IPTO Sustainability Report 2022

ipto
INDEPENDENT POWER TRANSMISSION OPERATOR

IPTO Sustainability Report

2022

INDEPENDENT POWER TRANSMISSION OPERATOR

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Abbreviations

CIGRE	International Council on Large Electric Systems
DWDM	Dense Wavelength-Division Multiplexing
DWH	Data warehouse
EAM	Enterprise asset management
ENTSO-E	European Network of Transmission System Operators for Electricity
ERP	Enterprise Resource Planning
ESG	Environment, Social, Governance
ETS	Emissions Trading System
FRR	Frequency Restoration Reserves
FTE	Full-time equivalent / Full-time Employee
GHG	Greenhouse Gases
GIS	Gas Insulated Switchgear
GIS	Gas Insulated Substation
GRI	Global Reporting Initiative
GSA	GeoSpatial Analysis
IOT	Internet of Things
IT	Information technology
JAO	Joint Allocation Office
Med-TSO	Mediterranean Transmission System Operators
OT	Operational Technology
PMUs	Phasor Measurement Units
RSC	Regional Security Centre
SASB	Sustainability Accounting Standards Board
SDGs	Sustainable Development Goals
SEE CAO	Coordinated Auction Office in South East Europe
SEleNe CC	Southeast Electricity Network Coordination Center
SOC	Security Operations Center
VPN	Virtual Private Network
ZTA	Zero Trust Architecture

BoD	Board of Directors
ESGB	Environmental, Social and Corporate Governance Branch
FCO	Final Connection Offers
GC	Grid Code
GD AMM	General Division of Asset Management and Maintenance
GD HRLRA	General Division of Human Resources, Legal and Regulatory Affairs
HEDNO (DEDDIE)	Hellenic Electricity Distribution Network Operator
HEnEx	Hellenic Energy Exchange
HETS (ESMIE)	Hellenic Electricity Transmission System
HSB	Health & Safety Branch
HSMS	Health and Safety Management System
HVCs	High Voltage Centres
LRAD	Legal and Regulatory Affairs Department
NECP	National Energy and Climate Plan
NNGSO (DESFA)	National Natural Gas System Operator
NTPD	New Transmission Projects Department
PUs	Public Utilities
RES	Renewable Energy Sources
RESGOO (DAPEEP)	Renewable Energy Sources and Guarantees of Origin Operator
RTDD	Research, Technology and Development Department
S/S	Substation
SCD	Supply Chain Department
SI	SERVICE INVOICE
SOCD	System Operation and Control Department
SPAs	Special Protection Areas
TL	Transmission Lines
TSMD	Transmission System Maintenance Department
TYDP	Ten-Year Development Plan
WEWRA (RAAEY, former RAE)	Waste, Energy and Water Regulatory Authority (former Energy Regulatory Authority)

Message from the Chairman and CEO

Dear stakeholders,

Our fourth Sustainability Report is published in a year of significant achievements for IPTO, yet of great challenges as well due to the turmoil caused by the international energy crisis that arose in the wake of the coronavirus pandemic. The Russian invasion of Ukraine created new realities for Europe's energy supply, both in terms of prices and adequacy, and combined with the worsening climate crisis, highlighted the need to further accelerate the green transition.

Serving this critical national and European objective, in 2022 IPTO dynamically proceeded with the construction of the new generation of domestic and international interconnections it implements based on its 2030 horizon and upgraded key System infrastructure to become more resilient against the increasingly frequent extreme weather events. Furthermore, in this highly volatile environment, it continued – and continues – to work in cooperation with all relevant stakeholders to ensure the stability of the System and the uninterrupted, sustainable and secure supply of electricity to the country, as provided for by its institutional role.

As the penetration of RES in our energy mix is constantly increasing, radically changing the operating conditions of the electricity grids, we seek to make the absolutely necessary but difficult transition to the era of clean energy with the greatest possible speed and the least possible disruption.

Our activity contributes substantially to addressing these challenges and ultimately to the safe energy transformation of the country and the greater region. The electrical infrastructure we are developing already puts our country in an advantageous position in terms of green energy: 2022 was a record year for RES, as their contribution to the annual power generation mix reached almost 40% for the first time and the total installed capacity of clean energy units in the system amounted to 10 GW.

In domestic interconnections, one of the most important achievements of IPTO for the past year was the interconnection of Skiathos with Euboea, a project that now benefits all the Sporades islands. In the Cyclades, we initiated the construction of the high-voltage substation on Santorini, laid the electric cable that will connect Santorini to Naxos, and achieved remarkable progress with our subsidiary, Ariadne Interconnection, at sea and on land in respect with the major project of the second electrical interconnection between Crete and Attica.

In 2022, we also took significant steps for the strategic international interconnection projects that promise to upgrade our country to a strong green energy export power, accelerating the utilisation of RES and enhancing adequacy in Greece and Europe. In particular, we further boosted IPTO's presence and extroversion at the regional level, with the advancement of new international interconnections to every direction, and laid the groundwork for the Company's engagement in the Greece-Cyprus-Israel international electricity interconnection.

With the climate crisis posing ever greater challenges, in 2022 we also strengthened the resilience of the System. Through our expanded €200 million asset renewal programme, we continued to modernise key equipment and integrate cutting-edge technologies for the preventive maintenance and monitoring of our infrastructure. We also extended the fortification of the System in the digital realm, with the operation of the Security Operations Centre, which is IPTO's new state-of-the-art cyber defence infrastructure.

One of our strategic priorities has been to create added value for the country through the exploitation of our infrastructure. In this context, in the past year we contributed to the national digital transformation by developing the fibre optic backbone network of the Electricity Transmission System, and, with our subsidiary, Grid Telecom, we signed a series of strategic agreements for the Greece-Egypt telecommunications interconnection, which can turn our country into a powerful data transmission hub between Europe, Africa and the Middle East. Additionally, we modernised our telecommunications equipment and new IT projects have brought us even closer to the common electricity market and interconnected us with the European platforms of the Balancing Market.

Having now horizontally integrated the sustainability dimension in our strategy, we continue to implement the actions of a Sustainable Development Roadmap. These actions are transforming the Operator to be in position to respond to the demands and changes launched internationally and actively engage in shaping developments. Thus, we proceeded with the estimation of the carbon footprint for scope 1 & 2 emissions according to the GHG Protocol, setting 2022 as the base year, and we included in our organisational chart a Branch for sustainable development and corporate social responsibility issues.

In parallel, IPTO makes steady and continuous progress in implementing transparency and open data, disclosing more and more data to be fully aligned with the international standards and the needs and demands of both the market and the civil society.

2022 was a year of progress in all our priority areas. These achievements were made possible thanks to the human resources of the Operator working onsite, in our offices and our facilities across the entire country. With a high level of knowledge and solid technological training, with cooperation, trust, and open communication, we have achieved a lot and we continue to change establishing IPTO as one of the modern European Transmission Operators.

Manos Manousakis
Chairman and CEO

At a glance

13,404 km

total length of transmission lines and cables

- 11,850km Overhead Transmission Lines (km)
  - 400kV
  - 150kV
  - 66kV
- 1,554km Underground and Submarine Cable Lines
  - 150kV
  - 400kV
  - 66kV

4,100km

Fibre optic network

- Land and submarine

378

Substations with IPTO assets

- 150
- 20kV

23

High Voltage Centres (HVCs)

- 400
- 150kV

1,983

employees (IPTO Group)

€ 268 mil.

of social product

€ 5 bil.

in investment until 2030

38.8% share of RES in the energy mix

86% increase new installed capacity from RES in 2022

€ 6 mil. for the renewal of the System's assets

€ 865,000 expenditure on forest fire prevention

€ 1.1 mil.

our social contribution in 2022

93%

increase in total training hours compared to 2021

37%

of women in positions of responsibility

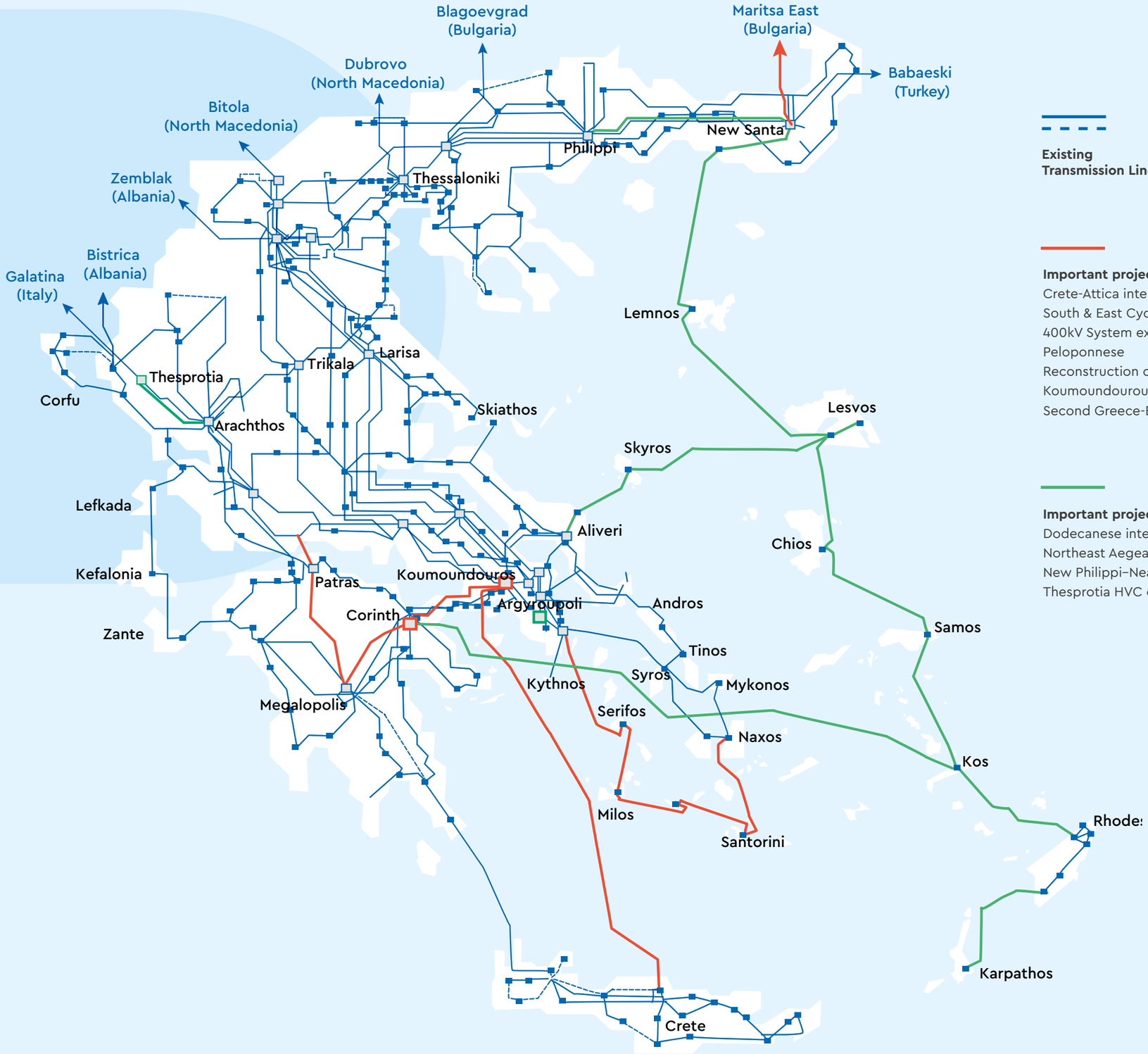
Transition to

modern business software for critical financial activities

Participation

in 17 European research programmes

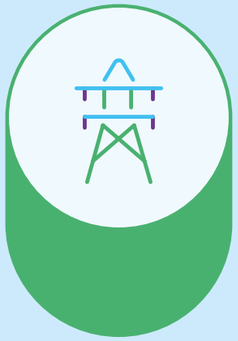
Map of the Hellenic Electricity Transmission System



Existing Transmission Line

Important projects to be constructed by 2025
Crete-Attica interconnection
South & East Cyclades interconnection
400kV System expansion in the Peloponnese
Reconstruction of the Koumoundourou Extra-HVC
Second Greece-Bulgaria interconnection

Important projects planned to be constructed by 2030
Dodecanese interconnection
Northeast Aegean interconnection
New Philippi–Nea Santa 400kV TL
Thesprotia HVC construction and connection with the System



The IPTO Group

IPTO is responsible for the operation, control, maintenance and development of HETS, in order to ensure the electricity supply of the country in an adequate, secure, efficient and reliable way.

Our role as the Hellenic Electricity Transmission System Operator

According to Greek legislation, IPTO (Independent Power Transmission System Operator SA) is the Operator of the Hellenic Electricity Transmission System (HETS). The Group, apart from the parent company, includes subsidiaries ARIADNE INTERCONNECTION SA and GRID TELECOM SA, and is based in Greece.

IPTO is in charge of the operation, control, maintenance and development of the HETS in order to ensure the country's electricity supply in an adequate, secure, efficient and reliable manner, as well as the operation of the Balancing Market and cross-border trade in accordance with the principles of transparency, equality and free competition. In addition, IPTO ensures the long-term ability of the System to meeting the needs for the transmission of electricity under economically viable conditions, always considering the protection of the environment.

In this context and given IPTO's pivotal role as the Operator of the country's Electricity Transmission System, all necessary measures have been taken and all necessary procedures have been set up to safeguard its independence and strict observance to the principle of equal treatment for all System Users and Stakeholders in the Electricity Market. In addition, IPTO's operation is based on transparency and respect for the principle of confidentiality in regard with the information it manages, where required.

IPTO implements all necessary procedures to ensure independence and strict adherence to the principle of "equal treatment" for all the System Users and the Participants in the Electricity Market.

Operation of the Hellenic Electricity Transmission System

The mission of the HETS is the smooth, safe and uninterrupted transmission of electricity from power plants (conventional or RES) to the points of consumption (urban centres, industries, etc.).

As large-scale power plants are usually located far away from urban centres and in order for electricity to be transported in the most optimal and efficient way, voltage is raised to 400kV and 150kV levels at the substations connecting the Power Plants so that energy is transported through high and ultra-high voltage transmission lines either to:

1. the high-voltage substations of the selected Customers, or	**2.** the substations connected to the Hellenic Electricity Distribution Network (HEDN) where voltage is decreased to medium (20kV). Distribution lines start from these substations and end at the distribution substations, where medium voltage is further reduced to low (220/380V), which is the voltage level used by most consumers.

International interconnections

The Hellenic System operates synchronously and in parallel with the interconnected European System under the ENTSO-E's overall coordination. The parallel operation of the Greek with the European System is achieved through interconnecting transmission lines (of mainly 400kV) with the Systems of Albania, Bulgaria, North Macedonia and Turkey. The Hellenic System is also connected asynchronously (via a 400kV DC submarine connection) with Italy.

The Transmission System at the end of 2022 included 13,404km of transmission lines and 378 substations with an installed capacity of 4.2GW from RES and a total installed capacity of 12.5GW.

The main components of the HETS in numbers

Overhead Transmission Lines (km)	Underground and Submarine Cable Lines	Substations with IPTO assets	High Voltage Centres (HVCs)	Fibre optic network
400kV, 150kV & 66kV	150kV, 400kV & 66kV	150/20kV	400/150kV	Land and submarine
11,850km	1,554km	378	23	4,100km

Hellenic Electricity Transmission System Grid Code

The HETS Grid Code is the basic regulatory framework of the HETS defining the terms, procedures, specifications and requirements for the activity and operation of the transmission system. IPTO assumes its role as the HETS Operator based on the Grid Code.

More specifically, the HETS Grid Code typically regulates:

01. The technical specifications for the design, operation and maintenance of the System
02. The planning procedure for the System's maintenance schedule
03. The requirements for applying for access to the System, the necessary supporting documents and the minimum technical and functional specifications for access to the System
04. The HETS electricity absorption obligations for adequate capacity assurance in the System and how these obligations are fulfilled
05. The terms and procedure to be followed by the Transmission System Operator for the conclusion of contracts
06. The type and minimum content of contracts on the connection of power stations to the System and any other relevant matter
07. The procedures for the approval, inspection and delivery of projects concerning the connection of power stations to the System by licensed installation contractors
08. The accounts to be maintained by the HETS Operator concerning costs arising from operating the HETS
09. The out-of-court settlement procedure on disputes between Users and the HETS Operator
10. The procedures applied and the transactions carried out by the HETS Operator for the estimation and allocation of long-term and short-term transmission capacity to Stakeholders at the borders between the bidding zones
11. Any other necessary arrangement for the proper, safe and efficient operation of the System

Activities of the IPTO Group

The IPTO Group consists of parent company ADMIE (IPTO) SA and subsidiaries ARIADNE INTERCONNECTION SA and GRID TELECOM SA, and is headquartered in Athens, at 89, Dyrrachiou Street and Kifissou Ave. More information is presented below.

ARIADNE INTERCONNECTION SA

ARIADNE INTERCONNECTION SA is a special purpose vehicle established in September 2018 by IPTO for the sole purpose of constructing and financing the Crete-Attica interconnection project in accordance with the provisions of the Ten-Year Development Plan (TYDP) of the Hellenic Electricity Transmission System (HETS) for the period 2018-2027 and the decisions of the Regulatory Authority for Energy (RAE).
The project was contracted in June 2020 in Heraklion, Crete, between Ariadne Interconnection and contractors Prysmian, Nexans, NKT-Hellenic Cables and Siemens-TERNA and is scheduled for completion in 2024.

The most important achievements in 2022 for ARIADNE INTERCONNECTION SA

During 2022, a large part of the submarine cable system for the Crete-Attica interconnection was completed. This concerns both high voltage cables and the fibre optic cable system. More specifically, in 2022, the following progress was noted:

Completion of laying and protection of fibre optic cables totaling a length of 336km (Pachi, Megara-Korakia, Crete).

Completion of protection of the eastern pole's first half by the section B contractor (Pachi, Megara-Milos).

Start laying and protecting the western pole by section's A contractor, total length 336km (Pachi, Megara-Korakia, Crete).

Completion of the cables' construction for all sections (A, B, C and D) in onshore and underwater sub-project.

More information about the company's activities can be found at
▶ https://www.ariadne-interconnection.gr/en

GRID TELECOM S.A.

Grid Telecom is IPTO's 100% subsidiary and active in the country's wholesale telecommunications market since 2019. Grid Telecom, utilising the alternative extended optical network of the parent company and having additionally installed state-of-the-art DWDM equipment, provides wholesale telecommunications services of very high quality and availability.
Grid Telecom provides the following wholesale telecommunications services:

- ultra-high-capacity services over a modern DWDM network;
- dark fibre leasing services for the deployment of proprietary telecommunications networks; and
- co-location services in IPTO's High Voltage Centres (HVDCs).

IPTO's onshore optical network is installed on the grid's high-voltage pylons and follows a completely alternative route to conventional optical networks.

- The onshore and undersea fibre optic network managed by Grid Telecom throughout Greece currently exceeds 4,000km and is constantly expanding with the aim of more than doubling in the next five years.
- By creating metropolitan optical rings in the wider area of Attica and Thessaloniki, Grid Telecom has managed to interconnect its network with the largest Data Centres in the country.

The most important events in 2022 for Grid Telecom SA

Conclusion of significant customer agreements for providing dark fibres and capacity, both with domestic and international companies. Also in 2022, cooperation with Islalink was especially important, marking the expansion of critical broadband infrastructure in the Mediterranean, significantly enhancing interconnectivity.

An agreement has been signed with Telecom Egypt, Egypt's leading telecommunications company, for a new interconnection between Greece and Egypt, through the branching of a submarine telecommunications cable, currently being laid in the South-eastern Mediterranean, with a landing point on Crete.

The expansion of the state-of-the-art DWDM (Dense Wavelength-Division Multiplexing) network continued, with the design and ordering of four new nodes in the Peloponnese and Crete, as well as six nodes with a DC connection in the metropolitan area of Attica.

Network speed increase to >500 Gb/s in order to provide capacity services to Business Customers and Providers.

More information about the company's activity can be found at
▶ https://www.grid-telecom.com/

Vision and Values

Vision

Our vision is to be one of the most efficient electricity transmission operators in Europe, providing sustainable development-related added value to all stakeholders, respecting people and the environment, for the benefit of all System Users and society as a whole.

Values

IPTO's operation relies upon the following values:

Commitment for the country's uninterrupted energy supply
Our main objective is to ensure uninterrupted power supply for the country, meeting all quality, safety and efficiency standards, which governs all our activities related to performing our duties as the HETS Operator.

Impartiality
We guarantee equal and non-discriminatory access to the System for all users.

Transparency
We implement fully transparent procedures in our operations and provide all necessary information to market players in order to stimulate healthy competition.

Efficiency
We perform our System Operator duties in the most efficient way aiming at achieving optimal use of available resources, contributing to the country's growth for the public benefit and creating value for all stakeholders.

Sustainability
We carry out our tasks according to the principles of sustainable development in respect with economic, social and environmental conditions by supporting research and development, technical training, and also by maximising the potential of our human resources.

Equal Treatment & Inclusion
Ensuring equal treatment of workers and creating an inclusive environment that incorporates and promotes diversity in everyday working life.

System adequacy, security, stability and reliability

IPTO is responsible for the safe and uninterrupted supply of the HETS on a 24-hour basis, 365 days a year. Consequently, its role is to balance energy production and consumption at any given time. IPTO ensures this balance either by increasing production or by reducing it, as required.

The penetration of RES makes IPTO's balancing task even more complex, as energy production from RES is volatile and stochastic. Moreover, their injection into the HETS varies depending on the time of day and weather conditions. In order to ensure the uninterrupted operation of the System, all factors that may affect it, such as weather conditions, special constraints, data availability, etc. are taken into account. System's operationis being monitored in real time by the Energy Control Centres.

The country's energy security is crucially affected by the following four key parameters, as follows:

IPTO is responsible for the safe and uninterrupted supply of the HETS on a 24-hour basis, 365 days a year. Consequently, its role is to balance energy production and consumption at any given time.

Availability

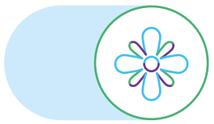
We are tasked to serve the country's demand and supply of electricity uninterruptedly and under any circumstances. We respond to the demand for electricity at all locations connected to the Transmission System, regardless of whether demand is limited or extremely high.

Reliability

Our responsibility is to safeguard that the country's electricity supply is safe, efficient and reliable, anticipating future needs, ensuring that we implement maintenance and expansion projects on the HETS and responding immediately in case of failure with our crews.

Affordability

The development of the HETS is realised so as to ensure the System's long-term ability to meet the reasonable needs for electricity transmission under economically viable conditions and to contribute to the reduction of Public Utilities (PUs) costs for the consumers.



Sustainability

An important parameter for the development of the System is the need to serve the high penetration of RES in fulfilling the national and European policy pursued that ultimately aims at having the energy sector contribute to the reversal of climate change. In this view, the development of the HETS is oriented towards its gradual transformation in order to support NECP's goal for 35% RES increase in the gross energy consumption until the end of the decade.

System adequacy

The factors that determine the adequacy of the production system to reliably serve demand (peak energy) are as follows:

- Load variation (capacity and energy demand)
- Availability of production units
- Hydraulic conditions
- Capacity availability for net imports from international interconnections
- The penetration level of RES units

The most critical parameter for the contribution of production units to the adequacy of the production system is their availability, as they may be out of service, either due to scheduled maintenance or due to accidental failure. Accidental breakdowns can have an adverse effect on the adequacy of the System, as both their occurrence and their duration are unpredictable. For this reason, the effect of unpredictable unavailability of production units due to accidental failures is considered by performing a probabilistic simulation of their actual function.

With regard to the other parameters affecting the adequacy of the System, due to their stochastic nature, their impact is assessed through the analysis of alternative scenarios and assumptions. Given this, it becomes practically impossible to guarantee that a power system will be able to fully meet demand needs under any conditions. It is therefore necessary to define the desired level of reliability that the power system should ensure so that the risk of not meeting demand is acceptable from both an economic and a social point of view.

Apart from ensuring the above parameters, it is also important to ensure independence, strict observance to the principle of equal treatment for all System Users and Participants in the Electricity Market, operational transparency and compliance with the principle of confidentiality of the information handled by IPTO. To this end, all necessary measures have been taken and all necessary procedures have been set up.

In order to safeguard the adequacy of the country's electricity production system, IPTO conducts, on an annual basis, a detailed Electricity Generation Adequacy Report, the purpose of which is to identify potential future risks related to the ability of electricity generation to adequately meet the projected evolution of demand over the following years. In addition, this study makes it possible to determine the requirements for new installed generation capacity so that demand needs can be safely met during the period under consideration.

Transmission System Resilience

During 2022, the average duration of outage of the Transmission System equipment was set at 15 minutes/year, while the average frequency of outage was set at 0.3. Indicators were estimated after assessing the relevant events recorded in detail in the Isolation and Handling Reports, which are collected and maintained by IPTO. Possible incidents related to outages of System equipment include circuits and autotransformers, as well as equipment that does not belong to the System, such as 150kV/20kV transformers that belong to the Network.

The table below presents values on the System's average outage duration and average outage frequency for the last three years.

Table 1.2

Transmission System resilience indicators	2020	2021	2022
System Average Interruption Duration Index (SAIDI) (minutes/year)	22	13	15
System Average Interruption Frequency Index (SAIFI)	0.19	0.26	0.3

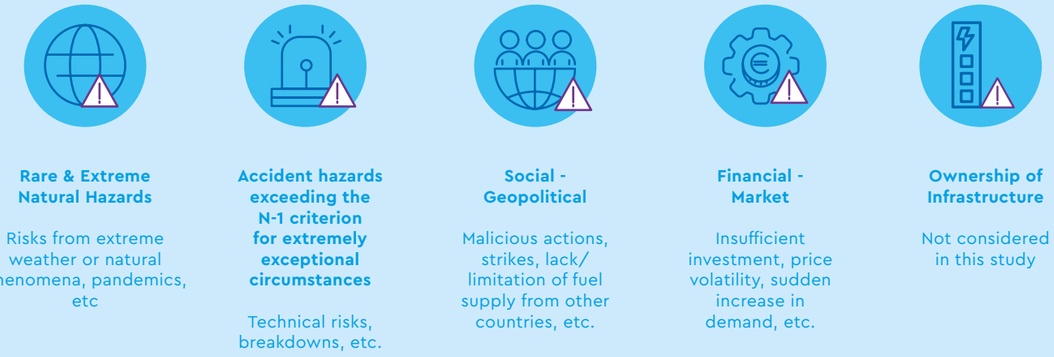
The average outage duration of the Transmission System was estimated by taking into account the total duration of an outage for the average customer during the year. Based on 2022 data, the network consists of 838 user connections and the number of incidents recorded was estimated at 279. Also, to estimate the average outage frequency of the System, IPTO takes into account the duration of such incidents, including damage restoration time, as well as the total number of customers who experienced such incidents.

Response to emergency situations

As part of ensuring preparedness to respond to emergency situations, IPTO reviews and assesses the risks that could potentially breach one or more operational security limits.

In this context, the Regulator carried out a study, in cooperation with IPTO, to investigate the conditions that may affect the security of power supply to the country's interconnected System for the years 2021-2024. The Hellenic Electricity Distribution Network Operator (HEDNO), the National Natural Gas System Operator (DESFA), the Natural Gas Distribution Network Operators, electricity producers, suppliers of natural gas and the Renewable Energy Sources and Guarantees of Origin Operator (RESGO/DAPEEP), also participated in the survey, providing important information within their area of responsibility and activity, in order to identify and analyse the potential risks for the period under consideration. These risks are summarised in the following table.

Table 1.3 Determining security of electricity supply



Source: Study for the Identification of National Electricity Crisis Scenarios, RAE, 2022

Based on the results of the study, the analysis of national and regional conditions, the results of the ENTSO-E Study on the Identification of Regional Crisis Scenarios and in accordance with Article 5 of Regulation (EU) 2019/941, a total of 16 crisis scenarios were identified, examined and simulated.

The crisis scenarios were classified into clusters for the best possible prevention and response measures and are as follows:

Malicious attacks

Cyber-attacks on critical infrastructure and systems of an energy entity connected to the System, as well as cyber-attack events on critical subsystems of the Hellenic Energy Exchange (HEnEx). Further information on malicious attacks is presented in the "Governance" chapter, under section "Innovation, research and development and digital transformation".

Natural hazards

Potential floods, forest fires and earthquakes that may cause extensive damage to the System.

Further information on natural hazards is presented in the "Environment" chapter, under section "Tackling climate change".

Pandemic/Human error

Risks related to the whole supply chain, from potential incidents that may affect the whole country (and/or the world), such as a pandemic wave, as well as incidents due to human error in the implementation of procedures. Also, incidents of untimely System risk assessment and improper handling of fault recovery, resulting in large discrepancies between forecast and actual load demand and significant imbalances that cannot be covered by the reserves.

Fossil fuel shortage

Retirement of all lignite units, as part of the implementation of the policy for the reduction of the environmental footprint from power generation, concurrently with other events resulting in the delay of the integration of new units into the System. This poses a risk of power adequacy, the inability to ensure the planned reserves, overloads on transmission lines due to new system topology also leading to a consequent increase in the probability of faults and the activation of emergency measures (e.g., rotational load shedding).

Electricity system failures

This scenario results from a combination of different events. More specifically, possible failures from different causes that affect the safe operation of the System in a specific geographical area. Possible failures may involve uncontrolled switching of circuit breakers, overloading of transmission lines, exceeding of thermal limits, loss of generating units and other events.

Measures for prevention, response preparedness and mitigation of the effects of electricity crises

In order to increase the reliability of the electricity system, a number of preventive measures are implemented to ensure both the maintenance of power quality and the rapid restoration of the System's operation following disturbances. In this context, IPTO implements a series of measures to prevent and respond to electricity crises and additional measures specifically for each set of the national crisis scenarios. In fact, IPTO aims to ensure safe operation from the planning phase, as well as the safe operation of the entire System within predefined operational safety limits, even after the occurrence of a disturbance, by implementing a predefined action plan. Furthermore, through a series of actions, such as reliable measurements, periodic simulations and regional monitoring, IPTO aims to ensure the safe operation of the System, both in its control area and in neighbouring Systems.

