

## ANNUAL REPORT 2015

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## 1 COMPOSITION OF MANAGEMENT BODIES

### 1.1 Board of Directors

The Board of Directors has the following members:

- Mr Pier Francesco Zanuzzi, *Vice-Chairman of the Board of Directors up until 24 April 2015, Chairman of the Board of Directors as from 19 June 2015*
- Mr Daniel Dobbeni, *Chairman of the Board of Directors up until 24 April 2015*
- Mr Gianni Armani, *Chairman of the Board of Directors from 24 April 2015 until 18 June 2015*
- Mr Mike Calviou, *Vice-Chairman of the Board of Directors up until 18 November 2015*
- Mr Philip Sheppard, *Vice-Chairman of the Board of Directors as from 19 November 2015*
- Ms Cordelia O'Hara, *director*
- Mr Dirk Biermann, *director*
- RTE Réseau de Transport d'Electricité SA, with Mr Sébastien Henry as its permanent representative, company director as from 1 September 2015 replacing Mr Dominique Maillard up until 1 September 2015
- Ms Brigitte Peyron, *director*
- Mr Carlo Sabelli, *director*
- Mr Frank Vandenberghe, *director*
- Mr Dirk Aelbrecht († 24 January 2016<sup>1</sup>), *director from 24 April 2015 until 24 January 2016*
- Ms Maria José Clara, *director as from 19 November 2015*

As certain directorships expired on 24 April 2015, the company's Ordinary General Meeting of 24 April 2015 (re)appointed Mr Mike Calviou, Ms Cordelia O'Hara, Mr Dirk Biermann, Mr Dominique Maillard, Ms Brigitte Peyron, Mr Carlo Sabelli, Mr Gianni Armani, Mr Frank Vandenberghe and Mr Dirk Aelbrecht as company directors.

Mr Gianni Armani was appointed Chairman of the Board of Directors by the latter on 24 April 2015 for a term of three years up until the company's Ordinary General Meeting to approve the annual accounts as at 31 December 2017, replacing Mr Daniel Dobbeni, whose chairmanship expired immediately after the company's Ordinary General Meeting of 24 April 2015.

Mr Mike Calviou was reappointed Vice-Chairman of the company's Board of Directors by the latter on 24 April 2015 for a term of three years up until the Ordinary General Meeting to decide on the annual accounts as at 31 December 2017.

Following the resignation of Mr Gianni Armani as company director as from 18 June 2015, Mr Pier Francesco Zanuzzi (whose directorship expired on 24 April 2015) was co-opted as a director and appointed Chairman of the company's Board of Directors by the latter on 19 June 2015 replacing Mr Gianni Armani.

On 19 November 2015 the company's Board of Directors co-opted RTE Réseau de Transport d'Electricité SA, with Mr Sébastien Henry as its permanent representative, as company director as from 1 September 2015 replacing Mr Dominique Maillard. Next, the company's Ordinary General Meeting of 19 November 2015 definitively appointed RTE Réseau de Transport d'Electricité SA, with Mr Sébastien Henry as its permanent representative, as a company director for a term that expires immediately after the company's Ordinary General Meeting in 2018 related to the financial year ending 31 December 2017.

Following the resignation of Mr Mike Calviou effective 18 November 2015, the company's Board of Directors on 19 November 2015 co-opted Mr Philip Sheppard as a company director and appointed him Vice-Chairman of the company's Board of Directors as from 19 November 2015. Next, the company's Ordinary General Meeting of 19 November 2015 definitively appointed Mr Philip Sheppard as a company director for a term that expires immediately after the company's Ordinary General Meeting in 2018 related to the financial year ending 31 December 2017.

<sup>1</sup> The Board was greatly saddened to learn of the death of Mr Dirk Aelbrecht on 24 January 2016.

Following the entry of REN – Rede Elétrica Nacional, S.A. into the company's share capital as a new shareholder, the company's Extraordinary General Meeting on 19 November 2015 appointed Ms Maria José Clara as a company director for a term that expires immediately after the company's Ordinary General Meeting in 2018 related to the financial year ending 31 December 2017.

