



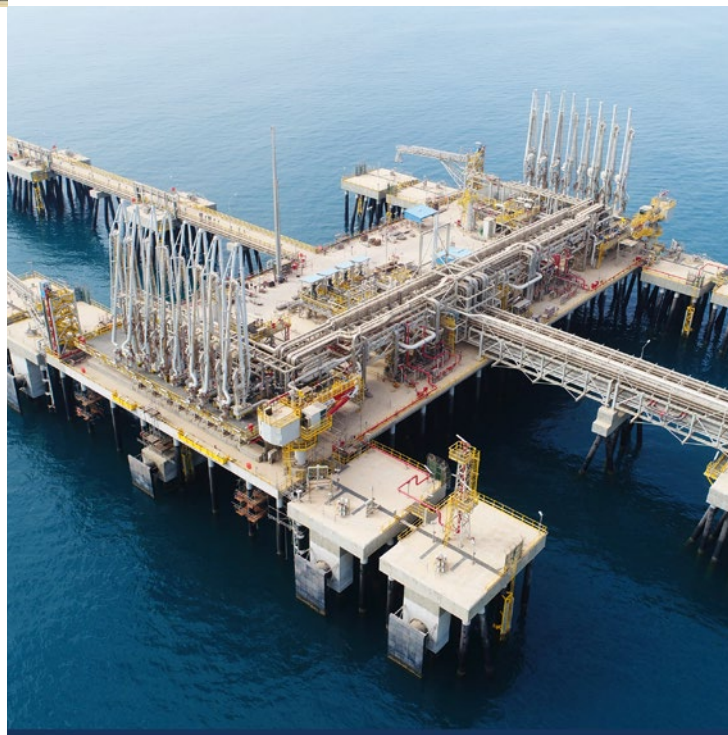
Sustainability

Supplement Report

'23

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Kuwait's Amir

His Highness the Amir
Sheikh Nawaf Al-Ahmad Al-Jaber Al-Sabah





Kuwait's Crown Prince

His Highness the Crown Prince
Sheikh Meshal Al-Ahmad Al-Jaber Al-Sabah





CEO Speech

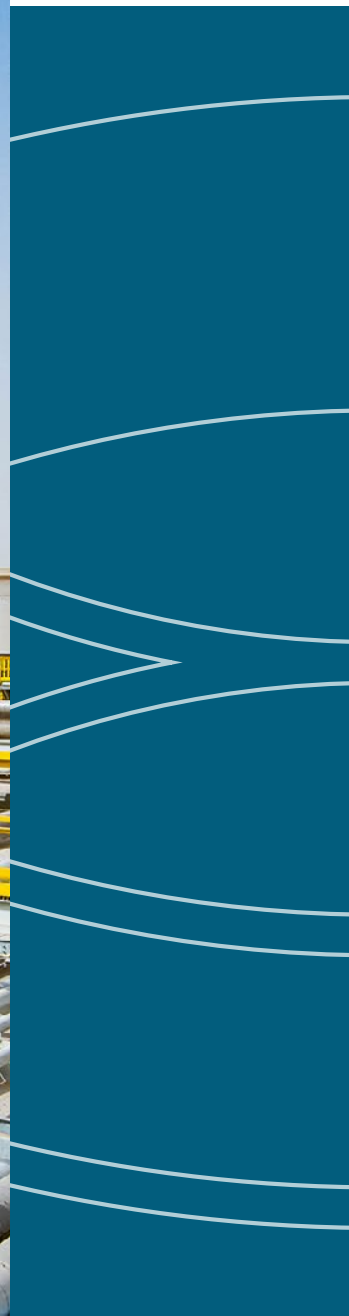


Company Profile

In line with the strategic directions of the refining, marketing and petrochemicals sector of Kuwait Petroleum Corporation (KPC), the initiative came to establish Kuwait Integrated Petroleum Industries Company (KIPIC) in 2016 as a wholly owned subsidiary of KPC with a capital of KD 1.8 billion, and it was the result of unremitting efforts and support from KPC and associate companies, in which they joined efforts in order to establish the company and establish its main rules of organizational structure, systems, regulations, and financial and administrative policies that enable the company to play its role in the integration operations of the stages of establishing, operating, and managing the refining and petrochemical complex and LNG import facilities in the Al-Zour region, as these projects are among the largest and most important developmental and strategic projects in the State of Kuwait.