Business Model

Main Resources

Financial capital

€303.624 million
Net profit for 2022

€5 billion
Investment until 2030

Human capital

1,983
workers

€199,916
total cost of Health and Safety training

Intellectual capital

HETS
Grid Code

Infrastructure capital

HETS
Infrastructure

Fibre optic
network

Social capital

€56.6 million
Total salaries and allowances in 2022

€1.074 billion
Investments

Results

Financial capital

€58.2 million
Net profit for 2022

Human capital

13,486
Total hours of training

9
Accidents/injuries

Infrastructure capital

13,404.91km
Total length of transmission lines

23
High Voltage Centres

378
S/S

4,100km
Fibre optic network

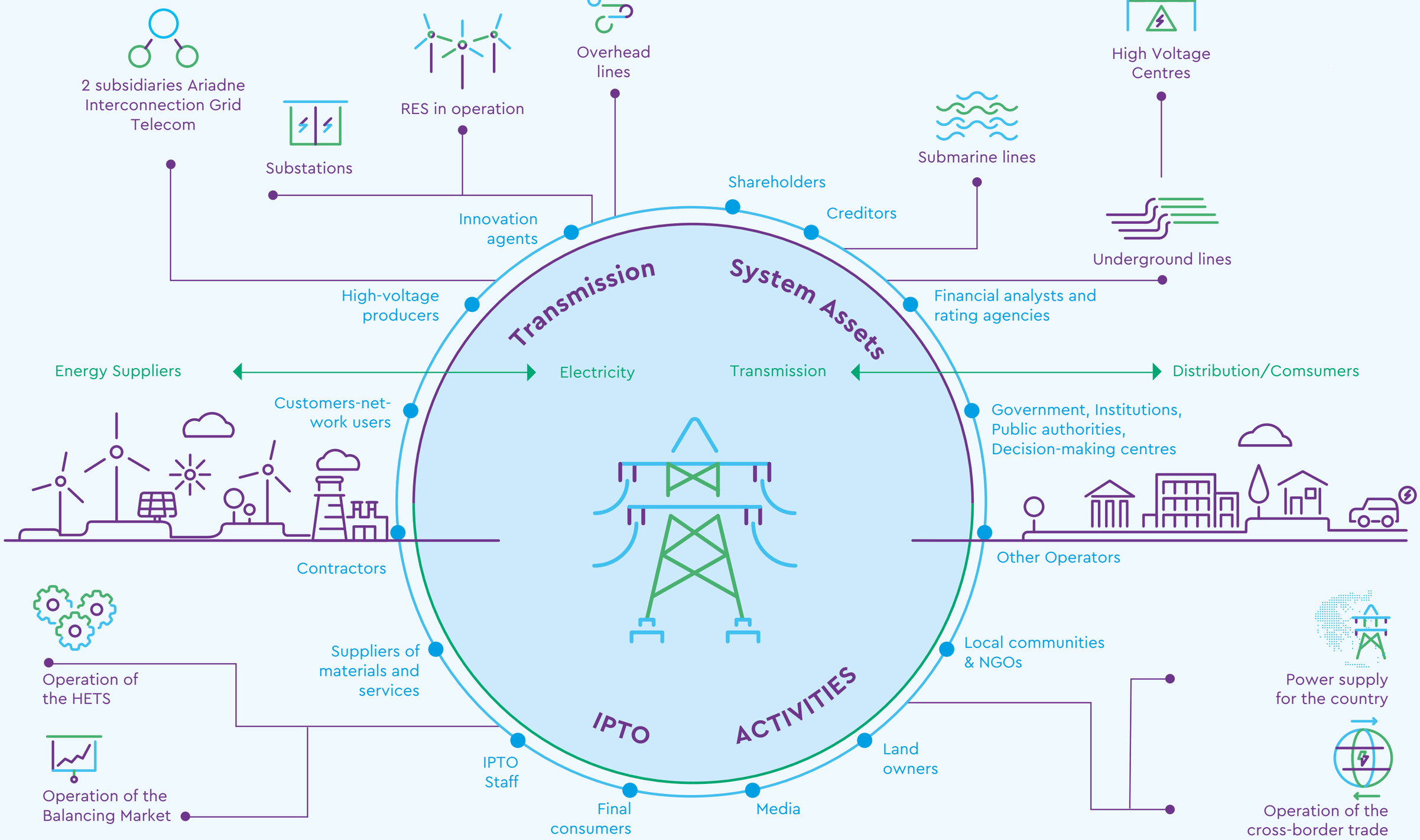
Intellectual capital

IPTO Analytics
Power System live data

Social capital

€3.76 million
Taxes paid

Business Model



Creation and distribution of economic value - Social Product

Through the operation and development of the country's electricity transmission system, IPTO creates value for all its stakeholders and society at large, making a significant contribution to sustainable development at national level. However, IPTO's socio-economic contribution exceeds its core scope which is the operation, development and maintenance of the HETS. In particular, because of the operation of IPTO and the development of the System, many jobs are being maintained and new ones are created, both direct and indirect. Furthermore, insurance contributions are paid to the competent bodies, and tax revenues are generated for the state. These amounts also contribute positively to the country's GDP and often have a multiplying positive impact.

In fact, the social product of the IPTO Group in 2022 amounted to €268 million. More specifically, the insurance contributions paid by the Group totalled €56.6 million, actively contributing to the development of local communities and the Greek economy in general, as wages and benefits have a multiplier effect. Moreover, in 2022 payments to state bodies (such as taxes, VAT, etc.) amounted to €3.76 million and €20.84 million in total for the three-year period (2020-2022).

In addition, IPTO's local footprint is also important, providing employment opportunities to workers from local communities and selecting local suppliers where feasible.

Chart 1.4: Group's annual contribution to social development – social product (€ in thousands)

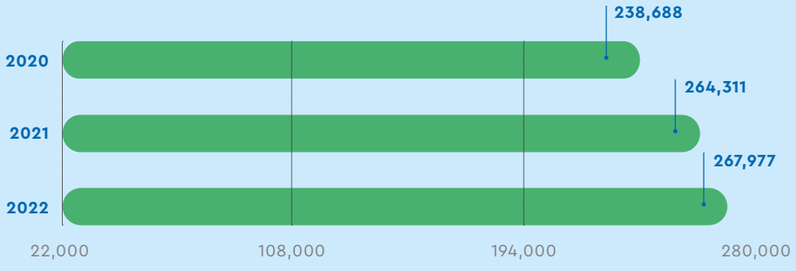
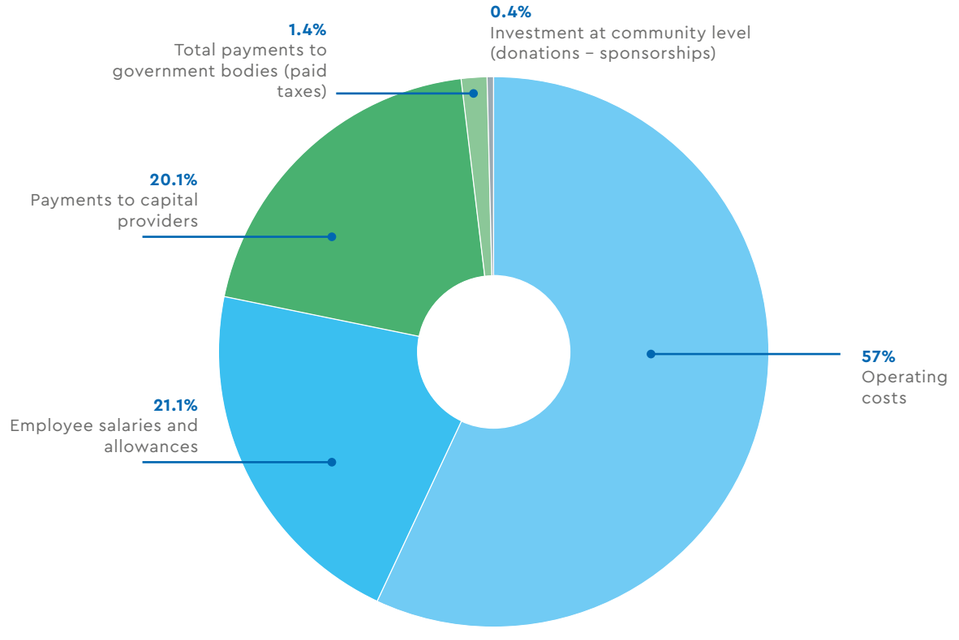


Table 1.5

Social product (€ in thousands)	2020		2021		2022	
	Company	Group	Company	Group	Company	Group
	Economic value generated					
Total revenue	**293,667**	**295,854**	**292,614**	**295,841**	**302,186**	**303,624**
	Economic value distributed					
Operating costs	111,181	112,164	140,495	141,453	151,017	152,608
Employee wages and benefits	54,037	54,105	58,957	59,255	56,266	56,632
Payments to capital providers	61,612	61,617	55,300	55,838	51,152	53,903
Total payments to government (paid taxes)	**9,508**	**10,052**	**6,853**	**7,028**	**3,759**	**3,759**
Community-level investments (donations – sponsorships)	750	750	707	737	929	1,074
Total social product	**237,088**	**238,688**	**262,313**	**264,311**	**263,123**	**267,977**
Economic value retained	56,580	57,166	30,301	31,530	39,063	35,647

Γράφημα 1.6: Social Product Distribution 2022



Strategic priorities

Strategic pillars and sustainable development goals

The role of IPTO is crucial in promoting sustainable development at national level, as through its activities it contributes to the country's energy transition, and in improving energy security and infrastructure resilience in a context of changing economic and climate conditions. Furthermore, it creates added value for the economy and promotes digital transformation both internally, in its activities, and across the country, through the development of the fibre optic network.

IPTO's 2022 Strategy enriches and strengthens that of the previous year, incorporating the aspect of sustainable development in its entirety and addressing the challenges of climate change.

The Group's strategic priorities are summarised below:

IPTO Strategy Pillars

Safety, reliability, resilience in a challenging and changing environment

Objective: Strengthening the System's resilience

IPTO implements technological upgrades and modernises the Energy Transmission System ensuring adequacy, security, stability and reliability. It incorporates modern technologies in the maintenance and monitoring of the network to timely address any potential internal and external risks. The digitalisation of services and operational internal processes, namely IPTO's transformation into a Digital TSO, is instrumental in achieving the objectives for a transition towards a sustainable future for the company, a transition also responding to modern cybersecurity challenges and the strict standards in the management of sensitive data that make it imperative.

Our overall goal is to fortify the resilience of the System in the face of a worsening climate change.

Utilisation of infrastructure and expertise for value-added services

Objective: Extention of the company's activities by utilising its potential

IPTO is looking forward to its transformation into a technological company for the exploitation of infrastructure and know-how, through investments aimed at the uninterrupted provision of its services with the smallest possible environmental footprint. In addition to the TLs, HVC and S/S, the IPTO Group has vast areas of land, buildings and a corporate fleet in its asset base. This asset base also includes fibre optics and data centres. By exploiting its real and movable property, the Group has the potential to create added value - beyond that produced by its core business - for its shareholders, always in the public interest, contributing to the digital transformation of the country.

Furthermore, IPTO has significant expertise, which, in cooperation with research institutions and universities, can create innovation hubs by contributing to the introduction of new technologies, such as energy storage technologies, critical infrastructure monitoring technologies, infrastucture supporting the "green" transition (e.g., charging stations) and advisory services on related issues.

Network development and energy transition

Objective: IPTO helps the transition to a decarbonised economy

IPTO is a facilitator of the transition to a low-carbon economy. We are moving in this direction along two axes: by building infrastructure and reducing pollutants.

The interconnection of the islands with the mainland, the integration of more remote RES production and storage plants into the grid, and the development of more interconnections with other Operators ensure energy security and the lowest possible charge to the final consumer. The reduction of fossil fuels in the energy mix and the energy transition are fully intertwined with IPTO's vision for a greener future. The gradual reduction of greenhouse gas emissions and energy savings in the Group's facilities, the way works are carried out and the way systems operate, the facilitation of procedures for the faster processing of RES connection requests and the research as well as development of new technologies all contribute significantly to a low-carbon operating model.

People, environment and governance

Objective: Caring for our people, for local communities and the environment

IPTO ensures the creation of a safe and secure working environment of equal opportunities, where diversity is respected. It works together with local communities, in the context of its activities, to accelerate the necessary energy transition promoting inclusion and value creation at the local level as well.

The improvement of working conditions based on European best practices and the cooperation between IPTO and local communities are actions that improve the efficiency of the company, make it more attractive to the right scientific and technical staff and enhance the sense of responsiveness in the areas where it operates. An important aspect of these practices is the transparency of procedures through the establishment of appropriate mechanisms and the continuous consultation of stakeholders.

Furthermore, an important objective for the Group is to reduce as much as possible the impact on the environment and biodiversity caused by the nature of its operations, which involve interventions in the natural landscape. The use and exploitation of new technologies in recording systems equipment, the use of recyclable materials and "circular" specifications, as well as the creation of a green value chain, aim to minimise the environmental impact.

Main achievements in 2022

Having completed 11 years of operation, IPTO continues by placing emphasis on its unceasing development and multi-level transformation, contributing as well to the transformation of Greece into an energy and telecommunications hub of the Eastern Mediterranean.

1

We have launched the SAP platform

We upgraded the business software (ERP) by migrating to the latest SAP platform, aiming to perform basic functions with maximum security and in a single flow.

The corporate functions performed through the new platform:

- Warehouse management
- Procurement and expenditure management
- Project management
- Employment time and performance review
- Travel and expenditure reports

2

We have completed the Skiathos power interconnection

An important milestone of 2022 is the Skiathos – Euboea electrical interconnection, another interconnection between islands that will benefit the whole of the northern Sporades. To operate this new interconnection, we installed a new 30km overhead transmission line in northern Euboea, laid a 29km long 150kV submarine cable at a depth of even 300m and placed it under the seabed for protection. Finally, we constructed a modern high-voltage substation with Gas Insulated Substation (GIS) technology on the side of Skiathos.

3

We have developed two new High Voltage Centres

We reinforced the continental Transmission System with two new HVC in Ptolemaida and Corinth. Specifically, the partial electrification of the HVC and the new power generation plant (Ptolemaida V) and the electrification of the new Corinth HVC and the 400kV Corinth-Megalopolis overhead transmission line were achieved.

4

We further developed the construction of the Crete-Attica electrical interconnection under the sea and on land

In 2022, major construction steps were taken for the Crete-Attica electrical interconnection. Ariadne Interconnection continued intensively the laying of 670km of submarine power cables for the interconnection. In addition, work on the construction of the conversion stations in Damasta and Aspropyrgos has been stepped up.

5

We laid the submarine power cable for the Santorini-Naxos interconnection

We laid the foundation for the high-voltage S/S in Santorini. With this project, we started the construction of the fourth and final phase of the electrical interconnection of the Cyclades. Furthermore, we laid 82km of electrical cable that will connect Santorini to Naxos, at depths of 400m in a particularly difficult and volcanic seabed.

6

We have achieved a record number in providing Final Connection Offers (FCOs) and RES Connection Contracts

With the parallel implementation of the projects, we are enhancing energy security for all consumers on the islands and the mainland and create new opportunities for the system to absorb RES. In 2022, we achieved a double record in the granting of FCOs and the conclusion of RES connection contracts. In a year when the installed capacity of RES exceeded the 10GW barrier, IPTO issued Final Offers for another 5.7GW and 2,130 green energy plants, thus being led to new green energy records. At the same time, 88 2.3GW connection contracts for RES plants were concluded. This is more than double last year's performance, which was the highest until that time.

7

We laid the foundations for our participation in the international power interconnection between Greece and Cyprus

In addition to domestic interconnections, IPTO also assists with major international interconnection projects. These projects upgrade our country to an energy hub and accelerate even further the penetration of RES in Greece and Europe. In 2022 we signed a Letter of Intent with EuroAsia Interconnector, the entity implementing the Greece-Cyprus-Israel power interconnection, with respect to our entry in the company's share capital by 25%.

We thus laid the foundations for our involvement in a very important project in terms of energy and geopolitics in the wider region of the Eastern Mediterranean, as Cyprus, which is the only EU country without interconnections with its neighbours, will become more secure in terms of energy supply.

8

We have signed an agreement with Telecom Egypt for the Greece-Egypt telecommunications interconnection

In 2022, IPTO signed a series of strategic agreements with Telecom Egypt, aiming for the telecommunications interconnection between Greece and Egypt. Specifically, a contract was signed between Grid Telecom and Telecom Egypt for the construction and laying of the branch to Crete of the major telecommunications cable that will interconnect most countries in North Africa. This new telecommunications cable will effectively serve the growing data traffic between Europe, Africa and the Middle East and will help transform Greece into a powerful data transfer hub among three continents.

9

We have fortified the digital security of our critical infrastructure

In 2022, the Security Operations Centre, which is IPTO's new state-of-the-art digital infrastructure for the Power System's cyber defence. This Centre utilises cutting-edge AI technologies, monitors and analyses in real-time potential cyber-attacks and helps protect the System from even the most complex attempts to breach digital security.

10

We have designed IPTO's Training Centre

During 2022, the new Training Department completed the basic studies on IPTO's Training Centre, which will be operational in September 2023. This initiative will boost expertise in many different areas.

11

We have entered the electric mobility market with GRID CHARGE

In 2022, the foundations were laid for the establishment of our new subsidiary, GRID CHARGE. With GRID CHARGE, IPTO enters the electromobility market and contributes to the promotion of transport electrification. GRID CHARGE is already involved in a consortium for the development of charging infrastructure in 23 EU Member States.

12

We have equipped the network with emergency pylons

We have enchanced our incident response tools for immediate response and restoration, especially in cases of natural disasters where the damage is deemed severe. During 2022 we procured the Emergency Restoration System and started to train our people on this innovative system that enables us to restore damage to transmission lines much faster by temporarily installing emergency pylons.

13

We have connected with the European intra-day market and prepared the demand response mechanism

In 2022 we managed to complete our connection to the single European intra-day market through the XBID platform. In addition, we have prepared the Demand Response mechanism, which is now ready to operate, incorporating for the first time the demand side of energy management.

14.

We haveasked our people's opinion for an even better working environment

The first staff satisfaction survey was conducted in 2022, with the aim of implementing subsequent surveys. In this context, all employees were given the opportunity to highlight the most important issues that shape their work experience, but also affect their degree of satisfaction by it. Additionally, a staff survey was carried out regarding the integration of the gender aspect in the work environment, with the aim of subsequently formulating the Agency's Gender Equality Policy.

15

We have provided for the first time an opportunity for young scientists to start their career at IPTO

In 2022, we launched the IPTO Talent initiative, which aims to give young people with little or no work experience the opportunity to work for a year at IPTO. IPTO's aim is to continue and further strengthen this initiative year after year in order to contribute to the effort to stop the brain drain, i.e. the emigration of young and highly qualified human resources from Greece to abroad.

The programme was addressed to graduates in Electrical Engineering, Mechanical Engineering and Computer Science, holding a postgraduate degree and with little (up to 2 years) or no work experience, who were invited to work in specific areas of the Company.

Goals for 2023

The IPTO Group has set short- and long-term objectives, which are the key element of its strategy. These targets are part of the Group's broader ambition to shape a secure, equitable and affordable low-carbon energy future through a stable and coherent policy.

The goals set for the year 2023 include a series of initiatives that contribute to the sustainable development of the economy, the environment and society.

01

Complete of the Crete-Attica electrical interconnection

One of the main objectives set by the IPTO Group is to complete the construction of the main buildings and infrastructure at the Koumoundourou and Damasta conversion stations and to start installing the basic equipment (transformers and conversion valves) at the same time. In addition, within 2023, the Group plans to complete the Ariadne Interconnection submarine cable system, by connecting all the electric cables and fibre optics of the project.

02

Commence the studies for the electrical interconnection of the Dodecanese

The Dodecanese interconnection is a new island interconnection included in IPTO's ten-year investment programme. Specifically, the project provides for the submarine interconnection of Kos with the Mainland Transmission System through the new Corinth HVC. The interconnection of Kos with Rhodes and Rhodes with Karpathos are set to follow next. Thus, the creation of another island "electrical corridor" is planned, which will allow the reliable supply of electricity to the Dodecanese from the System, as well as the exploitation of the RES potential, with significant environmental and socio-economic benefits.

In this context, our aim for 2023 is to start the preparation of structural safety and dynamic analysis studies for the first phase of the project, which concerns the electrical interconnection that will start from the new Corinth HVC and will end in Kos.

03

Prepare the contract for the new 400kV Corinth-Attica Transmission Line

Following completion of the first half of the Eastern Corridor, from Megalopolis to Corinth, our goal is to complete the contracting of the second part of the line between Corinth and Attica by August 2023.

04

Complete the new Greece-Bulgaria electricity interconnection

Another project that is very close to completion is the second Greece-Bulgaria interconnection with a 400kV overhead transmission line. Our aim in the next period is to complete the domestic part of this line, which starts from the Nea Santa HVC and reaches the Greek-Bulgarian border. It is a very important project that will increase the energy exchanges between Greece and Bulgaria and will further enhance energy security in South-East Europe.

05

Move forward the Energy Transition Projects Programme

In 2023, the implementation of the Energy Transition Projects Programme will continue, with the aim of ensuring the stability of the System, especially in periods when loads are low and voltages are high, due to the increased production from RES. This will be achieved with new compensation equipment, more sophisticated load sharing platforms and appropriate infrastructure specifically for green energy operation. In this context, IPTO is preparing the System for the new era.

06

Launch of the operation of our Training Centre

During 2022, we prepared the ground for the operation of the IPTO Training Centre. Our goal is for the Centre to open its doors in September 2023 and start offering high quality, certified technical training, to maintain and enhance IPTO's expertise, which is one of the most valuable assets of the Company.

07

Upgrade our asset management and monitoring systems

IPTO's aim is to manage its assets even more efficiently. Specifically, the new Asset Management System (AMS), which will be operating through the SAP platform, will achieve optimal utilization of assets and reduce management costs. Furthermore, the implementation of IPTO's state-of-the-art Asset Performance Management System (APMS), in combination with the Online Condition Monitoring systems and the interconnections with the PCCs and the HVCs, can support IPTO's strategy for the transition from Time Based Maintenance to Condition Based Maintenance. In addition, the objective has been set to modernize the web version of IPTO's Geographic Information System (GIS), with the use of new GeoSpatial Analysis software. Furthermore, an important objective is to upgrade security measures and systems in all IPTO infrastructure to prevent incidents of equipment theft.

08

Continue the expansion of our telecommunications network

Through our subsidiary GRID TELECOM, we continue to upgrade the telecommunications infrastructure and services in Greece. Our goal for 2023 is to expand our existing DWDM telecommunications infrastructure geographically in the Peloponnese, Crete and Attica (Phase II) and Thrace (Phase III) and to expand capacity services for even better commercial utilization of our fiber optic network. In addition, an objective for 2023 is the expansion of IPTO's own IP/MPLS Telecommunications Network used for communications and control of the electrical infrastructure.

09

Further develop a strong presence in the electric vehicle charging market

The Group aims to consolidate GRID CHARGE in 2023 in the market, as IPTO's new vehicle in the electromobility sector and to implement plans for the development of an ultra-fast charging network for electric vehicles with chargers up to 360kW.

10

Leverage cutting-edge technologies for the digital shielding of the System

In addition to the physical shielding of the System and equipment, we aim to keep improving the digital shielding of the System. Specifically, for 2023, our goal is to evolve our digital cyber defence infrastructure by developing advanced and intelligent cyber security solutions while strengthening our threat detection mechanisms in IT & OT Systems. In this context, specific business continuity and operational risk plans will be developed and specific information and awareness actions on Cybersecurity issues will be held.

11

Lay the foundation for the implementation of the new circular waste management system

An important objective is the creation and operation of a single Waste Registration, Evaluation and Recycling System. The project will have a 3-year horizon for its completion, to design overall procedures and policies for integrated and horizontal waste management at IPTO. Its launch is scheduled for 2023.

12

Develop a Policy and Action Plan for equality and inclusion

Following an internal qualitative and quantitative survey conducted among IPTO's employees, a policy document has been drafted and is in the process of being approved. The Policy includes commitments on equality issues and aims to implement a comprehensive action plan for equality and the inclusion of diversity. At the same time, an action plan is being prepared for the integration of the key axes of the Policy into everyday working life.

Our contribution to the UN Sustainable Development Goals (SDGs)

The United Nations Sustainable Development Goals (SDGs) provide a holistic and integrated framework for addressing the world's most important sustainability challenges and creating a better future for all. Although governments are primarily responsible for prioritising and implementing actions that meet the SDGs, achieving them also requires cooperation with businesses and civil society.

IPTO's contribution to the achievement of the United Nations Sustainable Development Goals (SDGs) for 2030, as expressed by the 17 SDGs and the 169 corresponding targets, is presented below.

Table 1.7

Sustainable Development Objectives and Targets related to IPTO's operation		IPTO's contribution in 2022
1 NO POVERTY	**1.2** We contribute to reducing the rate of men, women and children living in poverty in all its dimensions. **1.3** We implement appropriate social protection systems and measures to achieve substantial coverage of the vulnerable population. **1.5** We contribute to eliminating exposure of the vulnerable population to events related to the economy, society and the environment.	• We provided work for 1,983 employees, including permanent and temporary staff. • We have been developing the System ensuring electricity supply to all citizens in an adequate and safe way. • We have been planning and implementing new interconnections that enable the country's green electrification and reduce the cost of energy, making it more affordable for all. Additionally, PUs costs are reduced for all, including the most vulnerable social groups.
3 GOOD HEALTH AND WELL-BEING	**3.9** We contribute to reducing the number of deaths from hazardous chemicals and air, water and soil pollution and contamination.	• We contribute to increasing the integration of RES by implementing new interconnections, leading to a reduction in carbon intensity, which adds to air pollution, at local and national level. • We apply strict measures to keep electromagnetic radiation within the limits set by the World Health Organization.
5 GENDER EQUALITY	**5.1** We contribute to ending all forms of discrimination against women.	• We take steps to create an inclusive and non-discriminatory environment of equal opportunities. We are developing a "Gender Equality and Diversity Inclusion Policy" and a "Policy on preventing and combating violence and harassment at work".
7 AFFORDABLE AND CLEAN ENERGY	**7.1** We ensure universal access to affordable, reliable and modern energy services. **7.2** We contribute to increasing the share of renewable energy in the global energy mix. **7.3** We contribute to improving energy efficiency. **7.a** We support research on clean energy technologies, including renewable energy sources, energy efficiency and cleaner fossil-fuel technologies, promoting investments in energy infrastructure and new technologies. **7.b** We extend our infrastructure to supply sustainable energy services to the country's islands.	• We interconnect the Greek islands with the Mainland System, allowing the connection of a higher rate of RES to the System, addressing the energy isolation of the islands and increasing the reliability of supply. • New installed capacity from RES in the System in 2022: 583MW in the HETS and 1,939MW in the Interconnected System. • We have been developing the international interconnection network with Bulgaria, Italy, Albania, Cyprus, Egypt and North Macedonia accelerating the transition to the decarbonisation of power generation. • We are actively involved in 17 European Horizon 2020 Research Programmes and a research collaboration with the European Space Agency (ESA) aiming to achieve optimal integration of future RES penetration rates.
8 DECENT WORK AND ECONOMIC GROWTH	**8.1** We contribute to the country's economic growth per capita. **8.4** We contribute to improving efficient use of resources by decoupling economic growth from environmental degradation, promoting a framework of sustainable production and consumption. **8.5** We contribute to full and productive employment and decent work for all women and men and for young people. **8.8** We protect labour rights and promote safe working conditions for all employees without discrimination.	• Maintained 1,983 jobs, ensuring equal opportunities and respect for diversity, were preserved. • All of our employees are covered by full-time contracts and collective labour agreements. • In 2022, we spent €199,916 to train our employees on Health & Safety issues. • Our social product in 2022 amounted to €267,977 million.
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	**9.1** We develop sustainable, resilient and inclusive infrastructure. **9.2** We promote inclusive and sustainable industrialisation. **9.5** We contribute to stimulating scientific research and upgrading the technological capabilities of the industrial sectors.	• We are implementing a ten-year €5 billion investment programme and developing resilient infrastructure across the country. • We are implementing an extensive asset renewal programme to increase the resilience of the System. • We provide access to energy for businesses and households across the country. • We actively participate in 17 European Research Programmes. • We participate in the drafting of the ENTSO-E Research & Innovation Roadmap through the working groups (RDIP and Flexibility & Markets) of the ENTSO-E Research Development and Innovation Committee (RDIC). • We are developing international interconnections with neighbouring countries.

10 REDUCED INEQUALITIES	**10.2** We contribute to promoting the economic inclusion of all, regardless of age, gender, disability, race, ethnicity, nationality, origin, religion or economic or other status. **10.3** We ensure equal opportunities and reduce inequalities, by eliminating discriminatory laws, policies and practices, among other things. **10.4** We adopt policies to promote equality.	• We developed a Policy and Action Plan for equality and inclusion at the workplace. We are designing a policy to address violence and harassment at work and the implementation of an internal complaints mechanism.
11 SUSTAINABLE CITIES AND COMMUNITIES	**11.1** We contribute to the enhancement of local infrastructure. **11.4** We contribute to the efforts aimed at protecting and safeguarding cultural and natural heritage.	• We extended the fibre-optic network to 4,100km in order to upgrade telecommunications services in Greece. • Aspiring to safeguard the cultural heritage in the areas where our network extends, we have developed a collaboration with archaeological institutions. • We spend money on contracts for cleaning, vegetation removal, tree pruning/cutting and maintenance/ recharging of portable fire extinguishers to prevent or directly respond to fires that threaten the natural heritage of the country.
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	**12.4** We contribute to the sound management of all waste in accordance with agreed international frameworks and legislation. **12.5** We contribute towards reducing the generation of waste through prevention, reduction, recycling and reuse.	• We manage generated waste in line with applicable legislation and regulations. • Through our regeneration system, we restore and reuse insulating oils.
13 CLIMATE ACTION	**13.1** We enhance the resilience and adaptive capacity of our activities to hazards associated with climate change. **13.2** We contribute to the integration of climate change response measures into national policies, strategies and their planning.	• We are implementing an Asset Renewal Programme with the aim of replacing by 2026 all System assets older than 24 years, corresponding to approximately 60% of the existing System assets, with state-of-the-art equipment. • We helped shape the regulatory framework for energy storage and offshore wind farms.
14 LIFE BELOW WATER	**14.1** We contribute to the prevention of all forms of marine pollution and the protection of the marine environment.	• We ensure protection of the marine environment and minimise the environmental impact of our activities through the measures we implement.
15 LIFE ON LAND	**15.1** We contribute to the protection of natural habitats and prevent the loss of biodiversity.	• We take appropriate measures to protect the environment and biodiversity (flora and fauna) both during the planning phase and during the construction of our projects. • In addition to carrying out relevant environmental impact assessments with the aim to identify, describe and assess potential effects arising from the Company's projects, we prepare special studies such as Special Ecological Assessment Studies when required.
17 PARTNERSHIPS FOR THE GOALS	**17.17** We aim to build partnerships with national and European institutions, public authorities, local communities, and civil society organisations.	• We are in close cooperation with the competent authorities, such as Ministries, Regions, Forest and Archaeological Services, always taking into account the concerns of local communities regarding our activities. • We actively participate in organisations at both national and European level in order to promote cooperation and sustainable development.

Cooperation and consultation with stakeholders

Our role as the HETS Operator requires us to be in constant and two-way communication with our stakeholders at institutional, local and market level. We recognise as stakeholders all groups that affect or are affected by our operations.

Our strategy and priorities are also shaped by the views, expectations, concerns and priorities of our stakeholders.

During 2022, the Group continued to actively participate in the communication and consultation processes with its stakeholders through various ways and channels of communication.