None of the directorships are remunerated and all will expire immediately after the 2018 Ordinary General Meeting to approve the annual accounts as at 31 December 2017.

The Board met six times in 2015 and discussed technical, financial, economic and strategic issues.

## 1.2 Daily management responsibilities

Mr Patrick De Leener was appointed head of operations, with the title Chief Executive Officer, effective as from 1 January 2013.

Mr Cédric Auxenfans was appointed Chief Operating Officer, effective as from 1 August 2012.

## 1.3 Auditors

The Ordinary General Meeting of 24 April 2015 appointed KPMG Réviseurs d'Entreprises SCCRL and Ernst & Young Réviseurs d'Entreprises SCCRL as the company's auditors for a term of three years, expiring at the 2018 Ordinary General Meeting to approve the annual accounts for the year ending 31 December 2017. KPMG Réviseurs d'Entreprises SCCRL is represented by Benoît Van Roost (as from 10 October 2014, previously by Alexis Palm) and Ernst & Young Réviseurs d'Entreprises is represented by Marnix Van Dooren.

The auditors' remuneration is € 12,925.00 per year, to be indexed annually in line with the consumer price index. Amount indexed for the year 2015 = € 13,350.00

## 2 MAIN EVENTS DURING THE YEAR

Coreso's shareholders are Elia System Operator (Belgium), RTE (France), National Grid (UK), Terna (Italy), 50Hertz (eastern Germany and Hamburg) and REN (Portugal).

Coordination of Electricity System Operators (Coreso), which launched its operations in February 2009, is the first technical coordination centre in continental Europe to be shared by multiple electricity transmission system operators (TSOs). Coreso has notably enhanced the operational coordination of transmission systems in the Western Europe region in response to new challenges. The development of renewable energies, which are by nature intermittent, and the increase in cross-border exchanges within the European electricity market make electricity flows increasingly variable. In this field, Coreso has demonstrated a high level of reliability and expertise. Its added value in terms of identifying situations which pose a potential risk to the electricity system – risks which can only be detected by having an overview extending beyond the national scope of each individual transmission system – is now essential.

Specifically, Coreso provides the control centres of participating transmission systems with forecasts about the security of systems within its observation zone. To that end, Coreso conducts security analyses, and also simulates various scenarios and suggests remedial action. Coreso coordinates exchanges between the various national control centres, which remain responsible for implementing these actions within their respective systems, with a view to obtaining the agreement of each control centre for the proposed remedial action.

In 2015, Coreso was able to provide D-1 (= day-ahead, i.e. one day before real time) analysis and coordination services every day for the seventh consecutive year.

As well as security analysis activities and projects under development, 2015 saw the following operational developments:

### **Calculating capacity on the Italian border (Central and Southern Europe (CSE) area)**

As a coordination centre (on behalf of RTE Terna and Eles) and in cooperation with Swissgrid, APG and TSCNet, Coreso is in charge of performing data quality checks, merging files and calculating 2 days ahead (D-2) maximum import capacities at the northern Italian border.

Using a data improvement loop, security analyses and an innovative algorithm that automatically identifies the best set of remedial actions in situations in which there are constraints (phase-shifting transformer, specific topology in a substation and redispatching), Coreso helps its partners to implement this project, which is geared towards a technically and economically optimised D-2 capacity system to replace the annual capacity-calculation process.

Testing and development of the new service commenced in February 2014 in the form of the results of two optimised capacity calculations being supplied on a daily basis. The analyses conducted by Coreso enable TSOs to fine-tune the method used and to provide better quality input data. The testing phase with the relevant external market players and publication of the results began in mid-2015, paving the way for these daily values to be used to determine actual capacity allocation from early February 2016.

Coreso worked with the same partners on a project to implement a similar intraday capacity-calculation process in the CSE area. This project is currently at the design-specification stage. The main challenges are a high degree of automation and improved performance due to the very short deadlines expected for intraday market allocation processes.

### **D-1 security analysis of the South East England network**

Coreso has been carrying out its first D-1 operational process with CGMES files (future European format) since 30 October 2015.