Through these projects, the company aims to advance the petroleum industry in the State of Kuwait and keep pace with the global market by enhancing integration between refining projects in (Al-Zour) refinery, petrochemical complex projects (Al-Zour) and the LNG import facility (Al-Zour). All of these projects combined will contribute to maximizing the return of the national economy, in addition to diversifying national income sources and providing local energy needs, as well as providing professional opportunities for national employment and supporting and assisting community services in Kuwait.





Al-Zour Refinery

Al-Zour Refinery is the world's largest grass-root refinery with 615,000 bpd capacity. The refinery will have high flexibility as it is designed to process various types of Kuwait crude including the Kuwait Heavy Crude (KHC) oil, which will be produced according to KPC upstream strategy. It will provide mainly clean fuel oil to the power plants; and an expansion plan to full conversion is considered as a suitable option.



Aims of the Project

This strategic project will utilize Kuwait Heavy Crude (KHC) and other types of crude to supply the power stations with clean fuels (less than 1 % of Sulphur content).

Aims of the Project with the following:

- Located at Al-Zour area, 90 km south of Kuwait.
- Occupies 16 Sq. km.
- The land was reformed by transferring sand from the sea bottom and compacted.
- State of the art technologies are utilized. An Electric Network for Monitoring & Control (ENMC) to achieve better management.
- Facilities for export of solid materials and artificial island for liquid products.
- The project is divided into 5 packages awarded to 4 alliances.
- Full commissioning is expected in 2023

Economic Feasibility

- Ensures a secure and stable supply of clean fuel supply to the power stations
- Will create some 1,000 job opportunities for Kuwaiti nationals
- Kuwait private sector will have the chance to share in this national effort and gain rare technical experience

Green Features of Al Zour Refinery

At KIPIC, it is one of our top concerns to integrate Health, Safety and Environmental (HSE) into all aspects of our work environment. Therefore, we invest great resources to ensure the creation of a workplace that is safe for both: our employees and the environment.

Strict safety measurements are followed and carefully infused into our culture to create a level of awareness thus, minimising risks.

We contribute to the safety of our environment by:

- Recycling and reusing wastewater
- Controlling emissions and monitoring ambient air by using special systems
- Using smoke-free and low-noise flares



An aerial photograph of the Al-Zour Refinery Hydrotreater Units under construction. The image shows a vast industrial complex with numerous steel structures, pipes, and scaffolding. Several large blue-roofed buildings are visible. The facility is situated in a flat, arid landscape. The text "Al-Zour Refinery Hydrotreater Units" is overlaid in white on the upper portion of the image.

Al-Zour Refinery Hydrotreater Units

Diesel Hydrotreating Unit (DHT):

- Objective: To produce ultra-low sulphur diesel (ULSD)
- Capacity: 62,000 BPSD x 3 units: 186,000 BPSD
- Process Licensor: Shell Global Solutions
- To desulfurize, dewax, dearomatize the straight run light/heavy diesel from CDU/ARDS diesel to Ultra Low Sulfur Diesel Spec.
- Maximum 50% cold feed in feed stream
- Turn down Ratio: 50% (31,000 BPSD)

Naphtha hydrotreating Unit (NHT):

- Objective: To produce hydrotreated Naphtha as a feed for Hydrogen Production Unit.
- Capacity: 18,200 BPSD x 2 units: 36,400 BPSD
- Process Licensor: Haldor Topsoe A/S.
- Processes the most critical streams of KHC/ Eocene & ARDS naphtha
- Turn down capacity: 50 % of the design capacity.
- Design basis considered as High Sulphur (Max 0.26 wt % in Eocene Naphtha) & High Nitrogen (38 ppmw in ARDS Naphtha)

Kerosene hydrotreating Unit (KHT):

- Objective: To produce low sulfur kerosene, mostly used as a jet fuel & in rocket engines.
- Capacity: 53,000 BPSD x 2 units: 106,000 BPSD
- Process Licensor: Haldor Topsoe A/S.
- To de-sulfurize straight run kerosene and to improve smoke point as needed to meet ATK/ DPK product specifications.
- Unit capacity set by light crude mode operation of CDU & severity set by mix crude mode operation of CDU.
- Turn down capacity: 50 % of the design capacity.



