraş because of organizing the highest number of "I Design the Future" training presentations among all across Koç Group's companies.



INCLUSIVENESS, EQUALITY, DIVERSITY

Tüpraş announced its goal to be an inclusive and egalitarian workplace to its stakeholders by signing United Nations Women's Empowerment Principles (WEPs) in 2017 and continued to develop pioneering projects that will raise awareness and trigger transformation in the society while developing internal practices regarding this subject. With this approach, it also aims to make a contribution for the 5th Sustainable Development Goals which is, "Gender Equality".

In 2018, Tüpraş has started global cooperation with Fenerbahçe Sports Club and United Nations Women's (UN Women) HeForShe Movement Women's Unit to raise awareness about gender equality. This cooperation is the only large-scale commitment in the field of sports on gender equality until today.

Within the scope of this awareness movement, which is carried out with "We Are Equal Together" and "Our Energy for Equality" slogans; HeForShe logo has been carried on the right arm of Fenerbahçe A Soccer Team's uniform.

Dissemination of the project has been started by the Fenerbahçe Sports Club. Gender equality awareness trainings were provided to 1,068 people including athletes and employees through volunteer trainers trained in cooperation with AÇEV (Mother - Child Education Foundation). "Fenerbahçe Sports Club and Affiliated Companies Social Gender Analysis" was carried out by United Nations Women (UN Women) Women's Unit.

Within the scope of the project, Fenerbahçe Sports Club carried out "16-Day Activism Campaign for Combating Violence Against Women" by the support of the power of community access. As being part of the Women's Day's special events on March 8, 2019; former women athletes were hosted and their contributions in this field were shared with the public together with United Nations Women's Unit (UN Women) of HeForShe Movement and Fenerbahçe Sports Club.



Simla Türker Bayazıt
Fenerbahçe
Sports Club
Board Member



"With our valuable business partner, Tüpraş, we have carried out many crucial steps that was raised social awareness in a very short time and help us gain social awareness with the HeForShe movement which has been started in 2018.

By the power of our values, Fenerbahçe Sports Club that embodies goodness and Tüpraş, which owns the same perspective, have created a serious impact about social gender equality awareness starting within ourselves and we have succeeded to prove our feature of being pioneer and exemplary to our community.

Our main message and desire in these awareness moves which we have realized with the valuable support of Tüpraş; is to ensure equality between men and women at every moment of life, every part of our society and end violence against women.

We have a very large, prudent and well-established community. Throughout this process, we got the opportunity catching a different frequency of social awareness except sports by many organizations which were held in coordination with the associations both in Turkey and all around the world.

We are so happy to take part in and contribute to this cooperation, which we believe is very valuable with all the dynamics and structure of Fenerbahçe Sports Club.

Hence, along with our peace of mind and our belief in the Future, we would like to thank Tüpraş and all its employees for this special cooperation through which we realized the "Firsts" in terms of creating social awareness and contribution. We do believe that our efforts will continue to strengthen our new awareness moves by which we touch human values with new steps."

Zeliha Ünalı
Programs Manager, United
Nations Women (UN Women)
Turkey



"We are pleased to work with Tüpraş, one of Turkey's leading industrial organizations, in ensuring social gender equality which is one of the Sustainable Development Goals. Tüpraş, the signatory of United Nations Women's Empowerment Principles (WEPs) leads as a good example for many institutions and organizations in the private sector with its studies on gender equality in business life. As being the UN Women, we cooperate with Fenerbahçe Sports Club under the sponsorship of Tüpraş for HeForShe Movement and we work to ensure gender equality. This study serves in two important areas, which are innovative approaches for men's participation to social gender and social gender equality in accessing sports and physical activity as a human right not only in Turkey but also at the international arena. As visting being UN Women, we will continue to cooperate with the private sector to improve life sustainable for the next generations."

ART & CULTURE

Tüpraş carries out projects for protection of culture and art to contribute to the sub goal of UN SDG Goal 11: Sustainable Cities and Communities.

