# IPTO Sustainability Report 2021

ipto
INDEPENDENT POWER TRANSMISSION OPERATOR

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2021

INDEPENDENT POWER TRANSMISSION OPERATOR

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# MESSAGE FROM THE CHAIRMAN AND CEO

Dear stakeholders,

We are pleased to present to you the third Sustainability Report of the IPTO Group, summarizing the achievements of yet another year in the ever-evolving development of the Operator, having just celebrated our tenth anniversary.

Once again, in 2021, ADMIE successfully moved forward in the implementation of important objectives in an ever-changing landscape, marked by the ongoing turbulence of the pandemic, the intensifying challenges of climate change and the escalating energy crisis, which, in addition to the rising prices of fossil fuels, brought the issue of energy security to the forefront. Despite these successive and interrelated crises, the Group achieved high investment momentum with capital expenditure exceeding €400 million and demonstrated resilient financial performance, maintaining a steady pace in the implementation of its projects.

One of the major milestones in 2021 was the completion of the interconnection of Crete with the Peloponnese. This project is the first major step towards ending Crete's energy isolation, with the island's electricity supply already responding perfectly to the major earthquakes of last autumn and the increased demand of the summer months.

In 2021, IPTO also achieved remarkable progress towards the completion of the second electrical interconnection of Crete, the one with Attica, implemented by its subsidiary Ariadne Interconnection, by installing the first section of the electrical cables and all the fibre-optic cables that will also strengthen the telecommunications connection between Crete and the mainland.

The Skiathos-Euboea electrical interconnection has entered the completion stage and another key project, the interconnection of Santorini with Naxos, has been launched, marking the start of the fourth and final phase of the interconnection of the Cyclades.

In addition to domestic projects, in 2021 we strengthened our outward orientation and presence at regional level by accelerating international interconnections to each side of the border and the opening of the Regional Control Centre (SEleNe CC) in Thessaloniki. We contributed to the further development of the Single Electricity Market through the coupling of the Next Day Market with Bulgaria and Intraday Market with Italy, steps which were particularly important for the country's security of supply and the convergence of prices between the different European regions.

Amid unprecedented investment interest in the development of clean energy plants and with the new installed RES capacity in the System breaking the 1GW barrier for 2021, we managed to provide connection offers for another 3GW of renewables, contributing to the greening of our energy mix.

By implementing interconnections and integrating renewables, IPTO plays a catalytic role in reducing energy production costs, enhancing the country's energy security, mitigating carbon emissions and consequently protecting the atmosphere, locally and more broadly. And this is because the Operator's projects are designed and implemented with a view to expanding the available electrical «space» and limiting the use of fossil fuels, which are key aspects of the national strategy for the energy transition and the formation of a low-carbon economy.

Aiming to ensure the uninterrupted and optimal operation of the Transmission System, in 2021 we accelerated the modernization of our critical electrical infrastructure. As part of an expanded €200 million Asset Renewal Programme, we proceeded with equipment replacements as well as the integration of cutting-edge technologies for proactive grid maintenance and monitoring.

In addition, we emphasised further digitisation of both infrastructure and services. To this end, in 2021, a state-of-the-art digital system was put into operation at the Acharnes Substation, the mapping and integration of the geographic coordinates of the pylons into the GIS system was completed and the IPTO Analytics mobile application was created aiming at informing citizens about daily electricity production and consumption. During the year, our telecommunications infrastructure was also significantly upgraded with the operation of a state-of-the-art DWDM technology network, which will boost the international partnerships of the Group's subsidiary, Grid Telecom.

Another key achievement was the development and implementation of a comprehensive «cybersecurity strategy» to protect IPTO from digital challenges and threats. We aim to shield ourselves digitally as well, by proceeding with the design of a Security Operations Centre (SOC), which will be a model for the entire public sector and will leverage artificial intelligence technologies such as machine learning.

In addition to its core role as the Operator of the National Electricity Transmission System, IPTO also contributes socio-economically by creating value for its stakeholders and the communities where it maintains a presence due to its projects, by selecting local suppliers and employing labour where feasible. Specifically, in 2021, the social product of the IPTO Group amounted to €258 million while the actions and Corporate Social Responsibility programmes implemented in the areas where it operates totalled €1.2 million.

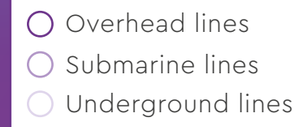
Recognizing that the driving force behind every achievement is our people, we have continued to prioritize the protection of our employees' Health and Safety whilst focusing on improving the working environment and shaping an inclusive culture. By organising training sessions and launching internal staff satisfaction surveys and diagnosing equality issues, we laid the foundations to formulate appropriate policies with a focus on equal opportunities, against any discrimination, and with respect for diversity.

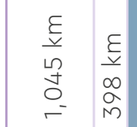
We remain committed to our role in providing uninterrupted and secure energy supply to the country, with respect for people and the environment. We are evolving into a modern and competitive Electricity Transmission System Operator and seek to become an example of a strong and flexible public organisation, whose activities strengthen the country's energy, economic and geostrategic position.

**Manos Manousakis**
Chairman and Chief Executive Officer

# 13,175 km

Total length of transmission lines




**4,100 km**

Fibre optic network

**52 TWh**

Transmitted electricity

**1,043 MW**

New installed capacity from RES in the System in 2021

**316 MW**

Launch of commercial operation of new RES

**22**

Ultra-High Voltage Centres

**372**

Substations

**69**

IPTO transformers

**794**

Connected user transformers

**61,363 MVA**

Total transformer capacity

**16,2% increase**

Share of RES production in 2021

**6,7% decrease**

Share of lignite generation in 2021

**€4.4 mil.**

Equipment replacement

**IPTO Analytics**

New mobile app with live Electricity System data

**€258 million**

Κοινωνικό προϊόν

**€1.2 million**

Social contribution in 2021

**€296 million**

Total revenue in 2021 (Group)

**€59.26 million**

Total salaries and benefits in 2021 (Group)

**€5 billion**

Investment until 2030

**€21,018**

Total cost for Health and Safety training

# Map of the Hellenic Electricity Transmission System


**Existing Transmission Line**

**Important projects to be constructed by 2025**

- Crete-Attica interconnection
- South – West Cyclades interconnection
- Euboea – Skiathos interconnection
- 2nd Greece – Bulgaria interconnection
- 400kV System expansion in the Peloponnese
- Reconstruction of the Koumoundourou Extra-High Voltage Centre

**Important projects planned to be constructed by 2030**

- Dodecanese interconnection
- Northeast Aegean interconnection
- New Philippi – Nea Santa 400kV TL
- New Greece – Turkey interconnection

**11**

Participation in 11 Horizon Europe research programmes

**1,813**

Employees

**7,023**

Total hours of training

**100%**

Employees received an evaluation in 2021

**31**

Electric vehicles

**36**

electric vehicle chargers during the three-year period 2019-2020

**8%**

Reduction in electricity consumption
In the two main buildings in 2021 compared to 2020

## Achievements 2021

1. Modernisation of the Transmission System
2. Laying of the first submarine cables for the Crete-Attica interconnection
3. Completion of the Crete-Peloponnese record-breaking interconnection
4. Start of the Santorini-Naxos interconnection
5. SEleNe CC: Further consolidation of regional energy cooperation
6. Increase in the connection rate of RES to the System
7. Digitisation of the Acharnes Ultra-High Voltage Centre
8. Upgrading of our telecommunications infrastructure

# 1. THE IPTO GROUP

The IPTO Group, apart from the parent company (IPTO SA), includes the associated companies ARIADNE INTERCONNECTION SPLC and GRID TELECOM SINGLE-MEMBER SA, 100%-owned subsidiaries.

# OUR ROLE AS THE HELLENIC ELECTRICITY TRANSMISSION SYSTEM OPERATOR

According to Greek legislation, IPTO (Independent Electricity Transmission System Operator SA) is the Operator of the Hellenic Electricity Transmission System (HETS).

The purpose of the Company is 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 meet the needs for the transmission of electricity under economically viable conditions, taking into account the protection of the environment.

Given the pivotal role of IPTO 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, 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 concerning the information maintained by IPTO.

## 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, the 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 the high voltage substations of the selected Customers, or
- to the substations connected to the Hellenic Electricity Distribution Network Operator (HEDNO) where voltage is transformed to medium voltage (20kV) and where from distribution lines start ending at the distribution substations where voltage is transformed again to low voltage (220/380V) used by most consumers.

The main components of the HETS are:

400kV & 150kV

Overhead transmission lines

400kV & 150kV

Underground and submarine cable lines

150/20kV

Substations

400/150kV

Ultra-High Voltage Centres (HVCs)



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

At the end of 2021, the HETS comprised 13,175 km of transmission lines and 386 substations with a total installed capacity of 23,412 MVA. Main elements of the HETS:

11,731.90km

Overhead

1,044.92km

Submarine

398.37km

Underground

4,100km

Fibre-optic network

## Hellenic Electricity Transmission System Grid Code

All issues related to the management of the System are regulated by the HETS Grid Code on the basis of which IPTO exercises its role as the HETS Operator.

More specifically, the HETS Grid Code typically regulates:

- The technical specifications for the design, operation and maintenance of the System
- The planning procedure for the System's maintenance schedule
- The terms of application for access to the System, the necessary supporting documents and the minimum technical and functional specifications required
- The HETS electricity absorption requirements so as to ensure adequate System capacity and the manner of how such requirements are met
- The terms and procedure to be followed by the Transmission System Operator for the conclusion of contracts
- The type and minimum content of contracts on the connection of power stations to the System and any other relevant matter
- The procedures for the approval of the implementation of projects concerning the connection of power stations to the System by licensed installation contractors, as well as the inspection of these projects by and their delivery to the Operator
- The accounts to be kept by the HETS on charges resulting from the management of the HETS
- The out-of-court settlement procedure in regard with disputes between Users and the HETS Operator
- 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 at the borders between the bidding zones
- Any other necessary arrangement for the proper, safe and efficient management of the System

## Network adequacy, security, stability & 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, according to the rules of physics. 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 the 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, while at the same time it is monitored in real time by the Energy Control Centre in Kryoneri, Attica, and if needed by the other Control Centres.

The four key parameters that determine the country's energy security are the following:

**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 all.

**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 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 that will allow an increase in the energy transferred from RES to 35% by 2030.



Similarly, 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 taken into account 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 maintained 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, on an annual basis IPTO conducts 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 next few 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.

# VALUES AND VISION

## Our vision

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

IPTO's operation is based on the following values:

**Commitment for uninterrupted energy supply of the country**

Ensuring the uninterrupted supply of electricity to the country by meeting all quality, safety and efficiency standards is our main objective guiding all our activities 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 aiming at enhancing healthy competition.

**Efficiency**

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

**Sustainability**

We carry out our tasks in accordance with the principles of sustainable development taking into consideration the economic, social and environmental conditions by supporting research and development, technical training, and maximising the potential of our human resources.



# MAIN ACHIEVEMENTS IN 2021

2021 was a milestone year for IPTO. Having just completed 10 years since the beginning of its journey, putting emphasis on its continuous development and multi-level transformation, IPTO keeps contributing decisively to the conversion of Greece into an energy and telecommunications hub of the Eastern Mediterranean.

More precisely, in 2021:

- **We completed the record-breaking Crete-Peloponnese interconnection**

This project was our first major step towards ending the energy isolation of Crete, contributing to a substantial improvement in the quality of life of the residents, as well as the upgrade of the tourist experience offered to its visitors.

- **We accelerated the modernisation of the Transmission System**

System resilience is a top priority for us at IPTO, thus the modernization of critical electrical infrastructure has been accelerated, aiming at maximum security, stability and reliability. In addition, we integrated cutting-edge technologies for proactive maintenance and monitoring of the System in order to address potential risks in a timely manner. Finally, we digitised our services and operational processes.

- **We laid the first submarine cables for the Crete - Attica interconnection**

2021 was a landmark year for Crete and its electricity supply. In addition to the completion of the small interconnection between Crete and the Peloponnese, we took important steps towards the realisation of the large interconnection between Crete and Attica. We laid the first section of the submarine cable between Pachi, Attica and Milos, and the two fibre-optic cables that will upgrade the island's telecommunications with the mainland. The cables laid reached a depth of up to 1,200m, a technical feat that will place the Crete-Attica among the three deepest interconnections in the Mediterranean Sea.

- **We started the Santorini-Naxos interconnection**

Also, in 2021 the tenders for the electrical interconnection between Santorini and Naxos were completed. This project is part of the fourth and final phase of the electrical interconnection of the Cyclades (Santorini, Folegandros, Milos and Serifos). Our goal is that by 2024 all the Cyclades will be connected to the mainland System. The completion of this project brings a series of investments of about 800 million euros to a close.

- **SEleNe CC: We further consolidated regional energy cooperation**

A critical element for IPTO's success at all levels is partnerships. In 2021, we further consolidated regional energy cooperation, as the Regional Control Centre established in Thessaloniki officially started operations.

- **We increased the connection rate of new RES to the System**

In 2021, we significantly increased the connection rate of new RES to the System. Within one year we provided connection bids for 3GW projects, significantly accelerating our pace compared to 2020. Investment interest in new green energy plants is huge and our goal is to connect them to the electrical System in a timely and secure manner.

- **We digitised the Acharnes Ultra-High Voltage Centre**

At the heart of IPTO's strategy is its transformation into a Digital Energy Transmission Operator. In 2021 we put into operation a state-of-the-art digital system at the Acharnes HVC. Using fibre optics, critical functions such as monitoring HVC data and communicating with the Energy Control Centre in Kryoneri, Attica are performed in a fully automated and even more secure way.

- **We upgraded our telecommunications infrastructure**

Digitisation has been implemented across the whole range of our infrastructure. In 2021 we upgraded our telecommunications networks. We put into operation a state-of-the-art Dense Wavelength-Division Multiplexing (DWDM) network in 15 facilities as well as 27 nodes in Northern Greece. In this way we were able to meet the commercial needs of Grid Telecom, our subsidiary. By integrating cutting-edge technologies into the fibre-optic networks we operate, we create the ground for important international partnerships and strengthen Grid Telecom's position in the market.

- **IPTO Analytics: We "planted" the daisy of green energy**

Another major success in 2021 was the creation of the IPTO Analytics application, which informs its users in a very friendly way about daily electricity production and consumption.

- **We leveraged 5G for remote infrastructure control**

We welcomed the 5G era through our participation in the innovative 5G-VICTORI project in collaboration with the University of Patras and the installation of 5th generation network equipment at our Rio premises. Our facilities were interconnected with the university cloud, thus allowing new 5G and IoT (Internet of Things) services to be safely tested on a large scale. Our goal is to continue to support scientific research on 5G and to fully exploit the new opportunities it offers for the digital transformation of the electricity System.

- **We laid the foundations for an even more sophisticated corporate governance**

In 2021 we proceeded to modernising our software systems. With new business planning systems, such as Enterprise Resource Planning (ERP), we simplified processes and carried out key functions in an even more efficient way. The above actions took place with increased digital data security.

- **We safeguarded labour relations and employees' rights**

As part of our effort to maintain safety, the new Operational Collective Labour Agreement 2021-2024 was signed to create to a safer working environment at IPTO. Two items worth noting in the new agreement are the continuation of the group health and life insurance programme for all employees and the regulation of teleworking by fully safeguarding labour rights.

- **We strengthened the Target Model**

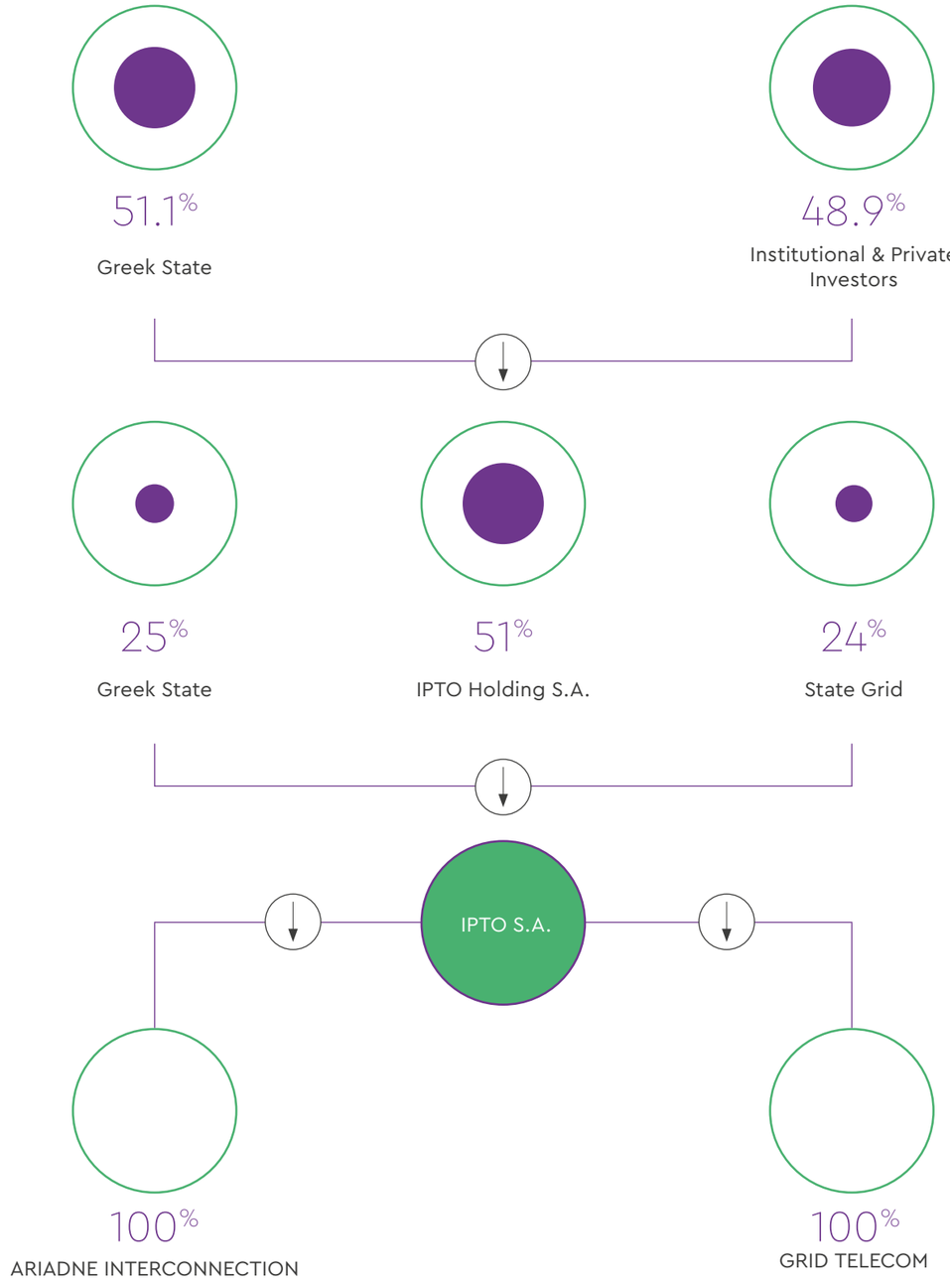
In 2021 we brought the Greek electricity market even closer to the European one, achieving the coupling of the day-ahead market with Bulgaria and the intraday market with Italy. We also completed the technical rules and procedures in order to reach the goals set in the Market Reform Plan.



# SHAREHOLDER STRUCTURE

The headquarters of the company INDEPENDENT POWER TRANSMISSION OPERATOR LIMITED COMPANY (IPTO SA) is located at 89 Dyrrachiou Street and 104-43 Kifisou Avenue, Athens, Greece.

As of June 2017, IPTO has been operating according to the Ownership Unbundling Model, fully harmonised with Directive 2009/72/EC. Its shareholder structure as at 31st December 2021 was as follows:



# ASSOCIATED COMPANIES

The IPTO Group, apart from the parent company (IPTO SA), includes the associated companies ARIADNE INTERCONNECTION SPLC and GRID TELECOM SINGLE-MEMBER SA, 100%-owned subsidiaries. The headquarters of both companies are located in Athens, 89 Dyrrachiou Street and Kifisou Avenue.

### ARIADNE INTERCONNECTION SPLC

ARIADNE INTERCONNECTION SPLC is a special company 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 (DDP) 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.

In spring 2021 the contractors completed the seabed surveys. This technically complex process resulted in determining the optimal route for the submarine cables according to the particularities in the seabed morphology and the least possible environmental disturbance.

More specifically, in 2021, the following progress was noted:

- Cable construction began at the contractors' factories
- Onshore section works were launched
- Equipment construction for the conversion stations began
- The submarine fibre-optic cables were laid
- The first section of the submarine cable was laid

More information about the company's actions can be found on its website https://www.ariadne-interconnection.gr/.

### GRID TELECOM S-M SA

GRID TELECOM S-M SA was established in January 2019 by IPTO with the purpose and object of operating, exploiting, managing and developing fibre-optic networks in order to provide integrated electronic communications services.

In 2021 the length of its fibre-optic network reached 4,100km, while net profit for the same year amounted to €264,664.

The highlights of the year are summarised below:

- Conclusion of significant customer agreements for dark fibres and capacity, both with domestic and international companies. A highlight was the cooperation with Islalink, which includes dark fibre sales yet also frequency spectrum exchange through which GRID gains an international presence and the ability to provide data capacity outside the Greek borders.
- Successful completion of the "ULTRA-FAST BROADBAND Infrastructure" tender with GRID Telecom taking over 4 out of the 7 geographical areas (LOTs).
- Expansion of fibre optic infrastructure in Northern Greece with the installation of 27 Dense Wavelength-Division Multiplexing (DWDM) nodes in cooperation with the IPTO's Information Technology and Telecommunications Division and through infrastructure exchanges in the Athens metropolitan area and beyond the Greek borders, such as Milan and other important data nodes of western and north Europe. These will enhance accessibility to the IPTO network as well as the provision of data capacity services to end customers.

More information about GRID TELECOM S-M SA can be found on the company's website https://www.grid-telecom.com/.



# GOALS FOR 2022

Our strategic priorities for the coming period have been defined in this respect and bring us ever closer to our vision: to shape a secure, just and affordable zero-carbon energy future.

To this end, we have set the following short-term goals, aiming to improve our performance and, therefore, make a decisive contribution to the sustainable development of the economy, the environment and society:

1

**Continue the Crete - Attica electrical interconnection under the sea and on land**

IPTO's next goal with regard to this interconnection is the installation of the 500kV power cables under the sea and on land and the start of the foundation works of the Conversion Stations at both ends of the interconnection (Aspropyrgos and Damasta), within 2022. Regarding the cables, this important step includes the laying of the western pole of the interconnection, with a length of 336km, as well as the installation of the overland cable sections in Attica and Crete.

2

**Start the construction of the southwestern Cyclades interconnection**

Within 2021, the construction of the Santorini-Naxos electricity interconnection started and is expected to be completed in 2023. A further objective for 2022 is to advance and complete the tender procedures that will electrify the entire southwestern Cyclades, including Folegandros, Milos and Serifos, from the mainland System by 2024.