Al-Zour Refinery Hydrotreater Units



Hydrogen Block in Al Zour Refinery

The Hydrogen Block installed in the Al Zour Refinery has three plants: Unit 31 (HRU) Hydrogen Recovery Unit, Unit 32 (HCU) Hydrogen Compression Unit, & Unit 33 (HPU) Hydrogen Production Unit.



Unit 33 (HPU): Hydrogen Production Unit

The purpose of this unit is to produce 20 Barg Hydrogen by steam reforming of hydrotreated Naphtha. HPU has 4 identical trains & a Common area. Hydrogen produced in this unit is sent to Unit 32 Hydrogen Compressor unit to compress to different pressure levels as required by downstream units.

Hydrogen production quantity & trains running capacity is based on the downstream hydrotreating unit's requirement.

Unit turndown capacity is 50% & Onstream factor: 8500 operating hours/year.

Design Capacity of each train (4 trains)	4 * 161 9000 Nm ³ /hr 4 * 145 MMSCFD (Total : 580 MMSCFD)
Hydrogen Product Specifications	Hydrogen : 99.8 vol% purity Carbon Oxides (CO+CO ₂) : 10 ppmv max Nitrogen : 0.1 vol max Methane : 1000 ppmv max



Unit 32 (HCU):

Hydrogen Compressor Unit

Hydrogen Compression Unit has 7 identical reciprocating compressors. Each compressor takes 20 barg hydrogen suction from 20 barg hydrogen header and compresses it to 40 barg, 100 barg & 200 barg in 4 stages.

40 Barg Hydrogen is required by Naphtha Hydrotreater Units.

100 Barg Hydrogen is required by Diesel & Kerosene Hydrotreater Units. This is supplied from Compressor 3rd stage.

200 Barg Hydrogen is required by Atmospheric Residue Desulphurization Units. This is supplied from Compressor 4th stage.



Unit 31 (HRU):

Hydrogen Recovery Unit

The main process objective of this unit is to produce a high concentration hydrogen stream from the sour off-gas (H₂ rich gases). The sour off-gas from the three ARDS (U-02/12/22) Cold Low-Pressure Separators (CLPS) is treated with amine and then the hydrogen is recovered via Pressure Swing Adsorption Unit (PSA). The treated gas joins 20 barg Hydrogen header from unit 33 and sent to Unit 32.

Unit turndown capacity is 25% & unit running depends on the ARDS running.

Design Capacity (120%)	20.818 kg/hr of ARDS CLPS off-gas.
Hydrogen Product Specifications	Hydrogen : 99.9 vol% purity Carbon Oxides (CO+CO ₂) : 10 ppmv max Methane : 1000 ppmv max
PSA Tail Gas	Sent to Sulfur Recovery Unit & Saturated Gas Units.



Introduction – Sulphur Block in Al Zour Refinery

The Sulphur Block installed in the Al Zour Refinery has five plants: Unit 35 (SWS) Sour Water Stripper Unit, Unit 39 (ARU) Amine Regeneration Unit, Unit 43 (SRU) Sulphur Recovery Unit, Unit 92 (AGF) Acid Gas Flare and the Unit 96 Sulfur Storage Tanks.