In parallel with National Grid, Coreso analyses constraint limits on the South East England network at two different times (off-peak and peak) and provides a detailed report of the findings.

The next step is to perform this calculation every hour, 24 times a day.

### **Flow redirection over the Great Britain/continental Europe interconnectors**

On 19 November 2015, Coreso tested an operational procedure in real time. The procedure is based on the capacity to adjust energy flows in the IFA (between France and Great Britain) and Britned (between Great Britain and the Netherlands) direct-current cables following gate closure, without affecting any previous commercial arrangements.

This involved simultaneously modifying the set points of the two direct-current cables in opposite directions so that each TSO's energy balance remains unchanged. Only internal flows on the National Grid and continental grids are altered.

This successful test led to the approval of a new operational solution in North-Western Europe (NWE)/Central West Europe (CWE) to reduce constraints on AC grids by redirecting flows over DC cables. This solution also limits imbalance costs for stakeholders if one of the DC cables fails by allocating the lost capacity based on the available capacity in the remaining cables.

This may also be an alternative to expensive redispatching.

The next stage is to turn this test into a permanent, fully-fledged solution for the TSOs involved and cable owners.

### **Activities linked to the market coupling mechanism – (CWE area)**

Since May 2015, day-ahead market coupling within the CWE area has been based on the flow-based methodology for calculating border exchange capacities, replacing the ATC market coupling mechanism. This is a world first and has had an immediate and significant positive impact on electricity prices, which are converging much more frequently in the CWE area.

Since this flow-based coupling mechanism became operational, Coreso has been confirmed as the operator of the CWE area's joint flow-based system on behalf of RTE and Elia. Coreso also hosts the platform used in market coupling.

Furthermore, the seven TSOs involved in the CWE area have confirmed Coreso's operational role in coordinating validation and verification of D-2 capacity forecasts for each TSO's grid; these values are crucial for calculating regional flow-based capacity.

After this new mechanism for calculating D-2 border exchange capacities was launched, Coreso developed new processes to assess intraday capacities in the CWE area. Coreso developed processes and tools in order to act as the contact point for RTE and Elia and coordinate with the other TSOs on the CWE borders. A night calculation and a day calculation for early-evening peak-load hours will be carried out every day from early 2016.

Since September 2015, Coreso has been finalising and testing out an automatic optimisation algorithm for remedial action that will be incorporated into future intraday capacity-calculation processes also based on the flow-based methodology.

### **Portal detailing the reliability of forecast files for local systems and their new standard**

Virtually all monitoring, security-calculation and cross-border-capacity calculations on the European grid rely on the accuracy of forecasts (D-2, D-1 and intraday) supplied by each TSO for their particular control area. All these activities first undergo quality checks following which local forecasts by TSOs are verified to obtain the most coherent and most reliable forecast possible for the European market as a whole. Being able to detect anomalies in local forecasts and communicate them rapidly to TSOs so that they can correct them within a very short timeframe is crucial. In partnership with two other coordination centres (TSCNet and SCC), Coreso spearheaded development and provision of a joint European-level portal on which the results of this validation are published for all TSOs in continental Europe. The portal came online in early 2015.

The development of this platform will be included in the project to implement the European Merging Function, which will enforce a new standard describing grid models exchanged in this manner, called the Common Grid Model Exchange Standard (CGMES). This function's deployment, which will be enforced by several Regional Security Coordination Initiatives (RSCIs), is managed at ENTSO-E level by Coreso.

### **Analysis of short and medium-term generation and demand adequacy at European level**

European countries are currently and increasingly faced with the challenge of meeting load – i.e. demand – with sufficient electricity generation. The fundamental reasons for this are the strong and intermittent presence (or absence) of renewable energy and the increasingly uncertain profitability of conventional generating facilities. If energy is not present - at any given time - in a particular country, potential help from other countries depends on the global availability of electrical energy and the grid capacity to transmit it to the country in need. Seasonal studies (winter and summer) are carried out at European level covering six months. The aim of the project analysing the short and medium-term adequacy (SMTA) of generation and demand at European level is to design and implement a week-ahead, two-days-ahead and day-ahead process. Coreso is running this project for ENTSO-E at European level. Setting up the project, analysing the existing situation as well as developing a simple design and prototype tools enabled Coreso to successfully begin initial testing with 21 European TSOs and the involvement of two other centres (RSCI) in December 2015. Early lessons learned from this experience will be used to improve the design in 2016.