3

**Fortify the operation of the System under adverse conditions**

In an environment of increased challenges, IPTO aims at developing resilience mechanisms for its infrastructure. To this end, it enhances its readiness for the protection of the proper functioning of the electricity System by:

- training technicians at the Energy Control Centres in different failure response scenarios;
- completing the training of supervisors recruited the previous year to take up duties immediately;
- setting up permanent teams from various Departments to identify even temporary System weaknesses with the aim of improving coordination by intervening and providing support as quickly as possible.

4

### Use cutting-edge technologies for the inspection of the Transmission System

By making technology an ally, IPTO aims at a more effective inspection of the Transmission System by using - for the first time on a large scale - manned aerial vehicles and drones in order to timely detect potential failures and, in general, preventive maintenance needs.

5

### Upgrade telecommunications networks

Grid Telecom, IPTO's subsidiary, alongside TERNA Energy will jointly undertake 4 of the 7 regions in Greece where broadband fibre optic networks are planned to be deployed, with construction expected to start in 2022. In addition, a total modernisation of our telecommunications network is scheduled for the same year to replace old equipment in 270 nodes of the System with state-of-the-art solutions. This will further accelerate IPTO's digital transformation, reaping significant economic benefits of up to €800,000 per year.

**Ultra-Fast Broadband**

The Ultra-Fast Broadband project is the leading telecoms PPP across Europe with a total budget of €864 million. Through this project, more than 800,000 households in the Greek periphery will have access to the Internet at ultra-high speeds, significantly reducing the digital divide that exists in our country as well.

6

### Fortify digital security of IPTO's critical infrastructure

With digital security of its critical infrastructure being its key priority, IPTO pursues the use of cutting-edge technologies such as Machine Learning and Deep Learning in the design of its cyber security.

7

### Modernise the asset management system

Another key objective for 2022 is to optimise the management of IPTO's assets aided by a state-of-the-art platform that will facilitate the improvement of safety and the efficiency of the System so that the Company transitions to applying a preventive infrastructure maintenance model, namely a condition-based maintenance model rather than a time-based one.



8

### Prepare for transition to SAP

IPTO, wishing to modernize its corporate governance using the latest digital tools, aims, by the end of 2022, to have become fully familiar with the use of the new system through a pilot operation, taking full advantage of its potential for redesigning and simplifying corporate processes.

9

### Activate planning for circular waste management

An integrated waste management system in line with the principles of Circular Economy is to be designed by 2022.

10

### Modernise/electrify IPTO's corporate fleet

We aim to have reinforced our heavy transport fleet by 2024 in order to utilise it for value-added services and to electrify the company's fleet in order to reduce its environmental footprint.

11

### Lead the way on gender equality and inclusion

Within 2022 our Gender Equality and Diversity Inclusion Policy is expected to be completed and put to implementation so as to create a non-discriminatory working environment.

IPTO evolves and at the same time develops the country's electricity transmission System, aiming at creating value for all its stakeholders, contributing to the entire country's sustainable development.

# 2. CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

Materiality analysis of sustainable development topics is a necessary tool for shaping our approach on value creation for our stakeholders

# STRATEGIC PILLARS AND SUSTAINABLE DEVELOPMENT GOALS

IPTO, the HETS Operator, plays a key role in the sustainable development of the country, contributing to energy transition, energy security and infrastructure resilience at a national level in a context of changing economic and climate conditions. At the same time, IPTO creates added value for the economy and promotes the digital transformation of both the Company and the country.

In 2021 IPTO further proceeded with the horizontal integration of its sustainable development strategy, which was completed in early 2022. The four pillars of our strategy are detailed below, of which the fourth has been put to implementation in 2022 in view of our concern and action for our people, society and the environment.

## IPTO STRATEGY PILLARS

1

**Safety, reliability, resilience in a challenging and changing environment**

IPTO modernises the Energy Transmission System ensuring adequacy, security, stability and reliability. It incorporates modern technologies the maintenance and monitoring of the network in order 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, also responding to modern cybersecurity challenges.

Our overall goal is to fortify the resilience of the System in the face of climate change. To achieve this, our projects will need to evolve faster than the climate crisis in order to ensure a safe transition to the clean energy era. In 2021 we took significant steps in this direction by expanding the Asset Renewal Programme, launched in 2018, and increasing its budget from €80 million to €200 million. Our goal is to have modernised the most critical High and Ultra-High Voltage equipment across the country by 2023 and to have replaced 60% of the existing elements of the System with state-of-the-art equipment by 2026.



2

**Network development and energy transition**

IPTO is a facilitator of the transition to a low-carbon economy. Our organisation moves in this direction on the basis of two key elements: infrastructure implementation and emission reduction.

The interconnection of the islands with the mainland, the integration of more remote RES plants into the grid and the development of interconnections with other Operators ensure energy security and enhance decarbonisation and energy transition.

The gradual reduction of greenhouse gas emissions and energy savings in our facilities, the way we conduct works and operate our systems, the facilitation of procedures for the faster processing of RES connection requests and the research for and development of new technologies all contribute significantly to an operational model for minimised indirect or direct emissions.

3

**Utilisation of infrastructure and expertise for value-added services**

In addition to the critical infrastructure managed by IPTO for the benefit of all citizens, we create even greater value through our assets, such as our large tracts of land, buildings and corporate fleet.

Furthermore, we expand our asset base with cutting-edge technologies such as fibre optics and data centres that contribute to the country's overall digital transformation. At the same time, we encourage innovation directly related to green transition, such as energy storage technologies that increase the contribution of renewables to the energy mix, and vehicle charging infrastructure.

4

**People, environment and governance**

Our aim is to create an even safer and fairer working environment based on equal opportunities and respect for diversity. At the same time, we work with local communities inclusively, creating value in the areas where we operate and enhance the transparency of our processes by establishing appropriate frameworks and placing even greater emphasis on stakeholder consultation.

In addition, we ensure the protection of biodiversity and the restoration of the environment in the areas where we operate by utilising new technologies in recording systems and equipment, increasing the use of recyclable materials and introducing circular economy standards, seeking to create a "green value chain" in order to minimise our environmental impact.

## Our contribution to the Sustainable Development Goals (SDGs)

IPTO, as the HETS Operator, clearly contributes to a significant extent in achieving a large part of the Sustainable Development Goals (SDGs) at national level.

Our contribution to the achievement of the United Nations 2030 Agenda, as expressed in the 17 SDGs and the 169 corresponding targets, concerns those directly related to our operations.

The table below shows our contribution in 2021:

| Sustainable Development Goals and Targets related to our action | Our contribution |
|---|---|
|  **1.2** We contribute to reducing the proportion of men, women and children living in poverty in all its dimensions.<br><br>**1.3** We implement appropriate social protection systems and measures to achieve substantial coverage of the vulnerable population.<br><br>**1.5** We contribute to eliminating exposure of the poor to economic, social and environmental events. | • In 2021 we provided jobs for 1,813 people as permanent and temporary staff.<br><br>• We have been developing the network ensuring electricity supply to all citizens in an adequate and safe way.<br><br>• 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. |
|  **3.9** We contribute to reducing the number of deaths from hazardous chemicals and air, water and soil pollution and contamination. | • The interconnections we implement increase RES integration resulting to a reduction in the carbon intensity that contributes to air pollution at local and national level.<br><br>• We apply strict measures to keep electromagnetic radiation within the limits set by the World Health Organization. |
|  **5.1** We contribute to ending all forms of discrimination against women. | • We see to creating an inclusive and non-discriminatory environment of equal opportunities and develop a "Gender Equality and Diversity Inclusion Policy". |



| | | |
|---|---|---|
|  | **7.1** We ensure equal access to affordable, reliable and modern energy services.<br><br>**7.2** Contribute to increasing the share of renewable energy in the global energy mix.<br><br>**7.3** We contribute to improving energy efficiency.<br><br>**7.a** We support research on clean energy technologies, including renewable energy, energy efficiency and cleaner fossil-fuel technologies, and promote investment in energy infrastructure and new technologies.<br><br>**7.b** We expand our infrastructure to provide sustainable energy services on the islands of the country. | • We interconnect the Greek islands with the Mainland System, allowing the connection of a higher percentage of RES to the System, addressing the energy isolation of the islands and increasing the reliability of the supply.<br><br>• New installed capacity from RES in the System in 2021: 1,043MW<br><br>• We initiated the commercial operation of RES plants with a capacity of up to 15MW in the Interconnected System: 316 MW<br><br>• We have been developing the international interconnection network with Bulgaria, Italy, Albania, North Macedonia, Turkey, Cyprus and Egypt for transition to decarbonisation.<br><br>• We are actively involved in 11 European Horizon 2020 Research Programmes and 1 research collaboration with the European Space Agency (ESA) to respond to the optimal integration of future RES penetration rates. |
|  | **8.1** We contribute to the country's economic growth per capita.<br><br>**8.4** We contribute to the improvement of efficient use of resources by decoupling economic growth from environmental degradation, promoting a framework of sustainable production and consumption.<br><br>**8.5** We contribute to full and productive employment and decent work for all women and men and for young people.<br><br>**8.8** We protect labour rights and promote safe working conditions for all employees without discrimination. | • 1,813 jobs, ensuring equal opportunities and respect for diversity, were preserved.<br><br>• 100% of our employees are covered by full-time contracts and collective labour agreements.<br><br>• We spent €21,018 to train our employees on Health & Safety issues.<br><br>• Our "social product" in 2021 amounted to €258 million. |
|  | **9.1** We develop sustainable, resilient and reliable infrastructure.<br><br>**9.2** Promote inclusive and sustainable industrialisation.<br><br>**9.5** We contribute to enhancing scientific research and upgrading the technological capabilities of the industrial sectors. | • We have been implementing a €5 billion investment programme over 10 years and developing resilient infrastructure across the country.<br><br>• We provide access to energy for businesses and households across the country.<br><br>• We collaborate with innovators through our participation in 11 European Horizon 2020 Research Programmes.<br><br>• 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). |

| | | |
|---|---|---|
|  | **11.1** We contribute to the strengthening of local infrastructure.<br><br>**11.4** We contribute to the efforts to protect and safeguard cultural and natural heritage. | • We extended the fibre-optic network to 4,100km in order to upgrade telecommunications services in Greece (9% yearly increase)<br><br>• We have developed a collaboration with archaeological institutions wishing to safeguard the cultural heritage in the areas where our network extends.<br><br>• We spend €350,000 per year on contracts for cleaning, vegetation removal, tree pruning/ cutting and maintenance/recharging of portable fire extinguishers in order to prevent or directly respond to fires that threaten the natural heritage of the area.<br><br>• In 2021 we sponsored the implementation of erosion and flood control projects in the fire-affected Municipality of Dionysos. |
|  | **12.4** We contribute to the sound management of all waste in accordance with agreed international frameworks and legislation.<br><br>**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.<br><br>• Through our regeneration system we recover and reuse insulating oils. |
|  | **13.1** We enhance the resilience and adaptive capacity of our activities to climate-related hazards.<br><br>**13.2** We contribute to the integration of climate change measures into national policies, strategies and planning. | • We have reduced electricity consumption by 8% in the two main buildings compared to 2020.<br><br>• We purchased 9 pure electric vehicles with near-zero $CO_2$ emissions and installed an equal number of charging stations on our premises.<br>• We have been implementing a specific Asset Renewal Programme aiming to modernise the most critical High and Ultra-High Voltage equipment across the country by 2023 and replace 60% of the existing elements of the System with state-of-the-art equipment by 2026.<br><br>• We helped shape the regulatory framework for energy storage and offshore wind farms. |



| | | |
|---|---|---|
|  | **14.1** We contribute to the prevention of all kinds of marine pollution. | • We ensure protection of the marine environment and minimise the environmental impact of our activities through the measures we implement. |
|  | **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.<br><br>• In addition to carrying out relevant environmental impact assessments in order to identify, describe and evaluate the potential impacts arising from the Company's projects, we also prepare special studies such as Special Ecological Assessment Studies when required.<br><br>• We provided a sponsorship through the institution of the rehabilitation and reforestation contractor in support of the fire-stricken Municipality of Dionysos in 2021. |
|  | **17.17** We aim for corporate partnerships and effective joint ventures between the public and private sectors and with Civil Society. | • 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.<br><br>• We actively participate in a number of bodies and organisations at both national and European level in order to promote cooperation and sustainable development. |

# COMMUNICATION 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.

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

In 2021 the company continued taking active part in the communication and consultation processes with the stakeholders through the following communication channels.

| Stakeholders | Expectations | Communication channel and frequency |
|---|---|---|
| **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<br>• Safeguarding the viability of the Company<br>• Application of international standards and principles of corporate governance | • Constant updating through announcements, press releases and presentations, the website and the media, as well as annually through the Sustainability Report<br>• Constant communication with the Investor Relations Division of ADMIE Holding. |
| **Creditors** (Banking institutions & other capital providers) | • Timely updating on financial results and new investments<br>• Safeguarding the Company's sustainability and application of international standards and corporate governance principles<br>• Implementation of the Company's investment plan | • Constant updating through announcements, press releases and presentations, the website and the media, as well as through the Financial Statements, the Annual Report and the Sustainability Report on an annual basis<br>• Meetings with the Company's Management and Financial Division, as the need arises |
| **Financial analysts and rating agencies** | • Sustainability<br>• Liquidity<br>• Strategic planning<br>• Performance on ESG criteria | • Constant updating through announcements, press releases and presentations, the website and the media, as well as through the Financial Statements, the Annual Report and the Sustainability Report on an annual basis<br>• Communication (telephone & electronic, physical presence) 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<br>• Achieving the objectives of the 10-year development plan and the investment plan for infrastructure projects (e.g. island interconnections)<br>• Compliance with laws and regulations<br>• Environmental, labour and social issues<br>• Contribution to energy transition at national level | • Regular communication (by the telephone, online and physically) at institutional level<br>• Participation of the company in Associations and Chambers<br>• Meetings with organisations / authorities / legislative and institutional bodies<br>• Workshops and conferences<br>• Company website<br>• Annual Report and Sustainability Report |
| **Other Operators** | • Energy security<br>• Innovation<br>• Cooperation to promote sectoral issues at European level<br>• Implementation of international interconnections | • Continuous communication with the other European operators through ENTSO-E in which we participate<br>• Active dialogue and development of partnerships through participation in joint projects<br>• Participation in industry seminars<br>• Annual Report and Sustainability Report |
| **Local communities & NGOs** | • Strengthening the local economy through spending on local suppliers and project contractors<br>• The Company's responsiveness to local community issues (e.g., strengthening initiatives)<br>• Minimisation of visual disturbance and electromagnetic radiation | • Constant communication with local bodies and associations<br>• Participation of the Company's representatives in public consultations on projects<br>• Publication of the Sustainability Report |
| **Land owners** | • Expropriation of private land and compensation issues<br>• Local disturbance due to new projects and the operation of the Transmission System | Notifying them prior to the start of the project and during its execution |
| **Media** | • Informing the public regarding the Company's activity<br>• Report on economic, environmental and social data | • Company Press Office<br>• Communication with media representatives whenever necessary<br>• Press releases, publications and announcements<br>• Company website<br>• Social Media<br>• Annual Report and Sustainability Report |

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

**Stakeholders engagement and operation-related impact management**

Our activity as well as the development and maintenance of the HETS projects concern the entire Greek territory and are particularly important as they lead to a series of benefits for consumers, society, the economy and the environment, contributing to the country's energy security, the energy transition, the reduction of 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 that aim to contribute to shaping a sustainable future for local communities.

More specifically, as part of tackling impacts that may result from our activities, we follow the following general principles:

- 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 brough about 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 owners, where land expropriation is required, about the procedure for collecting their 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 size, location and partial design changes (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).
- We implement project for the restoration and protection of the natural environment after the completion of works.

## Discovery of an ancient shipwreck in Kythira

IPTO's investigation on the seabed offshore Kythira, during works for the Crete -Peloponnese electrical interconnection, a rare archaeological treasure was discovered at a depth of 222 metres. The sunken ship cargo included amphorae from Corfu, Skopelos and Chios.

According to the Ephorate of Underwater Antiquities and the Hellenic Centre for Marine Research (HCMR) that rushed on the site, the find dates from late fifth to mid-fourth century BC. The wreck was depicted in 3D to get a clearer picture of its size and the volume of its cargo.

IPTO expressed its intention to support possible initiatives for the collection or/and exhibition of the findings to benefit society as a whole in the best possible way.

The discovery of this treasure confirms that IPTO's projects benefit society and the environment, always with respect to the history and tradition of the country.

**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 in order 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 in order 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 in order 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.

With regard to 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 regulatory framework improvement**

In accordance with the provisions of Law 4001/2011 and the System Grid Code (SGC) and within the framework of its responsibilities, IPTO prepares and publishes the Ten-Year Development Plan (TYDP) for the country's Transmission System, which is issued every year, on a rolling 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:

- Monitoring developments and the amendments to Greek, European and international legislation and case law regarding the regulatory framework
- Monitoring 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 to the dialogue on the regulatory framework for offshore wind farms is important, as well as to approvals for the integration of energy storage systems into the energy mix with favourable pricing terms.

The proper shaping of the country's legal and regulatory framework and the regulation of issues related to new technologies in the energy sector is important in order to maintain the momentum towards the transition to a low-carbon economy and to safeguard the country's energy security.

IPTO is in constant communication with local communities throughout the design and implementation of a project in order to achieve a wider acceptance of its projects

# PARTICIPATION IN ORGANISATIONS AND BODIES

## ACEO
Association of Chief Executive Officers

## ACCI
Athens Chamber of Commerce & Industry

## TCG
Technical Chamber of Greece

## UHCC
Union of Hellenic Chambers of Commerce

## GECR
General Electronic Commercial Registry

## HFE
Hellenic Federation of Enterprises

## CSR HELLAS
Hellenic Network for Corporate Social Responsibility

## IENE
Institute of Energy for South-East Europe

## CIGRE
International Council on Large Electric Systems (Hellenic & International)

## IAM
The Institute of Asset Management

## ENTSO-E
European Network of Transmission System Operators for Electricity

## MED-TSO
Mediterranean Transmission System Operators



### ENTSO-E

The European Network of Transmission System Operators for Electricity (ENTSO-E) represents 39 Transmission System Operators for Electricity from 35 countries and its mission is to ensure the reliable and secure operation of the interconnected System at pan-European level and 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 Grid 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.

In 2021 IPTO updated the material topics stemming from its operation, considering the view of its stakeholders.

# MATERIALITY ANALYSIS

In order to strengthen the strategy developed for the four-year period 2021-2024, in 2021 IPTO reviewed and updated the material topics stemming from its operation that affect the wider economy, society and the environment through its activities.

Applying the requirements of the GRI Standards, we analysed the sustainability issues related to our operations and through a properly designed questionnaire, we sought the opinion of our stakeholders. We then prioritised the issues based on the degree of impact of each sustainability issue and the relevant stakeholder interest.

In particular, in order to apply the GRI principles for defining report content (Stakeholder Inclusiveness, Sustainability Context, Materiality and Completeness), a structured procedure/ methodology was followed, consisting of the following steps:

**Mapping** → **Questionnaire** → **Analysis** → **Materiality Matrix**

Identification of the material topics of the sector, taking into account the broader trends as well as the latest developments in the field of sustainable development at national, European, and international level

Preparation and distribution to stakeholders of an appropriately formatted questionnaire

Questionnaire collection and data processing

Prioritisation of material topics and their mapping to the materiality matrix

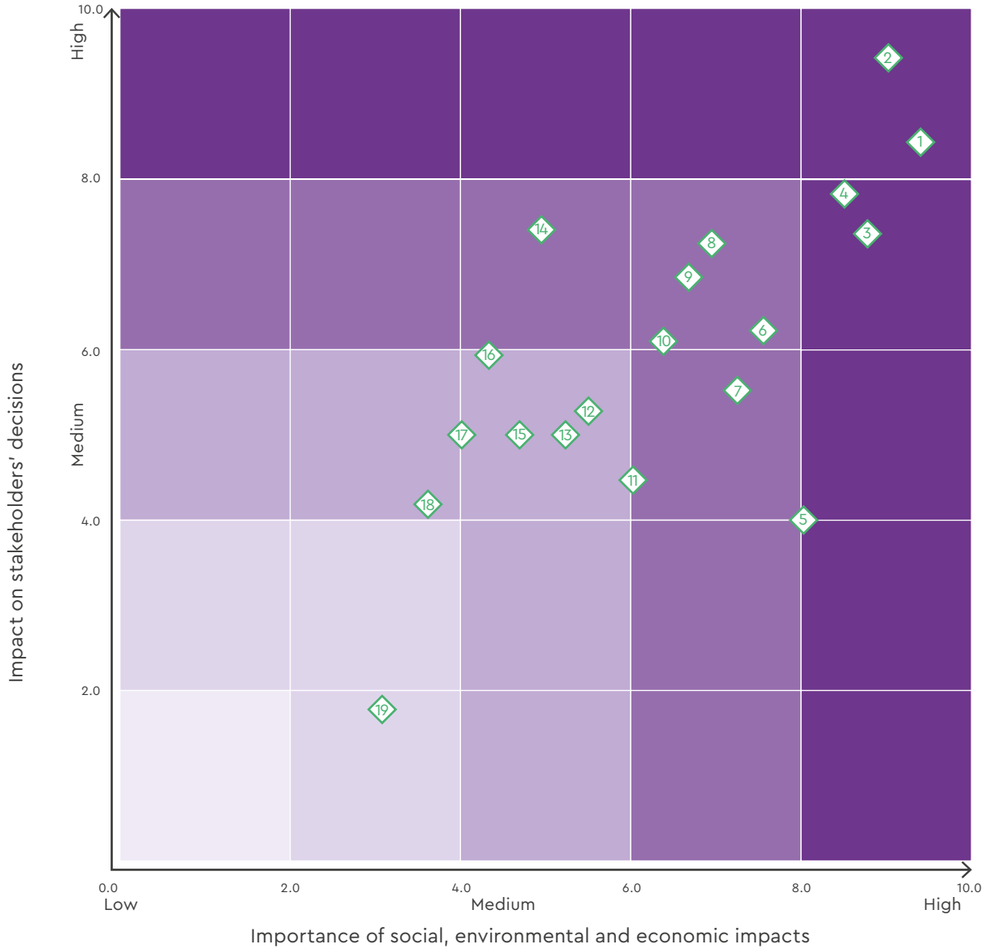
Throughout this process we ensured that both the principles of the GRI Standards that define the content of the Report and the views and concerns of our stakeholders were appropriately incorporated.