U-35 (SWS) Sour Water Stripper Unit

The purpose of this unit is to remove Hydrogen Sulfide (H₂S) & Ammonia (NH₃) content in sour water streams coming from upstream process units, the product stripped water is reused in other refinery process or well the surplus is directed to the Wastewater Treatment Unit (Unit 76), while the Ammonia Acid Gas is diverted to the Sulfur Recovery Unit (U-43)

Design Capacity of each train (3 trains)	450 m ³ /hr
Stripped Water Specifications	max. 20 ppmw H ₂ S, Max. 50 ppmw NH ₃ & Max. 25 ppmw NaCl
Estimated Annual Production of Stripped Water (based in 900 m³/h normally generated in the refinery)	7,780,000 m ³



U-39 (ARU)

Amine Regeneration Unit

The main process objective of this unit is to strip rich amine as returned from the process units (ARDS, DHT, NHT & SGU) from acid gas and to return the regenerated lean amine to the same users. The stripped acid gas is diverted to the Sulfur Recovery Unit (U-43).

Design Capacity of each train (3 trains)	1300 sm ³ /hr
MDEA Concentration	45% wt



U43 (SRU)

Sulphur Recovery Unit

The SRU processes the acid gas coming from amine solution (U39) and sour off-gas from Sour Water Stripper Unit to convert H₂S to elemental sulphur as a refinery product.

The new SRU of Al Zour Refinery is designed with the last state of the art to produce elemental sulphur and comply with the today's stringent environmental regulations.

Design Capacity of each train (3 trains)	1000 MTPD of Molten sulfur
Estimated (Design) Annual Production of Liquid Sulphur	1,080,000 MTon per year of Liquid Sulphur
K-EPA regulations for stack emissions	<250 ppmv of SO ₂
Liquid Sulphur Specifications	less than 10 ppmw H ₂ S.





U96

Sulphur Storage & Handling Unit

The Sulphur Storage System collects liquid sulphur from the three SRU trains (Unit-43), stores it, and pumps it to the Sulphur Pelletizer Unit (Unit-86).

The Sulphur Storage System is designed for both continuous and semi-continuous operation. The concept of multiple tasks is used to provide suitable system flexibility, which allows for outages of any individual piece of equipment without reduction in capacity of the Sulphur Storage System.

Capacity of each tank in the Unit 96, (four tanks)	10500 tons (5890 m ³) of liquid sulphur.
Total Storing Capacity of the Unit 96	14 days of normal sulphur production from Unit 43 (three trains)



U92 (AGF)

Acid Gas Flare

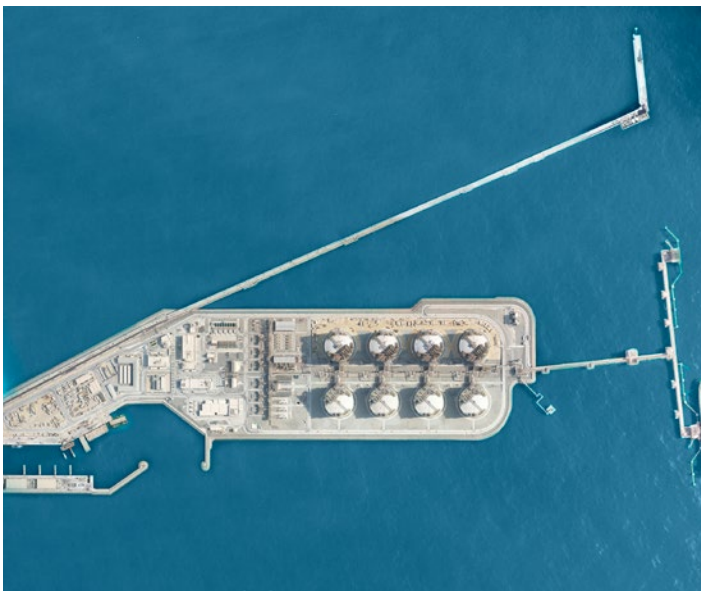
Acid Gas Flare serves as the final line of protection against catastrophic failure resulting from overpressure of equipment and interconnecting piping. It is a device which is designed to collect acid gas vent and relief streams from Amine Regeneration Unit (ARU), Sour water stripper Unit (SWS) and Sulphur Recovery Unit (SRU). The height of the Acid Gas Flare (165m) is based on the safe allowable concentrations of hydrogen sulphide (H₂S) at ground level assuming maximum H₂S relief with a flame out condition.