Our Energy for Art: Arter

Tüpraş undertook the corporate sponsorship for 5 years of Arter, which was inaugurated in 2010 as an institution of Vehbi Koç Foundation and moved to its new building at Dolapdere in September 2019.

In this context, Tüpraş will provide an environment where young people and children can meet freely



Melih Fereli
Founding Director of Arter



"I would like to proudly and gladly announce that Tüpraş has undertaken Arter's Corporate Sponsorship. Tüpraş lays the foundations of this reformist structuring by embracing the values represented by Arter, to increase the awareness among the new generation through art. Thanks to Tüpraş, as youth under 24 years old will have opportunity of free entrance to the Arter exhibitions."

with contemporary art while ensuring youth under 24 years old free entrance to the exhibitions. Arter, which inaugurated its doors to the visitors again in September, aims to be an accessible, lively and sustainable culture and life platform for everyone with its program includes all disciplines of art.

Our Energy for Culture: Anatolian Civilization Series in collaboration with Yapı Kredi Culture, Arts and Publishing

Tüpraş has continued its support for Anatolian Civilizations book series in 2019 as well. With the cooperation of Yapı Kredi Culture, Arts and Publishing, the following works have met with the readers till today; "Urartu, Transformation in the East", "Phrygians: In the Land of Midas, in the Shadow of the Monuments", "Hittites An Anatolian Empire", "Pergamon, A Hellenistic Capital in Anatolia", "From Lukka to Lycia: The Land of Sarpedon and St. Nicholas", "The Persians, Power and Glory in Anatolia", "The Assyrians Kingdom of the God Assur from Tigris to Taurus" and "Hellenistic and Roman Anatolia: Kings, Emperors, City States".

Young Musicians on World Stages

Tüpraş has been supporting the "Young Musicians on World Stages" project for 6 years. The project was launched in 2010 with the aim of transferring the 50 years of knowledge and visionary experience of our worldwide known pianists, Güher&Süher Pekinel, to the young musicians. With the scholarship provided as a part of the program, talented young people between 12 and 23 years old obtain education in the most prestigious music schools of the world. Twenty highly talented students have received scholarships and the education of 10 students continues with "Young Musicians on World Stages" project.

23rd Istanbul Theater Festival

During the 23rd Istanbul Theater Festival organized by İKSV with the contributions of Koç Holding Energy Group Companies, 23,000 art lovers were reached. Participation of 7,000 students to the festival was supported at the "23rd Istanbul Theater Festival" in order to increase the access of more students.

16th Istanbul Biennial

The 16th Istanbul Biennial was organized by İKSV by the sponsorship of Koç Holding, Tüpraş's support. The Biennial hosted 451,387 visitors with the theme of "Seventh Continent" representing a new continent formed by plastic waste that draws attention to the environmental pollution.

ENVIRONMENT

By having the responsible producer identity, Tüpraş focuses on energy efficiency in production, conservation of natural resources, reduction of waste, and supports social responsibility projects to combat climate change and protect the environment.

Our Energy for Environment: DTO (Turkish Chamber of Shipping) Fethiye Waste Collection Boat

Within the scope of sustainable marine tourism, TURMEPA, which provides mobile services in the bays frequently, visited by yacht and touristic boat owners; contributes to reduce the environmental footprint of marine tourism by collecting thousands of tons of liquid waste. DTO Fethiye waste collection boat, which has been sponsored by Tüpraş since 2016, collected 600,697 liters of wastewater, equivalent to 3,318 daily wastewater, from 949 boats while operating in Göcek Bay in 2019. Approximately 32,000 carboy-sized black and gray water were prevented be mixed to the sea by ensuring 4,805,576 liters of seawater remained clean.

Tüpraş continued to support activities, which protect the nature, seas and biodiversity in 2019 by its voluntary employees.