Table 1.8 Communication with stakeholders

Stakeholders	Key priorities/expectations	Communication
Shareholders	• Interest in the fulfilment of the Company's purpose, growth and development, as well as its performance with regard to social and environmental issues • Safeguarding the Company's sustainability • Application of international standards and principles of corporate governance	• Constant updates via announcements, press releases and presentations, the website and the media, as well as annually through our annual Sustainability Report • Constant communication with the Investor Relations Department of ADMIE (IPTO) Holding
Creditors (banking institutions & other capital providers)	• Timely updates on financial results and new investments • Safeguarding the Company's sustainability and application of international standards and corporate governance principles • Implementation of the Company's investment plan	• Constant updates through announcements, press releases and presentations, the website and the media, as well as Financial Statements (annual and half-yearly) and the annual Sustainability Report • Meetings with the Company's Management and Financial Division, as the need arises
Financial analysts and rating agencies	• Sustainability • Liquidity • Strategic planning • Performance on ESG criteria	• Constant updates through announcements, press releases and presentations, the website and the media, as well as through the Financial Statements (annual and half-yearly) and the annual Sustainability Report • Communication (by phone, electronic or in person) with representatives of the Company
Government, Institutions, Public authorities, Decision-making centres (within and outside Greece)	• Maintaining the country's uninterrupted and secure energy supply • Achieving the objectives of the 10-year development plan and the investment plan for infrastructure projects (e.g., island interconnections) • Compliance with laws and regulations • Environmental, labour and social issues • Contribution to the energy transition at national level	• Regular communication at institutional level • Participation of the company in Associations and Chambers • Meetings with organisations / authorities / legislative and institutional bodies • Workshops and conferences • Company website • Financial Statements (annual and half-yearly) and annual Sustainability Report
Other Operators	• Energy security • Innovation • Cooperation to promote industry affairs at European level • Implementation of international interconnections	• Continuous communication with the other European operators through ENTSO-E in which we participate • Active dialogue and development of partnerships through participation in joint projects • Participation in industry seminars
Local communities & NGOs	• Stimulating the local economy through spending on local suppliers and project contractors • The Company's responsiveness to local community issues (e.g., strengthening initiatives) • Minimisation of visual disturbance and electromagnetic radiation	• Constant communication with local bodies and associations • Participation of the Company's representatives in public consultations on projects • Publication of the Sustainability Report
Landowners	• Expropriation of private land and compensation issues • Local disturbance due to new projects and the Transmission System's Operation	• Notice to landowners prior to the start of the project and during its execution
Media	• Informing the public regarding the Company's activity • Report on economic, environmental and social data	• Company Press Office • Communication with media representatives whenever necessary • Press releases, publications and announcements • Company website • Social Media • Financial Statements (annual and half-yearly) and annual Sustainability Report

Final consumers (through the energy suppliers)	• Security of services • Reduction of energy costs • Innovation	• Intensive communication campaigns with nationwide coverage throughout the year • Communication via the website • Daily communication via social media and answers to consumer questions • Financial Statements and Sustainability Report
Employees	• Growth and development • Protection of occupational Health and Safety • Benefits and insurance coverage • Opportunities for development within the Group • Equal opportunities and respect for diversity	• Staff satisfaction survey • Regular communication between management and workforce • Internal meetings • Intranet • Internal updates via e-mail • Notice boards in assembly areas • Social media • Company events • Employee evaluation process and training
Suppliers of materials and services	• Impartial/objective evaluation • Profitable and long-term partnerships with the Group • Strengthening local suppliers	• Constant communication with the Supply Chain Division per procurement category • Contact via the accounting department on financial matters • Presence at supplier exhibitions and events
Contractors	• Consistent, profitable and long-term cooperation with the Company • Working in safe conditions • Cooperation issues with local communities	• Direct communication via Site Managers for each activity on an ongoing basis and as needed
Customers – network users	• High quality services • Execution of projects according to the set timetable and work programme • Policies and procedures for prompt service • Information about the services • Data protection	• Physical and telephone presence, e-mail • Website and media
High-voltage producers	• High quality service provision • Proper functioning of the electricity market	• Constant communication with the relevant Company Divisions
Innovation drivers (educational institutions, research centres, etc.)	• Linking academic research with applied practices • Cooperation on research and innovation • Student internships	• Participation in conferences • Cooperation with the Research, Technology and Development Division • Company website

Consultation with stakeholders and operation-related impact management

Our activity as well as the development and maintenance projects for the HETS are of national concern and great important as they lead to a series of benefits for consumers, society, the economy and the environment, contributing to the country's energy security, energy transition, and reductions in electricity bills, and paving the way for the gradual decoupling from pollution generating power plants.

However, the realisation of new projects and the implementation of interconnections has resulted in incidents of local disturbances, however mainly of a transient nature. IPTO takes all necessary measures to minimise local nuisance, seeking, through systematic dialogue and consultation, to respond to the expectations and concerns of its stakeholders by undertaking specific actions whose aim to contribute towards shaping a sustainable future for local communities.

More specifically, in tackling impacts that may result from our activities, we follow the general principles below:

- We engage in systematic dialogue with the local communities in which we operate, so that there is mutual understanding and effective communication concerning the benefits generated by our projects.
- We develop alternatives for the routing of transmission lines during the design phase of all projects, seeking to ensure consensual solutions and minimal disruption during the construction of our projects.
- We inform landowners, where land expropriation is required, on the procedure to collect compensation.
- We undertake continuous actions and initiatives to support local communities after an open dialogue with them and sometimes implement projects for the public benefit.
- We strictly comply with the limits set by the World Health Organization and the Greek legislation on electromagnetic fields, both for the general public and for our employees.
- We study and assess in detail the potential impacts of our projects on protected species and habitats.
- We take measures to eliminate, prevent or reduce to a negligible level the potential impacts of a project. These measures include changes to the size, location and design (e.g., use of reduced-noise transformers to address noise pollution) or may be temporary adjustments during construction and operation phases (e.g., avoiding construction activities during bird migration season).
- We consider alternatives where the impacts of the planned project continue to be significant, even after mitigation measures (e.g., different siting or undergrounding of the project, change in scale or development plans).

Reduction of visual disturbance and electromagnetic radiation

IPTO's objective is to show the utmost respect for the natural environment and the local communities in the areas where it operates, seeing to minimise the impact and disturbance at the local level.
For this reason, IPTO is in constant communication with local communities throughout the implementation of a project to make necessary technical improvements, taking care to address concerns that may arise at the local level. In this context, meetings or informative events are held with the relevant institutions of the local communities.
Also, the Company's policy for the wider acceptance of its projects includes potential agreements with local communities to implement projects of public benefit.
In the case of visual disturbance, its reduction is always sought to achieve an optimal cost-benefit balance for both local communities and the wider society. The undergrounding of transmission lines entails higher costs than overhead lines, which then translates into higher electricity bills for the citizens. Therefore, the choice of the appropriate means of transporting electricity should be based not only on reducing visual disturbance, but also on a balanced economic and social approach, taking into account the corresponding increase in electricity bills. The practices applied to achieve the lowest possible levels of visual disturbance are as follows:

- All new overhead transmission lines are routed away from residential areas, even from individual farmhouses or warehouses.
- Transmission lines near or within residential areas run underground rather than overhead.
- When transmission lines are close to settlements, tubular poles (masts) are used instead of lattice towers (pylons). The area and volume occupied by a mast is much less than the area occupied by a pylon.
- The construction of a substation and a high-voltage centre within cities or areas with special natural characteristics, such as the Cyclades islands, is of a closed GIS (Gas-Insulated Switchgear) type.

Regarding electromagnetic radiation, IPTO strictly applies the limits set by the non-profit scientific International Commission on Non-Ionizing Radiation Protection (ICNIRP) operating under the auspices of the WHO. In fact, routine measurements throughout our activities demonstrate that the observed electric fields are well below the limit set by the relevant Joint Ministerial Decision of 2002, (Electric field strength E ≤ 5,000V/m), and magnetic fields are often 50 to 100 times below the set limit (magnetic induction B ≤ 100μT).

Contribution to the dialogue for the improvement of the regulatory framework

In accordance with the provisions of Law 4001/2011 and the System Grid Code (SGC), as well as within the framework of its responsibilities, IPTO prepares and publishes the Ten-Year Development Plan (TYDP) for the country's Transmission System, issued every year, on a rotating basis. After its preparation, the Preliminary Draft of the TYDP is subjected by IPTO to a public consultation, in accordance with the provisions of Article 229 of the HETS SGC, inviting stakeholders to submit their views to IPTO by email. These tasks also include the improvement of the country's regulatory framework, to which the contribution of our Legal and Regulatory Affairs Division is crucial. Our Legal and Regulatory Affairs Division:

- Monitors developments and amendments to Greek, European and international legislation and case law regarding the regulatory framework.
- Monitors international regulatory practices and trends, developing its strategic approach, tackling regulatory issues, and coordinating communication with the relevant institutions and bodies.

For instance, IPTO's contribution is important in terms of the dialogue about the regulatory framework for offshore wind farms, as well as the approvals for the integration of energy storage systems into the energy mix under favourable pricing terms.

Appropriate shaping of the country's legal and regulatory framework and the regulation of issues related to new technologies in the energy sector are also important for maintaining the momentum towards the transition to a low-carbon economy and safeguard the country's energy security.

Engagement in organisations and bodies

We take active part in developments related to the country's energy issues, as well as sustainable development issues, by participating in several organisations and support initiatives related to sustainable development. Furthermore, the IPTO Group is an active member of ENTSO-E, Cigre, Med-TSO, as well as the Hellenic Network for Corporate Social Responsibility (CSR HELLAS).

The organisations and entities that the IPTO Group participated in during 2022:

- Association of Chief Executive Officers (NACEO)
- Athens Chamber of Commerce & Industry (ACCI)
- Technical Chamber of Greece (TCG)
- Union of Hellenic Chambers of Commerce (UHCC)
- General Electronic Commercial Registry (GECR)
- Hellenic Federation of Enterprises (HFE)
- Hellenic Network for Corporate Social Responsibility (CSR HELLAS)
- Institute of Energy for South-East Europe (IENE)
- International Council on Large Electric Systems (Hellenic & International) (CIGRE)
- The Institute of Asset Management (IAM)
- European Network of Transmission System Operators for Electricity (ENTSO-E)
- Mediterranean Transmission System Operators (Med-TSO)
- Hellenic Association for Energy Economics (HAEE)
- Institute of Internal Auditors of Greece (IIA Greece)

Furthermore, IPTO holds shares in the following organisations:

- Joint Allocation Office (JAO)
- Coordinated Auction Office in South East Europe (SEE CAO)
- Southeast Electricity Network Coordination Center (SEleNe CC)

We take active part in developments related to the country's energy issues, as well as sustainable development issues, by participating in several organisations and supporting initiatives related to sustainable development.

ENTSO-E

The European Network of Transmission System Operators for Electricity (ENTSO-E) represents 39 Transmission System Operators for Electricity from 35 countries. Its mission is to ensure the reliable and secure operation of the interconnected System at pan-European level, coupled by the optimal operation and development of Europe's interconnected electricity markets, while facilitating the smooth penetration of RES in the energy mix of European countries and the development of new technologies.
IPTO is a member of ENTSO-E, taking active part in all its activities, the meetings of the General Assembly and the actions of committees and respective working groups tasked with designing and implementing Codes, developing of pan-European Network Development Plans, preparing reports on System adequacy, coordinating research projects for the promotion of Research and Innovation, seeing to cybersecurity and technical support issues concerning the operations of systems, as well as closely monitoring their legal and regulatory duties (Market Committee, System Development Committee, System Operations Committee, Research and Development Committee, Information & Communication Technologies Committee, Legal and Regulatory Group).
IPTO also participates in consortia for the implementation of projects related to the operation and development of the ENTSO-E networks and chairs the Project Group Turkey for the interconnection of Turkey to the ENTSO-E Network.

SEleNE CC

The commercial operation of the Regional Security Center (Regional Security Center-RSC), namely the Southeast Electricity Network Coordination Center (SEleNe CC) in Thessaloniki, established in the summer of 2020 by the System Operators of Greece, Bulgaria, Italy and Romania, has started since 2021.
As of July 1, 2022, SEleNe CC, in accordance with the provisions of the 4th Clean Energy Package (CEP), has become a Regional Coordination Center (RCC) providing advisory services to its Shareholder Operators with the aim of coordinating and harmoniously operating the Transmission Systems of the region.
SEleNe CC is one of the six Regional Coordination Centres currently operating on the European continent and has been providing all the services foreseen since day one of its commercial operation.
These services include:

- the development of a common network model,
- coordination for the operational security of the network,
- the coordinated estimation of interconnection capacity,
- coordination of the maintenance planning,
- the assessment of the short-term adequacy of the region's Transmission System, and
- participation in the management of critical operational situations, coordinating the actions of the Operators of the region.

SEleNe CC will enhance the efficiency of the operation of the electricity market in the region and contribute to its faster and more efficient integration at European and regional level. It also represents an important step towards aligning the SEE region with the 4th EU Clean Energy Package.

Materiality analysis

The IPTO Group carried out an assessment of the sustainable development material topics related to its operations, with the aim of identifying and evaluating the positive and negative impacts that are created or may be created on the environment, people and the economy as a result of its activities.

The assessment was carried out based on the methodology proposed in the revised GRI International Standards, while international and sectoral sustainable development standards, such as the SASB Standards, were also considered in determining impacts.

The materiality analysis was carried out according to the following steps:

Step 1: Review of the operating framework

- Review of activities and business relationships, as well as of the context in which they take place.
- Overview of the Group's main stakeholder groups.

Step 2: Identifying positive and negative impacts

- Identification of the positive and negative (existing and potential) impacts on the economy, the environment and people resulting from the Group's activities and business relationships.

Step 3: Assessment of the significance of impacts

- Conducting research on sustainable development material topics with the participation of stakeholders' representatives.
- Evaluation of the survey's results, based on the stakeholders' responses.

Step 4: Prioritising the most significant impacts for reporting

- Setting a materiality threshold for the identification of material issues.
- Validation of the list of material topics by the Group's Management.

The materiality analysis conducted in 2022 was attended by representatives of the Group's stakeholders, who were asked to consider criteria to determine the significance of the impacts that are or may be created due to IPTO's activities.

Both the extent and magnitude of each impact were considered in the assessment and in the case of negative impacts the level of difficulty to reverse them was also considered. Furthermore, the survey participants were asked to consider the probability of each different impact occurring. In this context, a prioritisation of the significant impacts arising from the Group's operations was carried out with the results of the survey offering crucial information for the enrichment of the Group's strategic priorities regarding sustainable development.

After collecting the stakeholders' views, which were also reviewed and approved by the Company's senior Management, the following 19 material topics emerged:

Table 1.9: Materiality analysis

Positive impacts		
ESG Category	**Material topic**	**Sustainable Development Goals**
Governance and Economy	System adequacy, security, stability, reliability and emergency response	7 AFFORDABLE AND CLEAN ENERGY; 13 CLIMATE ACTION
Environment	Implementing the energy transition	3 GOOD HEALTH AND WELL-BEING; 7 AFFORDABLE AND CLEAN ENERGY; 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE; 11 SUSTAINABLE CITIES AND COMMUNITIES; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION
Governance and Economy	Network development (domestic and interconnections)	1 NO POVERTY; 7 AFFORDABLE AND CLEAN ENERGY; 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE; 11 SUSTAINABLE CITIES AND COMMUNITIES; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION
People	Cooperation and consultation with stakeholders and local communities	17 PARTNERSHIPS FOR THE GOALS
Governance and Economy	Data and infrastructure security	11 SUSTAINABLE CITIES AND COMMUNITIES; 13 CLIMATE ACTION
Governance and Economy	Compliance and governance practices	8 DECENT WORK AND ECONOMIC GROWTH
Governance and Economy	Innovation, research & development, and digitalisation	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
Governance and Economy	Economic value creation and contribution	8 DECENT WORK AND ECONOMIC GROWTH; 17 PARTNERSHIPS FOR THE GOALS
People	Occupational Health and Safety	8 DECENT WORK AND ECONOMIC GROWTH
People	Equal opportunities and diversity	5 GENDER EQUALITY; 8 DECENT WORK AND ECONOMIC GROWTH; 10 REDUCED INEQUALITIES
People	Training and development	8 DECENT WORK AND ECONOMIC GROWTH; 13 CLIMATE ACTION
Governance and Economy	Contribution to the efficient functioning of the energy market	1 NO POVERTY; 7 AFFORDABLE AND CLEAN ENERGY
Environment	Ecosystem protection and environmental management	3 GOOD HEALTH AND WELL-BEING; 11 SUSTAINABLE CITIES AND COMMUNITIES
Governance and Economy	Procurement practices	12 RESPONSIBLE CONSUMPTION AND PRODUCTION; 14 LIFE BELOW WATER
Environment	Waste management	3 GOOD HEALTH AND WELL-BEING; 11 SUSTAINABLE CITIES AND COMMUNITIES; 15 LIFE ON LAND

Negative impacts	
ESG Category	**Material topic**
Environment	Ecosystem protection and environmental management
Governance and Economy	Innovation, research & development, and digitalisation
Environment	GHG emissions and energy efficiency
People	Cooperation and consultation with stakeholders and local communities
People	Occupational Health and Safety
Environment	Waste management
Governance and Economy	System adequacy, security, stability, reliability and emergency response
People	Equal opportunities and diversity
Governance and Economy	Compliance and governance practices
Governance and Economy	Data and infrastructure security

Material topics Other topics

The actions and practices followed by the Group in the context of mitigating and managing existing and potential positive and negative impacts are discussed in the following sections.

Whilst reviewing and updating the material topics related to the Group's operation, three additional topics - identified as material for 2022 - were added to those identified as material in the survey conducted in 2021. Specifically, these topics concern IPTO's "Compliance and governance practices", "Procurement practices" and "Data and infrastructure security". In addition, two topics were not identified as material according to the 2022 materiality analysis. More specifically, the topics "Quality and timelines" and "Open data" were not considered material, as far as alignment with the requirements introduced by the new GRI Standards was concerned.

Contributing to the energy transition

583MW
New installed capacity from RES in the HETS in 2022

38.8%
share of RES in the energy mix

€5 billion
Investments by 2030

4 System development projects
were completed in 2022

Participation
of Portfolios of Dispatchable Load and Dispatchable Renewable Energy Units in the Balancing Market

Integration
of the Greek market with European markets

€6.12 million
For equipment replacement in 2022

Inspections
4,000km
of transmission lines
2,467
pylons in 2022

Programming of projects
and ensuring their timely implementation and quality

As part of the modern transition plan and the adoption of the common European target for a drastic reduction of carbon emissions, IPTO contributes to the development of a greener Energy Transmission System, while shielding it against weather phenomena.

IPTO's role in energy transition

IPTO is implementing the country's major interconnections, paving the way for green investments and the increase in the integration of RES in the HETS, with many significant benefits for society, the environment and the economy.

The need for a transition to a low-carbon economy seems more urgent than ever for tackling climate change and its devastating consequences. In the context of the modern transition plan and the adoption of the common European target for a drastic reduction of carbon emissions, IPTO contributes to the development of a greener Energy Transmission System, while at the same time shielding it against climate phenomena.

More specifically, IPTO's role is crucial for climate change adaptation, through its maintenance and assets renewal plan, as well as the improvement of the Transmission System's resilience. IPTO also plays an equally important role in addressing climate change (mitigation), as the implementing agency of the country's major interconnections, which will allow the acceleration of the energy transition to a low-carbon economy, through an increased capacity of integrating RES into the System.

In this context, IPTO operates under the European administrative and regulatory framework governing the operation of the electricity market, which is based on three main sub-frameworks:

01.

The European Green Deal
The European Green Deal is at the heart of the EU's climate actions through a package of measures aimed at reducing greenhouse gas emissions. More specifically, it includes the European Climate Law, which incorporates the objective of climate neutrality into European legislation. In this context, the EU is taking initiatives to stimulate citizen engagement in the energy transition and to shield the continent against the impacts of climate change.

02.

The Clean Energy for all Europeans package
According to this initiative, the European Energy Policy aims to make the energy transition from conventional fuels to cleaner forms of energy and to reduce greenhouse gas emissions to meet the Paris Agreement commitments. As to the design of the electricity market's operation, this Package aims to establish a modern design of the European electricity market, giving priority to those organisations that rely more on market mechanisms and focus on integrating a higher share of RES. Each EU member state is also required to prepare and adopt a 10-year National Energy and Climate Plan for the period 2021-2030. IPTO complies with the National Energy and Climate Plan and contributes decisively to the achievement of the transition to a climate neutral economy by 2050, responding to the urgent need for a drastic reduction of greenhouse gas emissions.

03.

The Fit for 55 Package
The Fit for 55 Package includes the legislative tools to make the European Green Deal a reality and to achieve the relevant objectives of the European Climate Law. The initiative's proposals include implementing the Emissions Trading System in new sectors and adding more stringent requirements to the existing Emissions Trading System (ETS), increasing the use of RES, greater energy efficiency, etc., to avoid carbon emissions and create new tools to maintain and enhance carbon avoidance and absorption technologies.

Increasing the integration of RES

Alongside serving demand, which is a key parameter for the development of the Transmission System, facilitating the high penetration of RES is of equal importance, in fulfilling the national and the corresponding European policy for the achievement of climate neutrality.

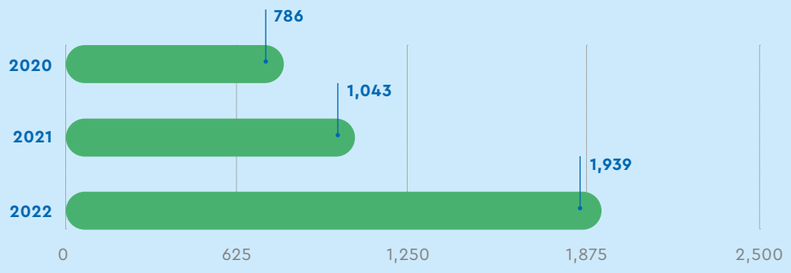
As the entity implementing the country's major interconnections, IPTO is paving the way for green investments and the increase in the integration of RES in the HETS, offering many significant benefits for society, the environment and the economy.

In particular, through interconnections and the increased integration of RES, we achieve:

- Reduction of carbon intensity (decarbonization)
- Reduction of energy costs
- Improvement of the country's energy security
- Reduction of air pollution, locally and in the greater region, by reducing air emissions from fossil fuel combustion, with significant benefits for human health.

In 2022, the new installed RES capacity in the Interconnected System (including the Transmission System and the Distribution Network) amounted to 1,939MW.

Graph 2.1: New installed RES capacity (MW) in the Interconnected System



According to our estimates for the forthcoming revision of the National Energy and Climate Plan (NECP) and with the aim of reducing carbon emissions, increasing the country's energy safety and reducing energy production costs, the restructuring of the country's energy mix by 2030 and the increase of the share of renewable energy sources to at least 45% of total gross final energy consumption are due. To achieve this objective, a radical restructuring is foreseen, focusing on the integration of new technologies. More specifically, the following guidelines have been established and followed by the IPTO Group, due to its key role in the energy transition.

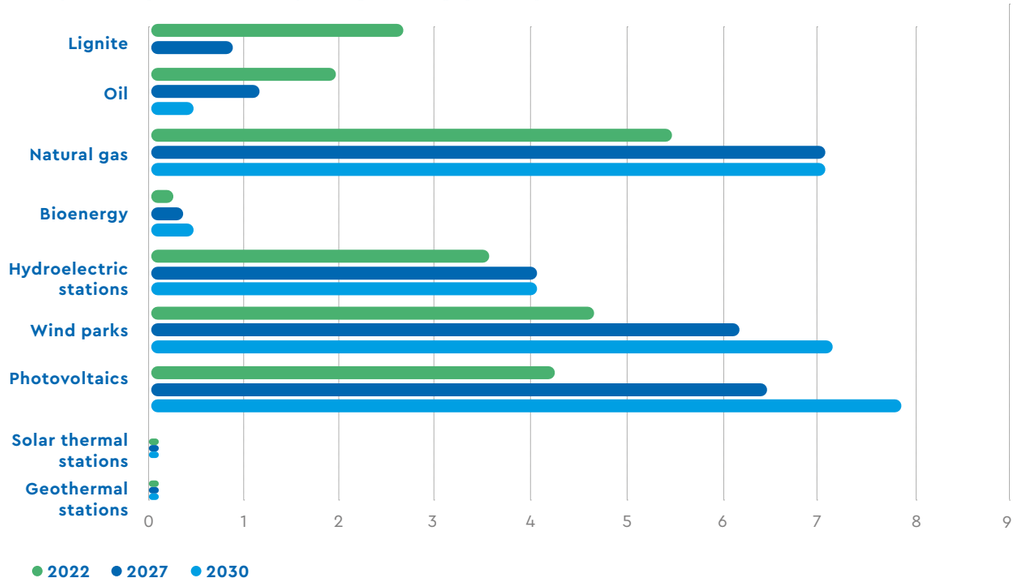
Main components of the revised NECP:

Rapid growth of RES:	Priority is given to developing photovoltaic and wind plants, accelerating at the same time the development of offshore wind plants, adding more than 12GW of capacity by 2030 and exploiting the country's remaining hydraulic potential.
Energy storage:	Development of the required storage in relation to the integration of RES, to balance and stabilise the System.
Energy efficiency:	Implementation of energy upgrades in buildings, integrating proper management of energy consumption by final consumers, with the aim of reducing energy demand.
Electrification of light transport:	Implementation of electromobility in light/medium vehicles while developing charging infrastructure and interaction with the grid.
Creating a green hydrogen economy:	Adoption of hydrogen use in transport, industry and, under certain circumstances, in power generation.
Development of synthetic, green fuels (RFNBO):	New guidelines to build a new industry with the aim of using green fuels in heavy vehicles, shipping and aviation.
Innovation and systemic solutions in carbon capture, utilisation and storage (CCUS):	Implementation of new initiatives for the energy transition of the country's industry, notably in the cement, refining and fertiliser industries.

Furthermore, in order to achieve the RES penetration targets, the appropriate fortification of the Transmission System's infrastructure is planned in order to increase the available margins for the connection of new RES stations to the Transmission System.

The graph below shows the significant integration of RES in the national energy mix by 2030, based on the new NECP:

Graph 2.2: Key features of the power generating system by 2030



The evolution of the installed capacity of RES shows their dynamic integration in the country's energy mix and in the electricity System in particular. The release of grid electricity space from RES projects and the development of energy storage projects render the vision of meeting national needs from RES and moving to a climate-neutral economy by 2050 increasingly feasible.

Within the framework of the revised National Energy and Climate Plan (NECP), the following revised targets have been set, compared to the previous National Plan of 2019, which complement the country's Long-Term Strategy for 2050.

Table 2.3: NECP Targets

	Targets under the NECP 2019	Targets under the NECP 2023 (estimate)
Share of RES in gross final energy consumption	≥ 35%	≥ 45%
Share of RES in gross final electricity consumption	≥ 60%	≥ 80%
Share of RES for heating and cooling	> 40%	> 47%
Share of RES in the transport sector	> 14%	> 32%

An important parameter in achieving this ambitious target is uncertainty due to the ongoing energy crisis, as priorities at European level are reset and revised National Energy and Climate Plans (NECPs) are thus redesigned, which will be published during 2023.

The interconnection of the Aegean islands with the Mainland System, in the framework of the Ten-Year Development Programme, is considered important to increase the integration of RES in the System. These interconnections will help to address the electrical isolation of the islands, by increasing the reliability of supply, reducing the cost of the energy produced and consequently the cost of Public Utility Services (PSUs). In addition, through these interconnections environmental protection is achieved along with the exploitation of the potential of RES, further contributing to the national green transition. At the same time, the end of the electrical isolation of the Aegean islands increases the size of the domestic electricity market.

Affordable energy for all

Although recent geopolitical developments increased energy prices at the regional level, the implementation of the electricity interconnections carried out by IPTO, both within the country and internationally with neighbouring countries, has resulted in a reduction in energy costs, compared to the energy costs that consumers would have paid without these interconnections. IPTO's aim is to ensure reliable, efficient and green electricity supply in the country, promoting the development of free competition in the Greek electricity market. Through IPTO's activities and the new interconnection projects, as well as the growth of free competition, among other things, energy costs are reduced, making energy not only affordable but also clean. An illustrative example is the savings of €550 million per year through the reduction of PUs costs in the electricity bills of all consumers in the country from the first full year of operation of the two electricity interconnections in Crete (2024).

Setting the energy mix

Electricity transmission from producers to consumers requires the smooth cooperation between power grids of different voltage levels. This is achieved by using appropriate grid control and operation tools, as well as market mechanisms that have a regulatory impact on the System. The operation and control of the System are carried out according to solutions extracted from the electricity market and are based on technical and financial offers. Subsequently, they are implemented in real time mainly by the National Energy Control Centre, as well as by the Regional Energy Control Centres.

The main factors affecting the country's electricity demand in the medium- to long-term are summarised below:

- The country's economic conditions, with GDP being the key indicator.
- Changes in consumption habits (air conditioning, use of electricity in transport, computers, LED lamps, etc.) due to improved living standards, yet also improvement in the living conditions of specific population groups (e.g., economic migrants).
- The general situation in the energy sector and the electricity market (energy price level, natural gas competition, etc.).
- Specific circumstances (e.g., the development and implementation of financial mechanisms).
- Population growth.
- The implementation of governmental policies, concerning for instance energy savings, energy efficiency improvements in buildings, etc.

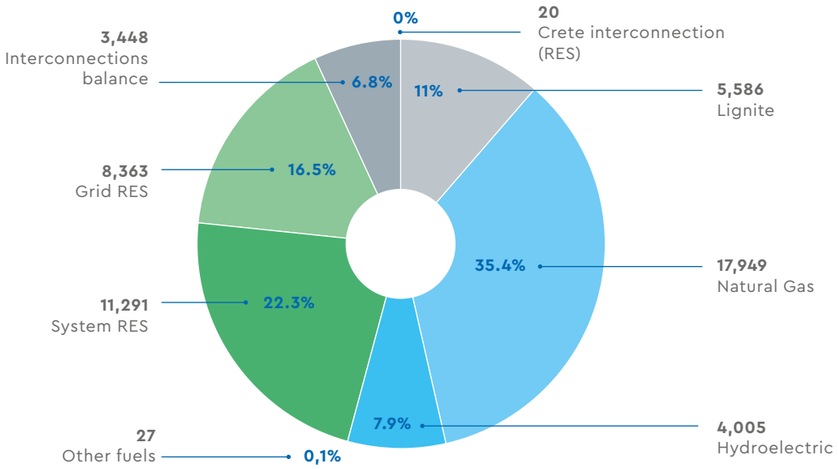
In this context, the Operational Planning procedures aim at planning the safe operation of the HETS. The key procedures include the outage planning concerning the interconnections and main elements of the HETS, as well as the Production Plants, to ensure the uninterrupted supply of electricity in the country and the reliable operation of the HETS.

Moreover, the analysis of the control area's adequacy of capacity and reserve margins, the creation of the Individual Grid Model that reflects current network topology, as well as the production, load and flow forecasts, constitute the main pillars for the Operational Security Analysis of the HETS.