Acid Gas Flare Capacity	72,600 kg/h
Stack Height	165 m
Purge Gas (RFG)	262 kg/h
Pilot Fuel Gas	3.4 kg/h



LNGI Project

The Liquefied Natural Gas Import Facility (LNGI) project is the first of its kind in the State of Kuwait and has been established to meet Kuwait's growing needs for cleanest fuel (natural gas) to generate electricity, as well as the needs of other natural gas consumers such as oil refineries and petrochemical industries.



Project Features:

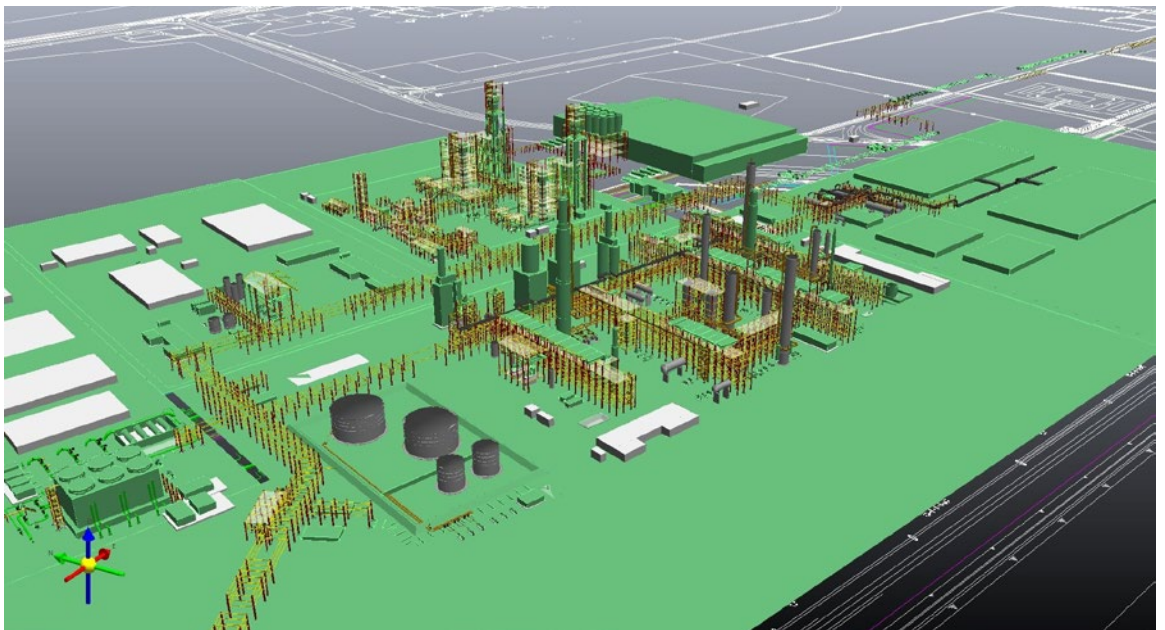
- The LNGI project is the world's largest capacity LNG storage & regasification green field project.
- LNGI project is the first permanent LNG Import terminal in Kuwait.
- The area of each LNGI tank (being 6,644 m²) is 1.04 times of Jaber Al-Ahmad Stadium's Pitch (6,400 m²).

The usage of 8 LNG Tanks, 9% Nickel Plate, is approximately 18,390 ton, which is equivalent to 13,130 Toyota Camry (2017).



Petrochemical Facility - Refinery Integration Al-Zour Project (PRIZe)

Petrochemicals facility upgrades fuel products from Al Zour Refinery to high value bulk petrochemicals products. The upcoming facility has an annual capacity of 2761 KTPA of aromatics & Polypropylene and 1700 KTPA of gasoline.