Tüpraş volunteers participated in zero waste blue mobilization under the leadership of TURMEPA on the International Coastal Clean-Up Day, in which volunteers from more than 100 countries, including Turkey, cleaned seas and coasts simultaneously. During the event in Turkey, more than 300 sea lovers met together for coastal cleaning and collected approximately 170 kilograms of waste, including plastic, metal, glass and cigarette butts, within an hour.



LOCAL COMMUNITY DEVELOPMENT

Batman Disabled Sports Club

Tüpraş has been supporting Batman Disabled Sports Club since 2007-2008 season. Batman Disabled Sports Club; struggling in the 2nd league of Turkey Physically Disabled Wheelchair Basketball League, has risen to Wheelchair Basketball 1st League in the 2019-2020 season. The club, which has 42 athletes under its roof, has been providing hundreds of disabled youth with opportunity to sport for 12 years.

Batman Tüpraşspor Football Club

Tüpraşspor Football Club, which was established in 1995 in Batman where its refinery is situated; provides talented youth of Batman and its environment by early age trainings and contribute them to be profession in sports. This club is managed in cooperation with the District Directorate of Youth Services and Sports. Batman Amateur Sports Club Federation, Turkish Football Club and other clubs by the volunteers consisting of Tüpraş employees. In Tüpraşspor Football Club, there are 95 athletes between the ages of 10-18, 52 licensed and 43 unlicensed.

Awards

2010

- Batman Refinery won the first place and İzmir Refinery took the third place in Industrial Energy Efficiency competition.

2011

- İzmir and Batman Refineries won the first prize in Industrial Energy Efficiency competition.

2012

- Batman Refinery won the first prize in Industrial Energy Efficiency competition.

2013

- Batman Refinery won the first prize in Industrial Energy Efficiency competition.
- İzmir Refinery received the first place in Aegean Region Chamber of Industry's Environmental Practices Award.

2014

- Batman Refinery won the first prize in Industrial Energy Efficiency Competition.

2015

- Tüpraş took the first prize in European Union Environment Awards Turkey Program, in Process Category.
- Kırıkkale Refinery won the first place, İzmit Refinery second place, İzmir Refinery third place and Batman Refinery Jury Special Award in Industrial Energy Efficiency Competition.

2016

- Batman Refinery won the first place, Kırıkkale Refinery took the second place and İzmit Refinery took the third place in Industrial Energy Efficiency Competition.

2017

- Tüpraş R&D Center was selected as the Best R&D Center in the petroleum and petroleum products sector by the Ministry of Science.
- Batman Refinery won the first prize at ICCI Energy Awards organized with the support of the Ministry of Energy and Natural Resources and EMRA.
- İzmit Refinery won the second place and Kırıkkale Refinery won the third place in Industrial Energy Efficiency Project Competition.
- İzmir Refinery was awarded second place in Environment Award competition organized by the Aegean Region Chamber of Industry.

2018

- Kırıkkale Refinery won the first place, İzmit Refinery the second and Batman Refinery the third in Industrial Energy Efficiency Project Competition.
- İzmit Refinery won the first prize in Sustainable Business Awards - Water Management Category.
- İzmit Refinery received the second prize in ISO 2018 Environment Awards - Large-Scale Enterprise Environment Friendly Practice Category.
- In Turkey Investor Relations Association's 2018 Summit, Tüpraş received the second prize in the category of "the Company Most Invested by Sustainability Funds".
- Tüpraş won the PERYÖN Human Value Awards - Employee Health and Safety Category.

2019

- Tüpraş won the first place in the Innovation Strategy category within the scope of innovation development program InovaLIG.
- Energy Efficiency in Industry Project Competition, Tüpraş won the first and jury special awards.
- Kırıkkale Refinery New Power Plant Project received the first prize in Sustainable Business Awards "Energy Management" category.
- Kırıkkale Refinery New Power Plant project was selected as the "Project of the Year" at ICCI International Energy and Environment Fair and Conference.
- Tüpraş received the Large-Scale Organizations Sector Award in the Sectoral Performance Awards organization of the Kocaeli Chamber of Industry (KSO).