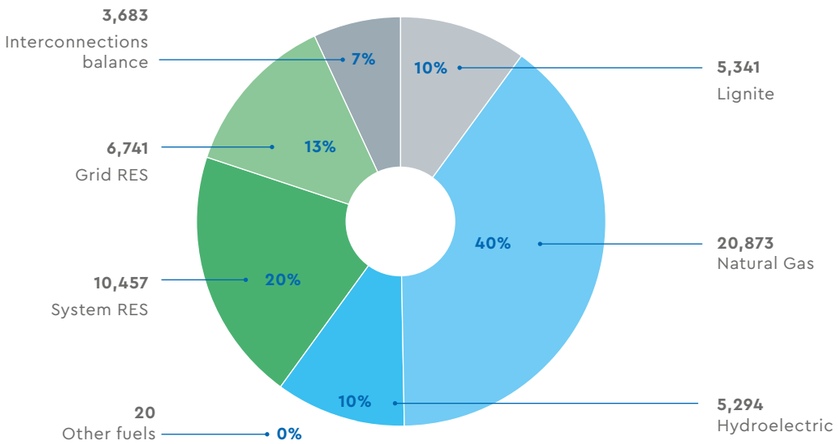
The total production and import-export balance that was traded in 2022, according to the data reported in the Monthly Energy Bulletin (December 2022), amounts to 50,688GWh, of which 19,654GWh come from RES, namely 8.363GWh are related to the production of RES from the Grid (photovoltaics, biogas, small hydroelectric plants and high efficiency CHP units) and 11,291GWh, at 22.3% of the total production from RES from the System. With a view to implementing the energy transition, IPTO aims to further increase the integration of RES in the System, with aiming at reaching 24GW of RES energy production by 2030.

The figure below shows the distribution of electricity production from different fuel sources for 2022. As shown, in 2022 the production share from RES increased (to 38.3% cumulatively from 33% in 2021), while the share of lignite production remained approximately the same (at 11% from 10% in 2021).

Graph 2.4: Production & interconnection balance (GWh) in 2022*



Graph 2.5: Production & interconnection balance (GWh) in 2021*



Notes:
- Demand on the non-interconnected islands is not included.
- Grid output is derived from certified measurements for Medium Voltage and measurements and estimates for Low Voltage.
- The interconnection balance is shown in the estimation of aggregate demand when exported and in the estimation of aggregate output when imported.
- The percentage of losses shown in this graph is not related to the System Loss Rate shown on page 5 of this Bulletin

Source: Monthly Energy Bulletin (December 2021, December 2022)

Development of the Electricity Transmission System in Greece and international interconnections

Development of the Energy Transmission System

IPTO proceeds with speed and consistency in the implementation of the Ten-Year Development Plan. Having an investment plan of €5 billion and aiming at the electrical interconnection of almost all islands of the Aegean Sea with the mainland System by 2030, IPTO projects provide significant benefits for the economy, society and the environment.

One of the main tasks of IPTO in its role as an Operator is the development of the HETS to meet the needs of electricity transmission, under any circumstances, in a safe, reliable, cost-effective and environmentally acceptable manner.

Furthermore, it is important to ensure the long-term ability of the System to meet the needs for power transmission under economically sustainable conditions, for the benefit of society, the economy and the environment.
With the above in mind and a high sense of responsibility, IPTO designs and implements its projects in accordance with the requirements of national and European environmental legislation, promoting at the same time the principles of sustainable development.

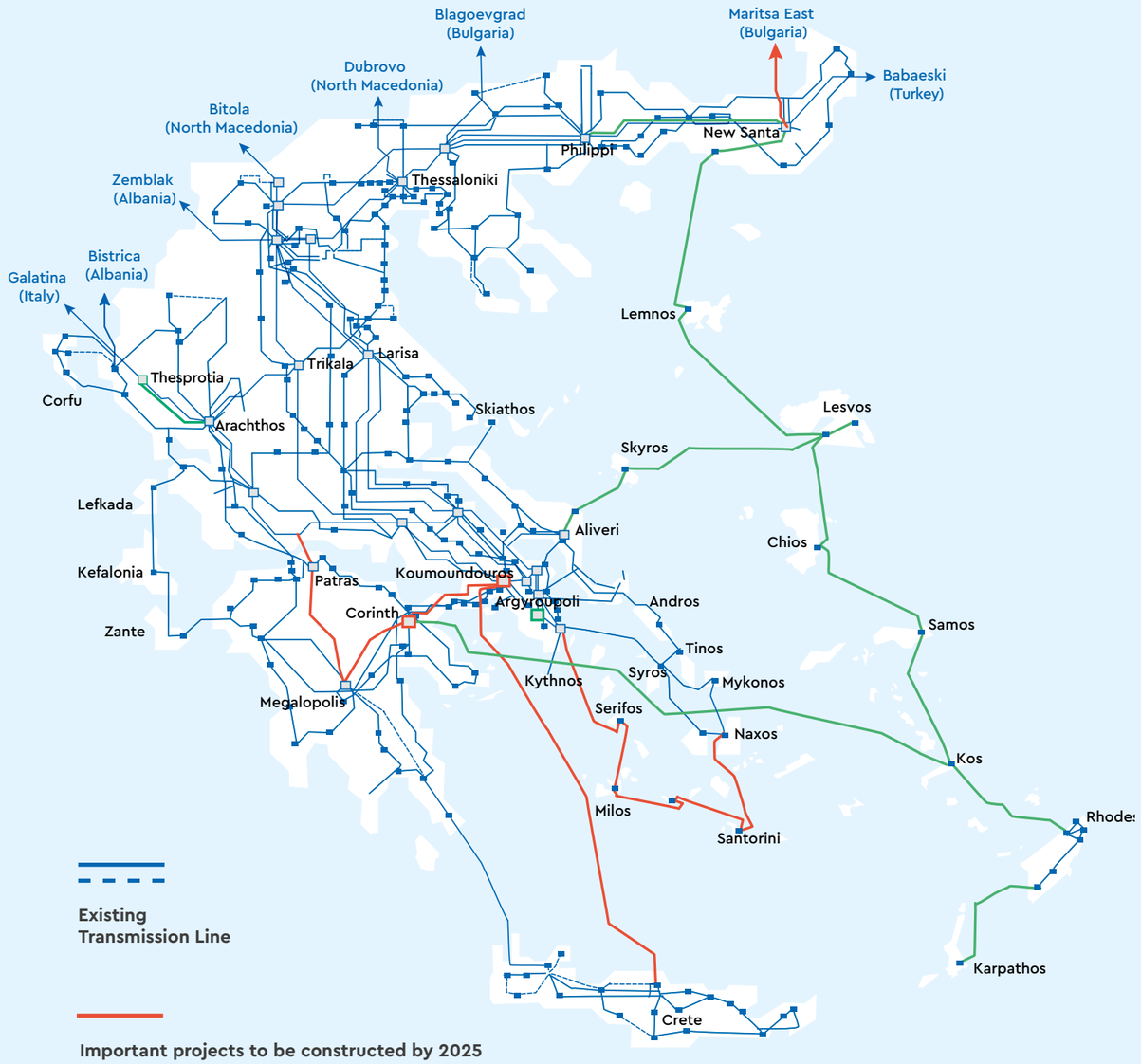
To prepare its Ten-Year Development Plan, IPTO considers the content, targets and data of the National Energy and Climate Plan (NECP) for 2030, as well as the Long-Term Strategy for 2050, in full compliance with the targets of the EU. The Ten-Year Development Programme includes the reduction of greenhouse gas emissions due to the increased penetration of RES in electricity generation, the gradual abandonment of lignite and the use of natural gas as a transitional fuel in electricity generation. Priority is given to including in the TYDP reinforcement and expansion projects in order to increase the penetration of RES in electricity generation.

In addition, a special category of projects to achieve the targets set in the NECP for 2030 and the Long-Term Energy Plan for 2050 includes the development of RES plants on islands or offshore areas with their submarine interconnection to the mainland system. In this direction, IPTO, already in the framework of the latest TYDP for the period 2023-2032, which has been submitted for approval to the Regulatory Authority for Energy, has included an integrated plan for the development of island interconnections concerning the largest of the Aegean islands (Crete, the Cyclades, the Dodecanese, and the North-eastern Aegean). The extension of the Interconnected Transmission System to the islands creates the conditions and makes the development of offshore wind farms more feasible as it significantly reduces distances for the transport of electricity from the production source to the grid connection points, making new areas economically and technically sustainable for the development of offshore RES projects.

This is an important development, as the achievement of the objectives based on international practice and recent technological developments foresees the implementation of offshore wind farms in the Greek seas.

To prepare its Ten-Year Development Plan, IPTO considers the content, targets and data of the National Energy and Climate Plan (NECP) for 2030, as well as the Long-Term Strategy for 2050, in full compliance with EU's targets.

Map of the Hellenic Electricity Transmission System



Existing Transmission Line

Important projects to be constructed by 2025
Crete-Attica interconnection
South & East Cyclades interconnection
400kV System expansion in the Peloponnese
Reconstruction of the Koumoundourou Extra-HVC
Second Greece-Bulgaria interconnection

Important projects planned to be constructed by 2030
Dodecanese interconnection
Northeast Aegean interconnection
New Philippi–Nea Santa 400kV TL
Thesprotia HVC construction and connection with the System

The Ten-Year Development Plan

The main vehicle in terms of planning and scheduling investments for the development of the HETS is the TYDP. In accordance with the provisions of Law 4001/2011 and the System Grid Code (SGC), IPTO prepares and publishes the Ten-Year Development Plan (TYDP) of the country's Transmission System annually, on a rotating basis.

The TYDP includes the development projects of the System for each period of reference, including the necessary infrastructure for the penetration of RES, as well as the timetables and estimated financial flows for their implementation. The publications of the TYDP are accessible to the public through IPTO's website[3].

International interconnections

Since October 2004, the Greek System operates anew, synchronously and in parallel with the interconnected European System under the overall coordination of the European Network of Transmission System Operators for Electricity (ENTSO-E). The parallel operation of the Greek with the European System is achieved through interconnecting transmission lines (of mainly 400kV) with the Systems of Albania, Bulgaria, North Macedonia and Turkey. Moreover, the Greek System is connected asynchronously through a 400kV DC submarine link with Italy.

The development of electricity interconnections between countries is an important priority, as:

- it contributes substantially to the security of energy supply;
- is a key factor in the integration of national electricity markets through the implementation of the Target Model;
- allows, in a general sense, the sharing of various resources (capacity, flexibility, reserves, etc.) between power systems, which can lead to a reduction in the overall cost of electricity; and
- will enable the desired high penetration of RES in Europe, as this will require the ability to transmit significant amounts of electricity over long distances, while the replacement of conventional plants by RES plants will lead to the need for increased inter-system transmission capacity for regulation purposes.

IPTO's development strategy is largely based on the development of international connections, as they contribute significantly to the stability of the System and the convergence of prices among different European regions. In this context, IPTO is in cooperation with the neighbouring Operators to assess alternatives for strengthening transnational interconnections.

The international interconnection projects currently under-way or planned for the near future, in partnership with neighbouring Systems, are the following:

1. Second Greece-Bulgaria interconnection	The project concerns the implementation of a second interconnection line between the systems of Greece and Bulgaria, which will be realized with a 400kV overhead interconnection between the HVC of Nea Santa and the Maritsa East 1 S/S. The line will have a nominal transmission capacity of 2000MVA and a total length of approximately 151km, of which 30km will belong to the Greek territory and 121km to the Bulgarian territory. The new 400kV Greece-Bulgaria interconnector is an important project of European-wide interest and is expected to be integrated into the European System within 2023.
2. Second Greece-Turkey interconnection	A joint working group between the Transmission System Operators of Greece, Bulgaria and Turkey (IPTO, ESO-EAD & TEIAS) has been previously established to explore alternative scenarios for the development of new interconnections between the European and Turkish Systems to increase transmission capacity at the Greece-Turkey and Bulgaria-Turkey borders. The joint studies that have been completed have shown the possibility of proposing future interconnectors between the European and the Turkish System, which will be able to contribute to increasing transmission capacity and, in addition, to strengthening the Systems on this border. During 2022, IPTO and TEIAS agreed on the implementation of the new 400kV Greece-Turkey interconnector to be completed by 2029. The new interconnecting overhead transmission line will have a nominal transmission capacity of 2000MVA and is estimated to have a total length of about 130km, of which 70km will be located in Greek territory and 60km in Turkish territory, as it is planned to run parallel to the existing interconnection between the two countries.

[3] https://tinyurl.com/4rxxep93

3. Second Greece-Italy interconnection	According to the results of the studies investigating the needs for strengthening the European Transmission Network, in the long term, price convergence between the two countries requires the strengthening of the electricity interconnection between them. To this end, in November 2020, cooperation procedures were launched between IPTO and the Italian Operator (TERNA) with the establishment of a working group for the preparation of studies to strengthen the interconnection between the two electricity systems. Subsequently, in May 2021, an Agreement on Terms of Reference was signed between the two operators for the preparation of a Feasibility Study for a new interconnection between Greece and Italy. According to the 2024–2033 TYDP, the nominal capacity of the submarine cable interconnection between Greece and Italy will be 1000MW, tripling the existing electricity exchange margin between the two countries to 1500MW. Technically, the new interconnection will be DC, with state-of-the-art Voltage Source Converters (VSC) and electrode stations in Greece and Italy. The underwater length of the route is estimated at 220km, of which 55km will be the length of the underground sections in Greece and Italy.
4. Greece-Cyprus-Israel interconnection:	The project concerns the implementation of the interconnection of the Transmission Systems of Greece, Cyprus and Israel with direct current links and includes parts of the Israel-Cyprus interconnection and the Cyprus-Greece (Crete) interconnection. According to the implementing entity, EuroAsia Interconnector, the Greece-Cyprus-Israel electricity interconnection project, with a total length of 1,208km and estimated budget of €2.4 billion. In this context, a collaboration between IPTO, Ariadne Interconnection and EuroAsia Interconnector is under way for the elaboration of the technical details to ensure the interoperability of the Attica-Crete interconnection project, which is currently being implemented, with the Greece-Cyprus-Israel interconnection project to be implemented by EuroAsia Interconnector.
5. Greece-Egypt Interconnection	In October 2021, a Memorandum of Cooperation was signed between Greece and Egypt under which a high-level working group was established, with representatives of the two competent ministries, the transmission System Operators and the regulatory authorities, that will examine the technical and economic parameters of the Greece-Egypt electricity interconnection project, facilitate licensing and support its designation as a project of European interest. This will be soon followed by the establishment of a joint technical committee comprised by executives of the two Transmission System Operators (IPTO and EETC) for the preparation of the feasibility study on the Greece-Egypt electricity interconnection.
6. Upgrading the Greece-North Macedonia interconnection	In the framework of ENTSO-E's 2018 and 2020 Pan-European Ten-Year Development Plans (TYNDPs), the studies investigating the needs for the strengthening of the European Transmission Network, with a time horizon of 2040, identified the need to reinforce the capacity of electricity transmission between the Greek and North Macedonian systems for the scenarios examined. To address this need, ADMIE and the North Macedonia Operator (MEPSO) proposed the upgrade of the interconnection transmission line and will be examined in the next period in a joint working group.
7. Second Greece-Albania interconnection	The Operator's updated ten-year plan schedules the completion of the new 400kV interconnecting transmission line between Greece and Albania by 2030. The interconnection will have a nominal transmission capacity of 1,600MVA and will connect the Hellenic Electricity Transmission System (HETS) with the new Fier Substation in southern Albania. The land-based international interconnection is estimated to have a total length of about 145km, of which 45km will be in Greek territory and 100km in Albanian territory. The project is expected to increase the transmission capacity between the two countries by at least 200MW in both directions (to and from Albania).

Electricity market

IPTO plays a leading role in the operation of the electricity market which is fully compliant with the respective European Target Model concerning the operation of the electricity market. The electricity market operation model has been in place for about a decade in various countries of the European Union. In November 2020 it came into force also in Greece, through which the following are ensured:

- The optimization of the use of the Transmission System's capacity through coordinated practices of the Operators of the Transmission Systems
- The achievement of reliable prices and liquidity in the allocation of interconnection capacity for the day-ahead market
- The efficient functioning of futures markets
- The effective planning of intra-day markets for the allocation of interconnection capacity.

According to law 4512/2018, the following wholesale energy product markets are set, as per the Regulation (EU) No 1227/2011:

1. Forward Market

2. Day-ahead Market

3. Intra-day Market

4. Balancing Market

The operation of the first three markets has been entrusted to the Hellenic Energy Exchange (HEnEx).

In 2022, IPTO successfully managed and operated the Balancing Market and other key processes of the electricity market overall, such as the estimation and allocation of long-term interconnection capacity and the long-term allocation of capacity in the Next Day and Intraday Markets managed by the Hellenic Energy Exchange (HEnEx).

The Balancing Market, consisting of the Balancing Capacity Market, the Real-Time Balancing Energy Market and the Imbalance Settlement process, ensures the balance of supply and demand and, in general, the security of the System providing higher-quality economic operation through a more efficient use of the interconnections. It aims at promoting competition by providing significant incentives for the entry and the more efficient integration of new RES into the market, as well as of demand-responsive and storage technologies.

The information systems supporting the operation of the electricity market and concern market management (MMS platform), the collection and certification of measurements (MODESTO system), cross-border management (XBMS system) and the settlement of the Balancing Market (MSS system) are continuously upgraded and improved to address the ever-emerging needs of the market and its participants.

Important milestones achieved in 2022:

Participation of Portfolios of Dispatchable Load and Dispatchable Renewable Energy Units in the Balancing Market

In 2022, IPTO completed the design and implementation of the required modifications to the regulatory framework and its information systems to ensure its ability to provide balancing services from both the Dispatchable Load Portfolios and the Dispatchable Renewable Energy Portfolio. The participation of these entities in the market, although optional, promotes competitiveness in the Balancing Market, contributes to the further penetration of RES in the energy mix and smooths load peaks, improving the reliability and cost of using the Transmission System. To inform the Participants, IPTO organised a workshop on June 14th, 2022, to present in detail the framework for the participation of these entities in the Balancing Market.

Integration of the Greek market with the European markets

During 2022, IPTO achieved two important milestones towards the creation of a common European electricity market. The integration of the European electricity markets brings increased benefits from cross-border competition since this leads to fair and competitive wholesale prices, enhances the security of Europe's energy supply, contributes to the international objective of reducing greenhouse gas emissions and to the decarbonisation of the European economy.

1. Planning the integration of the Greek Balancing Market with the European markets through participation in the European platforms MARI and PICASSO

With IPTO's participation in the European platforms MARI and PICASSO for the exchange of balancing energy from Frequency Restoration Reserves (FRR) with manual (mFRR) and automatic (aFRR) activation respectively, the Greek Balancing Market is being integrated with the rest of the European balancing markets in a common energy market. In particular, the MARI platform consolidates the mFRR energy market and the PICASSO platform consolidates the aFRR energy market. These European platforms will enhance the efficiency of electricity balancing in Europe, by promoting the possibilities of balancing energy exchange while contributing to the safe operation of the connected countries' systems.

The mFRR and aFRR balancing energy exchanges are implemented on the basis of the available offers and related balancing energy activation needs of all participating European Operators, which are submitted to the MARI and PICASSO platforms. Balancing power activations are decided centrally in a way that meets the requirements of each individual case, does not infringe the available interconnection capacity and maximises the overall social surplus.

In preparing for Greece's participation in the MARI and PICASSO platforms, in 2022, IPTO prepared the general market design, which was submitted for public consultation by RAE in January 2023.

2. IPTO's participation in the European intra-day electricity market (SIDC-XBID Project)

Another important step towards convergence with the single European electricity market took place at the end of 2022, with IPTO's participation in the European Single Intra-day Coupling (SIDC) market.

The Single European Intra-Day Market has now integrated the borders of Greece (Greece-Italy, Greece-Bulgaria) and Slovakia (Slovakia-Czech Republic, Slovakia-Hungary, Slovakia-Poland), where cross-border electricity transmission capacity is allocated in the ongoing negotiation through the SIDC. The accession of Greece and Slovakia to the SIDC marked the full completion of the single European intra-day market, which extends to a total of 25 countries.

In SIDC, trades are executed on a 24-hour basis through a continuous trading mechanism in which buy and sell orders from all European connected bidding zones are matched, while the required capacity is allocated to the transzonal interconnections. For this coupling, the XBID Project was implemented, in the framework of which the required common software infrastructure was developed with the coupled markets.

SIDC increases the efficiency and flexibility of the intra-day market and enhances its liquidity, as it provides Greek electricity market participants with additional tools to correct positions very close to the actual delivery time (up to one hour before), thus facilitating the further penetration of RES in the energy mix.

HETS asset management

IPTO ensures the efficient operation and maintenance of its assets based on the principles of sustainability, operational efficiency, quality and safety, in order to optimise the returns on its investments and create value for its stakeholders. IPTO's strategic objective is the transition from Time-Based Maintenance to Condition-Based Maintenance through the development of state-of-the-art cloud-installed systems. In this context, the Group will achieve both the coverage of its business operations and optimal management and maintenance of its electrical assets, which constitute the country's critical infrastructure.

To achieve this, a structured approach is applied, based on best practices covering the entire life cycle of an infrastructure, also considering respective costs and potential risks involved. Furthermore, financial and technical parameters are combined with the management of all the phases that make up the life cycle of an asset: The design, construction, commissioning, monitoring, maintenance, repair and replacement, as well as its shut-down and eventually in the end its decommissioning.

The HETS consists of the Interconnected System of the country's mainland and the interconnected islands at high (150kV and 66kV) and extra-high (400kV) voltage levels, as well as the international interconnections with neighbouring countries (Italy, Albania, North Macedonia, Bulgaria, Turkey). The high-voltage underground cable network serving the needs of the capital region falls under the remit of the Network Operator (HEDNO), which is responsible for its operation and the planning of its development. In this context, the equipment of the new subsidiary company that will be established next year (GRID CHARGE) to develop charging infrastructure will also be included.

The basic HETS equipment data, as of 31.12.2022, are described in the following table:

Table 2.6: Transmission System Equipment

Transmission Lines (km)		**Total**
Overhead	11,850	13,404
Submarine	1,147	
Underground	407	
Substations with IPTO fixed assets (number)		**Total**
Transformer	391	401
Switching	10	
IPTO Transformers		**Σύνολο**
Number		69
Capacity (MVA)		17,835
Connected User Transformers		**Σύνολο**
Number		807
Capacity (MVA)		44,782

The management of the Electricity Transmission System's fixed assets is carried out by IPTO's Asset Management Department and mainly aims at maintaining healthy, resilient and cost-effective power grid infrastructure. To this end, it conducts inspections and submits proposals for the improvement of scheduled maintenance sessions and has also assumed the planning for the renewal of electromechanical equipment according to the available data regarding the condition and life cycle of fixed assets.

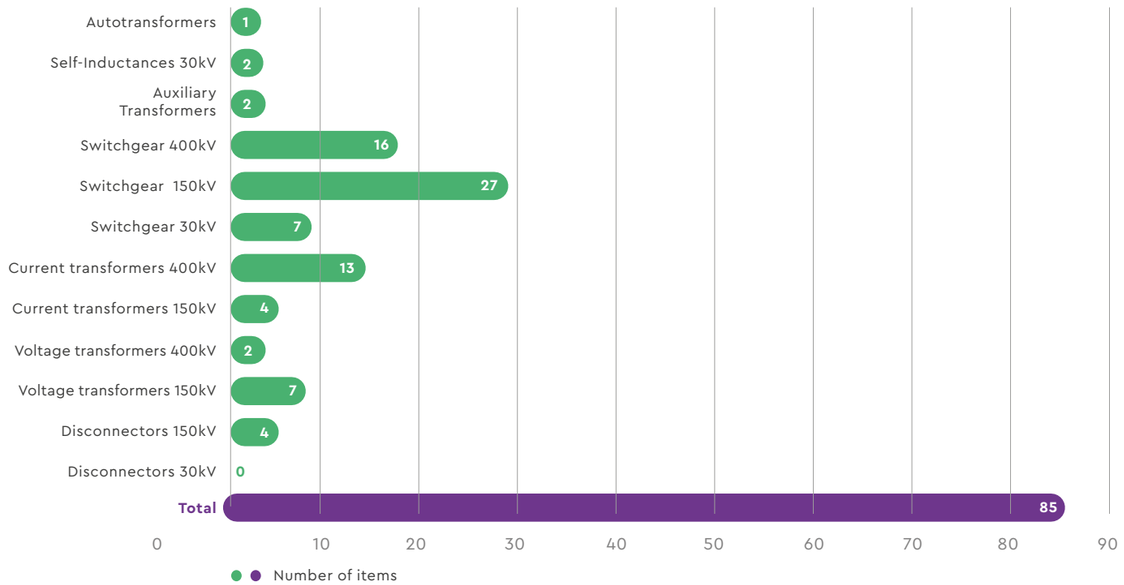
Asset renewal programme

Aspiring to ensure the country's electricity supply in an adequate, safe, efficient and reliable manner, IPTO gives priority to the technological upgrade and modernization of the System, taking also into account the importance of shielding the System against climate change and the increasingly frequent extreme weather phenomena. In this context, seeking to modernise and upgrade the existing infrastructure, IPTO started to plan and implement, in an organised manner for the first time in 2018, a renovation programme for the HETS, with newer equipment of cutting-edge technology, high operational efficiency and low periodic maintenance costs.

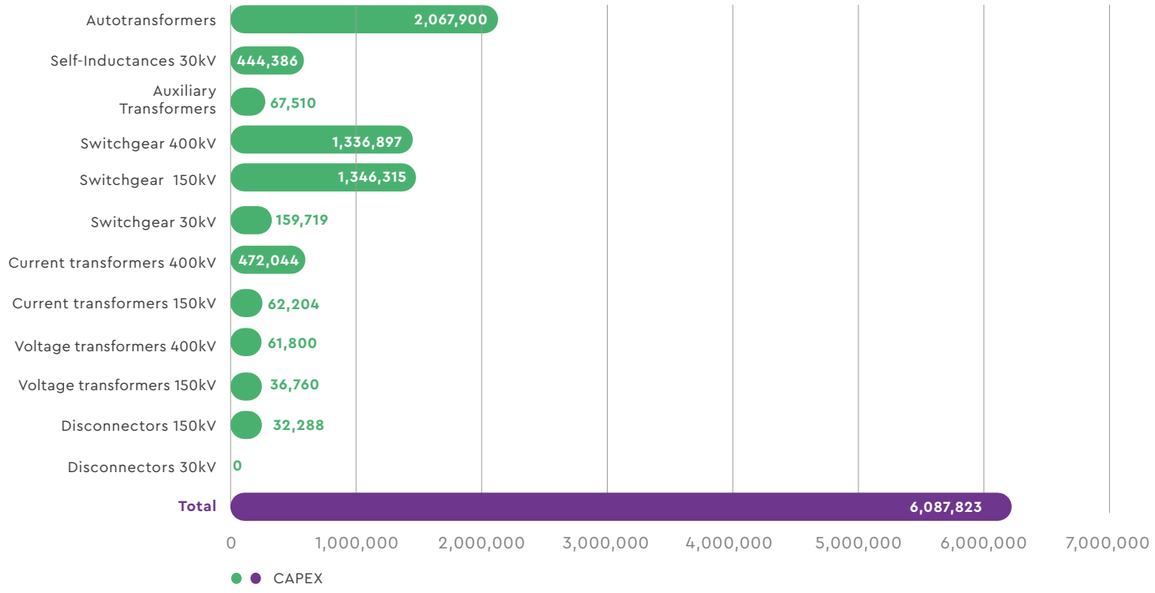
The Asset Management and Maintenance General Division (AMMGD) is coordinating and overseeing the five-year (2021-2026) plan for the renovation and modernisation of the Transmission System equipment and facilities. During the five-year period set as the implementation period of the Renovation Plan, IPTO seeks the effective shielding of the Transmission System, according to the guidelines of the committee established with experienced executives, with the aim of formulating an extended replacement plan of a total budget of €200 million. Critical equipment over 24 years old was included in this plan and a list for replacing it was prepared in order to be implemented during 2023-2026. The System Operation and Control Department (SOCD), in cooperation with the Transmission System Maintenance Department (TSMD) and the New Transmission Projects Department (NTPD) have set priorities regarding the timing of the components' replacement. The replacements are carried out by TSMD and NTPD crews and contractors.

During 2022, the AMMGD implemented an extensive programme of equipment replacements throughout the country, alongside maintenance and restoration of equipment, including delivery and commissioning of works. Specifically, the breakdown by category of equipment planned and implemented as well as the related CAPEX for replacements completed in 2022 are presented in the two charts below:

Graph 2.7: Equipment replacements 2022 – Items



Graph 2.8: Equipment replacements 2022 – Expenditure



The breakdown of expenditure for the period 2018-2022 is shown in the table below:

Table 2.9: Breakdown of expenditure for equipment replacements over the four-year period 2019–2022

Equipment replacement costs (EUR thousand)	Year
579	2018
6,173	2019
2,200	2020
12,440	2021
6,088	2022

Implementation of HETS Improvement Projects and Inspections

In 2022, in addition to the replacement programme, the TSMD carried out projects to improve the operation of the HETS across the country. These projects included the installation and commissioning of:

- Real-time On-line Monitoring Systems in dozens of HVCs and substations.
- Surveillance system at the 150kV Alouminio-Roof transmission line. The surveillance devices consist of optical cameras or a combination of optical/thermal cameras, as well as sensors for pipeline ambient temperature, conductivity and relative humidity.
- Equipment to improve the protection system (replacement of relays in various HVCs and substations, new differential protection system for 400kV busbars at the HVC of Pallini and a load shedding system at the substations of Chania and Heraklion).

Furthermore, in 2022, 4,000km of transmission lines and 2,467 pylons were inspected, while 14 technicians were certified in the use of drones for monitoring transmission lines.

Establishment of an Asset Performance Management System

The specifications for the procurement, development and operation of an integrated Asset Performance Management System (APMS) were completed in 2022. The tender for the centralized Asset Performance Management System (APMS) is expected to be completed in spring 2023 and implementation is expected to start in summer 2023. The APMS combined with the Online Condition Monitoring systems aims to support IPTO's strategy for the transition from Time-Based Maintenance to Condition-Based Maintenance of assets. The new APMS will be receiving input by the individual Online Condition Monitoring systems, the existing GIS system, the new Enterprise Asset Management (EAM) system and operational data to track assets in real-time and provide highly accurate results.

IPTO decisively contributes to the implementation of the national plan for the transition to a low-carbon economy.

Project quality

Given the nature of IPTO's role and the importance of the new interconnections, both in the interior and with neighbouring countries, the quality of the projects and adherence to timetables are of utmost importance.

In this context, IPTO takes special care to ensure that they are completed within the required time frames and according to quality standards to meet national and local needs, thus decisively contributing to the implementation of the national plan for the transition to a low-carbon economy.