Upon completion of collecting views from stakeholders, as well as their review and approval by the Company's senior management, the following 19 material topics emerged:



1. Network adequacy, security, stability, reliability and response to emergencies
2. Energy transition, increase in RES integration and reduction in costs
3. Health and Safety at work
4. Network development (internal and interconnections)
5. Cybersecurity
6. Quality of works and adherence to schedules
7. Waste management
8. Managing climate risk and opportunities
9. Environmental compliance
10. GHG emissions management
11. Biodiversity
12. Innovation, growth and digital transformation
13. Economic soundness
14. New technologies for climate change adaptation and mitigation
15. Communicating with local communities and managing impacts at local level
16. Contribution to the efficient functioning of the energy market
17. Education & development
18. Equal opportunities & diversity
19. Open data

**Classification of material issues for IPTO**




To capture these issues, we also took into account the United Nations Sustainable Development Goals (SDGs) and other relevant standards and initiatives, such as the GRI Standards, the SASB Standards and the TCFD recommendations (Task Force on Climate-Related Financial Disclosures).

Further information regarding IPTO's approach to its material sustainability issues, as well as its performance in each of them, is provided in the respective sections of this Report.

# ADDRESSING CLIMATE CHANGE

Climate change is now considered one of the most important global issues with a significant adverse impact on both the Company's activities and the natural environment and society. Addressing it is one of the most important challenges today.

For this reason, IPTO has integrated in its strategy the new data that have emerged due to climate change in order to adapt itself to the new environment. Based on current data and upcoming changes, it identifies the risks associated with climate change and the related opportunities.

One of the pillars of IPTO's new Strategy for 2021-2024, comprises Safety and Reliability in a challenging environment. To this end, IPTO formed a committee of experienced executives for formulating a Renewal Program of System assets. The Program will be completed until 2026 and its initial budget has been increased from 80 to 200 million euro. The dynamic climatic parameters and extreme weather events, which are now increasingly frequent in our country, are considered for the formulation of the Renewal Program.

IPTO's contribution is also important in terms of tackling climate change at the national level. Specifically, the construction of new interconnections that integrate more RES in the System, results in a cleaner energy mix, thus contributing to the transition to a lower carbon economy and gradual decarbonization. At the same time, IPTO supports innovative technologies that enhance "green transition" such as energy storage for increasing RES contribution in the energy mix and vehicle charging infrastructure.

These changes also contribute to the creation of new business opportunities as the transition to a low-carbon economy can only be achieved through significant structural and technological changes in the energy production system. Further information regarding IPTO's role in the energy transition and its asset renewal programme are provided at Chapter "Network and infrastructure development".

IPTO has integrated in its strategy the new data that have emerged due to climate change in order to adapt itself to the new environment.



# VALUE CHAIN

The procurement of the right goods (e.g., infrastructure, equipment, materials, services) in the right quantity and quality, at the best possible price and in the desired time, based on precise specifications, is an important parameter for the smooth running of our operations.

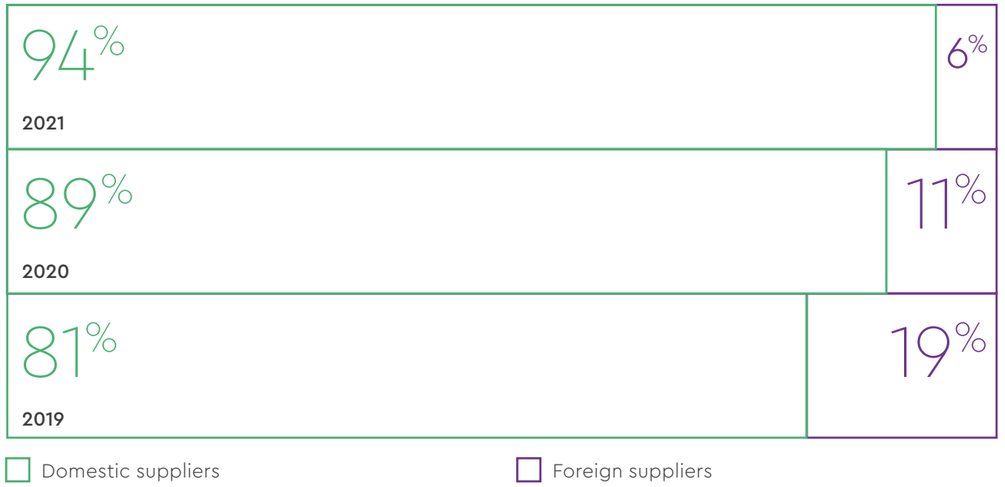
Specifically, the categories of suppliers with whom IPTO interacts are:

- 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 alternatively suppliers at national level.

In 2021, the total number of suppliers/contractors for projects amounted to 28. The total amount paid by the Company to suppliers amounted to €211 million, with the ratio of expenditure between domestic and foreign suppliers being 94 to 6 percent, an increase compared to the previous year. At the same time, in 2021, the total number of suppliers/contractors of materials and equipment rose to 31, with total supply expenditure amounting to €7,182,782. The expenditure ratio between domestic and foreign suppliers was 18 to 82 percent.

**Percentage of expenses to suppliers and contractors**




An important objective achieved during 2021 was the creation of a Supplier Register. This is a crucial step, considering that the Company's cooperation with the best suppliers is not only necessary but also essential, since the projects, materials and services are critical and directly related to its operation. The Registry's contribution to the acceleration of tendering procedures and thus to IPTO's efficiency is also crucial.

# 3.

# NETWORK AND INFRASTRUCTURE DEVELOPMENT

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

17 PARTNERSHIPS FOR THE GOALS

IPTO proceeds with speed and consistency in the implementation of the Ten-Year Development Plan worth €5 billion, aiming at the electrical interconnection of the biggest islands with the mainland System by 2030, creating significant benefits for the country's economy, society and the environment.

1,043MW

New installed capacity from RES on the System for 2021

# DEVELOPMENT OF THE ENERGY TRANSMISSION SYSTEM

One of IPTO's main tasks in its role as an Operator is the development of the Hellenic Electricity Transmission System (HETS).

With an investment plan of €5 billion over a ten-year period and aiming at the electrical interconnection of the biggest islands in the Aegean Sea with the mainland System by 2030, IPTO is proceeding with speed and consistency in the implementation of the Ten-Year Development Plan, with significant benefits for the economy, society and the environment.

The development of the System includes the planning and implementation of significant investments to ensure that the country's electricity supply is adequate, secure, efficient and reliable, as well as the long-term ability of the System to meet the needs for the transmission of electricity under economically viable conditions, for the benefit of society and the environment.

The Ten-Year Development Plan is the main vehicle for planning and programming these investments.

## The Ten-Year Development Plan

The Ten-Year Development Plan (TYDP) of the country's Transmission System is annually prepared by IPTO, has a rolling character and includes the development projects of the System for the respective reference period, as well as the basic philosophy followed for their planning, design and scheduling, including the necessary infrastructure for the penetration of RES. It also includes the timetables and estimated financial flows for their implementation.

More specifically, according to the TYDP for the period 2022-2031, the development projects include, among others:

- the necessary reinforcements to the System, such as new transmission lines, upgrades of existing transmission lines, new Ultra High Voltage Centres (HVCs) and Substations (substations), as well as extensions of existing HVCs or substations which are necessary for the safe distribution of power foreseen for this period;
- the modernisation and upgrading of existing substation and HVC infrastructures, as well as their respective control infrastructures, the necessary projects to improve the operation and economic efficiency of the System, such as reinforcement of existing substations and construction of new transmission lines to optimally serve the needs of System Users;
- the integration into the System and/or the upgrading of new interconnectors with neighbouring countries,
- the connection projects to the System (transmission lines and substations) required for the integration of new generation plants and new high-voltage consumers, for which relevant connection studies have already been carried out; and finally,
- the development of the necessary infrastructure, such as SCADA systems, a backbone telecommunications network, telecommunication links between the substations and the Energy Control Centres (ECCs), development and installation of software tools in accordance with the requirements for the safer and more efficient operation of the System and the electricity market.



INTERCONNECTION IMPLEMENTATION PLAN UNTIL 2030

## NATIONAL INTERCONNECTIONS

### CRETE

**Crete-Peloponnese**

The project was completed in the first half of 2021.

**Crete-Attica**

By 2021 the following aspects of the project were completed:
- the production of the ultra-high-voltage overland cable parts for its section in Attica;
- the laying of the two fibre-optic submarine cables in the section Pachi, Attica - Korakia, Crete and also the laying of 170km of the eastern electric pole.
- the expropriation of land for the Attica Conversion Station;
- the procedure of the factory tests for all sub-units of the Attica Conversion Station valve.

The project is expected to be completed in 2024.

### SKIATHOS

**Skiathos – Euboea**

The laying of the submarine cable between Skiathos and Mantoudi, Euboea was completed in 2020. The project is expected to be completed in 2022 with the construction of a new substation in Skiathos.

### NORTH-EASTERN AEGEAN ISLANDS

**Phase A: Nea Santa-Limnos-Lesvos**
**Phase B: Aliveri-Skyros-Lesvos-Chios-Kos-Samos-Rhodes-Karpathos**
**Phase C: Lesvos-Chios-Samos**

2029: Year of estimated completion of the project's three phases.
2030: Year of estimated full operation

### CYCLADES

**Phase D: Western and Southern Cyclades (Santorini, Milos, Folegandros and Serifos)**

Preliminary studies were completed in 2021. The project is expected to be completed in 2024.


### PELOPONNESE

**Megalopolis – Corinth – Attica (Eastern Corridor)**

- Completion of the new Corinth HVC within 2022.
- Construction of a new 400kV overhead transmission line between Megalopolis and Corinth HVCs. Its completion is expected within 2022.
- Construction of an overhead transmission line between Koumoundourou and Corinth HVCs. It is expected to be completed in 2025.

**Megalopolis-Patras-Western Sterea (Western Corridor)**

Redesign of the project due to the opposition of the Agioi Theodoroi Monastery in Kalavryta changing the route of the transmission line. The modification of the Environmental-Impact Conditions Approval Decision has been approved while the approval of the Kalavryta Forest Authority is expected. It is estimated to be completed in 2022.

### DODECANESE

**Corinth-Kos-Rhodes-Karpathos**

2027: Year of estimated completion
2028: Year of estimated operation

## INTERNATIONAL CONNECTIONS

### BULGARIA

**2nd interconnection with Bulgaria**

The completion of expropriations is underway. This process has been delayed due pandemic-related continuous postponements. The overall completion of the second Greece – Bulgaria interconnection is expected in 2023.

## Διασυνδεδεμένο Σύστημα Ηλεκτρικής Ενέργειας του ΑΔΜΗΕ έως το 2032


**Existing Transmission Line**

**Important projects to be constructed by 2024**

- Crete interconnections
- North Cyclades interconnections
- South & West Cyclades interconnection
- Euboea – Skiathos interconnection
- 2nd Greece – Bulgaria interconnection
- 400kV System expansion in the Peloponnese
- Reconstruction of the Koumoundourou Extra-High Voltage Centre

**Important projects planned to be constructed by 2030**

- Dodecanese interconnection
- Northeast Aegean interconnection
- New Philippi – Nea Santa 400kV TL
- Argyroupoli EHVC

## Reconstruction of the Koumoundourou Ultra-High-Voltage Centre

Following the short circuit that occurred in early 2021 in one of the four transformers at Koumoundourou substation, resulting in a major power supply issue in many areas of Attica, IPTO proceeded to take some initial short-term measures in order to shield the Energy Transmission System. At the same time, ten new autotransformers were received under the Equipment Renewal Program, in order to upgrade and strengthen the infrastructure of the HVCs.

More specifically, the measures taken included:

- Coordinated actions in cooperation with HEDNO in order to transfer loads from the Koumoundourou HVC to other nearby HVCs to facilitate the Koumoundourou HVC so that consumers are supplied via alternative routes.
- Suspension of maintenance to make all production units available.
- Mandatory production in the wider areas of the Peloponnese and Central Greece for the operation of Megalopolis 5, Megalopolis 4, Ladonas Hydroelectric Power Station (HEPS), the Public Power Corporation's HEPS in Kastraki, the Thermal Power Station in Agioi Theodoroi belonging to Korinthos Power and Heron-I belonging to HERON THERMOELEKTRIKI.
- Coordinated actions in cooperation with the National Natural Gas System Operator (DESFA) to ensure the quantity of gas needed to cover the continuous high production of the gas plants.
- Re-scheduling and rearrangement of all IPTO's construction and maintenance crews, in accordance with the new emergency priorities, in full readiness for immediate intervention and response to incidents.

In addition to the above measures, IPTO has signed a contract for a total amount of €46 million with MYTILINEOS for the reconstruction of the Koumoundourou HVC, with a completion date of September 2023.

The project includes the replacement of all 150kV and 400kV switchgear with modern Gas Insulated Switchgear (GIS) equipment, the addition of two autotransformers and five compensation inductors, the installation of a modern digital protection and control system, as well as the replacement of the HVC's auxiliary supplies.

The new HVC that will be created will:

- take over a significant part of the electrical load in the Attica basin, shielding the supply of the wider region;
- be the connection node of the electrical interconnection between Crete and Attica, which is expected to be completed within 2023; and
- be the terminal node of the Eastern Corridor (400kV) of the Peloponnese with the mainland System.

## Development of the Transmission System: Projects completed in 2021

**Replacement of the 150kV Doxa - M. Botsaris - Nea Elvetia cable connection**

Due to the continuous and worsening problems caused by the leakage of insulating oil in the underground cables of this line, which are about 4.8km long, and given that their repair was not feasible, it was decided to replace them with new ones. This project, with a budget of €2.5 million, was completed and put into operation in 2021.

**Interconnection of Crete**

The System of Crete bears some particular characteristics that make its interconnection with the HETS necessary as far as the feasibility of its implementation is concerned.

In particular it is characterised by:

- Very high energy production costs due to the use of oil in local power plants reflected in significantly high Public Utilities costs to be covered by consumers.
- High annual increase rate of the island's load. It is noted that the load during the summer months is marginally covered by the local stations.
- The great difficulty or even impossibility of finding sites and securing licences to strengthen local stations or develop new ones.
- The ever-increasing interest in exploiting the rich local RES potential, whose penetration in the electricity generation mix of Crete is limited due to technical constraints.
- Low level of supply reliability, especially in case of failures in the production System.

Crete-Peloponnese interconnection

The Crete-Peloponnese interconnection is the first phase of the interconnection of Crete with the HETS. The Crete-Peloponnese AC interconnection includes two 150kV, 2x200MVA AC circuits.

The total cost of the flagship project, which amounts to €380 million, was co-financed by Greece and the European Union and with loans from the European Investment Bank (EIB).

The project started in 2018. The activities carried out in 2021 included the submarine cable line, the final arrangements of the overhead lines in the Peloponnese and STATCOM, which had been completed in stages by May 2021, when the interconnection was ready to operate under load. In July 2021, the interconnection was put into operation under load and has been operating continuously ever since.



## Award to IPTO for the Crete-Peloponnese Interconnection Project

In 2021, the Crete-Peloponnese Interconnection project won the Project of the Year 2020 Award through an open online vote conducted by the news website ypodomes.com for achieving timely completion. The award was presented by the Secretary General of Energy and Mineral Resources at the 4th Infrastructure and Transport Conference ITC 2021.

The economic benefits of the project will be particularly significant, since as from 2022 (the first full year of operation) all consumers in the country will be saving up to €380 million per year on their electricity bills through the Public Utilities. After the completion of the "big" interconnection between Crete and Attica in 2023, the reduction is estimated to reach €550 million and is expected to exceed €1 billion by 2030.

It is worth noting that during its implementation, many difficulties and unprecedented challenges were encountered, but did not delay its implementation. The cooperation between the employees and the contractors and the way they dealt with the challenges that arose set an example for similar large-scale projects.

Crete - Attica interconnection

The Crete - Attica interconnection constitutes the second phase of the interconnection of Crete with the HETS. Through this, a further significant reduction in the costs for Public Utilities is expected to benefit all System consumers in Greece.

This project is being carried out by IPTO's 100% subsidiary, ARIADNE INTERCONNECTION SPLC, which was established for the sole purpose of implementing this project.

This project consists of two sub-projects: the first one concerns the "design, supply and installation of cables and electrode stations for the direct current electrical interconnection between Crete and Attica (2 x 500MW)" and the second one concerns the "design, supply and Installation of two Conversion Stations and one Substation for the direct current electrical interconnection between Crete and Attica (2 x 500MW)".

Regarding the progress of the project and in particular the cable system, the production of the HVDC Mass-Impregnated cable for the Attica section, the seabed survey for the high voltage and fibre-optic submarine cable corridor were completed in 2021. Moreover, the two fibre-optic submarine cables (2X335km, Pachi, Attica – Korakia, Crete) were successfully laid.

In particular, with regard to the mainland part of the electrical interconnection project, it is worth noting that the work started successfully after long consultations with the representatives of the Municipalities of Mantra and Aspropyrgos, as well as the Region of Attica, clarifying in detail issues related to the environmental footprint of the project and its importance. A similar positive development is expected in early 2022 for the works related to the Municipalities of Megara and Elefsina.

Regarding the Conversion Stations in Attica and Crete, the basic design was completed in 2021 and the main characteristics of the equipment of both Conversion Stations were defined. At the same time, significant progress was made in the detailed design with the relevant thorough surveys and implementation designs for the civil engineering works and electromechanical installations. During 2021, significant progress was also made in the production of critical equipment (power electronic valves and transformers) and other equipment for the Conversion Stations. More specifically, in June 2021, the project design dossier was approved by the Heraklion Ephor-

ate of Antiquities following the decision of the Central Archaeological Council in May 2021, and was submitted to the urban-planning authorities which finally issued the building permit for the construction of the Crete Conversion Station in Damasta in November. Subsequently, excavation works began on the land. In addition, with regard to the Attica Conversion Station, the land expropriation process for the station was completed in November and the corresponding building permit has been issued. Finally, in December 2021, the production and the necessary factory tests for the valves of the Attica Conversion Station were successfully completed.

**Submarine fibre-optic cables installation**

Shortly before the end of the year and after about two months of works, the installation of the two fibre-optic cables that will connect Crete with Attica was completed, as part of the ongoing "big" interconnection project.

The laying of the submarine fibre-optic cables was carried out in two successive operations by Italian company Prysmian. The fibre optic cables have a total length of 756km (2 x 335km underwater and 2 x 43km underground).

With the help of fibre optics, the interconnectivity of the island with the land-based broadband networks and Data Centres will be significantly increased. This will create the conditions for Crete to become an energy and telecommunications hub, making use of the alternative routes of power cables and fibre optic cables.

## Enhancing supply reliability for Andros

The Andros Substation is supplied by two 150kV overhead transmission lines that connect the island on the north with Euboea and on the south with Syros (via Tinos). Due to the severe weather phenomena (very high wind speeds) that occur in the area, the overhead lines are often out of service due to failures. In order to enhance the reliability of the island's power supply and to minimise visual disturbance, the undergrounding of one of the two overhead transmission lines is planned in order to reduce possibilities of simultaneous disturbances in the connection circuits of the Substation resulting in the loss of power supply. The project includes the construction of an underground cable line with XLPE cables of approximately 20km length from the Andros Substation due south to Tinos (Paranga, Andros). The total budget of the project amounts to €10.3 million and it is estimated to be completed within 2024.



## Installation of submarine cables in the Crete-Attica interconnection

The Aurora, a state-of-the-art ship of our contractor Nexans, sailed into the port of Piraeus, making its maiden voyage that marks the start of the installation works for the first section of the 170km submarine cable that will connect Crete with Attica. The laying of the electrical cables is being carried out by IPTO's subsidiary Ariadne Interconnection.

**International interconnections**

Since October 2004, the Hellenic System has been reoperating 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), which, since June 2009, has been the successor and broader form of the Union pour la Coordination du Transport de l' Electricité (UCTE) with regard to the operation and development of the System. The parallel operation of the Greek with the European System is achieved through interconnecting transmission lines, mainly 400kV, with the Systems of Albania, Bulgaria, North Macedonia and Turkey. In addition, the Greek System is connected asynchronously through a 400kV DC submarine link with Italy.

The development of international interconnections plays a central role in the Operator's development strategy, as it contributes substantially to the stability of the System and the convergence of prices between different European regions. In this context, IPTO is in cooperation with the neighbouring Operators to assess the alternatives aiming at strengthening transnational interconnections. The international interconnection projects that are currently underway or planned for the near future are the following:

1. Greece-Bulgaria: The project concerns the implementation of a second interconnection between the two countries, with a 400kV overhead transmission line of a total length of approximately 151km and a nominal transmission capacity of 2000MVA, which will connect the Ultra-High Voltage Centre of Nea Santa with the Maritsa East 1 Substation. Construction on the Bulgarian side was completed in November 2021. Construction on the Greek territory is expected to start in May 2022, with completion scheduled for early 2023.
2. Greece-Italy: In May 2021 an Agreement on Terms of Reference was signed between the two Operators for the preparation of a Feasibility Study concerning a new subsea interconnection between Greece and Italy that will allow an increase of 500-1000MW of capacity between the existing systems. The most suitable and techno-economically optimal solution will be decided on the basis of the evaluation of the results by the two Operators (IPTO and TERNA).
3. Greece-Albania: The Operators of the two countries are exploring the design of a new 400kV interconnector between the southern transmission System of the neighbouring country and a suitable Ultra High Voltage Centre in the Greek System. For this purpose, a joint working group is to be set up to evaluate the available alternatives.
4. Greece-North Macedonia: The upgrade of the existing 400kV Meliti-Bitola interconnection has been resubmitted to the European Ten-Year Network Development Plan (TYNDP) 2020 as a project under consideration, while the feasibility of the implementation of this interconnection will be examined in the near future in

a joint working group of IPTO and MEPSO that has been set up for this purpose.

5. Greece-Egypt: In October 2021, a Memorandum of Cooperation was signed between the two countries under which a high-level working group was established, with the participation of representatives of the two ministries, the transmission System Operators and regulatory authorities, to 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 followed in the near future by the establishment of a joint technical committee composed of executives of the two Transmission System Operators (IPTO and EETC) for the preparation of the relevant feasibility study.
6. Greece-Cyprus-Israel: Equally important are the steps taken for the realisation of the Greece-Cyprus-Israel electricity interconnection. In 2021, IPTO and the Euroasia Interconnector implementing agency signed a contract specifying the support of the Operator to ensure the technical and operational adequacy of the new interconnection. At the same time, IPTO's further participation in this major energy project is under consideration.

# ENERGY TRANSITION

As climate change consequences become visible through the increasing occurrence of severe weather events, the need to shield the country from such devastating effects seems more urgent than ever.

IPTO's role is important both in the context of climate change adaptation actions, through the maintenance and renewal of assets and the improvement of the Transmission System's resilience, and with regard to climate change mitigation actions, being the implementing agency of the country's major interconnections, which will allow the acceleration of the energy transition to a low-carbon economy through the increased penetration of renewable energy sources.

According to the National Energy and Climate Plan, the country aims to drastically reduce greenhouse gas emissions in order to achieve a national transition to a climate-neutral economy by 2050.