## IT

To meet the ever growing and increasingly critical requirements of its business processes, Coreso is taking steps to shore up its IT infrastructure. Putting in place a completely new, high-availability environment will ensure that the group's IT infrastructure will be able to cope with increasingly demanding requirements in terms of the continuity of its business processes, both now and in the future. This new architecture was implemented in 2015.

Coreso played an active role in designing and establishing the ENTSO-E operational planning-data exchange platform (OPDE Project) to ensure that the new platform was integrated as well as possible.

### Creation of new jobs

To cope with the extension of its services and to manage related projects, Coreso continues to strengthen itself and become more professional. In particular, more staff are to be taken on for the Project unit (three additional FTEs) and the Operational unit (two additional FTEs).

## 3 OUTLOOK

### A new level of regional coordination in Europe: a key role for RSCIs and bottom-up implementation ensuring Europe-wide coverage

In late 2014, ENTSO-E approved its vision for European operational coordination based on RSCIs.

To summarise, the following functions are a top priority for ENTSO-E with respect to inter-TSO operational coordination (the so-called 'minimum coordination functions'):

1. Improved delivery of the Individual Grid Model (IGM)/Common Grid Model (CGM),
2. Capacity calculation to be allocated to regional markets,
3. Security analysis (including analysis and proactive coordination of remedial action),
4. Short and medium-term offer-demand adequacy,
5. Inter-TSO outage-planning coordination.

The corresponding implementation plan was compiled by ENTSO-E during the first half of 2015.

At the ENTSO-E Assembly of 10 December, **the multilateral agreement for RSCI-based TSO cooperation was approved and signed by the TSOs.**

With this contractual mandatory framework, TSOs across Europe are taking up the commitment to establish five regional coordination services and to set up or appoint RSCIs to perform these coordination services.

With this major step taken, RSCIs have now evolved from voluntary initiatives to initiatives with a structural role and place.

Within this context, REN, the Portuguese TSO, became a shareholder in Coreso on 19 November 2015 and Eirgrid and SONI (the Irish and Northern Irish TSOs) have also taken steps towards becoming shareholders in Coreso.

## 4 SUBSIDIARIES

The company has no subsidiaries.

## 5 EVENTS AFTER THE END OF THE YEAR

No significant events occurred after the end of the financial year.

## 6 NOTES TO THE ANNUAL ACCOUNTS

### 6.1 Introduction

#### 6.1.1 Key figures

In thousand €	31 December 2015	31 December 2014
EBITDA*	951.32	1,034.41
EBIT*	375.42	370.32
Net result (before tax)	393.11	379.98
Net result (after tax)	218.39	214.03
Solvency ratio	47.51%	47.5%
Liquidity ratio	103.32%	123.83%

*Solvency = equity/total assets*

*Liquidity = current assets/short-term liabilities*

*\*EBIT = earnings before interest and taxes*

*\*EBITDA = EBIT + amounts written off/depreciation*

### 6.2 Balance sheet

#### 6.2.1 Fixed assets

Fixed assets include the following:

In thousand €	2015	2014
Intangible fixed assets	30.68	29.92
Property, plant and equipment	1,859.79	1,264.10
TOTAL FIXED ASSETS	1,890.47	1,294.02

The investments made in 2015 were in software and hardware and totalled € 1,172,350.

The net book value of fixed assets was €1,890,470 and includes cumulative depreciations at year-end 2015 totalling € 575,900.

#### 6.2.2 Current assets

'Trade debtors' totalled € 570,410.

'Other amounts receivable' includes recoverable subsidies, taxes and VAT totalling € 46,670. plus a total of € 157,350 in reimbursable social security contributions.