Corporate Memberships

ESTABLISHMENT	LEVEL OF REPRESENTATION
A.SPIRE SUSTAINABLE PROCESS INDUSTRIES	Member
MEDITERRANEAN EXPORTERS' ASSOCIATION (AKİB)	Member
RAILWAY TRANSPORT ASSOCIATION	Board Member
WORLD ENERGY COUNCIL – TURKISH NATIONAL COMMITTEE (DEK TMK)	Board Member / Representative
AEGEAN REGION CHAMBER OF INDUSTRY (EBSO)	Committee / Member of Assembly
ENERGY EFFICIENCY ASSOCIATION (ENVER)	Member
TURKISH ETHICS AND REPUTATION SOCIETY (TEİD)	Member
İMEAK - Istanbul and Marmara, Aegean, Mediterranean and Black Sea Regions Chamber of Shipping / ALİAĞA BRANCH	Board Member - Aliağa Branch
KIRIKKALE CHAMBER OF COMMERCE AND INDUSTRY	Board Member / Member of Assembly and Committee Member / High Advisory Board Member
KOCAELİ CHAMBER OF INDUSTRY (KSO)	Board Member / Member of Assembly and Committee Membership
CORPORATE COMMUNICATIONS ASSOCIATION (KİD)	Member
INFORMATION SYSTEMS AUDIT AND CONTROL ASSOCIATION (ISACA-ISTANBUL CHAPTER)	Member
TSE CEN/TC 19 TECHNICAL COMITTEE	Member / Committee Memberships
TURKISH BRITISH CHAMBER OF COMMERCE AND INDUSTRY (TBCCI)	Member
ACCUMULATOR EXPORTERS AND MANUFACTURERS ASSOCIATION (TÜMAKÜDER)	Member
TURKISH INDUSTRY AND BUSINESS ASSOCIATION (TÜSİAD)	Member / Committee Memberships
TURKISH FOREIGN TRADE ASSOCIATION (TURKTRADE)	Member
TURKİSH EDUCATION AND DEVELOPMENT PLATFORM (TEGEP)	Member
TURKISH ENTREPRENEUR ASSOCIATIONS PLATFORM	Member
TURKEY QUALITY ASSOCIATION (KALDER)	Board Member / Member
TURKISH COGENERATION AND CLEAN ENERGY TECHNOLOGIES ASSOCIATION - TÜRKOTED	Member
CORPORATE GOVERNANCE ASSOCIATION OF TURKEY (TKYD)	Member
THE UNION OF CHAMBER AND COMMODITY EXCHANGES OF TURKEY (TOBB)	Member / Committee Memberships
TURKISH INVESTOR RELATIONS SOCIETY (TÜYİD)	Member

PERFORMANCE INDICATORS

OPERATIONAL PERFORMANCE	2008	2015	2016	2017	2018	2019
Processed Crude Oil (thousand tons)	24,208	27,559	28,348	28,502	24,540	27,238
Refining Production (thousand tons)	22,780	27,268	27,928	28,883	25,695	28,112
Sales (thousand tons)	25,957	28,739	30,255	31,493	29,830	29,197
Export of Products (thousand tons)	6,112	6,494	5,491	5,804	4,191	6,807
Import of Products (thousand tons)	2,931	2,999	3,749	4,388	6,252	2,827
Total White Product Ratio (%)	68.6	75.4	76.6	76.3	77.4	79.0
Capacity Utilization Rate of Crude Oil (%)	86.0	98.1	100.9	101.4	87.3	90.8
Capacity Utilization Rate Including Semi Product (%)	-	102.5	105.3	108.1	95.9	97.8