The TYDP includes a supervisory overview of the System's projects, with information on the progress of the implementation of projects realized in-between successive versions of the TYDP. In this way, information is provided regarding any delays in the implementation of the projects, as well as the Operator's relevant actions to observe the timetables.

The detailed timetables for the implementation of System reinforcement projects reflect the timing of the construction of the respective projects, considering the time necessary for the issuance of the required permits and the completion of the expropriations. The percentage of the project's financial execution is also illustrated against the total budgeted investment cost, which does not necessarily reflect the progress of individual works but provides a relative indication of the project's progress.

Environment

Identifying
climate risks and taking mitigation measures

41
charging stations (2019-2022)

32
electric vehicles (2019-2022)

Contribution
to the protection of the Bonelli's eagle in the areas where the Group operates

865,000€
expenses for fire prevention and suppression

As the impacts of climate change are already visible, IPTO is taking measures both to cope, adapt to it, and to shield the energy transmission System against the risks associated with climate change.

Addressing climate change

As the impacts of climate change are already visible, IPTO is taking measures both to cope, adapt to it, and to shield the energy transmission System against the risks associated with climate change.

Climate change is one of the most important and critical global issues today and addressing it requires collective action and cooperation.

In order to ensure the reliability and security of the Energy Transmission System, the IPTO Group is undertaking a series of actions focusing on addressing climate change, through the reduction of its carbon footprint, as well as its adaptation to it, shielding the transmission System against climate risk.

In particular, the Company focuses on obtaining data related to climate change and considers all dynamic climate parameters, with the aim of integrating them into its business planning and risk management. In this direction and with a view to adapting to climate change and shielding the Transmission System against extreme weather events, which are now increasingly frequent in our country, it has designed and implemented an extended plan for the replacement of System components with a budget of €200 million and an implementation horizon of 2026. More information about the Replacement Programme is provided on page 83.

In addition, to better understand how climate change may affect the Company and the System, it identifies not only the opportunities and needs that arise, but also the related climate risks. In this context, in June 2022, RAE, in cooperation with IPTO and with the contribution many other entities, such as the Hellenic Electricity Distribution Network Operator (HEDNO), the Hellenic Energy Exchange (HEnEx) and the General Directorate for Cyber Security of the Ministry of Digital Governance, proceeded with the development of a Risk Preparedness Plan for the Greek electricity sector. Within the framework of this Plan, potential risks were identified, which formed the basis for the identification of national scenarios for the country's electricity supply crisis and the assessment of their probability of occurrence.

The physical hazards identified within the framework of the Risk Preparedness Plan are presented below:

1.

Flooding

This scenario refers to extreme rainfall after a long period of drought, which causes river overflows, dyke collapses and soil erosion. In this context, there may be, among other things, flooding phenomena in substations and severe damage to the foundations of TL pylons, underground networks, as well as equipment at substations and HVCs.

2.

Windstorms (Summer and Winter)

The risks due to gusty winds during the winter or summer months include extremely strong gusts and severe thunderstorms with lightning, which may cause whirlwinds, falling trees, etc. As a result, serious damage may occur, including damage to radial distribution networks from possible collapse of TL pylons and reduced wind turbine capacity due to high wind speeds.

3.

Cold wave-snow

The assessed cold wave risk is the occurrence of extreme low temperatures, heavy snowfall and frost combined with high energy demand due to weather conditions. This scenario assessed severe damage to distribution and transmission networks, possible circuit failures and possible damage to pylons due to ice accumulation. In addition, the scenario of reduced production from RES and hydroelectric sources due to frost, issues that may cause overloading of the grid and potential problems in the System's supply, were assessed.

4.

Drought

The scenario concerns the occurrence of a prolonged and extremely dry period during the summer, combined with high temperatures and high winds, which may cause forest fires to start and spread. This may result in disruptions to TLs and distribution networks, damage to equipment in substations, power outages in the affected areas and reduced availability of thermal and hydroelectric plants. The above may cause an electricity adequacy problem and the occurrence of rolling blackouts due to the inability to meet demand.

5.

Earthquake

A powerful earthquake can cause extensive damage to the System's TL pylons, distribution network poles and substation equipment. In addition, among other things, major equipment in production plants may be damaged, affecting their availability, as well as the structure and control of the Transmission System. There may also be delays in repairing the damage due to damage to other infrastructure, such as the road network.

IPTO implements a series of preventive and mitigation measures to safeguard the System against the above climate risks, presented below:

Table 3.1: Measures against climate risks

Preventive measures	Mitigation measures
IPTO is informed in a timely manner by the General Secretariat for Civil Protection and is responsible for: • Increased System readiness • Provision for immediate intervention technical staff • Ensuring more / alternative electric roads • Briefing of Important Network Users • Cooperation with HEDNO • Communication and information to neighbouring Transmission System Operators (TSOs) • Checking the correct functioning of emergency mechanisms	IPTO applies appropriate corrective measures for: • Management of energy flows • Voltage and reactive power flow control • Frequency deviation management procedure • Issuing instructions to Users in case of emergencies • Securing additional energy from available units • Limitation of the pumping function • Provision of additional power through interconnections • Load cuts

More information concerning climate risks, the possible scenarios analysed, and the measures taken by IPTO to safeguard the System are provided in the "Risk Preparedness Plan for the electricity sector in Greece."[4].

[4] https://energy.ec.europa.eu/system/files/2022-09/EL_%20RPP%20electricity.pdf

Energy consumption and CO_2 emissions

In addition to the new interconnections and the development of the System, which contributes substantially to the country's energy transition, IPTO seeks to reduce energy consumption and the corresponding emissions from its own activities.

Energy consumption

Energy consumption in 2022 relating to building infrastructure, the company's vehicles and works machinery is summarized in the table below:

Table 3.2: Total energy consumption per fuel type

Type of fuel	2021		2022	
Electricity consumption	8,474MWh	30,507GJ	5,615MWh	20,214GJ
Heating oil consumption	39,129lt	1,675GJ	28,160lt	1,205GJ
Gas consumption	785MWh	2,826GJ	718MWh	2,585GJ
Petrol (machinery)	8,205lt	351GJ	8,482lt	363GJ
Petrol (vehicles)	124,507lt	5,328GJ	104,605lt	4,476GJ
Diesel (vehicles)	738,217lt	31,596GJ	679,001lt	29,061GJ
Diesel (machinery)	58,404lt	2,500GJ	47,347lt	2,026GJ
TOTAL	-	**74,783GJ / 20,773 MWh**	-	**59,931GJ / 16,647 MWh**

* Conversion factors from National Inventory Report 2022 (gasoline: 42.79 MJ/L, oil: 42.8 MJ/L)

Considering that the estimate for the total production and import-export balance traded in 2022 according to the data reported in the Monthly Energy Bulletin (December 2022) is 50,688 GWh, the intensity of energy consumed in GJ per GWh of energy produced is equal to 1.006 GJ/GWh.

Additionally, 38.8% of the electric energy consumed came from RES, based on the share of RES in the country's energy mix in 2022.

Energy consumption and energy efficiency improvements in the central administration buildings

In 2022, a slight increase of 4% was observed in the electricity consumption of the Company's two administrative buildings in Attica compared to the year before, coupled by a decrease in oil and gas consumption by 20% and 9%, respectively.

Table 3.3

Total consumption of electricity, heating oil and natural gas in the 2 main administration buildings	2020	2021	2022
Electricity consumption (MWh)	3,176	2,918	3,041
Heating oil consumption(L)	27,091	34,183	27,160
Gas consumption (MWh)	664	785	718

Water consumption in the two central administration buildings increased by 24% in 2022. This increase was directly associated with the buildings' occupancy (Konstantinoupoleos Avenue & Dyrrachiou Street). During 2021 in particular and for a long period of time, part of the staff was teleworking, while in 2022 the percentage of teleworkers decreased, and new recruitments took place.

Based on the results of the Energy Upgrade Study carried out, the Group is in the process of designing the method to upgrade the energy efficiency of its two buildings.

The main interventions for the energy upgrade of the buildings which have already been completed, are in progress or are planned to be implemented are as follows:

Konstantinoupoleos Avenue Building

- Replacement of heating oil with natural gas for central heating needs (planned)
- Replacement of lamps with new low energy consumption lamps (in progress)
- Upgrading of the Building Management System (BMS) (planned)
- Replacement of thermal insulation and damp proofing (planned)
- Creation of a planted roof, after replacing thermal insulation and damp-proofing (planned)

Dyrrachiou Street Building

- Modification to the refrigeration complex in order to improve the energy efficiency of the system (in progress)
- Building Management System (BMS) installation (planned)
- Replacement/installation of thermal insulation and damp-proofing of the roof (completed)

In addition, two net metering photovoltaic systems of 31.64 and 39.9kW respectively were installed at the facilities of Doxa in Thessaloniki.

Vehicle fleet energy consumption and promotion of electromobility

The IPTO Group is gradually replacing old technology vehicles with zero-emission electric vehicles, with the aim of reducing the energy consumption required by its fleet and increasing the number of charging stations at its facilities at the same time. IPTO was one of the first public sector entities to be harmonized with the Greek Government's new legislative framework introducing mandatory quotas for the procurement of clean vehicles, as well as mandatory siting for the installation and operation of charging infrastructure for electric vehicles.

In total, during the three-year period 2019-2022, 32 electric passenger vehicles with near-zero emissions have joined the IPTO Group fleet. Additionally, 5 new charging stations were installed, one in the building on Dyrrachiou Street and four in the building on Constantinoupoleos Avenue, bringing the total number to 41.

Transmission System losses

Energy Transmission System Losses are a natural phenomenon, as the transfer of electricity from generation points to consumption points, as well as the step-up and step-down of voltage where necessary, result in thermal and electromagnetic energy losses. Therefore, it is necessary to generate more electricity than is ultimately used by consumers.

IPTO is constantly seeking to limit losses as much as possible, but the measures to be taken to this end are limited. For instance, the development of the 400kV System in the Peloponnese contributes to limiting the overall System losses. Since the System is constantly growing, a key measure for monitoring the System's energy losses is the percentage resulting as the fraction of losses (in energy units) over the total energy input to the System.

Table 3.4: System Losses

Year	Percentage
2020	2.76*%
2021	2.74%
2022	2.74%

*Concerns two months (from the start of the Target Model 11/2020)

IPTO has proceeded with the installation of an automation system, which operates on a 24-hour basis, achieving a reduction of energy losses by optimising inductive load compensation.

Greenhouse gas emissions inventory

As part of its actions to reduce its carbon footprint, IPTO is undertaking an inventory of the greenhouse gas emissions resulting from its operation.

The GHG emissions inventory was carried out in accordance with the International Protocol on Greenhouse Gas Emissions (GHG Protocol) and ISO 14046-1 GHG - Part 1 and covers direct emissions (Scope 1) due to operations, including fossil fuel combustion and fugitive gases, as well as the indirect emissions from electricity consumption and transmission System losses (Scope 2). 2022 is considered as the base year for the emissions of these two scopes. Scope 3 emissions, as they are much more complex to estimate, are not included. The aim is to integrate them into the overall emissions, once recording and data collection issues have been resolved. However, in any case, they are expected to be a very small fraction of total emissions, as for TSOs, System losses are the main source and account for the largest share of emissions (>95%).

Specifically, Scope 1 and Scope 2 emissions for 2022 amounted to 714,169 tCO_2e. In particular, 4,293 tCO_2e (0.6%) resulted from direct emissions (Scope 1), while the largest share, 709,876 tCO_2e (99.4%), comes from indirect emissions (Scope 2), which are due to the losses occurred during the transmission of electricity from the System. Furthermore, as far as emissions classified under Scope 1 are concerned, the shares of emissions due to oil consumption for the vehicle fleet (53.6%) and SF6 (32.2%) are also significant.

Greenhouse gas emissions are presented per category in the table below:

Table 3.5: Greenhouse gas emissions

Source	Total emissions (tCO_2e)	%/Scope	%/Total
Mobile combustion	**2,661**	**62.0%**	**0.37%**
Diesel (vehicles)	2,303	53.6%	0.32%
Petrol (vehicles)	358	8.3%	0.05%
Stationary combustion	**211**	**4.9%**	**0.03%**
Natural gas (heating)	82	1.9%	0.01%
Heating oil	129	3.0%	0.02%
Fugitive emissions & refrigerants	**1,421**	**33.1%**	**0.20%**
SF_6	1,384	32.2%	0.19%
Refrigerants (A/C)	37	0.9%	0.01%
Scope 1 total	**4,293**	**100.0%**	**0.60%**
Purchased Electricity (Administration facilities, Energy Control Centres, Warehouses)	2,450	0.35%	0.34%
Network losses	**707,426**	**99.65%**	**99.06%**
Scope 2 total	**709,876**	**100.00%**	**99.40%**
Total emissions (Scope 1 & 2)	**714,169**	**62.0%**	**100.00%**

*The values in the table may be revised as the tool for calculating air emissions from the Ministry of Environment is awaited. The data presented here were derived from a tool developed by IPTO for the calculation of scope 1 & 2 emissions.

Considering that the estimate for the total production and import-export balance traded in 2022 according to the data reported in the Monthly Energy Bulletin (December 2022) is 50,688 GWh, the intensity of GHG emissions per GWh is equal to 11.59 tCO_2e/GWh.

Table 3.6

Greenhouse gas emissions intensity	GHG emission intensity (Scope 1 & 2) (tCO_2eq/GWh)	GHG emission intensity (Scope 1 & 2) (tCO_2eq/Total revenue)
Scope 1	0.08	14.14×10^{-6}
Scope 2	14	23.38×10^{-4}

Waste management and circular economy

The waste generated from the entire range of IPTO's activities in the country comes from the Group's buildings, Substations, HVCs, Transmission Lines, Energy Control Centres and warehouses. They also arise from the construction of new projects, replacements, maintenance or repairs in the System, as well as from the withdrawal of old support equipment (e.g., electrical, electronic and mechanical equipment), or from stocks that have become technologically obsolete and items of daily use.

Waste generated and sold is registered in the Electronic Waste Register on an annual basis.

We place emphasis on reducing the waste generated from our activities and seek to apply the practice of reuse, wherever possible.

Depending on the type of waste, the appropriate management method is followed. Waste is either sold or recycled in cooperation with appropriately licensed organisations. Especially in the case of works carried out by contractors, they are also responsible for waste disposal.

The table below presents the waste generated by the Group's operations during 2022, with reference to the respective management method used.

Table 3.7

Waste production and management	Hazardous	Non-hazardous	Non-hazardous (WEEE)	Total
Production in 2022 (tn)	43	60,705	4	60,752
Production from previous years (tn)	88	1,320	0	1,408
Total quantity (tn)	**131**	**62,025**	**4**	**62,160**
Amount of waste diverted from disposal (recovery) (tn)	22	1,335	4	1,361
Amount of waste disposed (tn)	0	59,267	0	59,267
Quantity remaining on the premises (tn)	109	1,423	0	1,532

Non-hazardous waste includes:

- Scrap metals (scrap steel, copper, aluminium)
- Mixed materials (switches, lightning arresters, cables, conductors, power transformers not containing PCBs, voltage transformers, current transformers, disconnectors, wave traps, connectors, inductors, capacitors not containing PCBs, etc.)
- Rubber parts
- Packaging materials (tanks, drums, barrels, SF_6 bottles)

Accordingly, hazardous waste generated due to the operation of the Company include:

- Insulating oils
- Batteries (Ni, Cd, Pb), electrolytes
- Materials that may contain PCBs, PCTs
- Fire extinguishers

In recent years, IPTO has digitised its internal communication, leading to a significant reduction in the consumption of paper, plastic and toner. Some of the Company's Departments already issue exclusively digital briefing notes, a practice which will be extended to other Departments in the coming period. The reduced quantities of paper, plastic and toner used are disposed of in appropriate recycling bins.

Regeneration of used and degraded oils

Insulating oils are considered high-impact waste. This is why in addition to checking for leaks, they are also separated from other materials to ensure their subsequent proper management.

Putting into practice the principles of circular economy, IPTO continued the regeneration of insulating oils for the third year, achieving the regeneration of 70 tonnes of insulating oils during 2022, by using a regeneration system that processes used and degraded insulating oils. In this way, used oils are upgraded, ensuring they have properties equivalent to those of new ones so that they are reused.

The regeneration system fully restores the properties of high-voltage equipment insulating oils. It removes moisture and contaminants, fully restoring the qualitative and electrical properties of the oil, as well as its colour. The process involved is usually simple: used oil is removed from the equipment, replaced with already regenerated oil and the contaminated oil is returned to our facility where it is regenerated and put back to our tanks. During the last three years that the regeneration system has been put to operation, about 410 tonnes of insulating oils have been restored, delivering significant economic and environmental benefits since both the disposal and repurchase of at least 50 tonnes of insulating oil is avoided each year.

Biodiversity protection and environmental restoration

Although IPTO's projects do not involve productive activities and have limited environmental impacts, we pay particular attention to the protection of biodiversity and the management of potential impacts that may arise from our activities.

To ensure the highest level of environmental protection, particular attention is paid to the appropriate management of any environmental impacts that may arise both due to the Company's operation and through new projects. In this context, we ensure that the work carried out during the construction of new projects complies with the environmental legislation's obligations and, where required, environmental studies are prepared in cooperation with the competent authorities. For this reason, we continuously monitor the new national and European regulatory framework regarding environmental protection and biodiversity, in order to ensure that both the environmental studies and the activities of the Company's projects are in compliance with the current framework.

Activity in protected areas

We have a very extensive TL network, extending throughout the country. In order to meet energy needs, TLs have to also pass through protected areas: 143 of the 446 protected areas of the Natura 2000 network in Greece.

During 2022, new projects were completed and electrified, whose TLs cross two additional Natura sites. More specifically, the installation of 21.5km of submarine cable for the Euboea-Skiathos interconnection and 9km of 400kV overhead cable in Megalopoli, Corinth, corresponding to 28 pylons (4,032m^2). The lengths of the lines were calculated using the world system WGS84, so there was a relative deviation from the calculation that would have been made using the Hellenic geodetic reference system 1987.

However, even though the TLs cover long distances and travel through various ecosystems, their operation does not alter the composition of vegetation or change the overall shape of the landscape. The coverage ratio of NATURA areas by the overhead (66kV, 150kV, 400kV), the submarine and the underground network is estimated at 15.3% (~2,103km). In addition, the area of coverage of pylons and masts is approximately equal to 0.34km^2. Respectively, the coverage due to 150kV S/S, 400kV HVC and 66kV TD reaches 0.57km^2.

The following table shows the System assets in Natura* areas:

The HETS and Natura 2000 areas

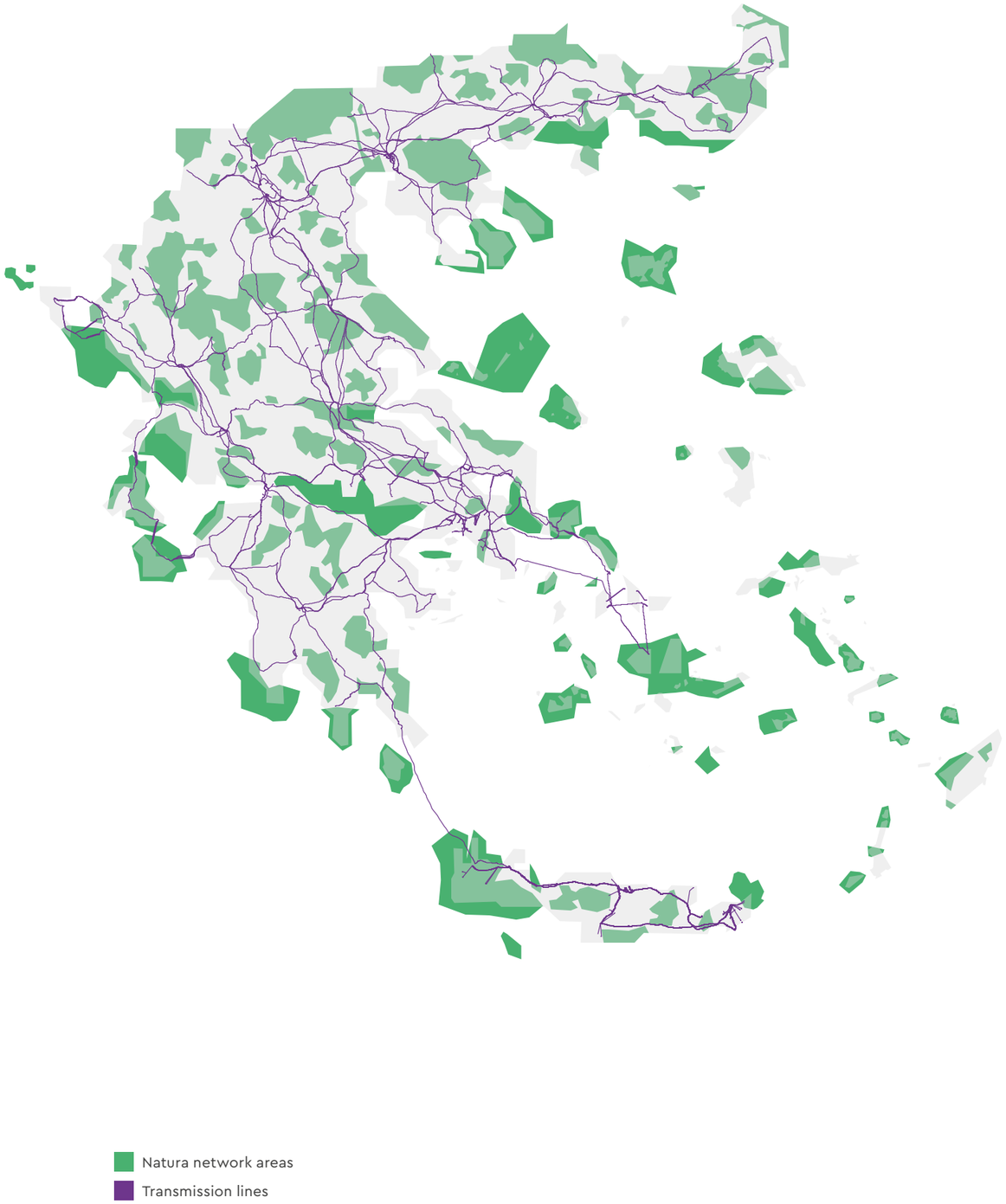


Table 3.8: Categories of new projects in Natura sites

Categories of installations	Project area (length or surface area)
Overhead network (400kV, 150kV, 66kV)	1,634.3km
Submarine network	444km
Underground network	24.3km
400kV pylons (Occupied area of 144m²/pylon)	0.16km²
150kV pylons (Occupied area of 75m²/pylon)	0.18km²
Mast (Occupied area of 25m²/mast)	400m²
150kV S/S	0.19km²
400kV HVC	0.38km²
**66kV TS	3,981.5m²

* They include land in Special Areas of Conservation (SAC) and Special Protection Areas (SPAs).

** TS: Terminal Stations

Similarly, most substations are located outside protected or high environmental value areas, covering a total area of 192.5km². In this case, the measures taken to reduce any visual disturbance include vegetation restoration, tree planting or mounding, always with the approval of the respective Forest authorities.

Therefore, the construction phase involves more impacts on biodiversity compared to the operational phase of the infrastructure, but these are short-term, as they last only throughout the construction period, with the balance being fully restored following the projects' completion, either through natural regeneration or through interventions by IPTO, which have been approved by competent bodies. To address the long-term impacts resulting from the operation of infrastructure, e.g. noise, electromagnetic radiation and visual/morphological disturbance, we take preventive measures by limiting the potential negative impacts of a project to a very low level.

Protection measures for the environment and biodiversity in the existing network

Although no significant impacts on the natural environment of the respective areas are identified during operation, IPTO takes all possible measures to mitigate them.

Measures for the protection of the Bonelli's eagle in Euboea and Andros

During 2022 a table of specifications was prepared for the tender procedure regarding the supply and installation of bird diverters on the TLs of South Euboea's Electricity Transmission System. Procurement is expected to be completed in early 2024. The action formed part of the Life Bonelli EastMed project for the prevention and control of potential threats to the Bonelli's eagle population in the Eastern Mediterranean.

Furthermore, undergrounding of one -out of the two- overhead TLs on Andros is underway, in an area that is the habitat of the Bonelli's eagle. The undergrounding project is expected to be completed within 2024.

Apart from the avifauna, it is estimated that during operation no significant negative impacts occur since mitigation measures are taken to reduce noise generated from substation transformers, which possibly disturbs animals and drives them away from their nests, so that equilibrium is restored after the construction phase.

Forest fire prevention and suppression

Environmental protection is a key pillar of the practices we follow in both maintenance and upgrade projects, as well as in construction projects, ensuring full compliance with the rules of environmental licensing and all domestic specifications as they are mentioned in the environmental legislation.

In conjunction with IPTO's regulatory obligations and institutional role for the safety of the electricity transmission infrastructure, following scheduled or unscheduled inspections, our Company implements works to reduce the thermal load on the bases of the transmission line pylons and ensure that safety distances from its networks are observed. Such works are carried out throughout the entire length of its lines, especially in part running through forest areas, and always in cooperation with the competent forest authority, the local forest authorities and in full compliance with their instructions. IPTO's main objective is that its staff carries out the maintenance work for the uninterrupted and safe operation of the network.

In order to maintain the security of its transmission infrastructure, the Company has in place contracts for the provision of cleaning services for substations and HVCs, removal of vegetation around pylon bases, tree pruning/cutting, as well as the maintenance/replacement of portable extinguishers. IPTO's premises and facilities in Attica are thus protected, preventing the possibility of a fire ignition and/or spread, while flood control and reforestation works are being carried out.

The expenditure over the last three years for the pruning of trees adjacent to overhead networks under our responsibility, as well as for vegetation removal works at substations and HVCs, is described in the table below.

Table 3.9: Expenditure on forest fire prevention and suppression

Cost of works (€)	2020	2021	2022
Deforestation at substations and HVCs	225,000	220,993	433,728
Cleaning and clearing the areas of land around TL towers (pylons)	375,000	100,288	158,238
Pruning/cutting of trees adjacent to overhead high-voltage transmission line networks	115,500	91,743	147,238
Other works (earthworks/asphalting) related to fire prevention	-	-	126,000
Total	**715,500**	**413,024**	**865,204**

At this point it is worth noting that the implementation of the above works is planned separately from the maintenance programme followed for the Transmission System.

Contribution to the fight against forest fires: Pilot project for early detection of forest fires

As part of its corporate responsibility initiatives, IPTO has proposed to the Ministry of Climate Crisis and Civil Protection and to the Hellenic Fire Service the implementation of a pilot project for the early detection of forest fires on Mt. Parnitha. High-voltage power lines, most of which run through mountainous forest areas, where it is very difficult to provide timely information about the occurrence of fires, can be carriers for the installation of intelligent systems for the early detection of forest fires.

In the proposed pilot project, "smart" sensors (Internet of Things-IoT) and cameras will be installed for the early detection of forest fires on two axes of the IPTO network on Mt. Parnitha. The western axis will start from Fyli and end at Skourta, Boeotia, with a total length of 18.5km and 50 pylons. The eastern axis will start from the Olympic Village and end south of Avlona, with a total length of 22.5km and 70 pylons. There will also be a branch, which will start from Ippokrateios Politeia and end near Malakasa, with a total length of 7km and 15 pylons.

A smart IoT sensor for forest fire detection will be installed in each of the 135 pylons. The sensors measure temperature, humidity, pressure and various gases. Based on these measurements and AI algorithms it is possible to detect fires. Sensor data will be collected on special telecommunication devices and sent via a mobile network to a web-based monitoring and management application, where access is provided only to authorised users. It monitors, in real time, all the system components and receives all possible alarms. Alarms will also be sent via email to designated users.

In addition to the IoT sensors, two pairs of dual-spectrum (thermal and optical) cameras will be placed at two points, one on each axis, for the auxiliary detection of fires at any time and day (24/7), as well as for the verification of sensor alarms. The camera data, live photo/video and possible alarms, will also be displayed in a web-based monitoring and management application.

IPTO will grant access to the applications of the fire detection system to authorized Fire Service personnel, so that they can be informed immediately and in real time about possible alarms. In future, it will be examined whether the project applications can be integrated with the existing "Engage Information System" used by the Hellenic Fire Service.

Environment and biodiversity protection measures during construction phase of new projects

Protecting the environment and limiting potential environmental impacts lie at the heart of at the heart of our approach during the construction phase of new projects.

In this context, IPTO follows rules and practices in line with the precautionary environmental principle (for prevention and safeguarding) during the preliminary design and planning of new projects, always aiming at the protection of the environment and biodiversity. The design of new energy infrastructures and the upgrading/modernisation or modification of existing ones are part of the System Operator's basic tasks, whose key pillar is the protection of the environment. When making final decisions about the routing of lines and the siting of new infrastructure (substations, TDs, HVCs, etc.), the minimisation of environmental impact is always considered, and the following criteria are mandatorily taken into account:

- mapping of environmentally sensitive areas and preliminary impact estimation caused by any given siting of our projects on the environment,
- extensive assessment of impacts as part of our environmental studies,
- thorough assessment of the public consultation process outcomes on the environmental impact studies,
- full compliance with the environmental licensing decisions concerning our projects.

Moreover, we have prepared a Strategic Environmental Impact Assessment (SEA) within the framework of the TYDP for the HETS for the period 2017-2026. An aim of the Strategic Environmental Impact Study is to identify, describe and assess the significant potential impacts on the natural environment that may be brought about by the implementation of proposals in the development plan, as well as to propose mitigation measures to minimize these impacts.

At the same time, with a view to a balanced and sustainable development, and prior to adopting any plans and programmes, a Strategic Environmental Assessment (SEA) is prepared to incorporate the environmental aspect by introducing the necessary measures, conditions and procedures. Consequently, an assessment and evaluation of the potential impacts on the environment is carried out, promoting thus sustainable development and a high level of environmental protection in the areas where the Company operates.

The steps followed during the planning and management process for a new project are shown in the following figure:

1. **Necessity to design a new project**

It arises when there is:
- increased electricity consumption in an area that cannot be met by the existing infrastructure,
- need to connect projects for the use of RES,
- need to interconnect the HETS with island complexes to exploit RES and reduce PUs costs,
- need to increase or create new interconnectors with other countries.

2. **Project design**

It is conducted by IPTO under the Ten-Year Development Plan. A project may aim to:
- enhance the HETS or
- expand the HETS

3. **Consultation and maturity**

Once a project has been thoroughly studied and included in the Ten-Year Development Plan, it is introduced for consultation and then final approval by the Regulatory Authority. The approved project is accompanied by a budget, cash flows and an implementation timetable. Projects of national importance are also accompanied by cost-benefit studies.

4. **Project licensing**

All necessary steps are followed to obtain the required permits and environmental impact assessments for the implementation of the project (updates on studies, commissioning of works, acquisition of necessary permits, drafting of Environmental Impact Studies, file submission, acquisition of an environmental terms approval decision).

5. **Project implementation**

Project implementation is carried out by IPTO, either with its own resources (direct labour) or by outsourcing (turn-key projects). Where applicable, implementation is supervised by IPTO, a third party or a special-purpose entity (see Ariadne Interconnection).