Objectives

- Increase the value of Kuwait's Hydrocarbon products.
- Supply Gasoline to the local market.
- Introduce new product and access to new markets for (Polypropylene Co-Polymer).
- Increase Kuwait's Polypropylene production and Aromatics by 1000% and 200% respectively.
- Supply Benzene deficit for existing Styrene Plant.
- Maximize integration with existing refineries.

Project Features

- Petrochemical Facility (PRIZe) project will increase Kuwait's Polypropylene production and Aromatics by 1000% and 200%
- The project will increase the value of Kuwait's Hydrocarbon products.

Quantity of products or services provided

ZOR Refinery Production FY 2022-2023		
Product Name	KT	%
Petrochemical Naphtha	518.6	10%
Aviation Turb. Kerosene	663.3	13%
Ultra-Low Sulphur Diesel	793.0	15%
Low Sulphur Fuel Oil 0.5%	1,694.3	32%
Sulphur Granules	362.9	7%
Burning Heavy Fuel Oil	494.1	9%
Raw LPG	40.4	1%
Intermediate Products	235.0	4%
Total Net Products	4,801.6	91%
Flare/Loss	476.3	9%
Total/Production Capacity	5,278.0	100%





Environmental Performance Highlights



Operational progress & HSE excellence

KIPIC has successfully completed the commissioning of first and second refineries and initiated commercial operation with no major environmental incidents through a well-established HSSE MS framework.

Oil spill response services

- Integrated Oil Spill Response (IOSR) Services Contractor has been mobilized and oil spill response center has been established.
- KIPIC is ready with adequate resources to handle oil spill within KIPIC's facilities and at Area C.
- Various Level 1 IMO certified trainings were conducted for various KIPIC personnel.

Emergency response

- KIPIC (Environment and Corporate Social Responsibility Team) actively responded and completed the clean-up of contaminated waste observed in Al-Zour area from external unknown sources in August 2022. Over 100 bags of contaminated wastes were collected and disposed.

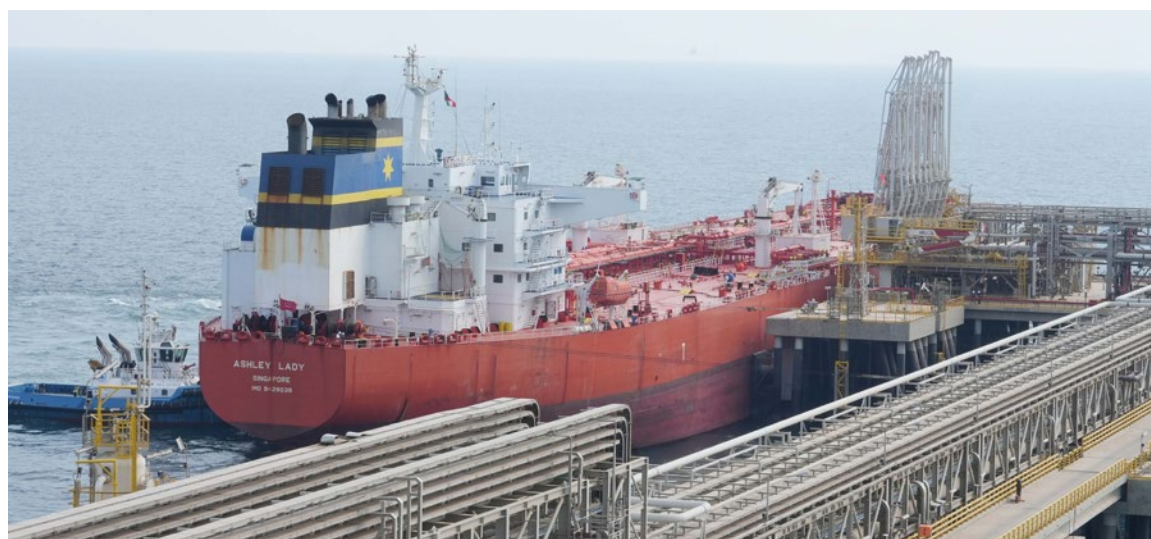
Campaigns

- Various environmental awareness campaigns were completed including desertification awareness, office waste, recycling / sustainability campaign, wildlife conservation and beach clean-ups.