ECONOMIC AND ADMINISTRATIVE PERFORMANCE	2008	2015	2016	2017	2018	2019
Net Sales (USD million)	23,353	13,571	11,547	14,801	18,349	15,804
Operational Profit (USD million)	984	1,012	781	1,333	1,189	393
Profit Before Taxes (USD million)	421	819	644	1,227	772	-55
Profit After Taxes (USD million)*	331	938	594	1,046	769	93
EBITDA (USD million)	1,099	1,397	1,125	1,614	1,846	712
Net Debt (Cash) (USD million)	215	2,370	1,729	1,657	2,275	1,418
Return on Equity (ROE) (%)	11	35.3	21.9	41.3	36.8	4.6
Net Working Capital (USD million)	202	536	405	786	1,163	-253
Investment Expenditures (USD million)**	395	344	213	184	138	157
Earnings per Share (TL)	1.73	10.18	7.16	15.22	14.83	2.1
Gross Dividend per Share (TL)	2.31	6.5	6.22	13.6	15.15	-
Net Dividend per Share (TL)	1.97	5.53	5.29	11.56	12.88	-
Taxes and Other Liabilities (TL million)	19,975	31,916	37,548	42,430	31,590	31,260
Corporate Governance Rating Note	8	9.44	9.42	9.47	9.48	9.50
Fitch Ratings Long-term Foreign Currency Rating Note	BB	BBB-	BBB-	BBB-	BB+	BB-
Fitch Ratings Long-term Local Currency (TL) Note	BBB-	BBB-	BBB-	BBB-	BB+	BB-
Supply Operations (TL million)	164	1,573	1,921	1,692	1,911	2,017
Domestic	64	1,122	1,200	1,217	1,164	1,608
Custom Manufacturing	27	12	5	4	13	14
Foreign	73	439	716	471	734	395
Local Procurement Ratio (%)	55.49	72.10	62.72	72.16	61.60	80.43
Total Number of Suppliers	-	2,238	2,266	2,120	2,164	2,060

ENVIRONMENTAL PERFORMANCE	2008	2015	2016	2017	2018	2019
Direct Energy Consumption (TJ)	76,432	90,313	101,639	104,749	91,752	96,528
<i>Natural Gas</i>	18,052	36,005	39,085	47,306	45,342	51,039
<i>Fuel Oil</i>	34,138	13,184	15,487	8,581	3,481	2,292
<i>Fuel Gas</i>	21,232	38,512	44,265	46,164	40,562	41,028
<i>Coke</i>	3,010	2,612	2,802	2,698	2,367	2,169
Indirect Energy Consumption – Electricity (TJ)	221	483	518	315	172	32
Total Energy Consumption (TJ)	76,653	90,796	102,156	105,851	91,924	96,560
Energy Consumption per Crude Oil (GJ/Ton)	3.2	3.29	3.60	3.71	3.75	3.55
Energy Intensity	119.1	102.3	103.4	102.2	99.1	98.4
Number of Energy Efficiency Projects	36	21	18	15	21	24
Total Energy Efficiency Savings (TJ)	978	1,031	1,054	830	3,620	473
Total Energy Efficiency Savings (USD million)	-	9.6	9.1	4.9	36.0	3.2
Greenhouse Gas Emissions Reductions through Energy Efficiency Projects (tons CO ₂ e)	106,870	71,744	77,666	45,945	243,666	26,292
Total Grey Water Consumption (million m ³)	-	20.1	17.5	15.7	18.2	18.0
Total Water Consumption (million m ³)	24.6	25.7	31.2	31.4	29.9	29.6
<i>Underground</i>	0.8	0	0	0	0	0
<i>Surface</i>	23.8	19	16.3	14.4	17.2	17.2
<i>Municipal</i>	0	1	1.2	1.2	1.1	0.8
<i>Treated waste water from Körfez Municipality</i>	0	5.7	13.7	15.7	18.2	11.6
Change in Grey Water Consumption to Total Water Consumption (%)	9.41	13.0	-10.1	-5.7	8.2	-0.9
Water Consumption per Product (m ³ /ton)	1.1	0.7	0.6	0.5	0.7	0.6
Total Recovered Water (million m ³)	12.0	17.2	20.0	25.7	20.8	20.6
Total Recovered Water to Total Consumption Ratio (%)	33.7	40.1	39.1	45.0	41.0	41.0
Total Waste Water Discharge (million m ³)	9.9	11.3	17.1	14.9	14.3	15.5
Total Amount of Solid Wastes (tons)	35,588	25,538	41,506	31,392	32,646	34,433
<i>Hazardous Waste (tons)</i>	29,168	14,192	30,971	17,811	23,617	22,144
<i>Non-Hazardous Waste (tons)</i>	6,420	11,346	10,534	13,581	9,029	12,290
Solid Wastes According to Disposal Method						
<i>Recycling (tons)</i>	20,671	17,812	27,746	22,618	28,934	23,947
<i>Disposal (tons)</i>	14,917	7,726	13,759	8,774	3,712	10,486
Solid Waste Recovery Rate (%)	58	69.7	66.8	72.1	88.6	69.5
Number of Saplings Planted during Afforestation Activities (units)	114,092	223	600	400	920	200
Estimated Reduction in CO ₂ Emissions due to Afforestation Activities (ton CO ₂ e)	44,344	75	200	165	380	83
Total Spending on Environmental Investments and Operating Expenses (TL million)	202	208	346	390	150	268
Environmental Training (person x hour)	-	17,787	17,331	16,012	10,391	14,127
<i>Tüpraş Employees</i>	-	7,438	4,310	4,010	4,168	4,200
<i>Contractor Employees</i>	-	10,121	13,021	11,971	6,223	9,927
<i>Community</i>	-	228	-	31	-	-