6. **Project completion**

The project is electrified upon completion.

7. **Project maintenance**

Subsequently, the project is maintained, repaired when damaged and upgraded when needed.

8. **Decommissioning**

When the life cycle of the project is completed, it is removed and decommissioned.

Practices for flora and fauna protection during construction works

The Operator takes a series of measures to protect the flora and fauna ensuring that an area's biodiversity remains unaffected during the construction of projects involving TLs, substations or HVCs. These measures are summarised as follows:

- The extent of the area occupied by the project is limited to what is strictly necessary for its construction.
- No uncontrolled disposal of debris, lubricants and other waste or rubbish is allowed at any location within the immediate project site areas.
- The areas where existing vegetation is to be removed, are limited to those strictly necessary. For this reason, prior to the launch of construction works these areas are demarcated with precision (the area to be occupied by the first pylon) by a special team of surveying engineers.
- Any damage to vegetation is limited to the minimum possible extent and always takes place in accordance with the instructions of the competent Forest Authority.
- The construction site areas are restored according to relative vegetation technical studies.
- In case of adverse weather conditions during earthworks, soil wetting is applied to reduce dust dispersion.
- Workers are thoroughly informed -both during construction and operation stages- so that all environmental requirements, especially those concerning the natural environment, are met.

Society

No
serious occupational injury in 2022

10,110
training hours on health and safety issues

74%
of all training hours related to Health and Safety topics

1,983
employees at Group level in 2022

13,626
total training hours in 2022

No incident
of discrimination in 2022

€1.06 million
expenditure on social actions in 2022

We recognize the importance of protecting Health and Safety at work and apply appropriate practices to identify risks early, prevent and minimize accidents.

Occupational Health and Safety

Our approach

The protection of Health and Safety at work is a key priority in all our activities.

We recognise the importance of protecting Health and Safety at work and implement appropriate practices in order to identify risks early so as to prevent and minimise accidents. Our goal is to create a strong corporate culture that encourages all workers to behave in a responsible manner regarding their safety, using the knowledge and experience gained to effectively protect Health and Safety at work.

Health and Safety Policy

IPTO has and implements a Health and Safety Policy setting out the framework of the principles and measures observed, aiming to promote a safe working environment for all. In addition, through the Health and Safety Policy, the Company aims to improve the systems, standards and practices applied. The Policy has been approved by the Management and is binding for all employees regardless of rank, as well as third parties who collaborate with IPTO or located in its premises.

Furthermore, the implementation of this Policy and the strengthening of the corporate culture on Health and Safety issues aims at the early identification of risks, prevention and minimization of work-related accidents and illnesses.

Identifying, assessing and minimising risks
In order to identify all risks arising from the Company's work activities, a Written Occupational Risk Assessment (WORA) has been prepared. The existing WORA is up to date and contains, inter alia, risk identification and analysis, risk assessment tables and the actions implemented according to the hierarchy of controls for risk minimisation. Moreover, the Company is in the process of developing a Health and Safety Management System (HSMS) to be completed by the first half of 2023.

The procedure applied for the identification of risks is the following:

- The Safety Technicians (EXYPP - External Protection and Prevention Services) cooperating with the Company carry out scheduled visits to the Company's facilities, according to schedules approved by the Labour Inspectorate.
- The remarks of the Safety Technicians recorded in the Indication Books at facilities are sent by the service provider (EXYPP) to the Health & Safety Branch (H&S Branch), which collects, analyses and then sends them to all the Company's competent Divisions in order for them to take the necessary corrective actions.

Employees are informed about the risks associated with their work so that they can avoid possible exposure through the training seminars held and the General Occupational Risk Assessment (GORD) which is accessible to all.
The Company encourages the employees' active participation and the reporting of any suggestion for improvement that may contribute to the enhancement of occupational health and safety protection. If an employee identifies a potential hazard, he or she can report it to both the Safety Technicians and his or her superior.
Some additional measures we take to protect Health and Safety at work include the following:

- Appropriate signage where necessary
- Provision of the necessary Personal Protective Equipment to staff and training in its use
- Fire safety
- Emergency response
- First Aid
- Incident Management and Accident Investigation

In the event of an incident and as provided for by the legislation in force, an investigation takes place by the Safety Technician. The investigation identifies the causes of the incident and suggestions are noted so that a similar situation can be avoided in the future.

Practices and measures to safeguard Health and Safety

Our main priority is to create a safe working environment for the effective protection of our people. To this end, the following measures are implemented:

- Preparation and updating of Occupational Risk Assessment studies for all IPTO facilities throughout the country.
- Staffing all workplaces with Safety Technicians and Occupational Physicians to identify and note occupational hazards.
- Right of access to nursing staff for all employees, distributed in clinics located in nine main Company facilities throughout the country.
- Operation of staffed medical clinics at IPTO facilities throughout Greece.
- Preventive staff medical check-ups.
- Mandatory annual occupational health check-ups for those working under high-risk conditions and biennially for all other staff.
- Issuance of fitness-for-duty certification for all employees, fully protecting medical confidentiality and personal data.

Health and Safety training

The effective protection of Health and Safety requires the establishment of a culture and the active participation of all. For this reason, we have placed and will continue to place particular emphasis on training our employees in matters relating to the protection of occupational health and safety.

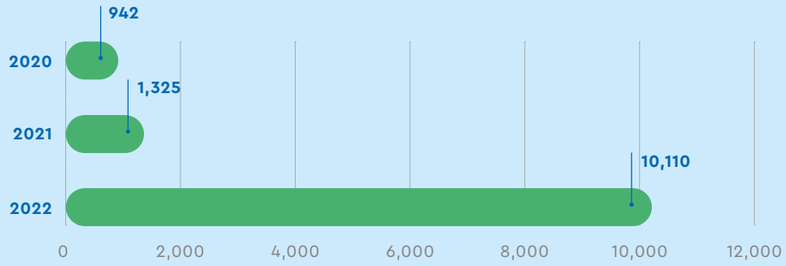
Training in occupational Health and Safety is an integral part of the basic and specific technical training of IPTO staff. The proper training of workers is one of the key pillars in the effort to prevent accidents and achieve high levels of safety. For this reason, IPTO draws up an annual Health and Safety training plan, considering parameters which include experiences and lessons learned from accident investigations of previous years, employee suggestions, current Health and Safety awareness campaigns, as well as possible new safe working guidelines.

The annual programme of training and experiential workshops aims to prevent and address any negative impact on the Health and Safety of workers regarding the the performance of their duties and covers a range of relevant topics, such as the correct use of personal protective equipment, information on occupational hazards, dangerous tasks or even dangerous situations and how to address them according to best practices.

All employees, depending on their job posts, are required to attend specific training courses, tailored to the needs in relation to their duties, with the aim to further develop their skills and address occupational hazards they may face.

During the course of 2022, seminars on Health and Safety issues were held accounting for a total of 10,110 training hours with 3,364 participants, representing 74% of total training hours. The seminars included first aid (basic adult life support and use of an automatic external defibrillator), as well as fire safety and workplace evacuation topics.

Graph 4.1: Hours of Health and Safety training



The gradual decline of the pandemic was a decisive factor that allowed more training programmes to be carried out, leading to a significant increase in the total number of hours of Health and Safety training.

Health and Safety Executive Training

In 2022, IPTO designed and implemented a Health and Safety training seminar for senior executives of the Group, with the following objectives:

- The gradual familiarization of executives with the concepts, terms and tools of Health and Safety and issues related to it.
- The start of the gradual development towards a uniform approach and understanding on Health and Safety matters.
- Identifying training needs for all employees of all Departments from within and setting out priorities for the coming period.

Specifically, executives from various Company Departments attended a two-hour seminar on a weekly basis. Following the completion of the cycle of training seminars, closed working meetings (workshops) were held per Department. In these meetings, the Department managers identified training needs and set priorities in regard with the training of their employees. One of the meetings' main objectives was to set useful, feasible and achievable training targets and programme Occupational Health and Safety training seminars for the coming years, with the aim to gradually cover all areas of work performed by the Company's employees.

Our performance

Our continuous efforts to protect Health and Safety resulted in no serious injuries for the second consecutive year. Our performance in relation to occupational Health and Safety is presented in detail below.

Table 4.2: Health and Safety Performance Indicators

	2020			2021			2022		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Number of deaths due to injury	1	0	**1**	1 (*4)	0	**1**	0	0	**0**
Number of deaths due to injury (*1)	0.089	0	**0.071**	0.139	0	**0.11**	0	0	**0**
Number of serious injuries	0	0	**0**	0	0	**0**	0	0	**0**
Serious injury indicator (*2)	-	-	**-**	0	0	**0**	0	0	**0**
Number of recordable injuries	5	0	**5**	5	0	**5**	9	0	**9**
Recordable injury indicator (*3)	0.447	0	**0.354**	0.693	0	**0.549**	0.767	0	**0.578**
Number of total working hours	2,238,383	586,627	**2,825,010**	1,442,969	378,057	**1,821,026 (*5)**	2,348,313	766,303	**3,114,616 (*5)**

(*1): Rate of injury-related deaths = (Number of injury-related deaths / total working hours)*200,000
(*2): Serious injury rate = (Number of serious injuries excluding deaths / total working hours)*200,000
(*3): Percentage of recordable accidents = (Number of accidents / total working hours)*200,000
Serious injuries are injuries that result to a loss of working days that total more than 6 months and recordable injuries are injuries of any kind, even if they did not result in lost workdays, or required first aid.
(*4) Death was caused by pathological causes during working hours
(*5) Hours of leave, sick leave and quarantine hours have been deducted and are not included, i.e. only office work and teleworking are included. Previous years included both leave and sick leave.

As far as the 9 injuries in 2022 are concerned, three were due to road accidents, one to pathological causes, one to cutting, one to a sharp object injury, one due to carrying a heavy object and one to stumbling.

Employment

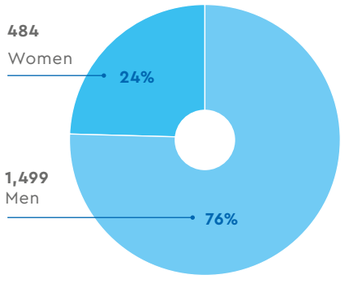
IPTO recognizes the value of its workforce as one of the most important factors contributing to the implementation of its mission and successful performance to date.

In 2022, the IPTO Group employed 1,983 people, all of whom were full-time employees.

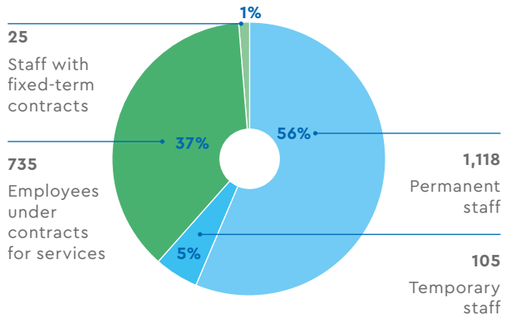
Table 4.3: Human resources data (Group) (2022)

	Men	Women	Total
Permanent staff	872	246	**1,118**
Temporary staff	72	33	**105**
Employees under contracts for services	534	201	**735**
Staff with fixed-term contracts	21	4	**25**
Total	**1,499 (76%)**	**484 (24%)**	**1,983**

Graph 4.4: Number of employees by gender



Graph 4.5: Number of employees by type of employment contract



The data on regular staff and FTCs are taken from the Company's Employment Data Sheets (EDS). The data on the Contracts for Services and the temporary staff are taken from the company's payroll (DFAS). There was a significant fluctuation in the regular staff population between October and November 2022 due to voluntary exits (terminations).

Table 4.6: Geographical Sectors (IPTO)

Breakdown of employees by geographical area (2022)*	Regional Sector of Central, Northern Greece	Regional Sector of Western Greece and the Peloponnese	Regional Sector of Attica	Regional Sector of Crete	Total
Permanent staff	262	125	721	9	1,117
Temporary staff	22	8	74	0	104
Employees under contracts for services	114	61	544	3	722
Total	**398**	**194**	**1,339**	**12**	**1,943**

*It concerns only IPTO employees. All staff from the subsidiaries ARIADNE and GRID is based in Attica.

Graph 4.7: Number of workers by geographical area (2022)

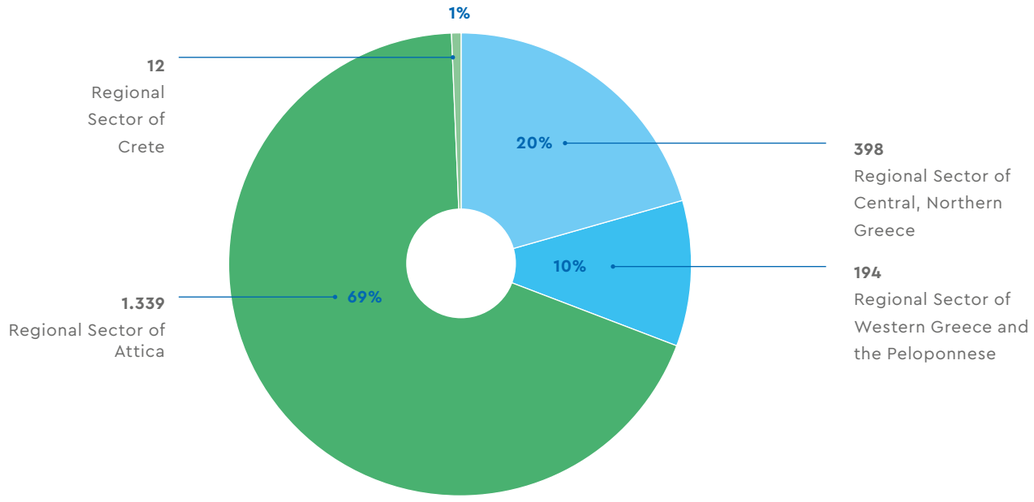


Table 4.8: Age distribution of staff by type of work contract (Group)

Employee distribution per geographical sector (2022)	<30		31 – 50		>50		Total	
	Number	%	Number	%	Number	%	Number	%
Permanent staff	3	0%	354	18%	761	38%	1,118	56%
Temporary staff	12	1%	76	4%	17	1%	105	5%
Workers under contracts for services	166	8%	469	24%	100	5%	735	37%
Staff under fixed-term contracts	0	0%	22	1%	3	0%	25	1%
Total	**181**	9%	**921**	46%	**881**	44%	**1,983**	100%

Graph 4.9: Number of employees by age group (2022)

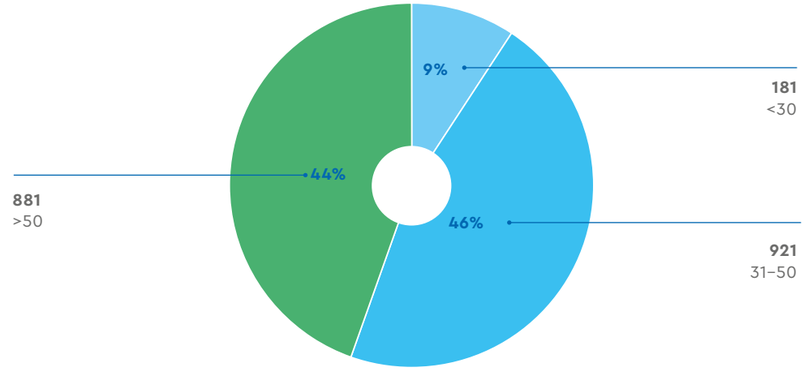


Table 4.10 / Graph 4.11: Workers who are not employees per category (2022)

Internship	8
Cleaning services	44
Security	44
Catering services	4
Total	**100**

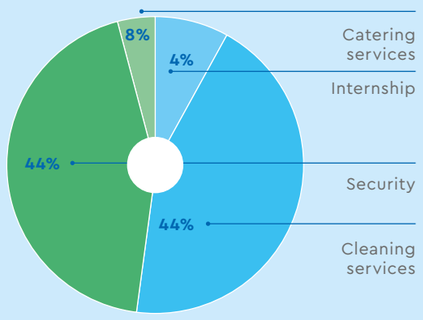


Table 4.12: Employee mobility by gender (2022)*

	Men		Women		Total
Employees who have left for any reason, e.g., voluntary exit, redundancy, retirement, death	Number	%	Number	%	Number
	61	87	9	13	**70**

Graph 4.13: Employees' mobility by gender (2022)

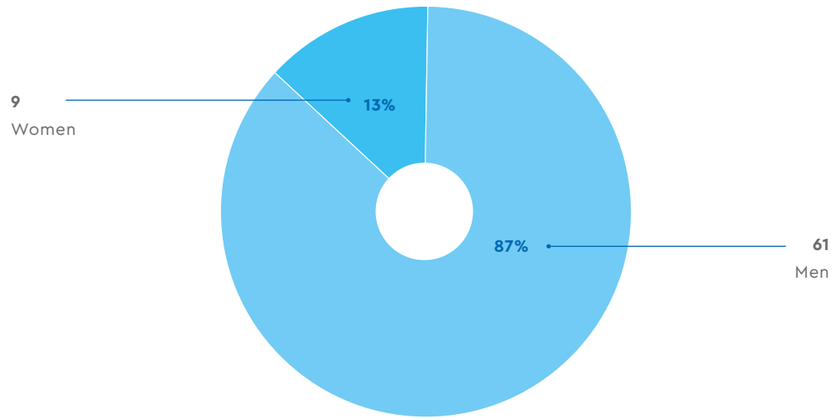


Table 4.14: Employees' mobility by age group (2022)*

	<30		31 – 50		>50		Total
Departures for any reason, such as resignation, dismissal, retirement, death	Number	%	Number	%	Number	%	Number
	0	0	2	3	68	97	**70**

Table 4.15: Employees' mobility by geographical area (2022)*

	Regional Sector of Central, Northern Greece		Regional Sector of Western Greece and the Peloponnese		Regional Sector of Attica		Regional Sector of Crete		Total
Departures for any reason, such as resignation, dismissal, retirement, death	Number	%	Number	%	Number	%	Αριθμός	%	Number
	18	26	9	13	43	61	0	0	**70**

*Note: It concerns only IPTO employees.

Graph 4.16: Employees mobility by geographical area (IPTO-2022)

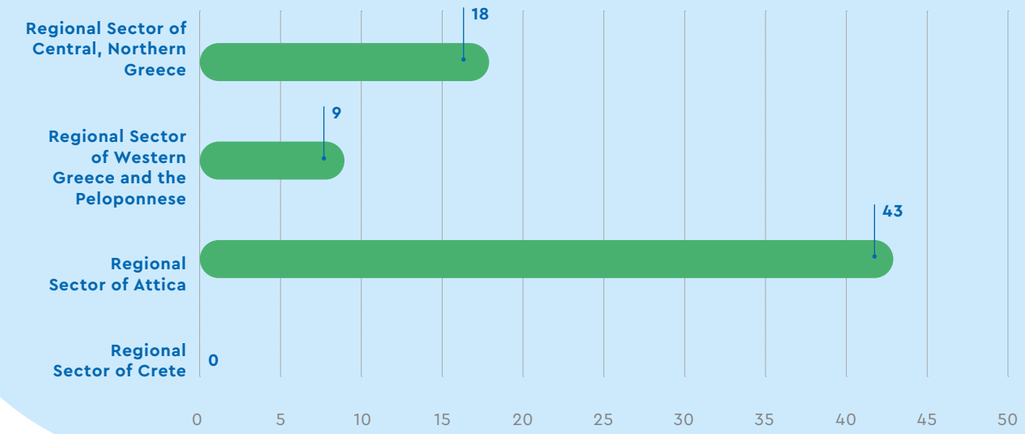


Table 4.17: Voluntary and involuntary mobility of employees (IPTO-2022)

Voluntary terminations		Non-voluntary terminations		Total	
Number	%	Number	%	Number	%
53	76	17	24	**70**	**100**

Graph 4.18: Staff on 24-hour shift (IPTO)

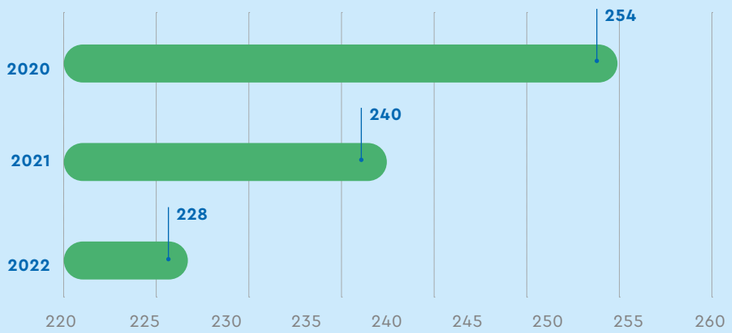


Table 4.19: Breakdown of employees by rank and gender (IPTO)

	2020			2021			2022		
	Men	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**
Department & Branch Directors	35 (76%)	11 (24%)	**46**	32 (76%)	10 (24%)	**42**	41 (75%)	14 (25%)	**55**
Section Heads & Sub-Section Heads	105 (61%)	66 (39%)	**171**	127 (64%)	73 (36%)	**200**	115 (60%)	78 (40%)	**193**
Employees*	833 (82%)	178 (18%)	**1,011**	765 (83%)	161 (17%)	**926**	716 (82%)	153 (18%)	**869**
Total	**973 (79%)**	**255 (21%)**	**1,228**	**924 (79%)**	**244 (21%)**	**1,168**	**872 (78%)**	**245 (22%)**	**1,117**

*Refers to IPTO's permanent staff.

Table 4.20: Breakdown of employees by grade and gender (Group)

	Men	**Women**	**Total**
Department & Branch Directors	43 (75%)	14 (25%)	**57**
Section Heads & Sub-Section Heads	115 (60%)	78 (40%)	**193**
Employees (permanent and temporary staff, contracts for services, fixed-term contracts)	1,342 (77%)	391 (23%)	**1,733**
Total	**1,500 (76%)**	**483 (24%)**	**1,983**

Human resources survey

In 2022, IPTO conducted a human resources survey with the participation of approximately 49% of all IPTO employees, which showed high levels of job satisfaction and employee support for the transformation of the Group, as most job satisfaction indicators were very high (>80%).

The survey assessed the most important parameters that influence the extent of employee satisfaction and are mainly related to daily work life, professional recognition and development, working climate and relations of collaboration, the level of remuneration and benefits, health and safety conditions, training and internal information.

The survey indicated "Good communication with colleagues" as the most important (62%) job satisfaction factor.

In addition, based on the results of the survey, 71% of employees believe that "the Management is moving in the right direction" and supports IPTO's transformation into an even more modern Operator with a clear identity and a unified vision for the future. The vast majority of employees want to see a corporate culture that is even more progressive and outward-looking and actively promotes individual initiative and responsibility, fostering a climate of consensus and teamwork.

Collective bargaining agreement

Already from 2021, IPTO has proceeded to the signing of a new three-year (2021-2024) company-level collective labour agreement covering all staff. It is a collective labour agreement fully in line with the standards and principles governing the modern working environment.

Within the framework of the collective agreement, among other things, the following are provided for:

- The continuation of group health and life insurance plans for all employees.
- The regulation about teleworking, ensuring all labour rights included in IPTO's Workforce Regulation and the collective labour agreements.
- Determining the amount for meal vouchers.

Workforce Regulation

IPTO has developed and implements a Workforce Regulation following the trends in modern working environments. This regulation covers all workers and safeguards their rights and working conditions, which are established through collective bargaining.

This regulation is very important as it helps to address many issues at work, including recruitment, pay and working hours. More specifically, the regulation:

- safeguards the staff's job posts;
- disconnects seniority-related remuneration levels from the staff assessment procedure;
- updates provisions on disciplinary procedure;
- increases parental leave by two days;
- provides for paid leave of employees who are either bone marrow donors or have children with severe mental illnesses, and
- provides for the inclusion of new recruits in the regular staff after seven months of service rather than two years as previously.

Support to employees and their families

We seek to promote the work-life balance of our employees. In this context, we support our workers and their families by offering additional insurance coverage, which includes life insurance, illness-related total permanent disability insurance (for people up to 65 years old), death insurance, insurance in case of accident-related total permanent disability and inpatient or outpatient care due to accident or illness.

Furthermore, IPTO provides meal vouchers, as well as nursery and camps allowances for the workers' dependants.

Skills development

IPTO steadily invests in the training and development of its employees to meet the increased challenges of its role and the new market trends.

The nature of our activities and the constant changes in the energy landscape of Greece sets the bar high for our human resources. In this context and in order to promote a strong culture of growth and development, we design and implement training programmes on various subjects. The purpose of these programmes is to enhance the employees' technological and organisational knowledge, develop their creative thinking, and nurture innovation skills.

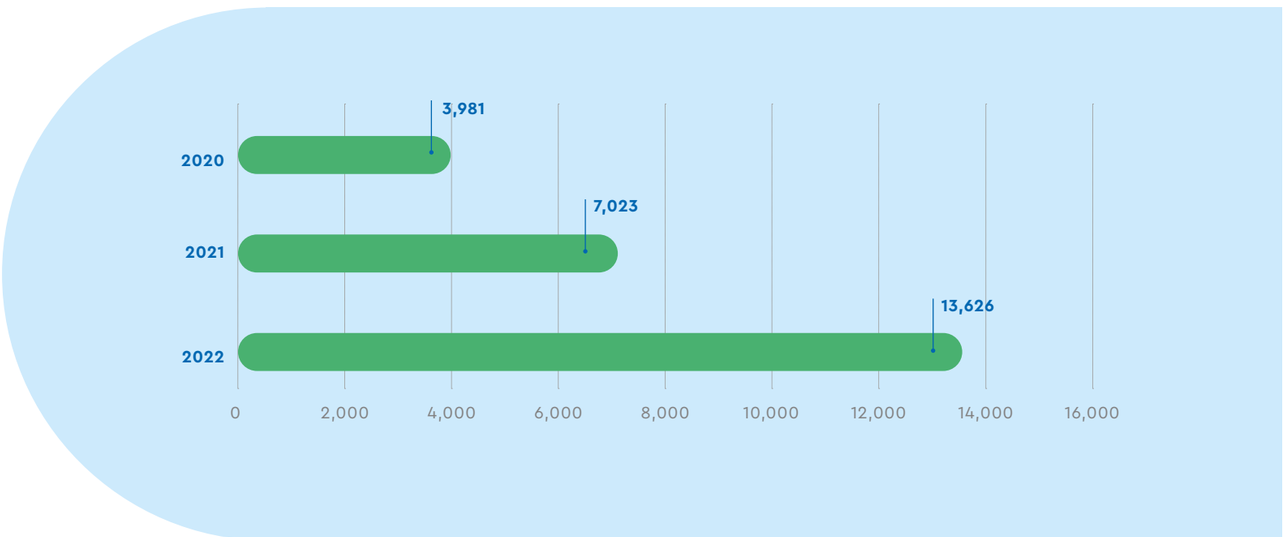
The nature of our activities and the constant changes in the energy landscape of Greece sets the bar high for our human resources.

Training is organised and carried out on an annual basis. Employees take part in seminars and educational events, in postgraduate, doctoral and post-secondary education and also language-learning programmes. Emphasis is placed on new practices such as experiential and distance learning, thus enhancing the quality and quantity of the training and development programmes.

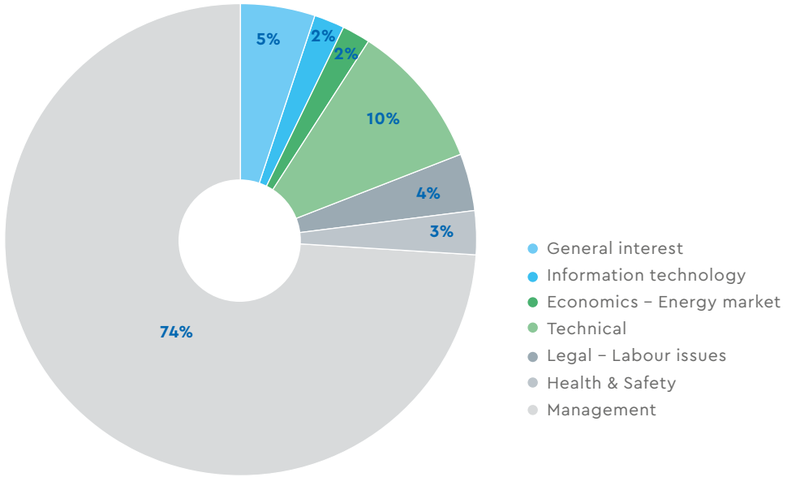
In 2022, 311 training seminars of a total duration of 13,626 hours were carried out with 3,910 participants and their total cost amounted to €286,18[5].

[5] The data refer to permanent employees, as well as IPTO and ARIADNE employees under contracts for services; temporary and GRID employees are not included.

Graph 4.21: Total employee training hours per year



Graph 4.22: Training hours per subject area (2022)



The training seminars are designed and implemented both internally and externally in cooperation with specialised instructors. The programmes cover a wide range of topics from specialised training to skill development.

The design of the annual training plan is dynamic. The topics of the training seminars implemented each year vary to meet the changing needs of employees and the Company. The Training Department communicates with all the Company Departments and notes their interest on specialised topics. The Company then processes results and designs the annual employee training plan, which is implemented according to priority needs.

Graph 4.23: Average training hours per gender (2022)

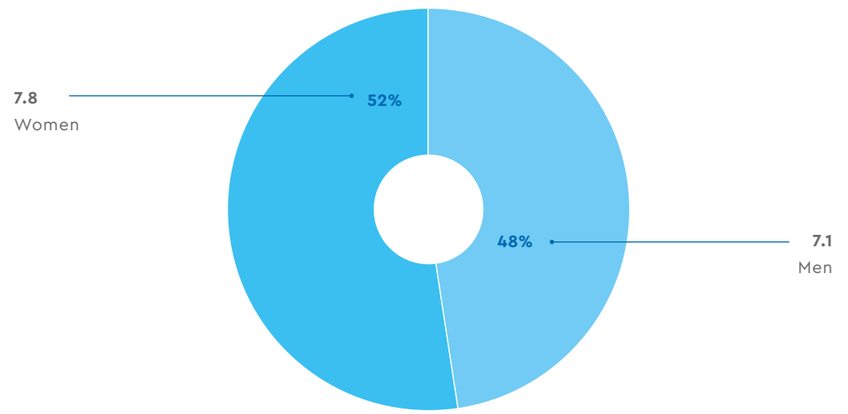


Table 4.24: Average training hours per category of permanent employees *

	2022		
	Men	**Women**	**Total**
Directors of Departments & Branches	7.1	9.6	**7.8**
Section Heads & Sub-Section Heads	9.8	9	**9.4**
Employees	6.8	7.5	**7.0**
Total	**7.1**	**7.8**	**7.3**

*Note: The category of employees also includes employees under contracts for services at IPTO and ARIADNE. Temporary employees and GRID employees are not included.

Table 4.25: Average number of hours of employee training based on total remuneration*

	2021	**2022**
Employees in the 10% of employees with the highest total remuneration (Managers)	11.8	7.8
Employees in the 90% of employees with the lowest total pay (Heads of Sections & Subsections & employees)	5.8*	7.4

*Note: The category of employees also includes employees under contracts for services at IPTO and ARIADNE. Temporary employees and GRID employees are not included.