**Increasing RES integration**

An important factor in reducing carbon emissions at the national level is increasing the integration of renewables into the energy mix. Being the implementing agency of the country's major interconnections, IPTO is paving the way for green investments and increasing the integration of RES in the HETS, with many significant benefits for society, the environment and the economy.

In particular, through interconnections and the increased integration of RES, energy production costs are reduced, carbon intensity is reduced (decarbonization), the country's energy security is improved, and the burden on the atmosphere is reduced, locally and more broadly through the reduction of air pollution due to the burning of fossil fuels.

As shown in the chart below, the new installed RES capacity in the HETS has been increasing in recent years, reaching 1,043MW in 2021. Also, in 2021, 316MW of new renewable energy projects became commercially operational.

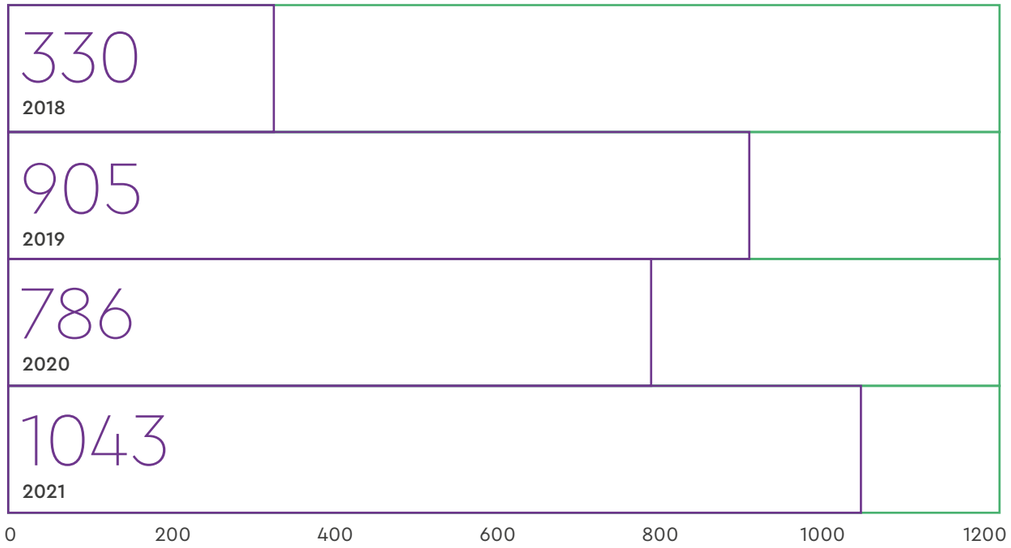


New installed RES capacity (MW) in the Interconnected System

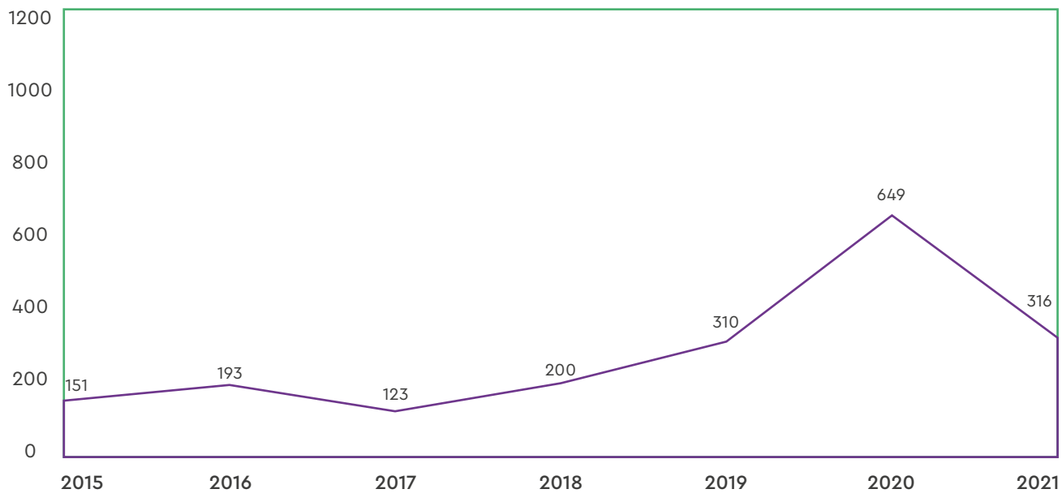
| Year | Wind | Photovoltaics | SHP* | Biomass | Co-production | Total |
|---|---|---|---|---|---|---|
| **2019** | 746 | 149 | 1 | 5 | 4 | 905 |
| **2020** | 430 | 343 | 3 | 8 | 2 | 786 |
| **2021** | 528 | 497 | 5 | 13 | 0 | 1,043 |

* Small hydroelectric power stations

**New installed RES capacity (MW) in the Interconnected System**




**Outset of commercial operation of RES***




*Wind, photovoltaic and hydroelectricity up to 15MW

In order to combat climate change, increase the country's energy security and reduce energy production costs, the restructuring of the country's energy mix by 2030 and increasing the share of renewable energy sources to at least 35% of total gross final energy consumption is foreseen. To achieve this objective, the National Energy and Climate Plan foresees a radical transformation of the electricity sector, with RES replacing fossil fuels, accounting for more than 60% of gross final electricity consumption.

The rapid penetration of renewables in electricity generation expected by 2030 is shown in the table below:

Evolution of installed RES capacity for electricity generation until 2030, according to the National Energy and Climate Plan

| Power Generation-Installed Capacity (GW) | 2022 | 2025 | 2027 | 2030 |
|---|---|---|---|---|
| Biomass & Biogas | 0.09 | 0.12 | 0.23 | 0.32 |
| Hydroelectric (incl. mixed pumped) | 3.66 | 3.72 | 3.83 | 3.86 |
| Wind | 3.19 | 4.04 | 5.16 | 6.62 |
| Photovoltaics | 4.38 | 5.33 | 5.81 | 6.76 |
| Solar thermal stations | 0.00 | 0.07 | 0.07 | 0.07 |
| Geothermal energy | 0.00 | 0.00 | 0.03 | 0.08 |
| **Total** | **11.33** | **13.29** | **15.14** | **17.71** |

An important priority of the Ten-Year Development Plan is the interconnection of the Aegean islands with the Mainland System. These interconnections will address their electrical isolation, increase supply reliability, reduce energy generation costs and thus PUs costs, protect the environment and exploit the high potential of RES. At the same time, the end of the "electrical isolation" of the Aegean islands increases the size of the domestic electricity market.

IPTO's role today is crucial for the implementation of these plans and objectives and will continue to be in the future to an even greater extent.

**Affordable energy for all**

Another benefit for consumers resulting from the implementation of the interconnections and the development of the Transmission System is the reduction of energy costs, compared to the energy costs that consumers would have paid without the 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 development of free competition, among other things, energy costs are reduced, making it not only affordable but also clean. An illustrative example is the savings of €550 million per year through the reduction of PUs costs in all consumers' electricity bills in the country from the first full year of operation of the two electricity interconnections in Crete (2024).



We show the utmost respect for the natural environment and the local communities by minimizing the impact and disturbance resulting from our projects

# "TARGET MODEL"

IPTO plays a leading role in the function of the electricity market which is fully compliant with the European "Target Model". In 2021 it successfully managed and operated the Balancing Market and other key processes of the electricity market overall, such as the calculation and allocation of long-term interconnection capacity and the long-term allocation of capacity in the Next Day Market and the 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 for more efficient integration of new technologies into the market, such as RES, demand response and storage.

The information systems supporting the operation of the electricity market pertain to 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). They are continuously upgraded and improved in order to incorporate the constantly emerging needs of the market and its participants.

Important milestones achieved in 2021 are the following:

- **Market participation of Crete**

The connection of the largest Greek island, Crete, to the HETS through the new interconnection between Crete and the Peloponnese was successfully completed on 3 July 2021. Following this great success, the System of Crete participates in the electricity markets. The transmission of electricity through the new interconnection contributes to the normalisation of electricity supply and the improvement of the quality of life of the residents and visitors of Crete, ensuring stable, cheap and green electricity supply while promoting further penetration of RES.

- **Integration of the Greek market with European markets**

Two important milestones were achieved in 2021 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.

## Participation in the International Grid Control Cooperation, a European platform

In July 2021, another successful coupling of the Greek market with the neighbouring markets took place through IPTO's participation in the International Grid Control Cooperation (IGCC), a European platform for operating the imbalance netting process. This platform of cooperation between ENTSO-E-member operators aims at preventing simultaneous activation of automatic Frequency Restoration Reserves (aFRR) in opposite directions between neighbouring Operators. This is achieved through an imbalance netting process in a Load-Frequency Control (LFC) area, taking into account the available transfer capacity (ATC) at each interconnection, the respective area control errors, as well as the activated automatic Frequency Restoration Reserve. Imbalance netting allows IGCC participating Operators to restrict balancing energy activation and increase the security of their system.

The IGCC cooperation platform was first put to implementation in 2011 among the German Operators and has since been continuously developing, currently listing nineteen Operators as operational members, which carry out the imbalance netting process in a coordinated manner. The platform was selected in February 2016 by ENTSO-E as the European Platform for the Imbalance Netting Process (IN-Platform), as defined by the Electricity Balancing Guideline (EBGL Article 22).

- **Day-ahead market coupling through the Greece-Bulgaria interconnection and intraday market coupling through the interconnection of Greece, Italy and Slovenia**

The second day-ahead market coupling through the Greece-Bulgaria interconnection was achieved in May 2021, following the coupling through the Greece-Bulgaria interconnection in December 2020. These couplings facilitate cross-border trade, optimal capacity allocation and congestion management towards an integrated electricity market in the European Union.

The interconnection of Greece's intraday electricity market with the markets of Italy and Slovenia was successfully completed in September 2021. The Complementary Regional Intraday Auctions (CRIDAs) at the Greece-Italy and Italy-Slovenia borders mark another milestone in the integration of the European electricity market, following the Greece-Italy next day and preday market couplings on 15 December 2020.

The coupling of intraday markets has been the outcome of the intensive cooperation among the Operators of Greece (IPTO), Italy (TERNA) and Slovenia (ELES), as well as of their energy exchanges (HEnEx, GME and BSP, respectively), in compliance with the EU Regulation on Capacity Allocation & Congestion Management (CACM).

These auctions are conducted on a daily basis and are expected to enhance the liquidity of the intraday market and provide additional balancing tools for participants in the Greek electricity market.

The next milestone in the convergence of domestic and neighbouring electricity markets is the launch of the Cross-border Intraday Auctions (XBID) at the Greek-Italian and Greek-Bulgarian borders in 2022.

## Commercial operation of the new Southeast Electricity Network Coordination Centre in Thessaloniki

On 1 July 2021, the commercial operation of the SEleNe CC Regional Energy Centre began in Thessaloniki. It is one of the six Regional Security Coordinators currently operating on the European continent established in the summer of 2020 by the System Operators of Greece (IPTO), Bulgaria (ESO-EAD), Italy (Terna) and Romania (Transelectrica).

SEleNe CC provides advisory services to its shareholder-Operators with the aim of coordinating and harmoniously operating the Transmission Systems of the region. The new SEleNe CC Regional Centre, provides services aiming at:

- the development of a common network model,
- the coordination of operational security,
- the coordinated calculation of interconnection capacity,
- the coordination of maintenance planning,
- the assessment of the short-term adequacy of the region's Transmission System.

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. Its operation is an important step towards the region's alignment with the EU's third energy package. In the context of the Clean Energy Package (CEP), in July 2022, SEleNe CC will become a "Regional Coordination Centre" (RCC) with increased obligations and responsibilities. The necessary preparations for this transition have already started.

# ENERGY MIX DETERMINATION

Electricity transmission from producers to consumers requires the smooth cooperation between power grids of different voltage levels. This is achieved through using appropriate grid control and management tools, as well as market mechanisms that have a regulatory impact on the System. Thus, System operation and monitoring is implemented according to solutions drawn from the electricity market and based on technical and financial offers that are then applied in real time mainly by the National Energy Control Centre and the three 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 as 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.
- Specific circumstances (e.g., the development and implementation of financial mechanisms).
- Population growth.
- The implementation of governmental policies, such as energy saving, energy efficiency improvement of buildings, etc.

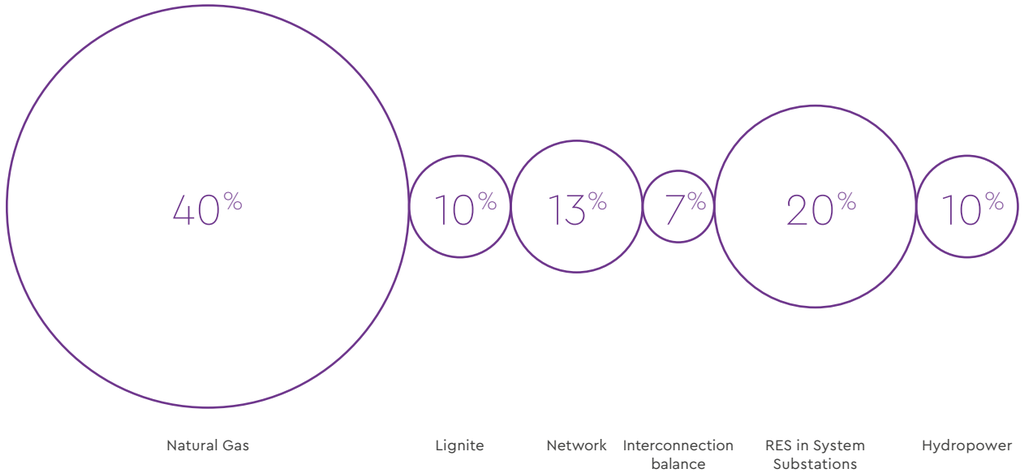
The Operational Planning procedures aim at planning the safe operation of the HETS. Its basic procedures include the outage planning concerning the interconnections and main elements of the HETS, as well as the Generation Units, in order to ensure the uninterrupted supply of electricity to the country and the reliable operation of the HETS.

Moreover, the analysis of the control area's capacity adequacy and reserve margin, the creation of the Individual Grid Model to reflect 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 traded in 2021, according to the data reported in the "Monthly Energy Report (December 2021)", amounts to 52,411GWh, of which 45,669GWh were traded through the Transmission System. The remaining 6,742GWh concerned production on the Network (from photovoltaics, biogas, small hydropower plants and high-efficiency combined heat-power units).

The figure below shows the distribution of electricity production from different fuel sources for 2021. As shown, in 2021 the production share from RES and the Network slightly increased (to 33% cumulatively from 29% in 2020) and the share of lignite production remained approximately the same (at 10% from 11% in 2020).

**Production estimate & interconnection balance (GWh)**




Demand in non-interconnected islands is not included.
Production refers to the injection point in the System.
Production in the Network is derived from certified measurements for Medium Voltage and estimates for Low Voltage.
Interconnection balance is included when it indicates imports.

# THE HELLENIC ELECTRICITY TRANSMISSION SYSTEM - ASSET MANAGEMENT

IPTO's objective is to operate and preserve its assets in accordance with the principles of sustainability, operational efficiency, quality and safety, optimising at the same time investment returns in order to create value for its stakeholders.

In this context, a structured approach is applied, based on best practices covering the entire lifecycle of an infrastructure, taking into account the costs and potential risks involved. At the same time, financial and technical aspects are combined with the management of all the phases that constitute the lifecycle of an asset: design, construction, commissioning, monitoring, maintenance, repair/replacement, shutdown and finally decommissioning.

The HETS consists of the Interconnected System of the country's mainland and the interconnected islands at high (150kV and 66kV) and Ultra-high (400kV) voltage levels. 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 development planning.

The basic HETS equipment data, as of 31.12.2021, are described in the following table:

Transmission System Equipment

| Transmission Lines (km) | | Total |
|---|---|---|
| Overhead | 11,732 | |
| Submarine | 1,045 | **13,175** |
| Underground | 398 | |

| Substations with IPTO fixed assets (number) | | Total |
|---|---|---|
| Converter | 378 | **386** |
| Link | 8 | |

| IPTO Transformers | Total |
|---|---|
| Number | 69 |
| Power (MVA) | 17,805 |

| Connected User Transformers | Total |
|---|---|
| Number | 785 |
| Power (MVA) | 43,558 |



The main objective of IPTO's Asset Management Department (AMD), which is responsible for the optimal management of the fixed assets of the Electricity Transmission System, is to maintain a healthy, strong and cost-effective power network infrastructure. To this end it conducts inspections and submits proposals for the improvement of scheduled maintenance and has also assumed the planning for the renewal of electromechanical equipment on the basis of available data concerning the condition and lifecycle of fixed assets.

In this context, the AMD coordinates the five-year plan for the renewal and modernisation of the Transmission System's equipment and facilities and implements major projects throughout the country as part of the Ten-Year Development Plan.

**Asset renewal programme**

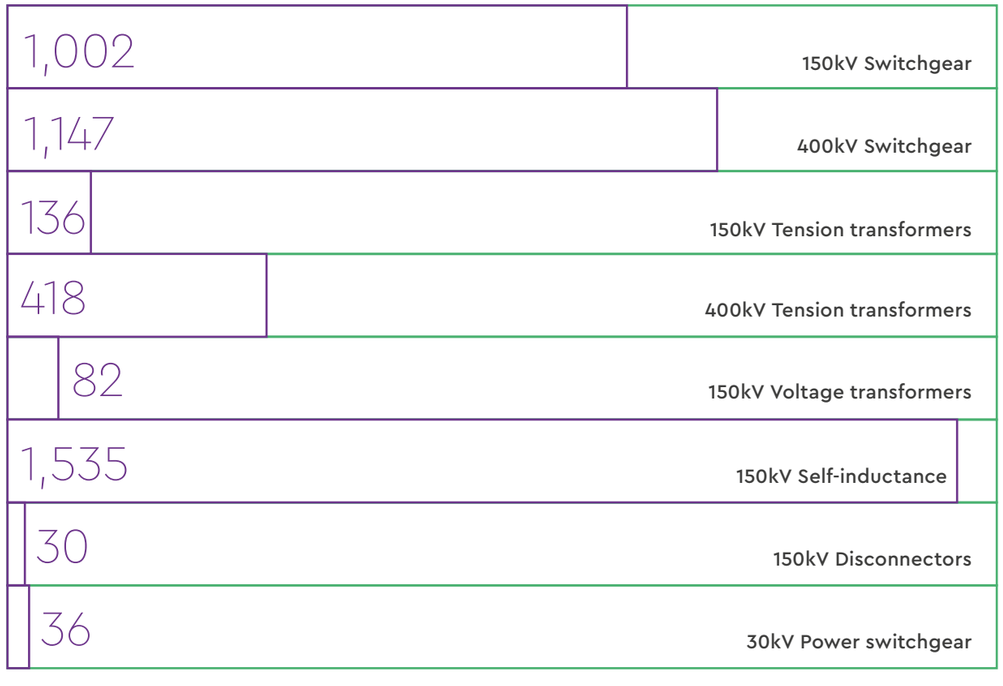
The technological upgrade and modernisation of the System, aiming to ensure the System's adequacy, security, stability and reliability, constitutes one of the main pillars of IPTO's strategy as a modern Operator. The fact that the System as a whole is changing and the network is growing creates new technological requirements. At the same time the increasingly frequent challenges posed by the climate crisis stress the need to accelerate and expand equipment renewal. in order to avoid power supply issues, it is important to properly renew and technologically update even minor System elements.

For the first time in 2018, IPTO started planning and implementing, in an organised manner, a renovation programme to supply the HETS with newer and cutting-edge technology equipment of high operational efficiency and low periodic maintenance costs to be completed by 2022. This planning takes into account a number of changing parameters, including climate, as the occurrence of extreme weather events is now increasingly common in our country. In addition, the new asset renewal plan also takes into account cybersecurity, as the Company's digital transformation is underway.

Responding effectively to the growing need to shield the Transmission System, in early 2021 IPTO established a committee of experienced executives to formulate a comprehensive renewal program that will extend until 2026, increasing the initial budget of the Plan from €80 million to €200 million. This program included critical equipment over 24 years old and scheduled replacements for the years 2023-2026 with the aim of distributing them evenly across the interconnected System, giving priority to the maintenance programme over the replacement programme.

During 2021, an extensive programme of equipment replacements was implemented throughout the country, in addition to maintenance works, equipment repairs due to breakdowns and the commissioning of new works. The total costs of replacements amounted to €4.4 million and was divided into the following items:

**Cost (EUR thousand) of equipment replacements carried out in 2021**




Similarly, the breakdown of expenditure for the four-year period 2018-2021 is shown below:

**Expenses distribution for equipment replacements (20218-2022) in thousand euros**




**Establishment of an Asset Performance Management System**

IPTO is already at the stage of preparing computer-system specifications for a new Asset Performance Management System (APMS) to achieve optimal asset management through inspecting and evaluating the condition of its assets allowing at the same time the timely implementation of preventive actions against errors, therefore significantly enhancing the System's security and efficiency.

The APMS combined with an Online Condition Monitoring system aims to a transition from Time-Based Maintenance to Condition-Based Maintenance.

The specifications for the procurement, development and operation of an integrated APMS will be completed by the end of the third quarter of 2022. The project is expected to launch in the third quarter of 2022. The new Asset Performance Management System will be provided by the existing GIS system, the new EAM (Enterprise Asset Management) system and operational data so as to track assets in real-time and provide highly accurate results.

# PROJECT QUALITY

The quality of its projects and adherence to schedules is a very important parameter, given the crucial importance of the infrastructure that IPTO designs and materialises. In this context, IPTO takes special care to ensure that they are completed within the required timeframes and according to quality standards in order to meet national and local needs, thus decisively contributing to the implementation of the national plan for the transition to a low-carbon economy.

Specifically, the new 2023-2032 TYDP will include an overview of the System's projects as well as any changes in their progress compared to the previous TYDP. The projects will be presented in groups of sub-projects that serve common objectives.

This classification will be useful for a number of reasons, including the following:

Better oversight of planned projects and their achieved objectives

Better planning to launch relevant licensing procedures

Clear picture of the difficulties and costs to achieve each specific objective during project implementation

Also, according to the new TYDP, detailed implementation timetables will be provided for the first time in addition to detailed descriptions and information on all System development projects.

# DIGITAL TRANSFORMATION

Over the last five years, IPTO has been undergoing a Digital Transformation leading the transformation of systems, processes, people and, subsequently, of the company's actual identity.

Some important actions taken by IPTO in the field of Information and Communication Technology (ICT) 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 which is essential for communication between the HETS elements (ECCs, HVCs, Substations). This action is realised in synergy with the extension of the company's fibre optic network through the overland and submarine electrical interconnections.

Implementation of the Market Reform Plan also for the interconnection with the European market balancing platforms.

Development of the most modern cloud-based systems both for the coverage of the Company's business operations and for the optimal management and maintenance of its electrical assets, which constitute the country's critical infrastructure. IPTO's strategic objective is the transition from Time-Based Maintenance to Condition-Based Maintenance.

Teleworking and Work-From-Anywhere enabling the Company to operate without any malfunctioning during the pandemic.