SOCIAL PERFORMANCE	2008	2015	2016	2017	2018	2019
Total Amount of Training (person x hours)	251,121	234,311	284,878	233,034	384,405	238,168
Female	-	31,140	21,827	35,601	34,968	40,919
Male	-	203,171	263,051	197,434	349,437	197,249
Monthly Waged	77,090	98,314	68,836	103,864	103,164	125,107
Hourly Waged	174,031	135,997	216,042	129,170	281,241	113,061
Total Amount of Training (average hours of training per employee)	58	49	59	45	70	44
Female	-	79	55	79	70	80
Male	-	46	59	42	71	40
Monthly Waged	96	93	65	91	82	98
Hourly Waged	49	36	57	32	67	27
Total Hours of OHS Training (person x hour)	46,708	104,091	135,951	141,729	165,038	201,813
Tüpraş Employees	-	63,596	85,609	83,381	87,805	108,026
Employees of Business Partners	-	40,495	50,342	58,348	77,233	93,787
Accident Frequency Rate (number of accidents x 1,000,000/person x hour) 2 Days	-	2,8	2,9	3,7	4,8	4,2
Accident Severity Rate (work lost days x 1,000,000/person x hour) 2 Days	-	320.0	365.0	1,135.0	300.0	56.8
Accident Frequency Rate (number of accidents x 1,000,000/person x hour) 4 Days	-	2.5	1.9	2.7	3.2	3.1
Accident Severity Rate (work lost days x 1,000,000/person x hour) 4 Days	-	315	354	1,132	292	54
LTI Frequency - OSHA (LTI fr= Loss time injury per 1 million manhour = LTI*1M/mh)	-	0.6	0.47	0.71	0.69	0.7
LTI Severity - OSHA (LTI Sev= Days of LTI per 1 million manhour = Days*1M/mh)	-	27.93	47.57	36.06	27.75	25.79
Number of Fatalities	0	1	1	1	1	0
Employee Loyalty (%)	57	50	53	61	57,2	35,8
Customer Satisfaction (%)	86.2	88.8	89	88.2	88.8	88
Supplier Satisfaction (%)	97.1	95.8	88.8	86.9	88.1	86.5
Contractor Satisfaction (%)	-	80.4	84.8	78.1	80.6	79.2
Donations and Sponsorships (TL million)	13.67	17.3	24.4	30	40.6	3.5
Total Number of Interns	1,485	1,076	962	874	884	479
Pension Fund Liabilities (TL million)	4.9	63.9	77.4	89.0	103.9	122.00
Minimum Starting Salary to Minimum Wage Ratio						
Monthly Waged	3.8	4.1	3.3	3.3	3.2	3.0
Hourly Waged	2.6	2.6	2	2.2	2.2	1.9