Equal opportunities and performance assessment

ADMIE consistently invests in the training and development of its employees, in order to respond to the increased challenges imposed by its role and new market trends.

The nature of our activities and the continuous development in the energy sector landscape of Greece sets the bar high for our human resources. Under this light and wanting to foster a strong growth culture and development, we design and implement training seminars on various subjects. The purpose of these programs is to empower technological and organizational knowledge of employees, as well as development of their creative thinking and innovation capabilities.

Equal opportunities, inclusion and human rights

In order to promote equal opportunities and respect for diversity in the workplace, we have developed a Policy and Action Plan for equality and inclusion in the workplace. IPTO respects and supports internationally recognized human rights and seeks to create an inclusive environment of equal opportunities and non-discrimination, accepting diversity. To this end, in 2022 the preparation of the "Gender Equality and Diversity Inclusion Policy" was launched, as well as the "Policy for the Prevention and Combating of Violence and Harassment in the Workplace", which includes a Complaints Mechanism for issues of equality, discrimination, violence and harassment in the workplace. These Policies were based on both the OECD and ILO Guidelines and the internal gender mainstreaming survey conducted for the first time in 2022. The Policies and the Complaints Mechanism will be adopted and implemented during 2023.

Within the framework of these Policies, the Environmental, Social and Corporate Governance Branch, which is part of the Division of Human Resources, Legal & Regulatory Affairs, undertakes, among other things, the following:

- Monitoring the Policies' implementation, assesment and reporting for Company's objectives, measures and actions.
- Preparation of an Action Plan for the promotion of improvement actions where necessary and the development of appropriate -quantitative and qualitative- methods for monitoring the equality and inclusion diversity status achieved within the Company (e.g., collection of statistics, comparison, completion of anonymous questionnaires by human resources).
- Cooperation with organisations or other bodies which aim to promote equality and eliminate discrimination based on sex, race, colour, national or ethnic origin, birth, religion, political or other beliefs, disability or chronic illness, age, marital or social status, sexual orientation, identity or gender features.

In 2022, no incidents of discrimination were recorded, while in addition, the IPTO Group is drafting a Complaints Mechanism, which is to be approved in 2023.

Table 4.26: Employees breakdown by rank and age group (2022-IPTO)

	<30		31 – 50		>50		Total	
	Number	%	Number	%	Number	%	Number	%
Department & Branch Directors*	0	0%	33	2%	24	1%	**57**	3%
Section Heads & Sub-Section Heads	0	0%	90	5%	103	5%	**193**	10%
Employees*	181	9%	798	40%	754	38%	**1,733**	87%
Total	**181**	9%	**921**	46%	**881**	44%	**1,983**	100%

*Included: Permanent and temporary staff, contracts for services, fixed-term contracts at Group level

IPTO seeks to provide equal opportunities regardless of gender, however, the percentage of male employees is significantly higher than that of female employees. This holds mainly since most of graduates from technical universities and schools used to be men, a fact that largely resulted from stereotypical perceptions in respect with "male professions". However, these facts and attitudes are changing, and IPTO seeks to keep pace with these developments in favour of gender equality.

Table 4.27: Gender ratio of managers*

	Percentage of men in management positions (%)	Percentage of women in management positions (%)
2020	64.5	35.5
2021	65	35
2022	63	37

*Directors, Section and Sub-Section Heads are included.

Table 4.28: Ratio of women's pay and total remuneration to men's by category of workers (2022)*

Department & Branch Directors	0.92
Section Heads & Sub-Section Heads	0.97
Employees*	0.79

(*) Values based on the Athens Stock Exchange (ATHEX) Disclosure Guide: 8%, 3% and 21% respectively.
(**) The category of employees also includes staff under contracts for services at IPTO and ARIADNE. Temporary staff and GRID employees are not included.

Gender equality survey

IPTO conducted a gender equality survey, the purpose of which was to investigate its staff's perceptions regarding gender issues, contribute to the formulation of a Human Resources Management Policy that incorporates gender discrimination as well as assist the company's initiatives for compliance with the legislation on the prevention of and response to all forms of violence and harassment in the workplace.

About 40% of the employees participated in the survey, while the quantitative data were confirmed and enriched by qualitative research based on individual interviews. Some of the most important findings are that 81% consider that "IPTO actively promotes gender equality", while a remarkable 24% consider that "patriarchal attitudes are maintained within the organisation", an assessment that is reinforced among younger and female employees. However, in 68% of responses, there is agreement that "in recent years management has made efforts to improve equality in the working environment".

Based on the findings of the survey, the "Policy on gender equality, inclusion and diversity" and the "Policy on the prevention and combating of workplace violence and harassment and management of internal complaints" were formulated for the integration of the gender dimension in IPTO's human resources management, as well as the prevention and handling of violence and harassment, which will constitute a particularly important step for the improvement of corporate culture and the working environment of the Operator.

Employee assessment

With performance management in mind, we apply a modern evaluation system for employees and executives.

IPTO has developed effective employee management and assessment mechanisms, thus ensuring the increase of the Company's efficiency for the benefit of all. Specifically, it implements a fully modernized electronic evaluation system, which aims to manage the performance of the entire Company in a systematic and organized manner, promoting the continuous development for its employees and executives.

Thus, the assessment system has a diagnostic character, as it demonstrates both the points that need improvement and the scope for continuous development of employees, teams, executives and the Company as a whole.

Performance evaluation is based on both qualitative (skills - behaviours) and quantitative (measurable objectives) criteria. Specifically, staff with non-responsible positions and Subsection Heads are evaluated only on qualitative criteria, while Heads of Departments and higher posts are evaluated on both quantitative and qualitative criteria, in a ratio of 30% - 70% respectively.

The assessment process includes the following steps:

01. The employee being assessed carries out a self-assessment.

02. The Direct Supervisor and the Next Level Supervisor of the employee being assessed submit their ratings.

03. The employee being assessed is informed of his/her score and has the option to accept it by completing the process or to disagree.

04. In case of disagreement, the parties involved in the assessment can resolve the disagreement through discussion. The two assessors then resubmit their assessment (with or without changes to their ratings).

05. The employee being assessed is informed of his/her score and has the option to accept it by completing the process or to disagree.

06. In case of a second disagreement, the assessment is systemically forwarded to the Supervisor of the next hierarchical level (third assessor), who submits the final rating for the employee.

Through this procedure, fairness and meritocracy of the evaluation system is strengthened, as the people being assessed keep the major role in the whole process.

Employee assessment is carried out on an annual basis and concerns the year preceding the reference period. The human resources assessment for 2022 took place between 19/06/23 and 21/07/23 and included all staff.

Supporting local communities

IPTO supports on an annual basis local communities at the areas where it operates. On that note it implements a series of actions aimed at further strengthening them, remaining faithful to its values. The total amount IPTO spent on these actions for 2022 amounted to €1.06 million.

More information on the social contribution initiatives undertaken by the Company in 2022 is presented below.

We seek to continuously support and strengthen local communities both through our activities and the development of the System, and through our practical support to public benefit projects in the municipalities where we operate.

Donation of a new and fully equipped ambulance to the Health Centre of Neapoli, Lakonia

IPTO donated a brand-new ambulance with state-of-the-art equipment to the Neapoli Health Centre in Lakonia, directly enhancing the quality of healthcare for the residents of the region.

With this donation, IPTO has actively contributed to the continual operation of the Health Centre of Neapoli, which will now be able to deal more effectively with the emergency health care needs of residents, including all serious incidents that require immediate transfer to the nearest hospital units in the area.

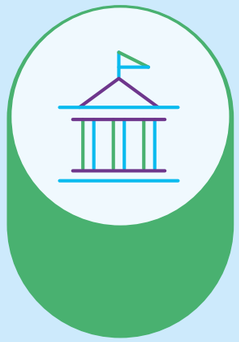
Upon receipt of the ambulance, the Governor of the 6th Health Region of Greece, Mr. Ioannis Karvelis, and the Director of the Neapoli Health Centre, Mr. Ioannis Michaletos, warmly thanked IPTO for its social sensitivity and support to the local community.

Donation of 22,000 litres of oil to schools on Zakynthos

IPTO, actively supporting the local community of Zakynthos, proceeded to a donation of 22,000 litres of oil stock, which helped to cover the heating needs of 11 school units on the island.

The oil stock resulted from the coverage of the Company's emergency needs in Zakynthos during the last summer period. More specifically, IPTO procured additional fuel and was supplied with additional oil tanks to ensure the smooth operation of the Zakynthos Substation during the tourist season. All remaining fuel was distributed by tanker to the 1st, 3rd, 5th and 6th Primary Schools of Zakynthos, as well as the Primary School of Riza, the 2nd and 3rd Secondary Schools of Zakynthos, the Secondary Schools of Machairades, Katastari, Vanato and the High School of Panagoula.

Through this initiative and amid the energy crisis, the IPTO Group once again offered its substantial assistance by supporting the local community.



Governance

Establishment

of the Environmental, Social and Corporate Governance Branch

Participation

in 17 European research programmes during 2022

€119 million

spent to suppliers in 2022

The Security Operational Center

started its provision of services

IPTO continues its Digital Transition by transforming systems, processes and human resources. Responding to modern challenges and technological developments, it leads the Group into a new era.

Corporate governance

Management structure and BoD Committees

IPTO's Board of Directors, consisting of nine members, is responsible for the formulation of the Company's strategy and policy. In addition, it has a supervisory and monitoring role over the management of the Company's assets, regarding the maintenance and preparation of the Ten-Year Development Plan of the HETS. Its objective is to act collectively, making decisions in line with the legislation and the guidelines set by the Regulatory Authority.

The Board of Directors is elected by the General Meeting of Shareholders. The term of office of its members is also decided by the General Meeting and is set at 3 or 5 years. The current term of office of the Board of Directors is 3 years for all members and is due to end in 2025. The Board of Directors' composition includes executive and non-executive members. Its President is also the CEO of the Company. This dual role is intended to ensure more direct decision-making and more appropriate coordination of the work performed by the Company's General Divisions.

The other members of the Board of Directors are from the shareholders of State Grid (3), ADMIE Holding (3) and DES ADMIE (2), and there is also an employee representative. Several criteria such as training and expertise, experience and graduate, postgraduate or doctoral degree qualifications are taken into account for their election.

The composition of the Board of Directors and the breakdown by age group as at 31/12/2022 was as follows:

Table 5.1: Board of Directors

Name	Position	Role	Gender
Manos Manousakis	Chairman & CEO	Executive	Male
Dong Chen	Deputy CEO	Executive	Female
Ioannis Margaris	Vice-Chairman – General Manager	Executive	Male
Yunpeng He	Independent Member	Non-executive	Male
Wan Yuanhang	Independent Member	Non-executive	Male
Ioannis Karampelas	Independent Member	Non-executive	Male
Fotios Nikolopoulos	Member – Employee Representative	Non-executive	Male
Antonis Aspras	Independent Member	Non-executive	Male
Stavros Ignatiadis	Independent Member	Non-executive	Male

Table 5.2: BoD members by age group

	<30	30–50	50>	Total
Number of BoD members by age group	0	6	3	**9**

Table 5.3: Percentage of women and non-executive members of the Board of Directors

	Number	Percentage (%)
Women-members of the Board.	1	11.1
Non-executive members of the Board of Directors.	6	66.7

Board of Directors Committees

The Company's Board of Directors carries out its duties assisted by four advisory Committees: (a) the Financial Audit Committee, (b) the Strategic Planning Committee, (c) the Remuneration and Nomination Committee and (d) the Audit Committee. The members of the Financial Audit, Strategic Planning and Remuneration and Nomination Committees are appointed by decision of the Company's Board of Directors and their term of office is equal to the term of office of the Board of Directors. Two of the members of each Committee are selected by the shareholder State Grid Europe Limited.

Financial Audit Committee

The Financial Audit Committee consists of four members. It is mainly tasked with:

- overseeing the collection of relevant information and preparing the Company's financial statements;
- monitoring the accounting practices and rules applied by the Company;
- monitoring the Company's business plan together with the Strategic Planning Committee;
- being briefed from the external or any internal auditors of the Company; and
- submitting proposals to the Board of Directors regarding the appointment, office term renewal and remuneration of the Company's external auditors.

Table 5.4: Financial Audit Committee

	Men	Women	Total
Executive members	1	2	3
Non-executive members	1	0	1
Total	**2**	**2**	**4**

Strategic Planning Committee

The Strategic Planning Committee consists of four members. Its responsibilities include, among other things, monitoring the Company's business plan together with the Financial Audit Committee and submitting strategic planning proposals to the Board of Directors.

Table 5.5: Strategic Planning Committee

	Men	Women	Total
Executive members	3	0	3
Non-executive members	1	0	1
Total	**4**	**0**	**4**

Remuneration and Appointments Committee

The Remuneration and Appointments Committee consists of four members tasked with seeing after recruiting affairs and determining respective remunerations.

Table 5.6: Remuneration and Nomination Committee

	Men	Women	Total
Executive members	3	1	4
Non-executive members	0	0	0
Total	**3**	**1**	**4**

Audit Committee

The Audit Committee is composed of three members. Its main responsibilities relate to the internal control and risk management system as well as the supervision of the Internal Audit office.

Table 5.7: Audit Committee

	Men	Women	Total
Executive members	0	0	0
Non-executive members	2	1	3
Total	**2**	**1**	**3**

Avoidance of conflict of interest

To ensure the avoidance of conflicts of interest, all members of the Board of Directors, including the Chairman, submit a Statutory Declaration stating they have no conflicts of interest with the Company.

Internal audit

The Internal Audit System consists of audit mechanisms and procedures related to Risk Management, covering consistently all Group's activities, to ensure its effective and safe operation. The System includes both internal and external risks.

The Risk Management Process carried out aims to:

- Identify the main risks and Group sectors exposed to them.
- Limit the extent of potential and/or actual losses related to market and operational risks through an effective Internal Audit System.
- Develop appropriate methodologies for risk management.
- Demand and implement adequate systems and audits for effective Risk Management (e.g., measurement, audit, reporting).
- Align the strategic objectives of the Board of Directors with the risks assumed by the Group.
- Form the basis for the enactment of an Annual Internal Risk Based Audit.

Performance assessment for the highest governance body

The Board of Directors is elected by the General Meeting of Shareholders, which is the Company's highest governing body that also assesses the performance of its duties.

The members of the highest governance body are constantly informed about the sustainable development issues that are ongoing in the organisation, as well as the broader sustainable development issues that affect the operation and development of the Company and take decisions on them when required.

The highest body is assessed against the annual targets, in accordance with the "Policy for the Remuneration of the members of the Board of Directors, its Committees and the Company Management and Procedure for Executive Recruitment" approved by the General Meeting.

Remuneration policy of the highest governance body and senior management

The remuneration policy is in line with the "Remuneration Policy for members of the Board of Directors, its Committees and Directors of the Company and the Recruitment Procedure for Directors" approved by the General Meeting. It includes both fixed and variable remuneration depending on the achievement or not of the targets set for the executives that are related to their activities. Furthermore, compensation is provided in the event of their dismissal, if the Company is liable. In the opposite case, no compensation is provided.

Procedure for determining remuneration

In preparing the policy, the Remuneration and Appointments Committee considers corporate best practices, industry-related company practices, departmental suggestions and views, and the deliverables of the consultants entitled Performance Management System. The policy is then submitted to the Board of Directors for approval and then to the Company's General Meeting of Shareholders for final approval.

The Remuneration and Appointments Committee regularly reviews whether the policy is still in line with the Company's business strategy or whether changes should be proposed to the Board of Directors. Every four years (or earlier if there is need for change), on a proposal from the Committee, the Board of Directors submits the new policy to the shareholders for approval.

Table 5.8: Annual total remuneration index

Ratio of the annual total remuneration of the person with the highest salary in the organisation to the median annual total remuneration of all employees	4.70
Ratio of the percentage increase in the annual total compensation of the person with the highest salary in the organisation to the average percentage increase in the median annual total compensation of all employees	0

Managing sustainable development issues

The Board of Directors oversees sustainable development issues and regularly monitors the performance and effectiveness of the Company's actions through the medium- and long-term objectives set and is also responsible for approving the overall sustainable development strategy. In addition, it reviews and approves both the results of the Materiality Analysis and the Annual Sustainable Development Report.

To improve the management of sustainable development issues, at the end of 2022, IPTO set up an Environmental, Social and Corporate Governance Branch (ESGB), which reports directly to the General Division of Human Resources, Legal and Regulatory Affairs (GDHRLRA). The main purpose of the ESGB is to work with all Departments for the implementation of the organisation's Sustainable Development Strategy.

The Branch is tasked with:

- Contributing to the implementation of the Sustainable Development Strategy.
- Publishing the annual Sustainable Development Report.
- The Corporate Social Responsibility actions.
- The supervision, coordination and monitoring of waste management.
- The oversight, coordination and monitoring of direct and indirect greenhouse gas emissions (Scope 1, 2 and 3).
- The organisation's internal surveys related to ESG topics.
- Identifying and monitoring key ESG performance indicators.
- Proposing necessary trainings related to ESG topics and holding them in cooperation with the Training Department.
- Sponsorships.
- Exploring green funding resources in cooperation with other Departments.

The executives that make up the Environmental, Social and Corporate Governance Branch (ESGC) report to the DHRLRA Director General and the CEO of the Company on Sustainable Development issues related to the operation of the Group. Furthermore, they communicate with the Divisions and external partners on relevant issues, manage data related to the Group's Material Topics and prepare the annual Sustainability Report. The Chairman and CEO regularly informs IPTO's Board of Directors concerning the actions implemented or those that are still pending. The review and approval of the Material Topics and other information in the Report is carried out by the Group's senior management.

Communicating critical concerns

The stakeholders can communicate any complaints or concerns by e-mail to "info@admie.gr". These complaints and concerns are then sent to the relevant Departments. The number and nature of these complaints and concerns is not currently noted. In addition, employees who wish to report ethical and conduct issues can contact the Internal Audit Department.

General Divisions (2022)

Proper organisation and excellent cooperation between the Board of Directors, the Advisory Committees, the General Divisions and all employees are the cornerstone for the achievement of the Group's objectives.
IPTO's General Divisions are the following:

1. General Division of Financial Services
2. General Division of Technology, System Planning & Strategy
3. General Divisions of Operation, Infrastructure & the Market
4. General Division of Human Resources, Legal & Regulatory Issues
5. General Division of Asset Management & Maintenance
6. General Division for Business Development & Digital Transformation

Through its Department of Research Technology and Development, the Group is, is today one of the most active Operators in terms of research, participating in consortia and numerous proposals for the undertaking of mainly European, but also domestic research projects.

Innovation, research & development, and digital transformation

Research and development

In a year during which the global energy crisis played a key role in developments, IPTO's investment in Research and Development proved to be very important.

The establishment of the Department of Research Technology and Development (DRTD) by IPTO in 2014, placed the Company in a list of Greek and European companies that have a separate and autonomous Research and Technology Division in line with the standards of an R&D department.

The DRTD was formed along the lines of similar Directorates of European Electricity Transmission System Operators, with the aim of linking the Research and Innovation of Universities and Research Institutions with the company's operational and strategic needs, as well as attracting expertise on matters such as flexibility, storage and smart management of System assets related to the evolution of Transmission Systems in order to be able to incorporate future high penetration rates of Renewable Energy Sources (RES).

More specifically, through its activities, IPTO transfers the necessary knowledge and experience gained in the application of new methods and technologies, which is of particular importance in view of the energy instability that characterizes the modern European environment. In this context, it has been actively participating for the last 8 years in the drafting of the ENTSO-E Research and Innovation Roadmap (R&I Roadmap) through the RDIP and Flexibility & Markets Working Groups of the ENTSO-E Research, Development and Innovation Committee (RDIC).

IPTO's priorities include the cooperation with universities and research institutions and the acquisition of further expertise in the following pillars:

- Asset Management
- Digitisation and communication
- Market management and flexibility
- System Operation

Furthermore, IPTO develops synergies with other Transmission and Distribution System Operators so that Systems are enabled to integrate high percentages of RES in the future, conforming with the objectives of the revised National Energy and Climate Plan (NECP), ENTSO-E's respective reports and position papers and the relevant EU legislation (Green Deal, Fit-for-55) concerning the decarbonisation of the energy system. To this end, IPTO participates in numerous proposals for research projects at European and national level. As a result, by 2022, IPTO has actively participated in 13 Horizon 2020, Horizon Europe and NSRF Research Programmes, as well as in a research partnership with the European Space Agency (ESA). The results of the research projects are oriented towards resolving existing business, operational and strategic issues of the TSOs in view of the above-mentioned energy challenges they face.

Through its participation in the above research projects, IPTO is actively involved in working groups that aim to prepare deliverables, carry out various tasks and individual studies, depending on the requirements of each project. IPTO participates in pilot projects demonstrating how research outcomes may be applied, such as the Active Power Flow Controller tests performed at the HVC of Nea Santa. The application of other innovative technologies (e.g., Dynamic Line Rating, Wide Area Monitoring and Control, 5G, Software Define Networking) is in progress.

IPTO participates in pilot projects demonstrating how research is applied, such as the Active Power Flow Controller tests at the HVC of Nea Santa.

The above projects include the operation of a Battery Energy Storage System (BESS) with a capacity of 2MW (2MWh), which was installed at the substation in Aisymi, Evros, at the Wind Generator's facilitiesto explore the possibilities of providing ancillary services (e.g., power smoothing, congestion management, etc.) to the Electricity Transmission System.

Apart from the expertise being acquired and the cash inflows from the projects, IPTO also contributes significantly to addressing the country's brain drain by employing 20 researchers who returned from abroad or never left, due to the opportunity they were given to be take part in high-quality European-wide research projects.

In 2022, IPTO participated in the execution and preparation/proposal submission of the following research projects per pillar:

Market management and flexibility

Coordinet:

The project aims at highlighting the ways and methods in which electricity transmission and distribution systems may cooperate to provide reliable and efficient services (voltage control, congestion management) to the benefit of the end-consumer with the involvement of assets connected to the Distribution Network.

As part of the CoordiNet research project, a platform has been developed that provides the interface between the Transmission Operator, the Distribution Operator and the Flexibility Service Providers.

The platform aims to address voltage and congestion problems in the Operators' network through the use of flexibility services in a market environment.
The coordinated interaction of System Operators with Flexibility Service Providers can lead to a smarter, more efficient and resilient grid, reduce unnecessary expansions and enable increased penetration of Renewable Energy Sources. The CoordiNet platform has been piloted in two regions of the HETS: Kefalonia and Mesogeia.

OneNet:

The project aims at demonstrating large-scale pilot projects involving assets connected to flexibility markets of the Distribution Network, in order to provide services to both the Distribution Network and the Transmission System (voltage control, congestion management).

Enflate (New Programme):

ENFLATE promotes RES sharing and their greater penetration in the electricity Systems, reducing also operational costs and enhancing the sustainable development of new business models with the participation of consumers and/or producer-consumers in the electricity markets.

System Operation

Flexitranstore:

This project's goal is to contribute towards creating a European-wide energy transmission network with high flexibility and interconnection indicators, as well as accelerate the penetration of RES in the Transmission System.

IPTO's participation in this research project includes testing an electricity storage station at the Aisymi substation, which consists of a lithium-ion battery array of 2MW nominal power and 2MWh nominal energy combined with an advanced control system.

Crossbow:

The project intends at demonstrating a set of technological solutions that offer Transmission System Operators greater flexibility and resilience with a focus on interconnections at the regional level (South-Eastern Europe).

Farcross:

The project aims to provide innovative solutions to issues arising in interconnections due to the increasing penetration of RES in the Transmission System by using grid technologies (e.g., Dynamic Line Rating, SSSC, WAMS using PMUs etc). In the framework of this research project, a fixed power flow control unit was installed and is being tested. The power flow control unit enables the Power Transmission Operator to adjust the inductive response of the TL in real time by controlling its power flow.

Opentunity (New Programme):

The aim of the Opentunity research project is to create a flexible "ecosystem", which will target the end consumer through its interoperable software solutions. The Distribution & Transmission System Operators, as well as other market participants, will benefit from interoperable software based on Blockchain technology by operating the network more efficiently and also by developing flexibility technologies. Four pilot demonstration projects are planned to be carried out in Slovenia, Spain, Greece, Spain and Switzerland, that will benefit about 26,852 users and lead to a forecasted reduction of 91.2 $MtCO_2e$ (carbon dioxide equivalent emissions).

Digitisation and communication

SDN-microsense:

The project aims to create secure and cyber-attack-resistant tools to ensure uninterrupted operation, as well as the integrity and confidentiality of communication. In particular, the project will establish a three-layer security structure by developing and implementing risk-assessment procedures, self-correction properties and a privacy protection framework.

5G-VICTORI:

The aim of the project is to strengthen existing infrastructures and create a platform that will turn closed and restricted infrastructures into an open environment where information and tools will be available to tech companies and vertical industries using 5G technology.

Specifically, IPTO will participate in the consolidation, validation and field testing that concern its facilities and the deployment of two pairs of nodes providing 5G access (a) at railway stations and along 2-3km long railway lines and (b) at electricity substations.

Synergy:

SYNERGY introduces Big Data electricity data market architecture, aiming to improve access to electricity shareholder data, improve knowledge for the optimization and participation in data and knowledge sharing/purchasing models.

Smart5Grid:

The project intends at demonstrating solutions for the smart energy grids of the future through pilot 5G applications. In this project, IPTO will lead the cross-border interconnection project between Greece and Bulgaria and participate in the dissemination and exploitation of the Smart5Grid outcomes to shareholders and grid operators.

As part of the Smart5Grid research project, Phasor Measurement Units will be installed at IPTO's substations of Lagadas and Blagoevgrad, aiming to monitor more broadly the interconnection between Greece and Bulgaria.

Electron:

The project aspires to formulate an innovative platform to enhance the resilience of the Transmission System against cyber-attacks, their detection and prevention, the minimisation of failures, etc.

Synergies:

Consumer-oriented inclusive planning towards the Energy Transition, through an Energy Data Reference Platform.

ACES (New Programme):

ACES is developing a set of tools exploiting the data from three pilots and evolving cloud services into advanced, resilient and scalable edge services through hierarchical intelligence and automation functions, in a geographically distributed environment.

Asset Management

ENORASIS:

The aim of the ENORASIS system is to offer the option for automated inspection, using an optical and thermal camera system with a moving robot recording key electrical components at HVCs, taking reliable periodic measurements.

INCODE (New Programme):

INCODE envisions the design and development of an open platform for the deployment and dynamic management of end-user applications over distributed, heterogeneous and reliable IoT-Edge node infrastructure, with enhanced programming features and tools both at the network infrastructure level and at the service development and operation level.

SINNOGENES (New Programme):

The SINNOGENES research project aspires to develop a toolbox of innovative storage media, which will include the methodology, tools and technologies that will allow the integration of innovative storage methods aiming at excellent technical performance, lifespan, non-dependence on the geographical location of the equipment, etc. SINNOGENES will examine storage means at different scales and different activation periods, considering the rapid integration of RES, the future electrification of specific electricity demand sectors and the compatibility of technologies in terms of their participation in the Electricity Flexibility Markets. Six pilot demonstration projects will be carried out in Portugal, Spain, Germany, Greece and Switzerland.

Cooperation with the European Space Agency

The ENTSO-E Research, Development and Innovation Committee decided to launch a partnership between the European Space Agency (ESA) and ten European Transmission System Operators, including IPTO, in order to design a pilot project to investigate whether the satellites of the European Space Agency can provide monitoring services to the European Transmission Systems. The areas of interest are vegetation management on the TLs, disaster and extreme weather risk management services and early warning systems for objects exceeding safety limits.

Energy storage

Energy storage is a dynamically growing sector in Greece.

IPTO assisted the Ministry of the Environment and Energy's Project Management Team, tasked to formulate the institutional and regulatory framework for the development and participation of storage units in the electricity markets (via the description of technical requirements for Electricity Storage Units as well as the Connection Procedures of Electricity Storage Units with the Transmission System). IPTO's Ten-Year Development Plans also include a proposal for pilot projects concerning the installation of storage systems on Naxos, with a capacity of 7-10MW, and in the region of Central Greece. The intention is for storage projects to contribute towards the management of congestion due to the high penetration of Renewable Energy Sources.

The IPTO Group seeks to actively contribute to the development of a cleaner energy mix that will fully utilise electricity storage stations.

Digital transformation

IPTO continues its Digital Transition by transforming systems, processes and human resources. Responding to modern challenges and technological developments, it leads the Group into a new era.

Some important actions taken by IPTO in the field of Information and Communication Technology are the following:

- Modernisation of its telecommunication equipment by creating a multi-level IP/MPLS telecommunication network, in line with the standards of the most up-to-date European Transmission System Operators, essential for purposes of communication between the components of the HETS. This action is in synergy with the extension of the company's fibre optic network through the overhead and submarine electrical interconnections.

- The installation of the first 30 nodes is planned for the first quarter of 2023. By the end of the year another 30 nodes are expected to be installed at HVCs and Substations.

- Implementation of the Market Reform Plan for the interconnection with the European market balancing platforms. The plan is evolving with the aim of implementing the first interconnections in the summer of 2024.

- Development of the most modern cloud-based systems both for the coverage of the Group's business activity and for the optimal operation and maintenance of its electrical assets, which constitute the country's critical infrastructure. The transition from Time-Based Maintenance to Condition-Based Maintenance is one of IPTO's main strategic objectives.

- Teleworking and Work-From-Anywhere enabling the Company to operate without any malfunctioning during the pandemic. Using Microsoft tools, all IPTO employees can access the system from any location and any device, if they have access to the internet. Furthermore, the option of remote connection to the Group's critical systems via VPN for all authorised employees is still available.

Additionally, the following procedures have already been completed:

- Significant upgrade in functionality and user-experience optimisation. Features include ease of use, fast search and response, intuitive navigation, the report generation system and the personalized User Dashboard with multiple graphs on the home page.

- Combination of internal and external signatures in any document workflow. Users may digitally sign any document in the workflow.

- Maximisation of security and confidentiality of the data being handled. Implementation of a strict Role-Based Access Control mechanism to ensure that only authorised users have access to each workflow.

- Installation of new IT infrastructure with a focus on cybersecurity. This significantly speeds up the process of signing and handling documents, enhances the stability and availability of the system, minimises the need for support and at the same time enhances cyber-defence and resilience of the company's IT infrastructure.

- Transfer of all folder contents (history) circulated via IDocs.

In addition, the following were implemented:

- **Document Classification/Metadata:** Document matching with categories and keywords for classification purposes and easier retrieval.
- **Access from everywhere:** Secure internet access without VPN connection through any desktop or mobile device.
- **Search Document Content:** PDF/A (searchable PDF document) format for all documents. Mechanism for quick retrieval of document content.
- **Full access control:** Redefinition of administrator/users roles and rights in accordance with Division requirements and digital security rules.
- **Digitisation/ Incoming documents:** Document digitization directly via DFS.