At the same time, 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, a report generation system and a personalized User Dashboard with multiple graphs on the home page
- Inclusion of both internal and external signatures in any document workflow. Users may digitally sign any circulating document in any way (DocuSign internal signatures, external signatures).
- Maximisation of security and confidentiality of exchanged data. 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) that had circulated via IDocs.



According to the plan that has been set up, the following actions are expected to be implemented during 2022-2023:

**Access from everywhere:** Secure internet access without VPN and use from any desktop or mobile device.

**Full access control activation:** and new user and administrator roles and rights in accordance with Divisions' requirements and digital security rules.

**Document Classification/ Metadata:** (the matching of documents with categories and keywords for classification purposes and easier retrieval).

**Document Content Search:** by adopting PDF/A (searchable PDF document) format for all documents (for quick document content search).

**Digitisation/Incoming documents:** directly via DFS.

## Digital Map of Transmission Towers

The mapping and integration of the geographic coordinates of the transmission towers into the GIS system was completed in 2021. This way IPTO establishes its assets, such as transmission towers and their land parcels, which now comply with the specifications set by the National Cadastre.

In addition, the following objectives remain to be achieved in the next three years:

- The first large-scale inspection of transmission lines using a combination of manned and unmanned aerial means and technologies, such as LiDAR, multi-spectral cameras, optical and infrared cameras due to vegetation and for work management purposes, pilot use of satellite data, digital terrain modelling and preventive maintenance.
- The upgrade of the HETS GIS platform through the fibre optic networks and state-of-the-art functionalities.
- The coordination of a comprehensive renovation plan for the HETS by 2026, which will modernise equipment and ensure network reliability.

# CYBERSECURITY

Digital transformation underway in recent years in the energy sector and the global economy has led IPTO into digitising its operations and services and, consequently, leading the digital transformation of the entire country. In 2021 IPTO developed a cybersecurity strategy and adopted Zero Trust Architecture to protect itself from upcoming digital challenges and threats, mostly from organised crime and third-party states. In addition, it has been designing a Security Operations Centre (SOC), which will become a model for the entire public sector, based on artificial intelligence and machine learning.

**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 model in cybersecurity for the country's critical infrastructure and establish itself as the Cybersecurity Critical Hub 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 national but also at international level. Moreover, IPTO's Security Operations Centre will be structured in such a way that it may be expanded in order to provide high quality security incident response services to the entire public sector. The key principles around which IPTO's cybersecurity strategy is structured are the following:

**Safety by design.** Governance and cybersecurity risk management are monitored and handled on an ongoing basis.

**In-depth defence.** Creation of layered protection and adoption of zero trust architecture to ensure IPTO's infrastructure resilience.

**Cutting-edge technology.** Machine learning, behavioural models and artificial intelligence shall form the basis of the Centre's cyber defence.

**Development of a Security Management System.** In line with ISO-27001, the international information security standard, and ISO 27019, the specialised energy utility information security standard.

**Cybersecurity Awareness-Raising.** Aiming at all employees concerning cybersecurity issues and managing digital threats both in the workplace and in their personal online activity.



Over the last five years, IPTO has been undergoing a Digital Transition leading the transformation of systems, processes, people and, subsequently, of the company's actual identity.

The challenges of securing industrial control systems against cyber threats continue to top the Information and Network Security Manager's daily list. Despite constant caution from those responsible in the field, business operations are increasingly at risk, mainly due to the growing number of new intrusion strategies, which are actually constantly evolving, intensifying the severity of threats. Attacks on critical infrastructure, such as power plants, factories, water treatment systems, petroleum facilities and traffic control systems, may impact national security, cause economic losses or damage the organisation's reputation.

2021 brought an additional challenge in addressing such risks due to the pandemic, exemplified by the number of employees working from home and, thus, the adoption of all the new technologies for remote working.

From the above, it is clear that IPTO's cybersecurity strategy is not based on vague and general principles. On the contrary, it has been based on:

- Στις νέες τεχνολογίες 5G και Intenet of Things (IoT)
- The new 5G and Internet of Things (IoT) technologies
- The detection and prevention of security incidents based on behavioural analysis
- The use of artificial intelligence technologies
- Safe teleworking due to coronavirus
- Cloud computing security
- The peculiarities of Operational Technology (OT) systems
- The link between Information Technology (IT) and OT environments
- The difference in security culture between IT/OT administrators
- The development of a new security management model based on verification rather than trust (Zero Trust Architecture)
- ISO/IEC 27001, ISO/IEC 27019, the National Cybersecurity Strategy, the Cybersecurity Handbook, the Electricity Subsector Cybersecurity Capability Maturity Model (ES-C2M2)
- The NIS legislative framework

The 12 Pillars of IPTO's Cybersecurity Strategy are illustrated in the table below.

| | | | |
|---|---|---|---|
| 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 | 11 Cyber security audit | 10 Regulatory and legal framework compliance | 12 Disaster recovery and business continuity |



By implementing the cybersecurity project, strengthening IPTO's critical infrastructure and fully deploying solutions/actions, IPTO minimises systemic risk from cyber-attacks. In particular, it has a 14-solution package in regard with security hardware and software, as well as a risk management action package (ERM). At the same time, 100,000-150,000 malicious (and usually dangerous) incoming emails are filtered by our cyber security tools on a daily basis while cyber security systems block any attempt of downloading malicious content even in cases where malicious emails bypass the initial filter.

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

With regard to the general public, the data to be used mainly are these 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 Report data sets
- Data from the imbalance settlement systems and applications in the electricity market

Areas of interest include the Balancing Market, the Transmission System, power production, load data and studies.

The data of the above areas 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 general public).

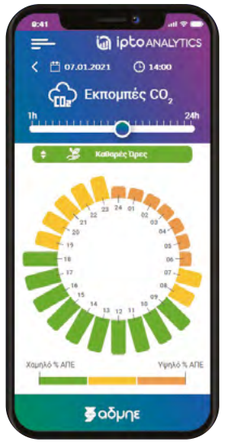
## IPTO Analytics: a new mobile app with live Electricity System Data

The IPTO Analytics application was launched in May 2021. It is IPTO's latest digital communication channel for mobile devices and provides real-time open data in regard with the Hellenic Electricity Transmission System in a clear and understandable manner. Utilising interactive graphs and maps that are updated in real time, the application provides immediate and live information on key power system parameters such as electricity demand, the electricity production mix and interconnection balance. With this new digital communication channel, IPTO takes another decisive step towards energy democracy and transparency by providing open data on national electricity transmission.

In November 2021, IPTO upgraded the application in order to better inform citizens on the progress of the energy transition. The new version of the application integrates data in schematics concerning the energy mix using $CO_2$ emission indicators that are updated in real time so that stakeholders are informed about:

- the $CO_2$ Emission Intensity Indicator depending on the power production mix
- Zero $CO_2$ emissions, i.e., the percentage of the energy mix that does not pollute the environment with $CO_2$ emissions
- the Clean Hours by displaying RES contribution in the energy mix for each hour of the day via the clean energy daisy.






IPTO Analytics, along with its additional functionalities, becomes a reference point for raising awareness and educating citizens on green energy consumption and addressing the climate crisis. In this way, IPTO contributes to raising awareness on climate change and the progress of the energy transition in a more comprehensive way and takes active part in the digital transformation of the energy sector.



# RESEARCH & DEVELOPMENT

The rapidly evolving energy reality that has been taking shape recently highlights the importance of investing in Research and Development.

IPTO, through the Research, Technology and Development Department (T&D) established in 2014, is today one of the most active TSOs at European level, participating in consortia and in a continuously increasing number of proposals for European projects.

In particular, IPTO participates in European consortia, transferring the necessary know-how and experience gained from the above projects in this transitional period for the Greek and European Energy System, contributing to the application of new methods and technologies. In this context, it has been actively participating for the last 7 years in the drafting of the ENTSO-E Research and Innovation Roadmap (R&I Roadmap) in the RDIP and Flexibility & Markets Working Groups of the ENTSO-E Research, Development and Innovation Committee (RDIC).

IPTO's priorities include the linkage of the Company's Research and Innovation with Universities and Research Institutions and the acquisition of further expertise in areas such as flexibility, storage, digitalisation and smart management of the Transmission System assets. 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 in line with the objectives of the revised NECP, ENTSO-E's respective reports and position papers and the relevant EU legislation (Green Deal, Fit-for-55) concerning the decarbonisation of the EU energy system. To this end, IPTO participates in numerous proposals for research projects at European and national level. As a result, in 2021, IPTO actively participated in eleven Horizon 2020 Research Programmes, as well as in a research collaboration with the European Space Agency (ESA). The results of the research projects are oriented towards solving existing operational, functional and strategic problems of the TSOs in view of the above-mentioned energy challenges they face.

It is worth noting that the participation of IPTO in the above research projects requires active involvement in working groups undertaking specific studies and applications by taking part in projects, conferences, and drafting/contributing to deliverables, as defined by each project. In addition, IPTO participates in pilot projects demonstrating how research outcomes may be applied, such as the Active Power Flow Controller tests conducted at the Nea Santa HVC while the application of other innovative technologies (e.g., Dynamic Line Rating, Wide Area Monitoring and Control, 5G, Software Define Networking) remains in progress.

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 facilities in order to explore the possibilities of providing ancillary services (e.g., smoothing, congestion management, etc.) to the Electricity Transmission System.

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

In 2021, IPTO participated in the following research projects in total:

**Flexitranstore:**
The project aims to contribute to the evolution towards a pan-European transmission network with high flexibility and high interconnection levels and 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 aims at deploying a set of technological solutions that offer Transmission System Operators greater flexibility and resilience with a focus on interconnections at the regional level (South-East Europe).

**Easy RES:**
The project aims to address challenges for the safe and efficient operation of the electricity grids which stem from the increasingly dynamic penetration of RES in the System by developing new methods for the control of inverter-based distributed generation, which will allow producers to contribute to the stability of the grid.

**CoordiNet:**
The project aims at highlighting how electricity transmission and distribution systems may cooperate in order to provide reliable and efficient services (voltage control, congestion management) to the benefit of the end-consumer through 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 renewables. The CoordiNet platform has been piloted in two regions of the HETS: Kefalonia and Mesogeia.

**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 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.



IPTO will lead the project on Energy and Factories of the Future and will participate in demonstration activities, including high-voltage substations and electrically powered trains. Specifically, IPTO will participate in the consolidation, validation and field testing in regard with 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.

**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 such as Dynamic Line Rating, SSSC, WAMS using PMUs etc.

**Smart5Grid:**
The project aims 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.

In the framework of the Smart5Grid research project, PMUs are to be installed at the IPTO substations of Lagadas and Blagoevgrad to monitor the interconnection between Greece and Bulgaria.

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

**Electron:**
The project aims at creating an innovative platform to enhance resilience of the Transmission System against cyber-attacks, detection and prevention, minimise failures, etc.

**Synergy:**
The project aims to create an Energy Data Space through which a large amount of data from the different participants of an integrated energy system will be moved and processed. In the SYNERGY project, IPTO will serve as an end-user in order to bring out big data management and analytics services to the industry, such as smart asset management, preventive maintenance, data analytics, etc.

IPTO plays a significant role for the sustainable development of the country by contributing to the energy transition, energy safety and infrastructure resilience.

### 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 ESA satellites can provide monitoring services to the European Transmission Systems. The areas of interest are vegetation management on transmission lines, disaster and weather risk management services by early and over-limit warning systems.

### Energy storage

Another dynamic field of action in our country is energy storage. IPTO plans to actively contribute to the transition towards a cleaner energy mix that makes the most of stochastic generation sources.

IPTO has participated in the Project Management Team of the Ministry of the Environment and Energy tasked to formulate the institutional and regulatory framework for the development and participation of storage units in the electricity markets by setting out the Technical Requirements for Electricity Storage Units as well as the Procedures for the Connection of Electricity Storage Units to the Transmission System. In addition, the IPTO's new Ten-Year Development Plan (2022-2031) also includes a proposal for pilot projects concerning the installation of storage systems on Naxos, with a capacity of 7-10MW, and also in the region of Central Greece, where storage projects will contribute decisively to the management of local congestion due to the high penetration of RES.



### Cooperation agreement for the installation of a pilot storage station

In March 2021, IPTO and SUNLIGHT, member of the Olympia Group, announced their cooperation agreement for the installation of a pilot storage station at IPTO's substation in Thebes.
The purpose of the new installation with a total capacity of 20MW and a storage capacity of 20MWh is to upgrade the Transmission System at local level and increase its capacity in order to integrate new RES units without having to build a new 150kV transmission line. The High Voltage Substation of Thebes was chosen as the location of the pilot plant since the regional unit of Boeotia has high installed capacity of both thermal and RES plants.

### Innovation competition for the employees of IPTO

As part of the IPTO Innovation Challenge action plan, in January 2021, the teams that qualified for the next stage were announced and seminars were held for all teams that participated on the following topics:

- Lean start-up methodology
- Intrapreneurship business model canvas
- Innovation management
- Concept presentation techniques
- Business planning

Between February and March, consultation sessions gave the opportunity to the teams to shape their presentations. However, although not all teams made a final presentation at the Demo Day, the ideas and work done will be put to use for the creation of an innovation hub for IPTO. This hub will aim to establish synergies with institutions (universities, start-ups, etc), consolidate Innovation Challenge and adopt a new programme to attract talented scientists with little experience.

# 4. ENVIRONMENTAL FOOTPRINT

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES

13 CLIMATE ACTION

15 LIFE ON LAND

We seek to continue reducing our carbon footprint by recording $CO_2$ emissions.

31
electric vehicles and

36
electric vehicle chargers during the period 2019-2021

8%
reduction in electricity consumption in the two main buildings in 2021 compared to 2020

# ENERGY CONSUMPTION AND $CO_2$ EMISSIONS

We seek to further improve our environmental performance by reducing our energy and carbon footprint both in our operations and in the projects we implement.

To this end, in addition to increasing interconnections and integrating RES into the country's energy mix, we apply practices to reduce the environmental impact of our activities to the minimum possible.

## Energy consumption

Energy consumption in 2021 relating to building infrastructure, the company's vehicles and works machinery is summarized in the table below:

Total energy consumption per fuel type (2021)

| | | |
|---|---|---|
| Electricity consumption | 8.474 (MWh) | 30.507 GJ |
| Heating oil consumption | 39.129 (lt) | 1.675 GJ |
| Gas consumption | 785 (MWh) | 2.826 GJ |
| Petrol (machinery) | 8.205 (lt) | 351 GJ |
| Petrol (vehicles) | 124.507 (lt) | 5.328 GJ |
| Diesel (machinery) | 738.217 (lt) | 31.596 GJ |
| Diesel (vehicles) | 58.404 (lt) | 2.500 GJ |
| **TOTAL** | | **74.782 GJ** |

* Conversion factors by National Inventory Report, Greece, 2022 (petrol: 42,79 MJ/L, diesel: 42,8 MJ/L)

Taking into account that the estimate for the total production and balance of imports-exports that was traded in 2021 according to the data presented in the «Monthly Bulletin of Energy" (December 2021), stands at 52,411GWh, the energy intensity consumed in GJ per GWh of energy produced equals 1.4GJ /GWh.

## Energy consumption and energy efficiency improvements in the central administration buildings

In 2021, electricity consumption was reduced by 8% compared to the previous year in the Company's two administration buildings in Attica.



| **Total energy consumption in the two main buildings** | **2019** | **2020** | **2021** |
|---|---|---|---|
| Electricity consumption (MWh) | 2,343 | 3,176 | 2,918 |
| Diesel consumption (L) | 5,000 | 27,091 | 34,183 |
| Gas consumption (MWh) | 584 | 664 | 785 |

| **Total water consumption in the two main buildings** | **2019** | **2020** | **2021** |
|---|---|---|---|
| Water consumption (L) | 5,955 | 4,580 | 5,260 |

It is noted that the increase in energy consumption between 2019 and 2021 is due to the fact that one of the two central administration buildings started operating in August 2019. This means that it was used as office space only for 5 months in 2019. Therefore, the consumption value for 2019 does not reflect consumption for a complete 12-month operation of both buildings.

As regards the reduction in energy consumption from 2020 to 2021 it is due to certain initiatives taken by the Company to increase energy efficiency in the two main buildings. In particular, last year an energy audit was carried out by an external partner to investigate the energy efficiency of the two buildings and to assess energy and economic savings from future interventions.

Following the results of the Energy Upgrade Report, the Company is in the process of seeking investment programmes to upgrade energy efficiency in the two buildings through co-financed programmes by the NSRF and the Government for the implementation of the interventions. The most crucial interventions that have 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 (planned)
- Creation of a planted roof (planned)
- Upgrade of the existing Building Management System (BMS) (planned)

**Dyrrachiou Street Building**

- Replacement of three central cooling units with units of higher energy efficiency and lower primary energy consumption (completed)
- Installation of a BMS system (planned)
- Replacement/installation of thermal insulation and waterproofing (in progress)

## Vehicle fleet energy consumption and its electrification

In order to reduce energy consumption for its fleet vehicles, IPTO has replaced old technology vehicles with new lower- consumption and emission vehicles while it has also been investing in electric vehicles with near-zero $CO_2$ emissions. IPTO has been adding electric vehicles in its fleet and increasing the number of charging stations at the Company's premises since 2019.

More specifically, in the context of this initiative, in 2021 the Company expanded its fleet by proceeding with the procurement of 9 pure electric vehicles. In total, during the three-year period 2019-2021, 31 electric passenger vehicles with near-zero emissions joined the IPTO Group fleet. In addition, the Company also proceeded with the installation of 9 new charging stations on its premises, bringing their total number to 36.

IPTO was one of the first public sector entities to be harmonized with the new legislative framework of the Greek Government introducing mandatory quotas for the procurement of clean vehicles from August 2021, as well as mandatory siting for the installation and operation of electric vehicle charging infrastructure from January 2022.

Vehicles: Consumption by fuel type

| | 2019 | | 2020 | | 2021 | |
|---|---|---|---|---|---|---|
| | lt | GJ | lt | GJ | lt | GJ |
| Petrol (unleaded) | 143,355 | 6,134 | 142,160 | 6,083 | 132,307 | 5,661 |
| Diesel | 658,239 | 28,173 | 676,452 | 28,952 | 794,964 | 34,024 |
| LPG (Liquefied Petroleum Gas) | 170,00 | 8 | 0,00 | 0,00 | - | - |
| **Total** | - | **34,315** | - | **35,035** | - | **39,686** |

Conversion factors by National Inventory Report 2022 (petrol: 42,79 MJ/L, diesel 42,8 MJ/lt, LPG: 47,3 TJ/L)

As expected, the increase in the number of electric vehicles has led to a corresponding increase in electricity consumption, while the number of kilometres recorded in 2021 has also increased compared to the previous two years. Another factor that contributed to the increased vehicle use in 2021 was the reduction in telecommuting.

Energy consumption of electric vehicles

| Year | Total kWh | Total km | Average kWh/km |
|---|---|---|---|
| 2019 | 6,410 | 45,461 | 0.141 |
| 2020 | 4,525 | 32,092 | 0.141 |
| **2021** | 33,897 | 225,981 | 0.150 |

Total km are taken from the vehicles' meters and by using an average of kW/km we calculate the total energy consumptions.

## Transmission System losses

Electricity transmission from production points to consumption points, as well as voltage increases and decreases where necessary, naturally result to heat and electromagnetic energy losses that affect the net load. Therefore, it is necessary to generate more electricity than is ultimately used by consumers.

Although IPTO's constant aim remains to minimise losses as much as possible, in reality, the measures that can be taken in this direction are limited. However, the development of the 400kV System in the Peloponnese contributes to limiting the overall System losses. Specifically, System losses for the last three years were 1,089.64GWh (2019), 1,165.14GWh (2020) and 1,382.44GWh (2021), representing 2-3% of the total load transmitted.

In order to reduce load losses, 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 emission inventory

For the first time, IPTO started a process of recording the greenhouse gas emissions resulting from its operation, with the aim of creating an integrated inventory system to control and reduce its emissions.

The GHG emissions inventory conducted concerns direct emissions (Scope 1) as a result of operations, including fossil fuel combustion and fugitive gases, as well as indirect emissions from electricity consumption and transmission System losses (Scope 2).

The inventory was carried out in accordance with the GHG Protocol and ISO 14046-1 Greenhouse Gases - Part 1.

Specifically, the Scope 1 and Scope 2 emissions for 2021 amounted to 566,858 $tCO_2e$.

In particular, 2,677 $tCO_2e$ (0.47%) result from direct emissions (Scope 1), while the largest share, 566,858 $tCO_2e$ (99.53%), comes from indirect emissions (Scope 2), which are due to the losses incurred during the transmission of electricity from the System.

With regard to the emissions classified under Scope 1, the share of emissions due to oil consumption for the vehicle fleet (73.81 %) is also significant.

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

| Source flow | Total emissions ($tCO_2e$) | %/Scope | %/Total |
|---|---|---|---|
| Natural gas (heating) | 142 | 5.30% | 0.02% |
| Heating oil | 103 | 3.85% | 0.02% |
| Diesel (vehicles) | 1.976 | 73.81% | 0.35% |
| Diesel (generator sets) | 3 | 0.11% | 0.00%* |
| Diesel (machinery) | 151 | 5.64% | 0.03% |
| Petrol (vehicles) | 283 | 10.57% | 0.05% |
| Petrol (machinery) | 19 | 0.71% | 0.00%* |
| Scope 1 total | 2,677 | 100.00% | 0.47% |
| Electricity use | 3,437 | 0.61% | 0.60% |
| Electricity transmission losses | 560,744 | 99.39% | 98.54% |
| Scope 2 total | 564,181 | 100.00% | 99.53% |
| **Total emissions (Scope 1 & 2)** | **566,858** | - | **100.00%** |

*Zero percentages are not due to zero consumption but have resulted from very low consumptions that have a minimal effect upon total emissions and when rounded to the second decimal place are shown as 0.00%.

The data collected for this calculation do not include fugitive greenhouse gas emissions contained in air conditioning and refrigeration equipment, which will be included in a later inventory. Also not included are emissions resulting from the use of sulphur hexafluoride, which is used as an electrical insulator and arc suppressant and is considered a significant emission for Transmission Operators. These data gaps are due to the absence of an organised recording system, resulting in incomplete data collection on these emissions. For this reason, IPTO is in the process of creating an integrated data recording system to fully capture its carbon footprint, in order to undertake actions to reduce it.

# WASTE MANAGEMENT AND CIRCULAR ECONOMY

Waste generated and sold is registered in the Electronic Waste Register on an annual basis. The process used until recently is expected to be modernised. In this direction, IPTO has already proceeded with the mapping and assessment of the current situation intending to use the results in designing a modern waste management policy.

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

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

The types of waste managed by IPTO are divided into non-hazardous and hazardous.

**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 during the operation of the Company include:

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

In addition, significant amounts of paper and toner are now being saved due to the digitalisation of IPTO's internal communications aiming to reduce paper consumption to what is absolutely necessary. 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.