Employee Demographics	2016	2017	2018	2019
Total Number of Employees	4,979	5,185	5,458	5,442
Female	412	453	500	510
Male	4,567	4,732	4,958	4,932
Contractor Employees	601	584	630	650
Female	179	184	198	213
Male	422	400	432	437
Employees by Contract Type				
Employees on Permanent Contract	4,977	5,182	5,454	5,437
Female	412	453	498	508
Male	4,565	4,729	4,956	4,929
Employees on Fixed-term Contract	2	3	4	5
Employees by Category				
Hourly Waged	3,899	4,042	4,199	4,158
Female	136	136	142	146
Male	3,763	3,906	4,057	4,012
Monthly Waged	1,080	1,143	1,259	1,284
Female	276	317	358	364
Male	804	826	901	920
Employees by Employment Type				
Full Time	4,979	5,185	5,455	5,438
Female	412	453	498	508
Male	4,567	4,732	4,957	4,930
Part Time	0	0	3	4
Employees by Age Groups				
Under 30	1,435	1,633	1,784	1,632
Between 30 - 50	2,979	3,036	3,201	3,400
Over 50	565	516	473	410

GRI CONTENT INDEX



Disclosures	Descriptions and Page Numbers	Omissions
GRI 101: Foundation 2016		
GRI 102: General Disclosures 2016		
Corporate Profile		
102-1	Contacts (p.98)	-
102-2	https://www.tupras.com.tr/en/products	-
102-3	Contacts (p.98)	-
102-4	Contacts (p.98)	-
102-5	Tüpraş 2019 Annual Report (p.125)	-
102-6	Tüpraş 2019 Annual Report (p.71)	-
102-7	Tüpraş 2019 Annual Report (p.14-15, 56, 68)	-
102-8	Performance Data (p.95)	-
102-9	Responsible Value Chain Management (p.74-75)	-
102-10	https://www.tupras.com.tr/en/material-disclosures	-
102-11	Risk Management (p.24-26), Internal Audit and Control (p.27), Disaster and Emergency Management (p.43)	-
102-12	Sustainability Journey (p.16-17), Quality Management (p.31), https://www.tupras.com.tr/ethical-rules	-
102-13	Corporate Memberships (p.91)	-
Strategy		
102-14	Message from the General Manager (p.6-7)	-
102-15	Message from the General Manager (p.6-7), Risk Management (p.24-26), Internal Audit and Control (p.27), Sustainability Management (p.28)	-
Ethics and Integrity		
102-16	Business Ethics and Anti-Corruption (p.27-28), https://www.tupras.com.tr/ethical-rules	-
Governance		
102-18	Corporate Governance Approach (p.24), Çalışan Demografisi (p.95)	-
Stakeholder Engagement (p.9-10)		
102-40	Stakeholder Engagement (p.29)	-
102-41	Employee Rights (p.34)	-
102-42	Stakeholder Engagement (p.29)	-
102-43	Stakeholder Engagement (p.29)	-
102-44	Customer Satisfaction (p.79)	-
Reporting Practices		
102-45	About the Report (p.5), Tüpraş 2019 Annual Report (p.125)	-
102-46	About the Report (p.5), Sustainability Management (p.28)	-
102-47	Sustainability Management (p.28)	-
102-48	About the Report (p.5)	-
102-49	About the Report (p.5)	-
102-50	About the Report (p.5)	-
102-51	About the Report (p.5)	-
102-52	About the Report (p.5)	-
102-53	Contacts (p.98)	-
102-54	About the Report (p.5)	-
102-55	GRI Content Index (p.96-97)	-
102-56	Legal Disclaimer (p.98)	-

“For the Materiality Disclosures Service, GRI Services reviewed that the GRI content index is clearly presented and the references for Disclosures 102-40 to 102-49 align with appropriate sections in the body of the report.”