LNGI GHG reporting

- Annual GHG emissions from Al-Zour LNGI for FY2022-2023 is 134,562 tonnes of CO₂-eq.

	2022/2023
Scope I (Ton CO ₂ -eq.)	50,132
Scope II (Ton CO ₂ -eq.)	84,430
Total	134,562





Innovation

Idea Registration Application

An application has been launched to facilitate the submission of innovative ideas by KIPIC employees. This platform allows employees to share their ideas in a streamlined and efficient manner as well as evaluating the novel ideas.

Innovation Excellence Award

KIPIC has introduced the Innovation Excellence Award, which recognizes and honours outstanding contributions to innovation within the organization. This prestigious award has been implemented to celebrate and showcase the innovative achievements of employees.

Innovation Portal

A dedicated innovation portal has been developed to facilitate and support innovation activities across the entire company. This portal serves as a comprehensive platform that enables employees to engage in various innovation-related initiatives and activities. It has been designed to enhance collaboration, idea sharing, and the overall innovation culture within the organization.

Innovation Management System Certification (ISO 56002:2019)

The innovation management system (ISO 56002:2019) has been officially certified, indicating that it meets the required standards and criteria for effectively managing and fostering innovation within an organization.

Employment

Breakdown of KIPIC Workforce per Gender Category

	Male Employees (Full-Time) 2021/2020	Female Employees (Full-Time) 2021/2020	Ratio Male to Female Workforce Representation (Non-managerial level)
Total number	1053	153	87.3% Males vs. 12.7% Females

Breakdown of KIPIC Full-Time Employees per Age Category

	Total Number of Employees (Below 30) 2021/2020	Total Number of Employees (30-50) 2021/2020	Total Number of Employees (Above 50) 2021/2020
Total number	302	766	138





Social Governance

KIPIC adopts triple bottom line approach to achieve sustainability in its long-run by providing more emphasis on environmental & social impacts rather than solely focusing on generating profit.

Implementation

- KIPIC has a well-established procedure under Element-15 to ensure the quality of Contractor and sub-contractor employee's working conditions both at work site and their accommodations.
- The procedure covers the welfare of workers including their recruitment, payment, working condition, accommodation, transport, etc. in compliance with local regulations.

Awareness campaigns

- As part of Company's relentless pursuit to promote and develop a comprehensive Environment & Social Management Program, KIPIC Environment and Corporate Social Responsibility Team organized awareness campaigns for Operation and Maintenance Contractors.
- Three (3) campaigns were conducted in FY2022/2023 for 43 employees. The objective of the campaign is to ensure that all those working at KIPIC site are aware of their rights and have a system in place should they feel those rights have not been met.
- This campaign highlights various worker welfare aspects including the following as a minimum:
 - Accommodation facilities
 - Passport retention
 - Leave entitlements
 - Working hours
 - Salary specifics
 - End of service benefits
 - Etc.





Mechanism for monitoring

- KIPIC has established an online (public.complain@kipic.com.kw) compliant reporting mechanism through which all stakeholders including local community could submit their grievances regarding KIPIC's operations. It is to be noted that no public grievances have been registered till date.
- KIPIC has appointed social counselors to perform grievance monitoring sessions with all Contractor and subcontractor workforce in the Company's projects of their rights according to KIPIC E&S procedures, contractual rights and as per the Kuwaiti Labor Law. 217 Contractor employees have been counselled in this fiscal year and 28 grievances have been registered. KIPIC actively followed with the Contractors and closed 26 (93%) concerns and also ensured appropriate actions are implemented.
- Periodic audits are conducted at worksites and employees' accommodation to ensure Contractors' compliance with KEPA regulations, Kuwaiti Labor Law, and that they follow the procedures in force in the company.

Compliance with International Standards

- Various Environment & Social Monitoring visits were completed by International Lenders for Al-Zour Refinery and LNGI with no major findings, which reflect KIPIC's efficient framework for managing Environmental & Social impacts.





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