### Regeneration of used and degraded oils

Given that insulating oils are considered high-impact waste, in addition to checking for leaks, we have also separated from other materials in order to ensure their proper management.



Putting into practice the principles of circular economy, IPTO continued the regeneration of insulating oils for a second year 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 and fully restores the qualitative and electrical properties of the oil and even the 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 to be put back to our tanks. Our regeneration system, launched in 2020, delivers significant economic and environmental benefits due to the fact that both the disposal and repurchase of at least 50 tonnes of insulating oil is avoided each year.

Materials recycled, recovered or reused in 2021

| **Materials (2021)** | **Quantity (kg)** |
|---|---|
| Mineral oils of all types * | 120,688 |
| Steel of all kinds | 35,660 |
| Mixed metals | 420,490 |
| Electrical and electronic equipment (lamps, monitors, PCs, printers, etc.) | 2,659 |
| Mixed batteries | 192kg |

* Insulating oils for transformers, autotransformers, compensation inductors, metering transformers (voltage, current and combined), which follow international standard IEC 60296 and do not contain PCTs or PCBs.

IPTO shall ensure the minimisation of waste arising from its activities by putting emphasis primarily on prevention and reuse where feasible.

# BIODIVERSITY PROTECTION AND ENVIRONMENTAL RESTORATION

As IPTO's projects do not involve productive activities, they have limited environmental impact and are generally considered "clean".

However, particular attention is paid to both the protection of the environment and the appropriate management of any impact that may arise during our operations. Works during the construction of our projects are carried out in accordance with environmental laws and the requirements of licensing regulations.

In addition, where required, special studies are conducted (specific ecological assessments, bird surveys) also in collaboration with the competent authorities (Ministries, Regions, Forest Authorities, Archaeological Authorities, etc.), all protection protocols on biodiversity and protected areas are followed.

At the same time, IPTO continuously watches the developments in the European legal and institutional framework for the protection of biodiversity so that the relevant environmental studies prepared for the Company's projects are fully harmonized with both the EU and Greek legislation.

## IPTO infrastructure and protected areas

Given the nature of IPTO's activities, the infrastructure it manages extends almost throughout the entire Greek territory. In order to meet energy needs, its wide network includes transmission lines that pass through protected areas. In particular, they pass through 141 of the 446 protected areas of the Natura 2000 network in Greece.

However, despite the fact that the transmission lines 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.

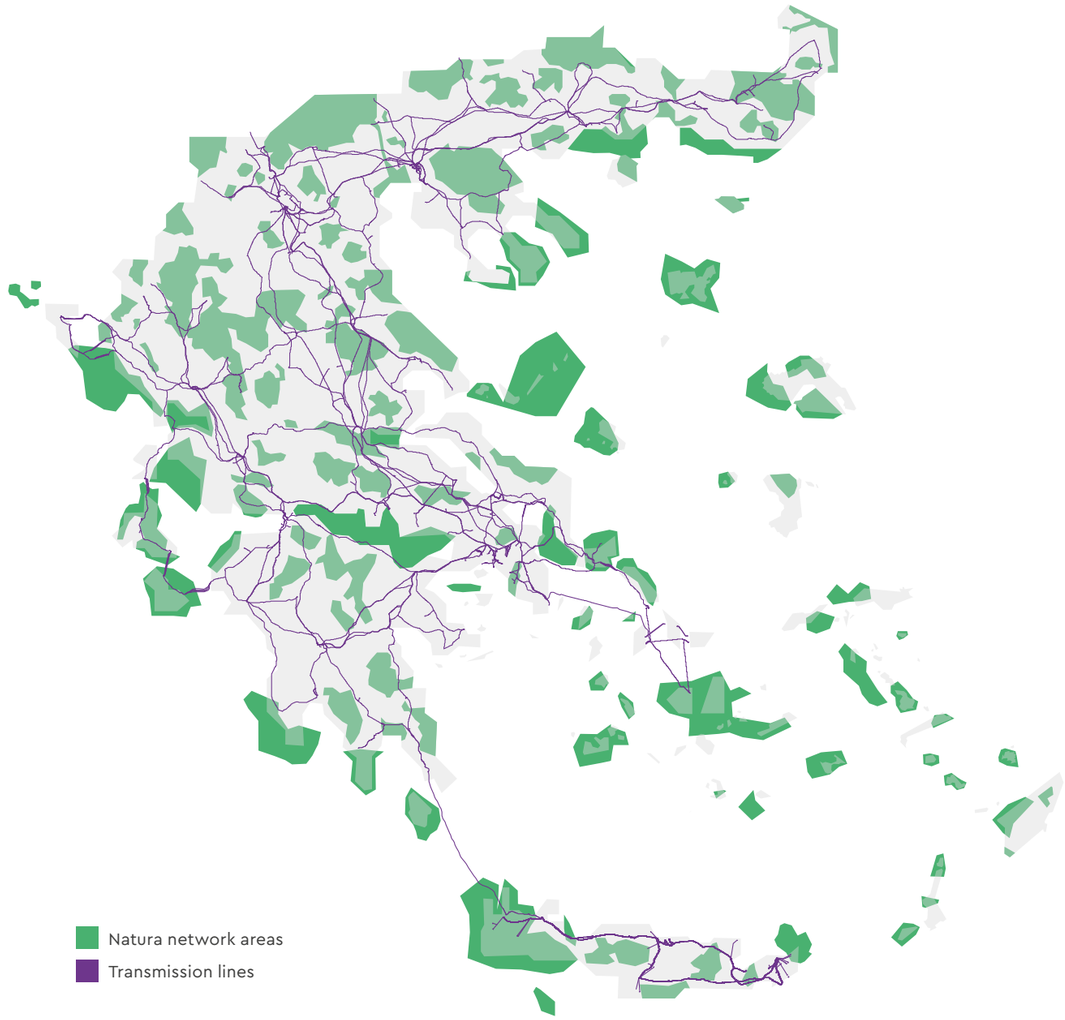
Specifically, NATURA areas are estimated to be covered by the overhead network (66kV, 150kV, 400kV) by 14% (~1,620km), the submarine network by 40% (~420km) and the underground network only by 6% (~24km). Furthermore, the area covered by towers and masts is approximately 740m$^2$ and the area covered by 150kV substations, 400kB HVCs and 66kV Terminal Stations reaches almost 580m$^2$.

Similarly, the majority of substations are located outside protected or high environmental value areas, covering a total area of 192.5km$^2$. In this case, the measures taken to reduce any visual disturbance include vegetation restoration, tree planting or mounding.

Therefore, impacts on biodiversity more likely occur in construction phases rather than during the operation of our infrastructure. Nonetheless, these are basically short-term impacts (lasting only during the construction phase) while balance is restored after the completion of works, either by natural regeneration or after IPTO's well-researched interventions licensed by the appropriate agencies. With regard to long-term impacts due to infrastructure operation, such as noise, electromagnetic radiation and visual/morphology disturbance, IPTO takes mitigation measures that eliminate, prevent or reduce to a very low level a project's potential negative impact.

Protecting ecosystems and restoring the environment where necessary is an important parameter for minimising our environmental footprint.

**The HETS and Natura 2000 areas**



## 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.

### Memorandum of cooperation for the protection of the Bonelli's eagle

To prevent and combat potential threats to the population of the Bonelli's eagle and other birds of prey in the eastern Mediterranean due to the development of electricity transmission networks, IPTO signed a Memorandum of Cooperation with the Ministry of the Environment and Energy as part of the LIFE Bonelli eastMed project.

Although so far there are no reports of incidents of birds of prey colliding with transmission lines, in the framework of this Memorandum, IPTO will investigate the possibility of interaction that its network may have with the Bonelli's eagle population in breeding sites included in the Natura 2000 Network (Special Protection Areas - SPAs) with appropriately marked electricity transmission network cables, at first in south Euboea. Moreover, the undergrounding of part of IPTO's overhead network on Andros, a habitat for the Bonelli's Eagle, is being planned.

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

IPTO has fully integrated environmental protection in its practices, whether it is for maintenance and upgrade projects or new construction projects, following the rules of environmental licensing and all domestic standards as they are mentioned in the environmental legislation.

As part of 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 forest areas, and always in cooperation with the competent forest authority, the local forest authorities and in full compliance with their instructions. The main objective is that IPTO's staff carries out the maintenance work for the uninterrupted and safe operation of the network.



In order to keep the electricity transmission infrastructure secure, the Company contracts for the cleaning of substations and HVCs, vegetation removal around the bases of the pylons, tree pruning/cutting and maintenance/replacement of portable fire extinguishers. Thus, IPTO's premises and facilities in Attica are protected, preventing the possibility of fire ignition and spread while flood control and reforestation works are being carried out.

In more detail, the expenditure incurred over the last five years for the pruning of trees adjacent to overhead networks under our responsibility, as well as for vegetation removal works at substations and ultra-high voltage centres, is shown in the table below.

| Cost of works (€) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| Vegetation removal at Substations and High Voltage Centres | 143,500 | 152,000 | 195,000 | 225,000 | 220,993 |
| Cleaning and clearing the areas around transmission line pylons | 220,000 | 195,000 | 360,500 | 375,000 | 100,288 |
| Pruning/cutting of trees adjacent to overhead high-voltage transmission line networks | - | - | 102,000 | 115,500 | 91,743 |
| **Total** | **363,500** | **347,000** | **657,500** | **715,500** | **413,024** |

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.

## Design and management of new projects

We make every effort to protect the environment and minimise any environmental impact that may arise during the implementation of our projects. To this end, IPTO has prepared a Strategic Environmental Impact Study as part of the HETS Ten-Year Development Plan for the period 2017-2026. The objective of the Strategic Environmental Impact Study is to identify, describe and evaluate the significant potential impacts on the natural environment brought about by the implementation of proposals in the Development Plan may have, as well as to propose mitigation measures to minimize these impacts.

At the same time, with a view to a balanced and sustainable development, prior to adopting any plans and programmes, a Strategic Environmental Assessment (SEA) is prepared in order 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 this way sustainable development and a high level of environmental protection in the areas where IPTO operates.

The steps followed in the design 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:**

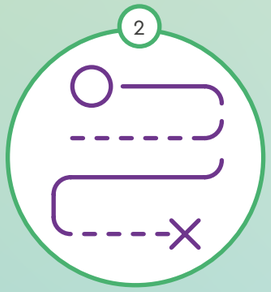
- increased electricity consumption in an area that cannot be met by existing infrastructure,
- need to connect renewable energy utilisation projects,
- need to interconnect the HETS with island complexes in order to exploit renewable energy sources and reduce PUs costs,
- need to enhance/expand interconnectors with foreign countries.

## Project design

**It is conducted by IPTO under the Ten-Year Development Plan.**
**A project may:**

- enhance the HETS or
- expand the HETS

2



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 RAE. The approved project is accompanied by a budget, financial flows and implementation schedule. Projects of national importance are also accompanied by cost-benefit studies.

## Project licensing

All necessary steps are followed to obtain the required permits and environmental impact assessment for the implementation of the project (update studies, assign works, issue permits, draft Environmental Impact Studies, submit file, obtain an approving decision on environmental terms).

4

5

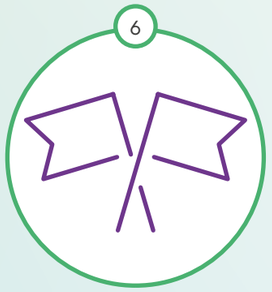
## Project implementation

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

## Project completion

The project is electrified upon completion.

6



7

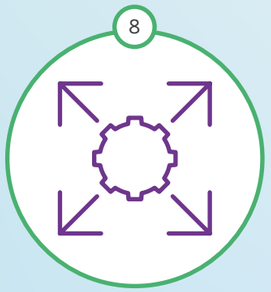
## Project maintenance

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

## Decommissioning

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

8



### Environment and biodiversity protection measures during construction phase of new projects

In order to ensure that an area's biodiversity remains unaffected during the construction of projects involving transmission lines, substations or high-voltage centres, the Operator takes a series of measures to protect flora and fauna. These measures can be 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 in which existing vegetation will be cleared 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 environmental restoration studies.
- In case of adverse weather conditions during earthworks, soil wetting is applied to reduce dust dispersion.
- Workers, both in the construction phase and in the operation phase, are thoroughly informed so that all environmental condition, especially those concerning the natural environment, are met.

# ENVIRONMENTAL COMPLIANCE

IPTO's major concern is that projects are designed, sited, constructed and then put to operation in full compliance and harmonised with the existing environmental legislation, carrying out all the required studies and meeting the environmental criteria approved 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 existing ones are part of the basic tasks of the System Operator, 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, terminals, high-voltage centres, etc.), we always take into account how to minimise environmental impact by strictly following all steps below:

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



IPTO's major concern is that projects are designed, sited, constructed and then put to operation in full compliance and harmonised with the existing environmental legislation, carrying out all the required studies and meeting the environmental criteria approved on a case-by-case basis.

Our continuous efforts to protect the environment have undoubtedly been successful. To date, no adverse impact on the environment and biodiversity has been reported officially caused by the installation and operation of our projects. In the few cases where additional measures have been required during construction phase, IPTO's executives have been cooperative and responsive, acting in accordance with the recommendations of the competent authorities (e.g. Forest Authority) in a prompt and effective manner. The embrace of the Company's projects by local communities and the recognition of their benefit for regional economic and social development are of major importance to the Operator.

However, despite public participation in consultations during the approval of environmental projects, as well as the adoption of necessary and possibly additional measures, there are cases in which IPTO is faced with protests, objections or even requests for the annulment of the approved environmental terms. It is important to note that the implementation of the new energy infrastructure projects by IPTO, in line with the European Union's strategy for a climate-neutral economy, is an obligation for our country, as these projects will contribute to the promotion of renewable energy sources in the energy mix and delignitisation. A typical example of protest is the case of the Western Corridor of the Peloponnese. The project aims to relieve the overloaded energy system of the Peloponnese and to increase the penetration of renewable energy sources by building a new 400kV transmission line. According to IPTO's Ten-Year Development Plan, this line would connect the high voltage centre of Megalopolis with the high voltage centre of Patras and was to be completed in 2021. However, the timeframe for the implementation of this interconnection was not met due to an interim injunction application filed by the nuns of the Monastery of Aroania in Kalavryta, by which they requested the halt of the installation of the last two ultra-high voltage pylons that had remained for its completion. The nuns' objections were based on the visual disturbance of the project and were expressed when the project was almost completed (by 95%), and not during the licensing phase, as provided by law for organisations or citizens who disagree with the project design. It should be noted that in regard with the same transmission line and, in particular, the harmonisation of its design with the existing environmental legislation, 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.

This led IPTO to opt for an alternative routing of a 2.6km long section in the area of the Monastery by transferring and placing seven pylons in new locations. Following the decision of the Kalavryta First Instance Court on the interim injunction application filed by the monastic community, the works for the transfer of the two 400kV transmission line pylons is expected to be completed at the end of 2022.

# 5. SOCIAL CONTRIBUTION

Recognizing that we are an integral part of a society in which we are assigned with the role of the Operator of the Hellenic Electricity Transmission System, we seek to create value for our stakeholders by undertaking a series of various initiatives.

8 DECENT WORK AND ECONOMIC GROWTH

11 SUSTAINABLE CITIES AND COMMUNITIES

€ 258 mil.

Our "social product" in 2021

€ 1,2 mil.

Our social contribution for 2021

# OUR SOCIAL PRODUCT

IPTO's main objective is to operate responsibly, increasing its positive impact by generating value in the regions where it operates and in the wider economy of the country. The IPTO Group's socio-economic contribution is significant and exceeds its core scope which is the operation, development and maintenance of the HETS. This contribution includes the creation and support of jobs, the creation of added value and tax revenues for the state. In addition, significant value is also generated through expenditure to the Company's suppliers, as well as donations and sponsorships to various social institutions. These amounts also affect the country's GDP in a positive, and often multiplicative, way.

In particular, in 2021, IPTO Group's social product totalled €258,134 million with employer contributions for the three-year period of 2019-2021 amounting to €362,797 million, contributing to the development of local communities and the Greek economy in general, given that wages and benefits have a multiplier effect.

In addition, in 2021, payments to state agencies (taxes, VAT, etc.) at Group level amounted to €0,85 million whereas for the three-year period (2019-2021) they reached €38,812 million.

Furthermore, IPTO supports local economy by providing employment to people from local communities and by selecting local suppliers where feasible.

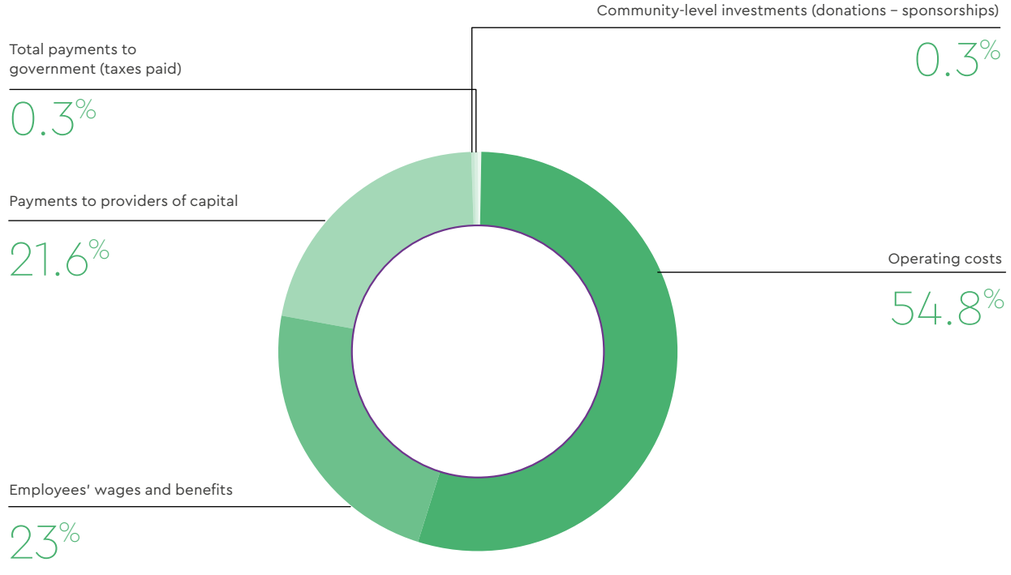
Social product* (€ in thousands)

| | 2019 | | 2020 | | 2021 | |
|---|---|---|---|---|---|---|
| | Company | Group | Company | Group | Company | Group |
| **Economic value generated** | | | | | | |
| **Total revenue** | **296,155** | **300,381** | **293,667** | **295,854** | **292,614** | **295,841** |
| **Economic value distributed** | | | | | | |
| Operating costs | 108,581 | 109,181 | 111,181 | 112,164 | 140,495 | 141,453 |
| Employees' wages and benefits | 40,771 | 40,859 | 54,037 | 54,105 | 58,957 | 59,255 |
| Payments to providers of capital | 55,151 | 55,152 | 61,612 | 61,617 | 55,300 | 55,838 |
| Total payments to government (taxes paid) | 27,886 | 27,909 | 9,508 | 10,052 | 676 | 852 |
| Community-level investments (donations – sponsorships) | 24 | 24 | 750 | 750 | 707 | 737 |
| **Total social product** | **232,413** | **233,125** | **237,088** | **238,688** | **256,136** | **258,134** |
| Economic value retained | 63,742 | 67,257 | 56,580 | 57,166 | 36,477 | 37,706 |

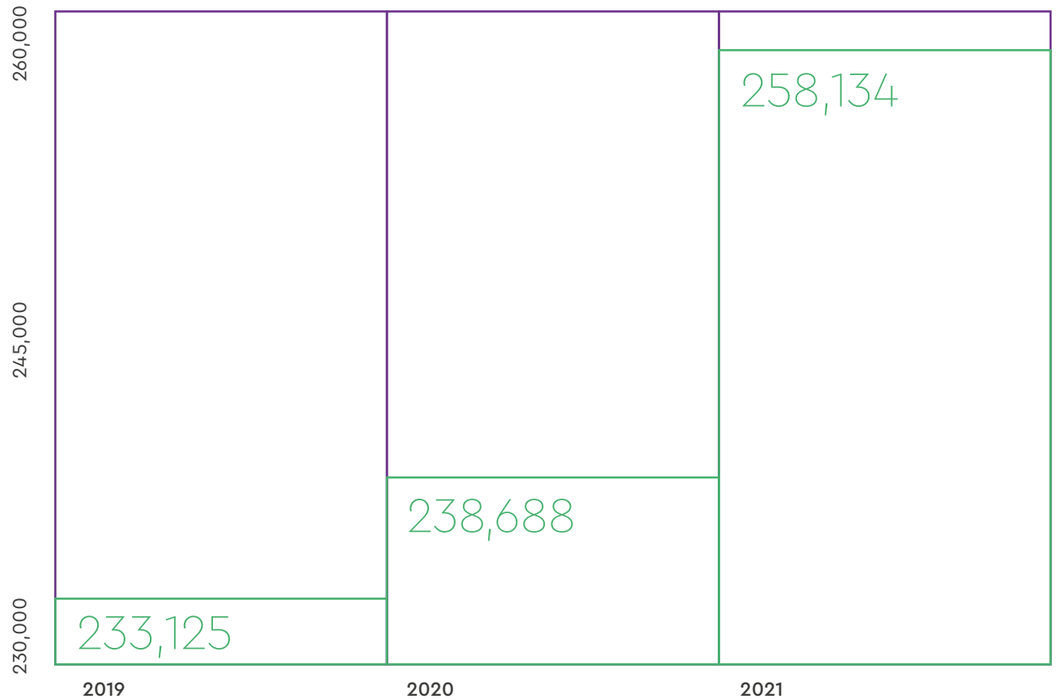
*Financial information is presented in accordance with GRI Standards



**Distribution of social product (2021)**




**Annual social product of IPTO Group (in thousand euros)**



# SUPPORTING LOCAL COMMUNITIES

IPTO carries out actions and programmes relating to society, the environment and culture in order to create value in the areas where it operates. The total amount spent on these actions for 2021 amounted to €1.2 million.

### Donations worth €620,000 to eight cities

Continuing to serve society, IPTO has made a donation of €620,000 to eight cities in order to help the victims of the pandemic and the recent strong earthquake that hit Thessaly and Crete.

In particular, after recording the needs of hospitals in Thessaloniki, Ptolemaida, Patras, Missolonghi, Heraklion, Chania, Sitia and Syros, and in cooperation with the administrations of local hospitals, IPTO donated medical equipment for the ICU, electromechanical installations for the ICU, ventilation systems, containers for the screening of suspected cases, personal protective equipment for the health staff and four containers for earthquake survivors.

Through this initiative, IPTO actively supported the public hospitals, continuing the work that started at the beginning of the pandemic which so far totals €1.4 million.