Material Topics			
Standard	Disclosures	Descriptions and Page Numbers	Omissions
Environment and Climate			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	Sustainability Management (p.28), Responsible Production (p.46-52)	-
	103-2 The management approach and its components	Responsible Production (p.46-52)	-
	103-3 Evaluation of the management approach	Responsible Production (p.46-52)	-
GRI 301: Materials 2016	301-1 Materials used by weight or volume	Tüpraş in Numbers (p.8-11), Performance Data (p.92)	-
GRI 302: Energy 2016	302-1 Energy consumption within the organization	Performance Data (p.93)	-
	302-3 Energy intensity	Responsible Production (p.48), Performance Data (p.93)	-
	302-4 Reduction of energy consumption	Responsible Production (p.48), Performance Data (p.93)	-
GRI 303: Water and Pollutants 2018	303-3 Water withdrawal by source	Responsible Production (p.50-51), Performance Data (p.93)	-
	303-4 Discharge of wastewater	Responsible Production (p.50-51), Performance Data (p.93)	-
GRI 305: Emissions 2016	305-5 Reduction of GHG emissions	Responsible Production (p.49), Performance Data (p.93)	-
GRI 306: Waste 2020	306-3 Wastes by Disposal Method	Responsible Production (p.52), Performance Data (p.93)	-
GRI 307: Environmental Compliance 2016	307-1 Non-compliance with environmental laws and regulations	Responsible Production (p.46-47), Performance Data (p.93)	-
Innovation, R&D and Digitalization			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	Sustainability Management (p.28), R&D, Innovation and Digital Transformation (p.56-71)	-
	103-2 The management approach and its components	R&D, Innovation and Digital Transformation (p.56-71)	-
	103-3 Evaluation of the management approach	R&D, Innovation and Digital Transformation (p.56-71)	-
GRI 203: Indirect Economic Impacts 2016	203-1 Infrastructure investments and supported services	R&D, Innovation and Digital Transformation (p.56-71)	-
	203-2 Evident indirect economic impacts	R&D, Innovation and Digital Transformation (p.56-71)	-
Gender Equality			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundary	Sustainability Management (p.28), Our Energy for Equality is Endless (p.18-21), Community Development (p.86-87)	-
	103-2 The management approach and its components	Our Energy for Equality is Endless (p.18-21), Community Development (p.86-87)	-
	103-3 Evaluation of the management approach	Our Energy for Equality is Endless (p.18-21), Community Development (p.86-87)	-
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	Talent Management (p.34)	-
GRI 404: Training 2016	404-1 Average hours of training per year per employee	Talent Management (p.37), Performance Data (p.94)	-
GRI 405: Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees	Corporate Governance Approach (p.24)	-
GRI 406: Non-Discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	No such cases have been occurred.	-
Occupational Health and Safety			
GRI 403: Occupational Health and Safety 2018	403-1 Occupational Health and Safety Management System	Sustainability Management (p.28), Talent Management (p.40-43)	-
	403-2 Damage Description, Risk Evaluation and Case Examination	Talent Management (p.40-43)	-
	403-3 Occupational Health Services	Talent Management (p.40-43)	-
	403-4 Worker Engagement in OHS Processes, Consultancy and Communication Methods	Talent Management (p.40-43)	-
	403-5 Employee OHS Trainings	Talent Management (p.40-43), Performance Data (p.94)	-
	403-6 Supporting Occupational Health	Talent Management (p.40-43)	-
	403-7 Protection and Prevention from OHS Impacts due to Business Relations	Talent Management (p.40-43)	-
	403-9 Work-related Injuries	Talent Management (p.40-43), Performance Data (p.94)	-
	403-10 Occupational Diseases	Talent Management (p.40-43), Performance Data (p.94)	-

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