Cash comprises liquidities worth € 1,346,240 of which € 500,000 is invested for a short period.

#### 6.2.3 Deferred charges and accrued income

This item comprises operating expenses and rents to be deferred to financial year 2015 (€ 119,640).

#### 6.2.4 Equity

As at 31 December 2015, share capital totalled € 1,000,000 represented by 15,210 shares and was fully paid up at the time Coreso was set up.

Following the positive results for the financial year 2015 (€ 218,390), a € 10,920 appropriation to the legal reserve was booked. The remainder of the distributable profit (€ 207,470) has been carried forward.

In 2010, a subsidy of € 68,780 was received from the European Union in connection with the Twenties project. This amount was booked as a subsidy and transferred to the result in proportion to the depreciation of the investments in question.

An amount of € 12,610 was booked to the 2015 results; there is no longer any remainder carried forward for the capital subsidies.

Equity amounted to € 1,962,490 after appropriation of the 2015 result.

#### 6.2.5 Debts

'Trade debts' at year-end 2015 totalled € 1,481,910. They relate to invoices not yet due totalling € 97,310 and invoices receivable totalling € 1,384,600.

Social security liabilities cover a number of provisions such as holiday allowances, bonuses and personnel insurance. The total amount for this item is € 632,840.

Tax debts totalled € 17,020 all of which comprises tax payable for 2014.

#### 6.2.6 Accrued charges and deferred income

This item comprises receivable subsidy amounts totalling € 36,530.

### 6.3 Income statement

#### 6.3.1 Operating income

Operating income can be subdivided as follows:

In thousand €	2015	2014
Operational fees	7,059.11	6,632.74
Other operating income	1,333.75	1,192.98
<b>Total</b>	<b>8,392.86</b>	<b>7,825.72</b>

The operational fees relate to security analysis services for the CWE grid.

'Other operating income' encompasses income relating to D-2 country merge, flow-based market coupling, ATC hosting and the recovery of withholding tax on personal income.

#### 6.3.2 Operating expenses

Operating expenses totalled € 3,949,140 for 2015 (compared with € 3,769,980 in 2014) and relate to the costs of rent, consultants, IT maintenance, representation, and so on.



### 6.3.3 Personnel expenses

Remuneration and social security costs are broken down as follows:

In thousand €	2015	2014
Remuneration	2,538.66	2,339.09
Social security costs	886.48	666.77
Other social security expenses	10.12	15.38
<b>Total</b>	<b>3,435.26</b>	<b>3,021.24</b>

The rise from € 3,021,240 (2014) to € 3,435,260 (2015) is generally due to the increase in full-time equivalents from 26 in 2014 to 28.2 in 2015.

### 6.3.4 Depreciation

Depreciation of property, plant and equipment totalled € 575,900 and is calculated according to the valuation rules approved by the Board of Directors, as indicated in the annual accounts.

### 6.3.5 Financial income

Financial income amounted to € 20,970, of which € 2,250 was generated by cash investments made in 2015. An amount of € 12,610 relating to the subsidy was allocated under this item. The other amount of € 6,110 comes from exchange differences.

### 6.3.6 Financial charges

Financial charges amounted to €3,280 of which €2,770 comprises exchange differences.

### 6.3.7 Taxes

In 2015, the profit before tax was € 393,110. After applying notional interest and taking into account disallowed costs, Coreso's tax expense in 2015 was € 174,730.

### 6.3.8 Net profit

For 2015, Coreso booked a net profit after tax of €218,390.

## 6.4 Appropriation account

At the Ordinary General Meeting to be held on 21 April 2016, the Board of Directors will approve the following appropriation:

In thousand €	2015	2014
Profit for the financial year	218.39	214.03
Profit carried forward from the previous year	706.89	503.56
Appropriation to the legal reserve	10.92	10.70
Distribution of the dividend	0.00	0.00
Result to be carried forward	914.36	706.89

## 6.5 Financial instruments

Coreso does not use financial instruments to hedge possible future risks.