### Support to the National Gallery

IPTO actively supports the field of culture. In 2021, it sponsored the catalogue of the exhibition 1821 in Painting, contributing to the reopening of the National Gallery-Museum of Alexandros Soutsos. The gallery reopened on the occasion of the Bicentennial of the Greek Revolution.

The catalogue, which was sponsored by IPTO, accompanied the exhibition, offering a fuller experience and thus contributing to the awakening of historical memory at a collective level.

### Support to the Municipality of Dionysos in the forest restoration effort

IPTO actively supported the fire-affected Municipality of Dionysos offering €600,000 by means of a forest restoration sponsorship approved by the Ministry of the Environment and Energy for the restoration of forest areas, as well as the implementation of erosion and flood control works which were deemed necessary in view of the winter season.

In this way, the Company stood by the national effort to restore the national wealth lost in the fires of the summer of 2021 which had also threatened the "heart" of the energy system, the Control Center in Kryoneri



We contribute to local communities by performing activities that create value for the areas where we operate.

# 6. HUMAN RESOURCES

3 GOOD HEALTH AND WELL-BEING

5 GENDER EQUALITY

8 DECENT WORK AND ECONOMIC GROWTH

The contribution of our people to the achievement of IPTO's mission and objectives is crucial. For this reason, we focus on creating an appropriate working environment, implementing development and training programmes, prioritising health and safety, ensuring equal opportunities and respecting diversity.

1,813
Total number of employees in 2021

7,023
Total training hours in 2021

1.325
ώρες εκπαίδευσης σε θέματα Υγείας και Ασφάλειας

704
Number of participants in Occupational Health and Safety seminars

€21,018
Total cost of occupational Health and Safety training

# EMPLOYMENT

IPTO recognizes the value of its workforce as one of the most important factors contributing to the implementation of its mission and its successful performance to date. In 2021, IPTO employed 1,813 employees under full-time contracts and the collective labour agreement.

| **Human resources data for 2021** | **Men** | **Women** | **Total** |
|---|---|---|---|
| Permanent staff | 924 | 244 | 1,168 |
| Temporary staff | 111 | 33 | 144 |
| Employees under contracts for services | 346 | 155 | 501 |
| **Total** | **1,381(76%)** | **432(24%)** | **1,813** |

| **Ηλικιακή κατανομή προσωπικού ανά μορφή σύμβασης εργασίας** | **<30** | | **31–50** | | **>50** | | **Σύνολο** | |
|---|---|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % | Number | % |
| Permanent staff | 3 | 2% | 339 | 43% | 826 | 93% | 1168 | 64% |
| Temporary staff | 19 | 14% | 125 | 16% | 0 | 0% | 144 | 8% |
| Employees under contracts for services | 115 | 84% | 326 | 41% | 60 | 7% | 502 | 28% |
| **Total** | **137** | **100%** | **790** | **100%** | **886** | **100%** | **1,815** | **100%** |

| **Staff on 24-hour shift** | **2019** | **2020** | **2021** |
|---|---|---|---|
| **Total** | **285** | **254** | **240** |

Similarly, the breakdown of employees by category for the last three years is shown in the table below:

| **Breakdown of employees (permanent staff) by category** | **2019** | | | | | | **2020** | | | | | | **2021** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **M** | | **W** | | **T** | | **M** | | **W** | | **T** | | **M** | | **W** | | **T** | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Department & Branch Directors | 32 | 74% | 11 | 26% | **43** | 100% | 35 | 76% | 11 | 24% | **46** | 100% | 32 | 76% | 10 | 24% | **42** | 100% |
| Section Heads & Deputy Section Heads | 103 | 62% | 62 | 38% | **165** | 100% | 105 | 61% | 66 | 39% | **171** | 100% | 127 | 1 | 73 | 37% | **200** | 100% |
| Employees | 848 | 83% | 176 | 17% | **1,024** | 100% | 833 | 82% | 178 | 18% | **1,011** | 100% | 765 | 83% | 161 | 17% | **926** | 100% |
| **Total** | **983** | | **249** | | **1,232** | | **973** | | **255** | | **1,228** | | **924** | | **244** | | **1,168** | |

## Collective bargaining agreement

In April 2021, the new three-year (2021-2024) IPTO's company collective bargaining agreement was signed. Fully aligned with the standards and principles regulating the modern working environment, it resolves outstanding issues of previous years yet incorporates adjustments and improvements that extend to the entire range of the Company's employees.

Among other things, the new company collective bargaining agreement secures:



the continuation of group health and life insurance plans for all employees,

the regulation of telework, ensuring all labour rights included in IPTO's Workforce Regulation and the collective labour agreements, and

the number of meal vouchers.

## Workforce Regulation

In line with the requirements and ideas in regard with the modern working environment, IPTO has developed and applies a Workforce Regulation addressed to all its staff. This ensures employee rights and working conditions established from collective bargaining.

This regulation is important in order to address issues that affect employees such as their rights and obligations in the workplace, as well as their recruitment, remuneration and working hours. The regulation also:

safeguards job posts

disconnects seniority-related remuneration levels from the staff assessment procedure

updates provisions on the disciplinary process

increases parental leave by two days

provides for paid leave for employees who are either bone marrow donors or have children with severe mental health disorders

provides for the inclusion of the new recruits in the regular staff after seven months of service rather than two years as previously.

## Support to workers and their families

In order to ensure the health and safety of its employees and their dependants, IPTO provides additional insurance coverage to all its staff. The coverage includes life insurance, total permanent disability insurance due to illness (for persons up to 65 years of age), life insurance, as well as insurance in case of accidental total permanent disability. Furthermore, hospital or out-patient care in the event of accident or illness is provided for both the employee(s) and their dependants.

In addition, IPTO provides meal vouchers, as well as nursery and camps allowances for the employees' dependants.

# OCCUPATIONAL HEALTH AND SAFETY

## Our approach

With a view to protecting our employees and third parties who either collaborate with IPTO or happen to be in its facilities, we have established and put into implementation a Health and Safety Policy. Moreover, we invest in the training of our people in Health and Safety issues in order to ensure awareness, prevention and maximum protection.

## Health and Safety Policy

IPTO has and implements a Health and Safety Policy, which sets out the framework of the principles followed and measures taken, 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 are in its premises.

Furthermore, the implementation of this Policy aims to improve the Company's performance in the area of Health and Safety through the early identification of risks, the prevention and minimisation of work-related accidents and diseases and by embedding health and safety in the company culture.

Protecting our employees' Health and Safety is one of our key priorities. Adopting appropriate practices and developing a culture of protection and care for the staff, we aim to prevent accidents.

### Our approach to Health and Safety issues

All employees want and are entitled to work in a safe environment. For this reason, IPTO has adopted an approach that focuses on preventing and addressing occupational hazards from the source.

To protect our employees' health and safety, IPTO ensures:

- preparation and updating of Occupational Risk Assessment studies for all its facilities throughout the country;
- workplace visits by safety technicians and occupational physicians to identify and record occupational hazards;
- occupational physicians at all Company facilities where there are employees;
- nursing staff available for the entire workforce placed in over nine workplaces throughout the country;
- operating clinics in IPTO's facilities across the country staffed with a large number of employees and additional recruitment of occupational physicians mainly aiming at addressing the coronavirus pandemic;
- preventive health check-ups for the staff and mental health helplines provided from a specialized company;
- mandatory annual occupational health check-up for the employees working under high-risk conditions and biannually for all the rest;
- issuance of fitness-for-duty certificates for all employees, always thoroughly protecting medical confidentiality and personal data.

## Health and Safety training

Training in occupational Health and Safety is an integral part of the basic and specific technical training of IPTO's staff. The annual training programme covers occupational Health and Safety issues, such as the correct use of personal protective equipment, awareness-raising on occupational hazards, hazardous works or even dangerous situations and what the best practices are to address them.

In order to establish a safety culture, training and hands-on workshops are held on the prevention and management of potential negative impacts on employee Health and Safety and during performance of duties.

Each employee, depending on his/her job post, is required to attend specific training courses, tailored to the needs of his/her duties, in order to further develop his/her skills to address the occupational hazards he/she may face.

In 2021, 36 seminars on Health and Safety issues were held for a total of 1,325 training hours, namely 19% of the total training hours. Trainings included topics concerning the correct use of personal protective equipment, how to improve staff psychology, protection against the COVID-19 pandemic and how to maintain the overall health of staff.

**Hours for occupational Health and Safety training**

| 2019 | 2020 | 2021 |
|---|---|---|
| 2,592 | 942 | 1,325 |

| Occupational Health and Safety Training – Personal Protective Equipment | 2019 | 2020 | 2021 |
|---|---|---|---|
| Seminar cycles | 33 | 13 | 6 |
| Trainees | 391 | 151 | 85 |
| **Total hours of training** | **2,592** | **942** | **1,325** |

| Training participants in psychosocial risk management | Men | Women | Total |
|---|---|---|---|
| Directors of Departments & Branches | 25 | 24 | 49 |
| Section Heads & Deputy Section Heads | 53 | 92 | 145 |
| Employees | 193 | 317 | 510 |
| Total trainees | 271 | 433 | 704 |

As expected, due to the pandemic and in order to protect employee Health and Safety, not all of planned seminars were held, resulting in fewer total training hours than in 2019, which was the last year without pandemic-related restrictions.

## Our performance

Our Health and Safety performance over the last three years is presented in the table below:

| Health and Safety Performance Indicators | 2019 | | | 2020 | | | 2021 | | |
|---|---|---|---|---|---|---|---|---|---|
| | M | W | T | M | W | T | M | W | ΣT |
| Number of deaths due to injury | 0 | 0 | **0** | 1 | 0 | **1** | 1 (*4) | 0 | **1** |
| Indicator (*1) of deaths due to injury | 0 | 0 | **0** | 0.089 | 0 | **0.071** | 0.139 | 0 | **0.110** |
| Number of serious injuries (excluding deaths) | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** |
| Indicator (*2) of serious injuries (excluding deaths) | | | | | | | 0 | 0 | **0** |
| Number of recordable injuries | 6 | 5 | **11** | 5 | 0 | **5** | 5 | 0 | **5** |
| Recordable (*3) injury rate | - | 0 | **0.920** | 0.447 | 0 | **0.354** | 0.693 | 0 | **0.549** |
| Number of total working hours | - | 0 | **2,390,960** | 2,238,383 | 586,627 | **2,825,010** | 1,442,969 | 378,057 | **1,821,026** (*5) |

(*1): Percentage of deaths due to injuries = (Number of deaths due to injuries / 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
Where serious injuries are injuries with a loss of working days of more than 6 months and recordable injuries are injuries of any kind, even if they did not result in lost days, or first aid.
(*4) The 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 attendance and teleworking are included. Previous years included both leave and sick leave.



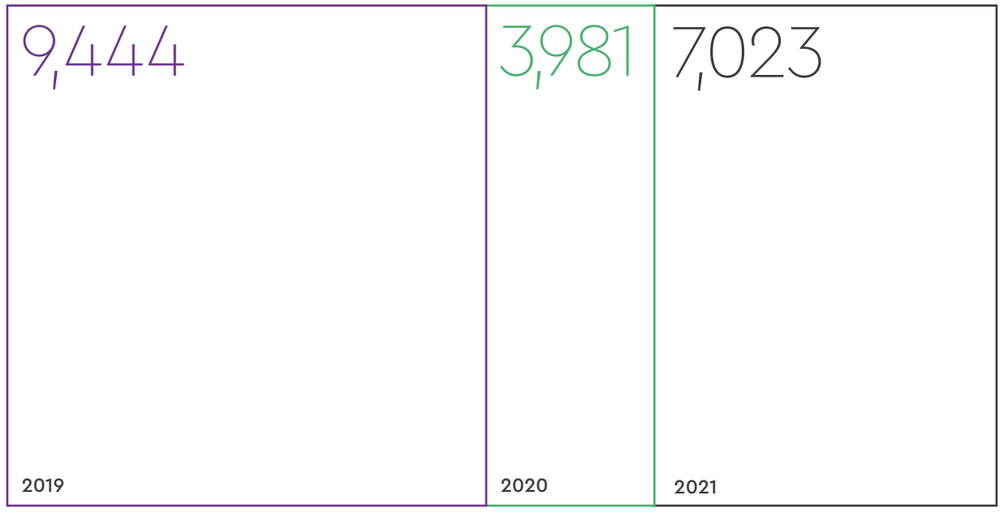
# TRAINING AND DEVELOPMENT

The nature of IPTO's activities and the constant changes in the energy landscape of Greece sets a high bar 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.

Training is organised and carried out on an annual basis. Employees take part in seminars and educational events, in postgraduate, doctoral and post-graduate study programmes and also in 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 2021, training and specialisation programmes of a total length of 7,023 hours were carried out and their total cost amounted to €93,075.

**Average training hours per category of workers**




At IPTO, we invest in our people in order to successfully meet the challenges posed by our role. In this context, we design and implement a series of training programmes and seminars, ensuring continuous progress and development for our people.

**Hours of training per subject**


The training programs are designed and implemented both internally and externally in cooperation with specialised tutors. The programmes cover a wide range of topics from specialised training to skill development. In 2021, most trainings (23%) were on topics of general interest, followed by management (22%) and health and safety (19%).

The themes of the training programmes implemented each year vary in order to meet the changing needs of the employees. Each year's training needs may be identified by either a questionnaire survey in which all employees take part or by collecting the training needs on specialised topics from all Company Departments. The Company then processes results and designs the annual employee training plan, which is implemented based on priority needs.

During 2021, 195 seminars were held in which 2,101 employees participated. More details are presented in the tables below:

| **Average training hours per category of workers** | **2019** | | | **2020** | | | **2021** | | |
|---|---|---|---|---|---|---|---|---|---|
| | **M** | **W** | **T** | **M** | **W** | **T** | **M** | **W** | **T** |
| Directors of Departments & Branches | 25.9 | 26.1 | **26.0** | 5.6 | 8.6 | **6.3** | 11.3 | 13.6 | **11.8** |
| Section Heads & Deputy Section Heads | 19.4 | 16.2 | **18.2** | 10.1 | 8.0 | **9.3** | 8.4 | 8.9 | **8.6** |
| Employees | 4.7 | 7.8 | **5.2** | 1.9 | 3.1 | **2.1** | 3.8 | 11.9 | **5.2** |
| **Total** | **6.9** | **10.7** | **7.7** | **2.9** | **4.6** | **3.2** | **4.7** | **11.1** | **6.0** |



# EQUAL OPPORTUNITIES AND PERFORMANCE EVALUATION

The Company respects and supports human rights, avoiding any form of discrimination. For this reason, it seeks to treat all employees equally, implementing an annual performance evaluation for all employees.

## Gender Equality and Diversity Inclusion Policy

In November 2021, by decision of the CEO, a working group consisting of twelve members representing different Departments was formed in order to elaborate, formulate and draft the Company's Gender Equality and Diversity Inclusion Policy. The actions of the working group included:

- Compilation of material on the definitions and legislative framework (national and European) on gender and diversity issues and setting of a general timetable.
- Preparation and completion of an internal survey to assess the situation at IPTO, whose analysis of results helped in formulating the Company's Policy.
- Formulation/drafting of the Gender Equality and Diversity Inclusion Policy.
- Establishment of an internal mechanism to receive, examine and deal with arising issues.

Once the Policy has been formulated and approved, the working group will be tasked with the following:

- A periodic reassessment of the situation in order to monitor the current state of things (improvement/change), allowing for adjustments in objectives and/or the procedures for their improvement.
- Promotion of a company culture based on equality and acceptance of diversity and the management of discrimination, inequality, harassment, etc. Issues through awareness-raising and educational activities.

The Gender Equality and Diversity Inclusion Policy will be put to immediate effect in 2022.

We seek to create a working environment of equal opportunities without discrimination and with respect for all aspects of diversity.

Although IPTO remains firmly committed in providing equal opportunities for both genders, the percentage of male employees is significantly higher than that of female employees. This is due both to historical reasons, as the majority of polytechnic and technical school graduates were men, and to the stereotypical belief that they are male professions. These facts and attitudes are changing, and IPTO seeks to keep pace with these changes in favour of gender equality.

However, the representation of women in positions of responsibility is crucial. Their percentage in such posts has increased significantly in recent years, as they represent on average 34% of the Group's total number of executives over the last three years.

| Year | Percentage of directors (%) | Percentage of female directors (%) |
|---|---|---|
| 2019 | 64.9 | 35.1 |
| 2020 | 64.5 | 35.5 |
| 2021 | 65.7 | 30.2 |

## Employee evaluation

Monitoring the progress of human resources contributes to the Company's long-term smooth operation and efficiency.

IPTO has developed effective employee management and evaluation mechanisms, ensuring, thus, the increase of the Company's efficiency for the benefit of all.

In particular, IPTO implements a fully modernised electronic evaluation system, the Performance Management System which replaced the paper-based evaluation used until 2020.

This innovative system is based on qualitative and quantitative criteria and includes each employee's self-assessment, allowing to all participants, both those who evaluate and those being evaluated, to appraise their performance and express their agreement or disagreement with the evaluation, thus gaining a better understanding of their role in the realisation of the Company's business objectives. At the same time, this system provides opportunity to highlight areas for improvement in regard with each employee, with the ultimate goal of developing IPTO's human resources as a whole, as well as improving and utilising all employees' skills and expertise.

In the last three years, all (100%) IPTO's permanent employees have been evaluated according to the new evaluation system.



The Group encourages and recommends to all employees to respect the diversity of every single employee, supplier or customer and not to accept any form of discriminatory behaviour. The Group's policy is based on the OECD and International Labour Organisation (ILO) Guiding Principles.

# 7. CORPORATE GOVERNANCE

IPTO adheres to high standards of corporate governance aiming to ensure full compliance with the national legislation requirements and achieve its long-term objectives, as well as its sustainable development.

# GOVERNANCE STRUCTURE

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, in particular with regard to the maintenance and preparation of the Ten-Year Development Plan of the Hellenic Electricity Transmission System.

The Board of Directors is elected by the General Meeting of Shareholders on an annual basis. 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 composed of executive and non-executive members, including the representative of the Company's employees. The Chairman of the Board 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 Board of Directors is supported by advisory committees, as presented below.

The composition of the Board of Directors and the breakdown by age group as at 31/12/2021 is as follows:

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 |
| Hong Li | Independent Member | Non-executive | Male |
| Yunpeng He | Independent Member | Non-executive | Male |
| Iason Roussopoulos | Member – Deputy General Manager | Executive | Male |
| Fotios Nikolopoulos | Member – Employee Representative | Non-executive | Male |
| Antonis Aspras | Independent Member | Non-Executive | Male |
| Stavros Ignatiadis | Member | Non-executive | Male |

BoD members by age group

| Age group | <30 | 30–50 | 50> | Total |
|---|---|---|---|---|
| Number of BoD by age group | 0 | 6 | 3 | 9 |



**Board Committees**

The Board of Directors, within the framework of its duties, is assisted by three advisory Committees:

- Financial Audit Committee
- Strategic Planning Committee
- Remuneration and Appointments Committee

**Financial Audit Committee**

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

- overseeing data and information collection and drafting 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; and
- submitting proposals to the Board of Directors regarding the appointment, renewal of term of office and compensation of the Company's external auditors.

**Strategic Planning Committee**

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

**Remuneration and Appointments Committee**

The Remuneration and Appointments Committee consists of four members tasked, inter alia, with following issues concerning the appointment of the Company's employees and setting their remuneration levels.

**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 who assesses the performance of its duties.

**General Divisions**

Excellent cooperation among the Board of Directors, the Advisory Committees, the General Divisions and all employees contributes to the realisation of the Company's strategy and also that of its associated companies.

IPTO's General Divisions are the following:

- General Division of Financial Services
- General Division of Technology, System Planning & Strategy
- General Divisions of Operations, Infrastructure & Market
- General Division of Human Resources, Legal & Regulatory Affairs
- General Division of Asset Management & Maintenance

# MANAGING SUSTAINABLE DEVELOPMENT ISSUES

In order to manage sustainable development issues related to its operation, IPTO has established a task force of executives reporting to the Company's CEO. They work together with the General Divisions on relevant issues, manage external partnerships and data related to sustainability, and prepare the annual Sustainability Report. The Chairman and CEO informs IPTO's Board of Directors of the actions taken or planned to be taken on a regular basis. Among IPTO's objectives for 2022 is to create a distinct Branch reporting to the CEO which will assume the Company's sustainable development affairs.

# 8. ABOUT THE REPORT

# REPORT METHODOLOGY

This Report is the third Sustainability Report of the IPTO Group and covers all the Group's activities for the period 1/1/2021 - 31/12/2021. Through this Report, IPTO discloses the Company's performance regarding ESG and sustainable development topics and the way it effectively contributes to the implementation of the national policy for the transition to a low-carbon economy.

The Report complies with the highest sustainability disclosure standards as it has been prepared in accordance with the GRI and SASB Standards and, for the first time, includes also the Athens Stock Exchange performance indicators following the 2022 ESG Reporting Guide.

**ESG reporting standards**
This Report has been prepared in accordance with GRI Standards, Core Option. Furthermore, other reporting standards have been also taken into consideration, such as the SASB Standards and the TCFD recommendations.

**Project coordination and project team**
A project team was convened in order to prepare this Report, under the coordination of the Administration Office. The primary duty of the Corporate Responsibility and Sustainable Development team was to collect the necessary data and information related to the areas of Corporate Responsibility and Sustainable Development at IPTO. Special thanks to all participants in the drafting of IPTO's third Sustainability Report, namely:

- **Coordination:** Irini Tsevi & Stefanos Tsemperlidis
- **Data and content contributions:** Apostolos Anagnostou, Stela Aretha, Katerina Vasiou, Vasilis Goudis, Christina Dimoudi, Dimitra Drakou, Elias Zafiropoulos, Aristeidis Zinelis, Giannoula Theopoulou, Manolis Kalfaoglou, Marina Kamilaki, Karastamatis Stamatis, Savvas Katemliadis, Nikos Kouveliotis, Dimitris Koukounias, Orianna Lymperi, Vasilis Lympertas, Katerina Makou, Despoina Makridou, Despoina Mesitou, Katerina Mpada, Georgia Mpekiari, Dimitris Moustakas, Giannis Moraitis, Efi Nikolakopoulou, Eleni Palamiti, Filippos Panagopoulos, Michalis Paraskevas, Nikos Raftopoulos, Victoria Roussaki, Vasilis Skordas, Aggelos Stamatelos, Giorgos Tarousinof, Eleni Tzoeti, Vivi Fasianou, Manolis Fylladitakis, Eleni Charpantidou, Giorgos Psiris.

**External verification**
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 in regard with the Company's financial information.



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

**Printing**
Fotolio

**Design**
The Birthdays Design

**Contact point**
We will be happy to talk to you about any sustainable development issue related to our operations. If you have any questions, please do not hesitate to contact us.