Data and infrastructure security

The digital transformation taking place over the past few years, in the energy sector and the global economy, has led IPTO into digitising its operations and services, thus contributing to the digital transformation of the entire country. IPTO has developed a cybersecurity strategy and adopted Zero Trust Architecture to be protected from upcoming digital challenges and threats, mostly from organised crime and third-party states.

In October 2022, IPTO's state-of-the-art Security Operations Center started to operate using artificial intelligence and machine learning mechanisms, in line with the standards followed by similar international centres. It is designed to operate as the CyberSecurity Hub of the country's critical infrastructure. To detect security incidents, the SOC provides 24/7, real-time monitoring and incident management services.

Cybersecurity strategy

Following the model of cooperation between government agencies both in the United States (Department of Energy and CISA) and in Europe, IPTO's vision is to become a cybersecurity model for the country's critical infrastructure, establishing itself as the Critical Cybersecurity Network in the energy sector.

IPTO's cybersecurity strategy, as well as the implementation of zero trust architecture, can become a security benchmark in the energy sector not only at the national but also at the international level. Moreover, IPTO's Security Operations Center is structured so that its subsequent expansion can provide high quality security incident response services to the entire public sector. The key principles on which IPTO's cybersecurity strategy is based are the following:

- **Safety in Design:** Threats and hazards are monitored and addressed during the design of projects on an ongoing basis.
- **In-depth defence:** The creation of a multi-layered protection to ensure IPTO's security and resilience.
- **Application of cutting-edge technologies:** Artificial intelligence technologies (machine learning/deep learning) are now the basis of the Company's resilience and cyber defence.
- **Adoption of zero-trust architecture:** Zero Trust Architecture helps prevent security breaches by eliminating the concept of trust from IPTO's infrastructure.
- **Information and awareness (Cybersecurity Awareness):** All employees are informed on cybersecurity matters and digital threats management both at workplace and during their personal online activity.

IPTO's cybersecurity strategy can become a benchmark for energy security not only at national but also at international level.

Table 5.9: IPTO's Cybersecurity Strategy Pillars

The 12 pillars of IPTO's Cybersecurity Strategy are:

1 Organisational structure	2 Risk management	3 Security policy	4 Resource management
5 Zero Trust Architecture - Security Technologies	6 User awareness and training	7 Security incident management using artificial intelligence and machine learning	8 Supply chain and partnership management
9 Third-party system interoperability	10 Cybersecurity audit	11 Regulatory and legal framework compliance	12 Disaster recovery and business continuity

The operating model of IPTO's Operational Security Center (SOC):

Security incidents created by IPTO's Information Technology (IT) & Operational Technology (OT) infrastructure are forwarded to the security incident management platform. This platform uses high levels of intelligent automation, leveraging artificial intelligence technologies to help identify sophisticated known and unknown threats in real time. Intelligent threat information, vulnerabilities, as well as information from the user-behavioural analysis service, the terminal devices, cloud services etc., provide the platform with confirmed Indicators of Compromise (IoCs) and Indicators of Attack (IoAs) to identify actual cyberattacks.

The services mentioned above are founded on a holistic approach, whereby the Organisation collects and analyses, in real time, the security data from its infrastructure, as well as from intelligence analysis sources to identify advanced threats and integrate response services.

The organisation collects and correlates data from endpoints, cloud services, networks and industrial control systems in order to identify malicious activities, prioritise them and present them to its security teams in a normalised format via a single console.

While traditional Security Information Event Management solutions collect, analyse and correlate information from an organization's infrastructure through a set of correlation rules and use cases, at IPTO, we designed and implemented an integrated solution, which in addition to the simple collection and analysis of security events is based on advanced analytics for the detection of cyber-attacks.

Analytics, such as Artificial Intelligence (AI) technologies, are applied to search for advanced hidden or invisible threats by creating and analysing behavioural models. These models are enriched with data from international Threat Intelligence sources to understand multiple, dissimilar and weak malicious activities based on behaviours that make up the Organisation's infrastructure such as:

- Users
- Endpoints
- Networks
- Cloud services
- Industrial Control Systems etc.

By implementing the cybersecurity project, strengthening IPTO's critical infrastructure and fully deploying solutions/actions, IPTO minimises the systemic risk from cyber-attacks. Specifically, it has a 17-solution package with respect to its security hardware and software, as well as an action package intended for Enterprise Risk Management (ERM) and the preparation of Business Continuity Plans (BCP) for all critical IPTO operations. Furthermore, 100,000-150,000 malicious (and usually dangerous) incoming emails are filtered by our cyber security tools on a daily basis. The cybersecurity systems block any attempt of downloading malicious content even in cases where malicious emails bypass the initial filter.

No documented complaints about privacy breaches and loss of data have been reported.

Open data

IPTO places great emphasis on the value of its data and invests in using and making them available to both operational users and the public.

Data Warehouse (DWH) and Business Intelligence (BI) tools become available to all operational departments across the organisation and we are gradually moving to new business models leveraging new technologies.

With regard to the public, the data to be used are mainly data already available through the Company's digital channels.

- Data from the many daily published files on IPTO's website.
- The IPTO Analytics mobile app data sets.
- The Monthly Energy Bulletin data sets.
- Data from the imbalance settlement systems and applications in the electricity market.

All data described above will be correlated and configured appropriately to allow self-service transformations and dataset combinations in tabular and graphical formats for all users (IPTO operational users, research institutions, electricity market participants and the public).

Procurement practices

Procurement of the appropriate goods (e.g., infrastructure, equipment, materials, services) in the appropriate quantity and quality, at the best possible price and in the desired time, according to specifications, are an important parameter for the smooth running of our operations.

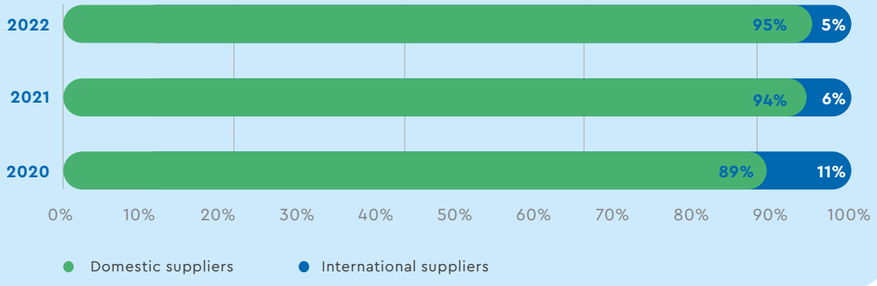
The main categories of suppliers we work with are:

Table 5.10: Categories of IPTO's cooperating suppliers

Contractors/Constructors	Service providers
Civil Engineering Contractors	Hardware/equipment manufacturers
Material suppliers	Transporters

In order to support the local communities in the areas where we operate, we focus on supporting local suppliers where possible, or otherwise suppliers at national level.

Graph 5.11: Percentage of expenses to suppliers and contractors



In 2022, the total number of suppliers/contractors for projects amounted to 36. The total amount paid by the Company to suppliers amounted to €119 million, with the ratio of expenditure between domestic and foreign suppliers being 95% to 5%, marking a slight increase compared to the previous year. Moreover, in 2022, the total number of suppliers/contractors of materials and equipment rose to 30, with the total supply expenditure amounting to €12.7 million and the expenditure ratio between domestic and foreign suppliers 80% to 20%.

During the same year, an important step was implemented. We concluded a contract with an external partner and received six deliverables concerning the elaboration of a survey, inventory, assessment and submission of proposals for the management of waste generated by IPTO's activities. This is a crucial step towards the creation of IPTO's single Waste Management System and Waste Management Policy.

Socially responsible procurement

As part of its responsible operation, IPTO asks its suppliers to comply with labour, insurance and environmental legislation and is in favour of cooperating with environmentally aware and socially responsible suppliers.

The Supply Chain Division (SCD) is responsible for ensuring that compliance requirements with labour, safety and environmental legislation are communicated to suppliers through tender documents and agreed through the relevant contract documents.

Compliance

Monitoring and compliance with national and European regulatory obligations to which the Company falls is a fundamental element of every parameter of our activity, whether it concerns environmental, economic, labor or social issues.

For this reason, the IPTO Group has a Legal and Regulatory Affairs Division (LRAD), supporting both IPTO's Management and all its other Divisions. This Division guarantees the compliance of the Group's activities with the obligations set each time by the applicable institutional and regulatory framework. Its main mission is to safeguard IPTO's rights and ensure legitimacy of the decision-making process. This Division assists the Group in the execution of all its activities, guaranteeing the compatibility of its choices with the law.

No incidents of corruption were identified at the IPTO Group in 2022.

Environmental compliance

IPTO's constant concern is that projects are designed, sited, constructed and operated in full compliance with the environmental legislation in force. During the design of the projects, all required studies are carried out and all environmental requirements are met, on a case-by-case basis.

In this context, IPTO follows rules and practices in line with the precautionary environmental principle (for prevention and safeguarding) during the preliminary design and planning of new projects, always aiming at the protection of the environment and biodiversity. The design of new energy infrastructures and the upgrading/modernisation or modification of the existing ones are part of the System Operator's main duties, whose key pillar is environmental protection. When making final decisions concerning the routing of lines and the siting of new infrastructure (substations, terminal stations, HVCs, etc.), the minimisation of environmental impacts is always considered with the following criteria:

- Mapping environmentally sensitive areas and performing a preliminary environmental impact assessment for any given siting of our projects.
- Detailed impact assessment as part of our environmental impact studies.
- Thorough assessment of the outcomes derived from the public consultation process regarding the environmental impact studies.
- Full compliance with the environmental licensing decisions concerning our projects.

Our continuous efforts to protect the environment have undoubtedly brought about positive results. To date, no adverse impact on the environment and biodiversity caused by the installation and operation of our projects has been reported by official management bodies or other institutions. In the few cases where additional measures were required during the construction phase, IPTO's executives have been cooperative and responsive, complying with the recommendations of the competent authorities (e.g., Forest Authorities), promptly and effectively. The embrace of the Company's projects by local communities and the recognition of their benefit for their regional economic and social development are of major importance to the Operator.

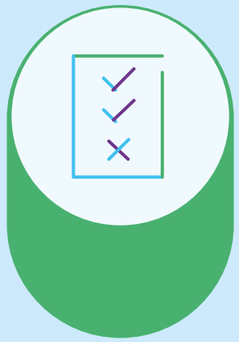
However, despite IPTO's adoption of all the above required or additional measures, as well as of best international practices for the implementation of new projects, whilst putting environmental protection and the support of local communities at the forefront, IPTO has been faced with protests, objections and requests for the annulment of the approved environmental terms. Notably, the implementation of new energy infrastructure projects by IPTO, apart from being in line with the European Union's strategy towards a climate-neutral economy, is a national obligation, as these projects will contribute to the promotion of renewable energy sources in the energy mix and the achievement of delignitisation.

A typical example of protest is in the case of the Western Corridor (400kV TL Megalopolis-Patras) which extends the HV System to the Peloponnese and decongests the existing energy System in the area. Moreover, it enables the installation of new RES units, ensures energy stability of the Southern System and benefits the local economy. During the implementation of licensed construction works, the Holy Monastery of Agioi Theodoroi at Aroania, Kalavryta and the nuns residing there, applied for an injunction requesting the cessation of the installation of the last two pylons of the interconnection at a point when its construction was completed by 98%. The complaints made by the nuns, which were based on visual disturbance and the violation of their personality right, initially resulted in a decision for the temporary cessation of works by the Kalavryta Single-Member Court of First Instance and then, following a new lawsuit filed by the nuns before the Kalavryta Multi-Member Court of First Instance, in the decision as of 30/06/2022 for the permanent cessation of works.

According to IPTO's Ten-Year Development Plan for the period 202-2030 this line would have connected Megalopoli's HVC with Patra's HVC by 2021, provided that IPTO would be allowed to proceed immediately to the installation of the 2 pylons, either by court's decision or after withdrawal of the opposing nuns. It is worth noting that the Council of State has rejected the annulment request due to risk from potential electromagnetic radiation as unfounded, irrevocably ruling that the project is not harmful to the environment, human health and physical integrity.

Well before this ruling, our Company before this ruling, and in an effort to accelerate works for the relocation of the pylons (routing variation) of the 400kV Patras-Megalopolis TL section in the vicinity of the Holy Monastery of Agioi Theodoroi, carried out and submitted additional studies to the Ministry of the Environment, which finally issued the Decision for the Approval of the Environmental Terms no 65616/4288/21.01.2022, modifying the Decision for the Approval of the Environmental Terms no 172867/23.05.2014.

After launching all necessary procedures, the project project's completion is estimated around the end of April 2023, significantly changing its original completion deadline, thus causing delay in the in the added value produced by the Western Corridor project.



Reporting standards and external assurance

With its annual Sustainability Report, IPTO seeks to disclose both the Company's performance on ESG and sustainable development issues, as well as how it effectively contributes to the implementation of the national policy for the transition to a low-carbon economy.

Report Methodology

This Report is the fourth Sustainability Report of the IPTO Group and covers all Group activities unless otherwise stated. Through this Report, IPTO seeks to disclose the Company's performance regarding ESG and sustainable development topics, as well as the ways it effectively contributes to the implementation of the national policy for the transition to a low-carbon economy.

ESG reporting standards
IPTO has prepared its Sustainability Report 2022 in accordance with the GRI Standards for the period from 1/1/2022 to 31/12/2022. Furthermore, other reporting standards have also been taken into consideration, such as the SASB Standards and the Athens Stock Exchange ESG 2022 Disclosures.

Project coordination and project team
The publication of this Report is a task of IPTO's Environmental, Social and Corporate Governance Branch, which collected the data, supervised and co-edited all the texts and coordinated the internal and external associates who contributed to the Report. We would like to thank all those who participated in the process of developing IPTO's fourth Sustainability Report.

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External assurance
We recognise the added value of external assurance of the disclosed data and performance indicators (KPIs) included in our reports and believe that this process enhances our Company's quality and accuracy of accountability, transparency and credibility. For this reason, the Report has been audited by an external assurance body.

At the same time, data and information assurance is provided in additional ways, as independent auditors provide external validation and assurance with respect to the Company's financial information.

Support
The Report was prepared with the support of AIPHORIA Consulting.

The GHGs inventory model was developed in collaboration with EnerSyn.

Printing
KETHEA Schema + Chroma

Design
The Birthdays Design

Translation in English
Olga Karyoti

Contact point
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GRI Contents Index

Declaration of use	IPTO has prepared this Report in accordance with the GRI standards for the period 1 January 2022 - 31 December 2022
GRI 1 used	GRI 1: Foundation 2021
GRI Sector standards applied	N/A

Table 6.2: GRI Standards table

GRI standard	Published by	Page of the Report / References	Omission	External assurance
General Disclosures				
GRI 2: General Disclosures 2021	2-1 Organisational details	General disclosures Page: 18, 21 Annual Financial Statement 2022 Page: 32	Grey areas in the table indicate that the Omission column is not applicable.	✓
	2-2 Entities included in the organisation's sustainability reporting	Page: 18, 162		✓
	2-3 Reporting period, frequency and contact point	Page: 162-163		✓
	2-4 Restatements of information	None		✓
	2-5 External assurance	Page: 173		✓
	2-6 Activities, value chain and other business relationships	Page: 18-22, 30-33		✓
	2-7 Employees	Page: 117-119		✓
	2-8 Workers who are not employees	Page: 119		✓
	2-9 Governance structure and composition	Page: 136-138, 141		✓
	2-10 Nomination and selection of the highest governance body	Page: 136, 139		✓
	2-11 Chair of the highest governance body	Page: 136		✓
	2-12 Role of the highest governance body in overseeing the management of impacts	Page: 141-142		✓
	2-13 Delegation of responsibility for managing impacts	Page: 141-142		✓
	2-14 Role of the highest governance body in sustainability reporting	Page: 59		✓
	2-15 Conflicts of interest	Page: 139		✓
	2-16 Communication of critical concerns	Page: 142		✓
	2-17 Collective knowledge of the highest governance body	Page: 139		✓
	2-18 Evaluation of the performance of the highest governance body	Page: 139		✓
	2-19 Remuneration policies	Page: 139-140		✓
	2-20 Process to determine remuneration	Page: 139-140		✓
	2-21 Annual total compensation ratio	Page: 140		✓
	2-22 Statement on sustainable development strategy	Page: 10-11		✓
	2-23 Policy commitments	Page: 112, 130		✓
	2-24 Embedding policy commitments	Page: 112, 130		✓
	2-25 Processes to remediate negative impacts	Page: 53-54, 93-109, 130, 112-116		✓
	2-26 Mechanisms for seeking advice and raising concerns	Page: 142		✓
	2-27 Compliance with laws and regulations	Page: 158-159		
	2-28 Membership associations	Page: 55-56		✓
	2-29 Approach to stakeholder engagement	Page: 50-53, 55		✓
	2-30 Collective bargaining agreements	Page: 123		✓
Material Topics				
GRI 3: Material Topics 2021	3-1 Process to determine material topics	Page: 58-59	Grey areas in the table indicate that the Omission column is not applicable.	✓
	3-2 List of material topics	Page: 60-61		✓
Protection of ecosystems and environmental management				
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 101-109		✓
GRI 304: Biodiversity 2016	304-1 Operational sites owned, leased or managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Page: 101-103		✓
	304-2 Significant impacts of activities, products, and services on biodiversity	Page: 101-109		✓
Innovation, research and development, and digital transformation				
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 50-57		✓
GRI 413: Local communities 2016	413-1 Operations with local community engagement, impact assessments and development programmes	Page: 53-54, 101, 107-108, 158		✓

Health and Safety at the workplace			
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 112–116	✓
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	Page: 112	
	403-2 Hazard identification, risk assessment, and incident investigation	Page: 112–113	✓
	403-3 Occupational health services	Page: 113	✓
	403-4 Worker participation, consultation, and communication on occupational health and safety	Page: 113	
	403-5 Worker training on occupational health and safety	Page: 114–115	✓
	403-6 Promotion of worker health	Page: 113	✓
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationship	Page: 157	✓
	403-8 Workers covered by an occupational health and safety management system	Page: 112	
	403-9 Work-related injuries	The Health & Safety management system that is being developed, is expected to cover all the employees.	✓
Compliance and governance			
GRI 205: Anti-corruption 2016	205-3 Confirmed incidents of corruption and actions taken	Page: 158	✓
Implementing energy transition			
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 64–77	✓
IPTO index	New installed RES capacity (MW) in the Interconnected System	Page: 65	✓
Equal opportunities and diversity			
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 128–131, 136–137	✓
GRI 405: Diversity and equal opportunity 2016	405-1 Diversity of governance bodies and employees	Page: 117, 119, 122, 129, 136–137	✓
	405-2 Ratio of basic salary and remuneration of women to men	Page: 129–130	✓
GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	Page: 129	✓

Transmission System development (domestic and international interconnections)			
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 38–40, 43–45, 71–77	✓
Waste management			
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 98–100	✓
	306-1 Waste generation and significant waste-related impacts	Page: 98–99	✓
	306-2 Management of significant waste-related impacts	Page: 98–100	✓
	306-3 Waste generated	Page: 99	✓
	306-4 Waste diverted from disposal	Page: 99	
	306-5 Waste directed to disposal	Page: 99–100	
GHGs emissions and energy efficiency			
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 93–97	✓
GRI 302: Energy 2016	302-1 Energy consumption within the organisation	Page: 93–96	✓
	302-3 Energy intensity	Page: 93, 96	✓
GRI 305: Emissions (2016)	305-1 Direct (Scope 1) GHG emissions	Page: 97	✓
	305-2 Energy indirect (Scope 2) GHG emissions	Page: 97	✓
	305-4 GHG emissions intensity	Page: 97	✓
Creation of social value and social contribution			
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 34–35	✓
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	Page: 34–35	✓
	201-2 Financial implications and other risks and opportunities due to climate change	Page: 83, 90–92	
GRI 203: Indirect economic impacts 2016	203-1 Infrastructure investments and services supported	Page: 34–35, 104–105, 132–133	✓
	203-2 Significant indirect economic impacts	Page: 65, 68–69, 78–80	✓
GRI 401: Employment	401-1 Total number of new employee hires/turnover during the reporting period, by age group, gender and region	Page: 120–121	✓
	401-2 Benefits which are standard for full-time employees of the organization	Page: 123–124	✓

Training and skills development			
GRI 3: Material Topics 2021	3-3 Management of material topics	Page: 125–127	✓
GRI 404: Training and education 2016	404-1 Average hours of training per year per employee	Page: 126–127	✓
	404-2 Programmes for upgrading employee skills and transition assistance programmes	Page: 125–127	✓
	404-3 Percentage of employees receiving regular performance and career development reviews	Page: 131	✓
Other issues			
Συμβολή στην αποτελεσματική λειτουργία της αγοράς ενέργειας	3-3 Management of material topics	Page: 78–80	✓
Procurement practices			
GRI 204: Procurement practices 2016	204-1 Proportion of spending on local suppliers	Page: 156–157	✓

SASB Standards table

IPTO aims at continuously improving the disclosures of its impacts and performance in relation to sustainable development. In this context, and on a voluntary basis, the most relevant SASB Standards performance metrics concerning the operations of the Company are presented in the following table. The data reflect the Company's performance on an annual basis, as recorded at the end of the year 2022.

Table 6.3: SASB Standards table

Industry: Infrastructure – Electric Utilities and Power Generators

Topic	SASB metric code	Metric	Page of the Report / References	External assurance
Workforce Health & Safety	IF-EU-320a.1	Total recordable incident rate (TRIR)	Page: 116	✓
		Fatality rate	Page: 116	✓
Grid Resiliency	IF-EU-550a.1	Number of incidents of non-compliance with physical or cybersecurity standards or regulations	No such incidents occured.	✓
	IF-EU-550a.2	System Average Interruption Duration Index (SAIDI)	Page: 27	✓
		System Average Interruption Frequency Index (SAIFI)	Page: 27	✓
Activity metric				
Description of the activity metric	IF-EN-000.C	Length of transmission and distribution lines	Page: 19	✓

Athens Stock Exchange ESG 2022 Disclosures - Table of Contents

Table 6.4: Athens Stock Exchange ESG 2022 Disclosures – Table of Contents

ATHEX metric	Description	Page of the Report / References	Additional remarks	External assurance
Environment				
C-E1-1	Scope 1 emissions – Total amount of direct emissions (Scope 1)	Page: 97		✓
C-E1-2	Scope 1 emissions – Greenhouse gas intensity of Scope 1 emissions	Page: 97		✓
C-E2-1	Scope 2 emissions – Total amount of indirect emissions (Scope 2)	Page: 97		✓
C-E2-2	Scope 2 emissions – Greenhouse gas intensity of Scope 2 emissions	Page: 97		✓
C-E3-1	Energy consumption and production – Total amount of energy consumed within the organisation	Page: 93		✓
C-E3-2	Energy consumption and production – Percentage of electricity consumed	34%		✓
C-E3-3	Energy consumption and production – Percentage of energy from RES consumed	13%		✓
C-E3-4	Energy consumption and production – Total amount of energy produced	-	It does not apply. IPTO does not produce energy.	
C-E3-5	Energy consumption and production – Percentage of energy from RES produced	-	It does not apply. IPTO does not produce energy.	
A-E2-1	Climate change risks and opportunities – Discussion of climate change-related risks and opportunities that can affect business operations	Page: 83, 90–92		
A-E3-1	Waste management – Total amount of hazardous waste	Page: 99		
A-E3-2	Waste management – Total amount of non-hazardous waste	Page: 99 62,029		✓
A-E3-3	Waste management – Percentage of waste by type of treatment – Recycling	Page: 99 2%		✓
A-E3-4	Waste management – Percentage of waste by type of treatment – Recycled	-	It does not apply. IPTO does not compost waste.	✓
A-E3-5	Waste management – Percentage of waste by type of treatment – Incinerated	-	It does not apply. IPTO does not incinerate waste.	
A-E3-6	Waste management – Percentage of waste by type of treatment – Landfilled	Page: 99 95%	It does not apply. IPTO does not use water resources as part of its operations.	✓
A-E5-1	Biodiversity sensitive areas – Description of the impacts of business operations on biodiversity sensitive areas	Page: 101–103		✓
SS-E4-1	Water management – Description of water management risks and the respective mitigation measures taken	-	Not relevant with IPTO's operation	
Society				
C-S1-1	Stakeholder engagement – Discussion of the organisation's main stakeholders and analysis of key stakeholder engagement practices	Page: 50–57		✓
C-S2-1	Percentage of female employees	Page: 117		✓
C-S3-1	Percentage of women in managerial positions	Page: 117, 129–130		✓
C-S4-1	Employee mobility – Percentage of voluntary mobility of full-time employees	Page: 120–121		✓
C-S4-2	Employee mobility – Percentage of non-voluntary mobility of full-time employees	Page: 120–121		✓
C-S5-1	Employee training – Average training hours for the top 10% of employees by total compensation	Page: 127		✓
C-S5-2	Employee training – Average training hours for the top 90% of employees by total compensation	Page: 127		✓
C-S6-1	Human rights policy – Description of human rights policy and fundamental principles	Page: 128–130		✓
C-S7-1	Percentage of employees covered by collective bargaining agreements	Page: 123		✓
C-S8-1	Supplier assessment – Discussion on the screening of suppliers using ESG criteria	Page: 157		✓
A-S2-1	Total amount of money spent on employee training	Page: 125		✓
A-S3-1	Percentage difference in pay between men and women	Page: 129–130		✓
SS-S6-1	Health and safety performance – Number of injuries	Page: 116		✓
SS-S6-2	Health and safety performance – Number of deaths	Page: 116		✓
SS-S6-3	Health and safety performance – Accident frequency rate	Page: 116		✓
SS-S6-4	Health and safety performance – Accident severity rate	Page:		✓
Governance				
C-G1-1	Board composition – ESG-related qualifications of board members	Page: 136		✓
C-G1-2	Board composition – Classification of the Chairman of the Board	Page: 136		✓
C-G1-3	Board composition – Percentage of women board members	Page: 136–137		✓
C-G1-4	Board composition – Percentage of non-executive members	Page: 136–137 67%		✓
C-G1-5	Board composition – Percentage of non-executive independent members	Page: 136–137 67%		✓
C-G2-1	Sustainability oversight – Description of the approach to sustainability oversight	Page: 141		✓
C-G3-1	Materiality – Description of the materiality assessment process	Page: 58–61		✓
C-G4-1	Sustainability policy – Description of the sustainability policy and fundamental principles	Page: 25–26, 36–37		✓
C-G6-1	Data Security Policy – Description of the data security policy and fundamental principles	Page: 152–155		✓
A-G1-1	Business model – Discussion of the business model and value creation	Page: 30–35		✓
A-G2-1	Total amount of monetary losses as a result of business ethics violations	0		✓

A-G3-1	ESG targets – Short-term objectives associated with strategic ESG objectives	Page: 43–45	✓
A-G5-1	External assurance – Discussion of the external assurance of the disclosed ESG-related information	Page: 163–175	✓
G-SD1-1	Data coverage	IPTO Group	✓

External Assurance Statement

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EUROCERT

External Assurance Statement for IPTO

Sustainability Report 2022

(No. KZ/70734)

Information on the Assurance Statement

The Assurance Provider EUROCERT has been engaged to provide external assurance on the disclosures published in the Sustainability Report 2022 ('the Report') of IPTO Group of Companies | Independent Power Transmission Operator Group of Companies ('the Company'). The Company is exclusively responsible for the data and information within the Report. The assurance process was conducted by EUROCERT in terms of sample-based audits of data and information, as well as audits of data collection systems and procedures.

Economic and financial data were not verified. Instead, they were assessed with respect to the information contained in the 2022 annual financial statement which has been verified by other third parties.

The intended users of this Statement are all the stakeholder of the Company.

Scope of Assurance

EUROCERT undertook and implemented the following quality assurance activities during September 2023:

1. Review of the Report against the requirements of Global Reporting Initiative (GRI) Sustainability Reporting Guidelines, to confirm that the GRI-STANDARDS "Core option" requirements are fulfilled
2. Review of the Report against the requirements of ATHEX ESG Reporting Guide 2022.
3. Evaluation and verification of the IF-EU-320a.1, IF-EU-550a.1 and F-EU-550a.2 Accounting Metrics and the Activity Metric IF-EU-000.C of SASB Sustainability Standards Framework.
4. Verification of the data included in all the chapters of the Report.
5. Conduct audit in the central offices of the company, including interviews with the Sustainability Team and the main executives of the Company, and sampling inspections of files, in order to evaluate:
   - the reliability and accuracy of performance indicators of the Sustainability Report
   - the processes for generating, gathering, and managing information included in the Report
   - the adherence to the principles of inclusivity, materiality, and responsiveness to stakeholders.

Limitations

The extent of the evidence, data and information collected justifies the characterization of a "limited level of assurance", as:

a) The objective evidence collected via internal sources of the Company and not via contacting external stakeholders.

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b) The verification of the information took place by using remote auditing technics, including interviews and documentation examination.

Conclusions

As a result of the application of the external assurance process, it was confirmed with "limited level of assurance" that the data and information of all the chapters of the Report are accurate and reliable. The accuracy of the disclosed statements and assertions was found to be within acceptable limits. The Company provided a comprehensive and proper presentation of performance based on reasonably documented information as well as that there is an effective data gathering, management and reporting system in place for issues which pertain to sustainable development.

Furthermore, it is confirmed that the statements of the Company related to the IF-EU-320a.1, IF-EU-550a.1 and F-EU-550a.2 Accounting Metrics and the Activity Metric IF-EU-000.C of SASB Sustainability Standards Framework are accurate and reliable.

EUROCERT concurs that the GRI-STANDARDS “Core option” requirements, as those of ATHEX ESG Reporting Guide 2022, have been met

Opportunities for Improvement

Based on the observations and concluding remarks derived from the assurance engagement, EUROCERT’s recommendations for the improvement of the Company’s future Sustainability Reports are as follows:

- ☞ Provision of information for additional GRI-STANDARDS performance indicators, in order to fulfill the “Comprehensive option” requirements.

Statement of Independence, Impartiality and Competence

EUROCERT is an independent professional services company that specializes in quality, environmental, health, safety and social accountability. Its assurance team has extensive experience in conducting verification over environmental, social, ethical and health and safety information, systems and processes for the environment, society, ethics, health & safety at work and sustainable development.

EUROCERT is an accredited certification body which operates a Quality Management System which complies with the requirements of several accreditation standards, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

EUROCERT has implemented a Declaration of Impartiality and Independency and several relevant procedures which ensure that all employees, that work for or on behalf of it, maintain high standards in their day-to-day business activities. We are particularly cautious in the prevention of conflicts of interest. Our assurance team does not have any involvement in other projects with the Company that would cause a conflict of interest and has never provided any consulting services to the Company.

Note: This Independent Assurance Statement has been prepared as a translation of the original Greek version.

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On behalf of EUROCERT,
Athens, 26th of September 2023

Managing Director
Georgios Briskolas

Vasiliki Filopoulou
Lead Auditor

ipto
INDEPENDENT POWER
TRANSMISSION
OPERATOR