## 7 DESCRIPTION OF THE RISKS AND UNCERTAINTIES FACING THE COMPANY

### 7.1 Financial risks

Coreso's funding needs are met by the contributions of its shareholders. To meet its needs, Coreso draws up a budget and reviews it in good time with its shareholders, which are also its main customers. In the event of unforeseen funding needs, Coreso can appeal to its shareholders for the release of extra cash at very short notice. Since its shareholders are also exposed to inherent financial risks, there is a residual financial risk for Coreso if any of its shareholders default. However, Coreso's residual risk remains very low when its shareholders are taken into account.

### 7.2 Data quality risks

In its role as coordinator of Transmission System Operators (TSOs), Coreso performs analyses of cross-border electricity flows, advises TSOs on congestion management, and contributes to Security of Supply (SoS) operations. To perform these tasks as effectively as possible, Coreso relies heavily on data from all the TSOs concerned and on this data being complete, validated according to the agreed acceptance criteria, consistent, accurate and delivered on time. Initiatives are under way within ENTSO-E to put in place a structural framework for the provision of harmonised qualitative data by TSOs. Coreso is actively involved in this.

### 7.3 ICT risks

Coreso is also highly dependent on the continuity of its ICT infrastructure to deliver its services in good time.

The management of the ICT infrastructure, including software applications and their hosting and data storage, is outsourced to external suppliers and service providers. A single supplier acts as the first line of support for troubleshooting any ICT issues. All contracts with ICT providers include guarantees on long-term support and maintenance services for all critical ICT components.

The power supply for ICT infrastructure is also backed up by uninterruptible power supply systems in Brussels and Lomme (France).

In addition, following a comprehensive IT audit in 2013, a work plan for enhancing the company's IT maturity was implemented in 2014 and 2015. IT resources were also upgraded as part of the plan.

### 7.4 HR risks

Coreso's strength lies in the quality of its staff, exposing the company to various risks, i.e. inadequate skill sets, the strain of work shifts inherent to Coreso's monitoring activities, and FTE turnover. Coreso relies on the pool of experts provided by its shareholders to fill any sudden gaps in human resources and has drawn up plans for joint training with the engineers employed by its TSOs.

### 7.5 Risks related to regulatory changes among European TSOs regarding coordination

The consolidation of international power exchanges following the liberalisation of the European electricity market, combined with the need to ensure overall security of supply in Europe, led to a need for increased cooperation and coordination among European TSOs.

Although decisions will still need to be taken by TSOs on the legal front, on roles and responsibilities, on governance and on the tools or expertise of future European coordination entities, there remains a risk that Coreso may not be sufficiently prepared for the future cooperation and coordination needs of the market and its players. Coreso can mitigate this risk by proactively identifying needs, adapting to be able to meet those needs and positioning itself as a trusted long-term partner.

Furthermore, the need for greater coordination is now widely acknowledged and in fact formally established. Plans to put in place a structural framework for Europe-wide operational coordination via RSCIs was formally approved by ENTSO-E in late 2014. In spring 2015 the implementation plan was drawn up and in December 2015 a multilateral contract was signed committing all TSOs.

### 7.6 Other risks

Coreso realises that there may be other risks of which the company is unaware, or that risks currently deemed negligible may become more significant in the future.

## 8 RESEARCH AND DEVELOPMENT

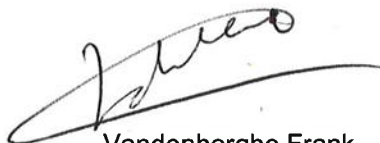
Coreso is involved in two European projects:

- iTesla: "Innovative Tools for Electrical System Security within Large Areas, designed to promote the future coordinated and stable operation of the pan-European electricity transmission system". Coreso will provide its expertise to aid the development of the tools needed for effective future coordination;
- GARPUR: "Generally Accepted Reliability Principle with Uncertainty modelling and through probabilistic Risk assessment". Coreso is a member of the Reference Group and takes part in workshops aimed at TSOs, and in the session to demonstrate a prototype of the quantification platform designed to be used to test various reliability criteria (at the end of the project, in 2017).

29 April 2016



Sabelli Carlo  
Director



Vandenberghe Frank  
Director