Address: 1 Konstantinopoulos Avenue, 12132, Peristeri, Attica
Tel: 210-9466974
Email: sustainability@admie.gr
Website: www.admie.gr

# GRI STANDARDS TABLE

| GRI Standard # | Description | ISO 26000 | Page number/ reference/note | Omission | External assurance |
|---|---|---|---|---|---|
| ORGANISATIONAL PROFILE | | | | | |
| 102–1 | Name of the organisation | 6.3.10<br>6.4.1<br>6.4.2<br>6.4.3<br>6.4.4<br>6.4.5<br>6.8.5<br>7.8 | Pages 14, 21 | | ✓ |
| 102–2 | Activities, brands, products and/or services | | Pages 8–11, 14–16, 22, 48–49 | | ✓ |
| 102–3 | Location of headquarters | | Page 21 | | ✓ |
| 102–4 | Location of operations | | Pages 10, 14–16, 55–56 | | ✓ |
| 102–5 | Ownership and legal form | | Page 21 | | ✓ |
| 102–6 | Markets served | | Pages 10, 14–16, 22, 52, 54–56, 60–61, 73 | | ✓ |
| 102–7 | Scale of the organisation | | Pages 8- 11, 14–15, 98, 104 | | ✓ |
| 102–8 | Information on employees and other workers | | Pages 11, 104 | | ✓ |
| 102–9 | Supply chain | | Page 45 | | ✓ |
| 102–10 | Significant changes to the organisation and its supply chain | | No significant changes | | ✓ |
| 102–11 | Precautionary principle or approach | | Pages 86–87, 88–94 | | ✓ |
| 102–12 | External initiatives | | Page 30–33 | | ✓ |
| 102–13 | Membership of associations | | Page 40, 41 | | ✓ |
| STRATEGY | | | | | |
| 102–14 | Statement from senior decision-maker | | Page 6–7 | | ✓ |
| 102–15 | Key impacts, risks and opportunities | 4.7<br>6.2<br>7.4.2 | Pages 6–7, 8–9, 14–15, 16–17, 19–20, 23–25, 28–29, 30–33, 42–43, 44, 48–49, 52–55, 56-58, 60, 62–63, 70–73, 75–77, 78–79 83, 86–87, 88–91, 98–99 Annual Financial Statement 2021 Pages 17–20, 81–87 | | ✓ |
| ETHICS AND INTEGRITY | | | | | |
| 102–16 | Values, principles, standards and norms of conduct | 4.4<br>6.6.3 | Pages 18, 111, 113 | | ✓ |
| GOVERNANCE | | | | | |
| 102–18 | Governance Structure | 6.2<br>7.4.3<br>7.7.5 | Pages 116–117 | | ✓ |
| 102–20 | Executive-level responsibility for economic, environmental & social topics | | Σελ. 117 | | ✓ |
| 102–21 | Consulting stakeholders on economic, environmental, and social topics | | Pages 34–36, 37 Consultations done directly between IPTO and its stakeholders. IPTO;s CEO participates in the consultations. | | ✓ |
| 102–22 | Composition of the highest governance body and its committees | | Page 116 Term of BoD until: 31/05/2025 | | |
| 102–23 | Chair of the highest governance body | | Page 116 | | ✓ |
| 102–26 | Role of highest governance body in setting purpose, values, and strategy | | Pages 116–117 | | ✓ |
| 102–29 | Identifying and managing economic, environmental, and social impacts | | Pages 42, 116–117 | | ✓ |
| 102–32 | Highest governance body's role in sustainability reporting | | Pages 42, 117 | | ✓ |
| STAKEHOLDER ENGAGEMENT | | | | | |
| 102–40 | List of stakeholder groups | 5.3 | Pages 34–37 | | ✓ |
| 102–41 | Collective bargaining agreements | 6.3.10,<br>6.4.1-<br>6.4.2,<br>6.4.3,<br>6.4.4,<br>6.4.5,<br>6.8.5<br>7.8 | Pages 104–105 | | ✓ |
| 102–42 | Identifying and selecting stakeholders | 5.3 | Pages 34, 42 | | ✓ |
| 102–43 | Approach to stakeholder engagement | | Pages 34 -37 | | ✓ |
| 102–44 | Key topics and concerns raised | | Pages 34–37, 38–39, 43 | | ✓ |

| | | | | |
|---|---|---|---|---|
| REPORTING PRACTICE | | | | |
| 102–45 | Entities included in the consolidated financial statements | 5.2<br>7.3.2<br>7.3.3<br>7.3.4 | Pages 21–22, Annual Financial Report 2021, Pages 6, 51 | ✓ |
| 102–46 | Defining report content and topic Boundaries | | Pages 42–43 | ✓ |
| 102–47 | List of material topics | | Page 43 | ✓ |
| 102–48 | Restatements of information | | No significant restatements | ✓ |
| 102–49 | Changes in reporting | | No significant restatements | ✓ |
| 102–50 | Reporting period | 7.5.3<br>7.6.2 | 1/1/2021–31/12/2021 | ✓ |
| 102–51 | Date of most recent report | | Annual Sustainability Report 2020 | ✓ |
| 102–52 | Reporting cycle | | Annual | ✓ |
| 102–53 | Contact point for questions regarding the report | | Page 121 | ✓ |
| 102–54 | Claims of reporting in accordance with the GRI Standards | | Page 120 | ✓ |
| 102–55 | GRI content index | | Pages 122–130 | ✓ |
| 102–56 | External assurance | | Page 134 | ✓ |



| GRI Standard # | Index | Description | ISO 26000 | Page number/ reference/note | Omission | External assurance |
|---|---|---|---|---|---|---|
| **GRI 200: Financial performance indicators** | | | | | | |
| MATERIAL TOPIC: FINANCIAL PERFORMANCE | | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 98–100 | | ✓ |
| | 103–2 | The management approach and its components | | Pages 6–7, 98–100 Annual Financial Report 2021 – Annual Management Report of the Board of Directors Pages 9–10 | | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 6, 42–43, 98–100, 117 Annual Financial Report 2021 – Annual Management Report of the Board of Directors Pages 9–10 | | |
| GRI 201: Economic Performance (2016) | 201–1 | Direct economic value generated and distributed | 6.8.1-6.8.2 6.8.3 6.8.7 6.8.9 | Pages 98–101 | | ✓ |
| | 201–2 | Financial implications and other risks and opportunities due to climate change | 6.5.5 | Pages 29, 44, 56–58, 65–67 | | |
| **GRI 300: Environmental performance indicators** | | | | | | |
| MATERIAL TOPIC: BIODIVERSITY | | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 88–95 | | ✓ |
| | 103–2 | The management approach and its components | | Pages 29, 88–95, 117 | | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 6–7, 88–95, 117 | | |
| GRI 303: Biodiversity (2016) | 304–1 | Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas | 6.5.6 | Pages 88–89 | | ✓ |
| | 304–2 | Significant impacts of activities, products, and services on biodiversity | | Pages 88–91 | | ✓ |
| | 304–3 | Habitats protected or restored | | Page 90 | | |

| | | | | | |
|---|---|---|---|---|---|
| **MATERIAL TOPIC: GHG EMISSIONS MANAGEMENT** | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43 | ✓ |
| | 103–2 | The management approach and its components | | Pages 6–7, 82–85 | |
| | 103–3 | Evaluation of the management approach | | Page 117 | |
| GRI 305: Emissions (2016) | 305–1 | Direct (Scope 1) GHG emissions | 6.5.5 | Page 85<br>There are no biogenic emissions as part of IPTO's operations, and therefore are not included. | |
| | 305–2 | Energy indirect (Scope 2) GHG emissions | | Page 85 | |
| **MATERIAL TOPIC: WASTE MANAGEMENT** | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 86–87 | ✓ |
| | 103–2 | The management approach and its components | | Pages 86–87 | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 86–87, 117 | |
| GRI 306: Waste (2020) | 306–1 | Waste generation and significant waste-related impacts | 6.5.3<br>6.5.4 | Pages 86–87 | Not sufficient data. The Company will collect and publish relevant information in future Reports. |
| | 306–2 | Management of significant waste-related impacts | | Pages 86–87 | ✓ |
| | 306–4 | Waste diverted from disposal | | Page 87 | |
| **MATERIAL TOPIC: ENVIRONMENTAL COMPLIANCE** | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 94–95 | ✓ |
| | 103–2 | The management approach and its components | | Pages 94–95 | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 94–95, 117 | |
| GRI 307: Environmental Compliance (2016) | 307–1 | Non-compliance with environmental laws and regulations | 4.6 | Pages 94–95 | |



| | | | | | |
|---|---|---|---|---|---|
| **GRI 400: Social performance indicators** | | | | | |
| **MATERIAL TOPIC: OCCUPATIONAL HEALTH AND SAFETY** | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 106–107 | ✓ |
| | 103–2 | The management approach and its components | | Pages 7, 106–107 | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 106–107, 117 | |
| GRI 403: Health and Safety (2018) | 403–1 | Occupational safety and health management system | | Pages 106–107<br>The management of Health and Safety issues is accomplished through the Branch of Occupational Health and Safety and the relevant procedures that are being applied. However, a certified management Occupational Health and Safety system does not exist yet. | |
| | 403–2 | Hazard identification, risk assessment, and incident investigation | 6.4.4<br>6.4.6<br>6.4.8 | Pages 106–107 | |
| | 403–3 | Occupational health services | | Pages 106–107 | ✓ |
| | 403–4 | Worker participation, consultation and communication on occupational health and safety | | Pages 106–107 | |
| | 403–5 | Worker training on occupational health and safety | | Pages 107–108 | ✓ |
| | 403–6 | Promotion of worker health | | Pages 106–107 | ✓ |
| | 403–7 | Prevention and mitigation of occupational health and safety impacts directly linked by business relationships | | Pages 106–108 | ✓ |
| | 403–9 | Work-related injuries | | Page 108 | |
| **MATERIAL TOPIC: TRAINING AND DEVELOPMENT** | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 109–110, 112 | ✓ |
| | 103–2 | The management approach and its components | | Pages 107–110, 112 | |
| | 103–3 | Evaluation of the management approach | | Pages 109–110, 117 | |
| GRI 404: Training and Education (2016) | 404–1 | Average hours of training per year per employee | 6.4.7 | Page 110 | ✓ |
| | 404–2 | Programs for upgrading employee skills and transition assistance programs | 6.4.7<br>6.8.5 | Page 109–110 | |
| | 404–3 | Percentage of employees receiving regular performance and career development reviews | 6.4.7<br>6.8.5 | Page 112 | ✓ |

## MATERIAL TOPIC: EQUAL OPPORTUNITIES AND DIVERSITY

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 111–112 | ✓ |
| | 103–2 | The management approach and its components | | Pages 7, 111–112 | |
| | 103–3 | Evaluation of the management approach | | Pages 111–112, 117 | |
| GRI 405: Diversity and equal opportunities (2016) | 405–1 | Diversity of governance bodies and employees | 6.2.3<br>6.3.7<br>6.3.10<br>6.4.3 | Page 116 | ✓ |
| | 405–2 | Ratio of basic salary and remuneration of women to men | | Page 112<br>There is no difference in wages and provisions based on gender. | ✓ |

## MATERIAL TOPIC: COMMUNICATING WITH LOCAL COMMUNITIES AND MANAGING IMPACTS AT LOCAL LEVEL

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 37–39, 42–43, 56 | ✓ |
| | 103–2 | The management approach and its components | | Pages 34–35, 37–39, 52-56, 94–95 | ✓ |
| | 103–3 | Evaluation of the management approach | | Page 117 | |
| GRI 413: Local communities (2016) | 413–1 | Operations with local community engagement, impact assessments, and development programs | 6.3.9<br>6.5.1<br>6.5.3<br>6.8 | Pages 37–39, 90–93 | ✓ |

## MATERIAL TOPIC: NETWORK ADEQUACY, SECURITY, STABILITY, RELIABILITY AND RESPONSE TO EMERGENCIES

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 16–17, 28, 42–43 | ✓ |
| | 103–2 | The management approach and its components | | Pages 6–7, 16–17, 28, 48, 51, 52–56 | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 16–17, 28, 117 | |

## MATERIAL TOPIC: ENERGY TRANSITION, INCREASE OF RES INTEGRATION, AND REDUCTION IN COSTS

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 29, 42–43, 56 | ✓ |
| | 103–2 | The management approach and its components | | Pages 29, 48–50, 52–54, 56–58, 60–61 | ✓ |
| | 103–3 | Evaluation of the management approach | | Page 117 | |

## MATERIAL TOPIC: NETWORK DEVELOPMENT (DOMESTIC AND INTERCONNECTIONS)

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 19–20, 23, 29, 43, 47 | ✓ |
| | 103–2 | The management approach and its components | | Pages 6–7, 19–20, 23, 29, 48–56 | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 6–7, 19–20, 23, 29, 52–56, 117 | |



## MATERIAL TOPIC: CYBERSECURITY

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 28, 43, 70–72 | ✓ |
| | 103–2 | The management approach and its components | | Pages 68–72 | ✓ |
| | 103–3 | Evaluation of the management approach | | Page 117 | |

## MATERIAL TOPIC: PROJECT QUALITY AND ON-TIME DELIVERY

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Page 43 | ✓ |
| | 103–2 | The management approach and its components | | Pages 6–7, 37, 67, 92–93 | |
| | 103–3 | Evaluation of the management approach | | Page 117 | |

## MATERIAL TOPIC: MANAGING CLIMATE RISK AND OPPORTUNITIES

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 28, 32, 43, 44, 48 | ✓ |
| | 103–2 | The management approach and its components | | Pages 44, 48 | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 44, 48, 117 | |

## MATERIAL TOPIC: INNOVATION, DEVELOPMENT AND DIGITALISATION

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 28–29, 31, 37, 43, 75–79 | ✓ |
| | 103–2 | The management approach and its components | | Pages 6–7, 37, 68–69, 75–79 | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 68–69, 117 | |

## MATERIAL TOPIC: NEW TECHNOLOGIES FOR ADAPTATION AND TACKLING CLIMATE CHANGE

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 75–78 | ✓ |
| | 103–2 | The management approach and its components | | Pages 32, 44, 56, 75–78 | ✓ |
| | 103–3 | Evaluation of the management approach | | Page 117 | |

## MATERIAL TOPIC: CONTRIBUTION TO THE EFFICIENT FUNCTIONING OF THE ENERGY MARKET

| | | | | | |
|---|---|---|---|---|---|
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 60–61 | ✓ |
| | 103–2 | The management approach and its components | | Pages 60–63 | ✓ |
| | 103–3 | Evaluation of the management approach | | Page 117 | |

| | | | | | |
|---|---|---|---|---|---|
| MATERIAL TOPIC: OPEN DATA | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 73–74 | ✓ |
| | 103–2 | The management approach and its components | | Pages 73–74 | ✓ |
| | 103–3 | Evaluation of the management approach | | Page 117 | |
| OTHER TOPICS | | | | | |
| **GRI 203 – Indirect economic impacts (2016)** | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 6–7, 42–43 | ✓ |
| | 103–2 | The management approach and its components | | Pages 6–7, 16–17, 19–20, 23–24, 28–29, 32, 48–58, 64–67, 68–79 | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 19–20, 117 | |
| GRI 203: Indirect economic impacts (2016) | 203–1 | Infrastructure investments and services supported | 6.3.9<br>6.6.6<br>6.6.7<br>6.7.8,<br>6.8.1-<br>6.8.2<br>6.8.5<br>6.8.7<br>6.8.9 | Pages 6–7, 23–25, 28–29, 32, 48–58, 64–67, 68–79 | ✓ |
| | 203–2 | Significant indirect economic impacts | | Pages 44, 48–67 | ✓ |
| **GRI 204 – Procurement practices (2016)** | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 42–43, 45 | ✓ |
| | 103–2 | The management approach and its components | | Pages 7, 45 | ✓ |
| | 103–3 | Evaluation of the management approach | | Pages 45, 117 | |
| GRI 204: Procurement practices (2016) | 204–1 | Proportion of spending on local suppliers | 6.4.3<br>6.6.6<br>6.8.1<br>6.8.2<br>6.8.7 | Page 45 | ✓ |
| **GRI 302 – Energy (2016)** | | | | | |
| GRI 103: Management approach | 103–1 | Explanation of the material topic and its boundary | 6<br>7.3.1<br>7.4.3<br>7.7.3<br>7.7.5 | Pages 31, 82–84 | ✓ |
| | 103–2 | The management approach and its components | | Pages 31, 42–43, 82–84 | ✓ |
| | 103–3 | Evaluation of the management approach | | Page 117 | |
| GRI 302: Energy (2016) | 302–1 | Energy consumption within the organisation | 6.5.4 | Pages 82–84, 86–87 | |
| | 302–2 | Energy consumed outside the organisation | | Pages 84, 86 | |
| | 302–3 | Energy intensity | | Pages 82–84 | |



# SASB STANDARDS TABLE

IPTO aims at continuously improving the manner of disclosing its impacts and performance in relation to sustainable development. In this context and on a voluntary basis, the most relevant SASB Standards performance indicators related to the Company's activity are presented in the table below. The figures reflect the Company's performance on an annual basis as recorded at the end of the year 2021.

| Standard: Infrastructure Sector – Electric Utilities & Power Generators | | | | |
|---|---|---|---|---|
| **Topic** | **SABS Code** | **Accounting metric** | **Reference** | **External verification** |
| ACCOUNTING METRICS | | | | |
| Workforce Health & Safety | IF-EU-320a.1 | Total recordable incident rate (TRIR) | Page 108 | ✓ |
| | | Fatality rate | Page 108 | ✓ |
| Grid Resiliency | IF-EU-550a.1 | Number of incidents of non-compliance with physical and/or cybersecurity standards or regulations | No such event occurred. | ✓ |
| | IF-EU-550a.2 | System Average Interruption Duration Index (SAIDI) | 13min/year | ✓ |
| | | System Average Interruption Frequency Index (SAIFI) | 13min/year | ✓ |
| ACTIVITY METRIC | | | | |
| Activity Metric Description | IF-EU-000.C | Length of transmission and distribution lines | Page 8 | ✓ |

# ATHENS STOCK EXCHANGE ESG INDEX

| ESG ID | Metric title/description | Reference / note |
|---|---|---|
| ENVIRONMENT | | |
| C-E1–1 | Scope 1 emissions – Total amount of direct emissions (Scope 1) | 85 |
| C-E1–2 | Scope 1 emissions – Greenhouse gas intensity of Scope 1 emissions | 85 |
| C-E2–1 | Scope 2 emissions – Total amount of indirect emissions (Scope 2) | 85 |
| C-E2–2 | Scope 2 emissions – Greenhouse gas intensity of Scope 2 emissions | 85 |
| C-E3–1 | Energy consumption and production – Total amount of energy consumed within the organisation | 83–85 |
| A-E2–1 | Climate change risks and opportunities – Discussion of climate change-related risks and opportunities that can affect business operations | 44, 56–58, 75–78 |
| A-E3–1 | Waste management – Total amount of hazardous waste | 87 |
| A-E3–2 | Waste management – Total amount of non-hazardous waste | 87 |
| A-E3–3 | Waste management – Percentage of waste by type of treatment – Recycling | 87 |
| A-E5–1 | Waste management – Percentage of waste by type of treatment – Incineration | 88–91 |
| SS-E4–1 | Water management – Description of water management risks and the respective mitigation measures taken | Not relevant indicator to IPTO's activity. |
| SOCIETY | | |
| C-S1–1 | Stakeholder engagement – Discussion of the organisation's main stakeholders and analysis of key stakeholder engagement practices | 34–37 |
| C-S2–1 | Percentage of female employees | 104 |
| C-S3–1 | Percentage of women in managerial positions (i.e., top 10% of employees by total compensation) | 104, 112, (23%) |
| C-S5–1 | Employee training – Average hours of training in the top 10% of employees based on total compensation | 110 |
| C-S5–2 | Employee training – Average hours of training in the bottom 90% of employees based on total compensation | 110 |
| C-S6–1 | Human rights policy – Description of human rights policy and fundamental principles | 111 |
| C-S7–1 | Percentage of employees covered by collective bargaining agreements | 104 |
| A-S2–1 | Total expenditure on employee training | 109 |
| A-S3–1 | Gender pay gap – Percentage difference between men's and women's earnings | There is no difference in wages and provisions based on gender. |
| SS-S6–1 | Health and safety performance – Number of injuries | 108 |
| SS-S6–2 | Health and safety performance – Number of fatalities | 108 |
| SS-S6–3 | Health and safety performance – Accident frequency rate | 108 |
| SS-S6–4 | Health and safety performance – Accident severity rate | 0 |
| GOVERNANCE | | |
| C-G1–2 | Board composition – Chairman classification | 116 |
| C-G1–3 | Board composition – Percentage of female board members | 116 |
| C-G1–4 | Board composition – Percentage of non-executive members | 116 |
| C-G1–5 | Board composition – Percentage of both non-executive and independent board members | 116 |
| C-G2–1 | Sustainability oversight – Sustainability oversight approach description | 117 |
| C-G3–1 | Materiality – Description of the materiality assessment process | 42–43 |
| C-G4–1 | Sustainability policy – Description of the sustainability policy and fundamental principles | 28–37 |
| C-G6–1 | Data Security Policy – Description of the data security policy and fundamental principles | 70–72 |
| A-G1–1 | Business model – Discussion of the business model and value creation | Annual Financial Rport 2021 Pages 6–7 |
| A-G2–1 | Total amount of monetary losses as a result of business ethics violations | No such losses |
| A-G3–1 | ESG targets – Short-term objectives associated with strategic ESG objectives | 23–25 |
| A-G3–3 | ESG targets – Long-term objectives associated with strategic ESG objectives | 28–29 |
| A-G5–1 | External assurance – Discussion of external assurance on reported ESG information | 133 |
| G-SD1–1 | Data coverage | IPTO Group |

# EXTERNAL ASSURANCE

**EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.**
89 CHLOIS & LYKOVRISEOS, 144 52 METAMORFOSI, ATHENS, GREECE
TEL. +30 210 6252495, 6252495
INTERNET SITE: www.eurocert.gr
e-mail: info@eurocert.gr
FAX: 210 6203018

## EUROCERT

### External Assurance Statement for IPTO
### Sustainability Report 2021
### (No. KZ/69117)

**Information on the Assurance Statement**

The Assurance Provider EUROCERT has been engaged to provide external assurance on the disclosures published in the Sustainability Report 2021 ('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 2021 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 August and September 2022:

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.



**EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.**
89 CHLOIS & LYKOVRISEOS, 144 52 METAMORFOSI, ATHENS, GREECE
TEL. +30 210 6252495, 6252495
INTERNET SITE: www.eurocert.gr
e-mail: info@eurocert.gr
FAX: 210 6203018

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.*

**EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.**
89 CHLOIS & LYKOVRISEOS, 144 52 METAMORFOSI, ATHENS, GREECE
TEL. +30 210 6252495, 6252495
INTERNET SITE: www.eurocert.gr
e-mail: info@eurocert.gr
FAX: 210 6203018

On behalf of EUROCERT,
Athens, 16th of September 2022

Managing Director
Georgios Briskolas

Nikolaos Sifakis
Lead Auditor