ACTIVITY REPORT

ENERGY REGULATORS
REGIONAL ASSOCIATION

2018

CONTENT

WELCOME TO ERRA'S 2018 ACTIVITY REPORT!

I am honoured to present to you ERRA's 2018 Annual Report which showcases the many ways ERRA member regulators cooperate and the wide range of programs our Association provides to its member and partner base. Contrary to many annual reports, this publication will not give its readers numerical information, it rather aims to provide a portrait of ERRA from the point of view of its members, services and everyone else with whom we interact.

We are witnessing the massive transformation of the energy sector. The pace and scale of changes in generation, networks, retail markets and consumer aspects is very different from what we have experienced ever before. This made us revisit our strategy in 2018, make certain shifts and introduce new programs under the auspices of ERRA's modified strategic vision: "to be a reference point for practice and knowledge in the constantly evolving regulatory environment".

All the programs and projects we implemented in 2018 were designed with the above vision in mind, thus you might have noticed adjusted programs, modified contents, new techniques and innovative ideas in order to assist our members better navigate and maneuver during these turbulent times. You will continue to see innovative ERRA programs in 2019 and we hope that you will be partnering with us to adjust to the change.

We welcome our new members joining ERRA in 2018. These organisations are:

- Energie-Control, Austria
- Azerbaijan Energy Regulatory Agency, Azerbaijan
- Energy Regulatory Office, Czech Republic
- Gas Regulatory Authority, Egypt
- Palestinian Electricity Regulatory Council, Palestine
- Peru's Regulatory Agency for Investment in Energy and Mining, Peru

I would like to end with a word of thanks. First of all to our member base, their commitment and dedication makes ERRA what it is. Then, to the staff of the Secretariat who is the engine of the work ERRA carries out. Then, to all our partners, for their confidence, participation and cooperation!

Märt Ots
Chairman
ERRA

مرحباً بكم في تقرير أنشطة الجمعية الإقليمية لمنظمي الطاقة لعام 2018

يشرفني أن أضع بين أيديكم تقرير أنشطة الجمعية السنوي لعام 2018 والذي يتطرق إلى مجالات التعاون بين المنظمين ويلقي الضوء على البرامج المختلفة التي تقدمها الجمعية لأعضائها وشركائها. وبخلاف التقارير السنوية السابقة، لا يقدم هذا التقرير أرقام وبيانات مالية، بل يهدف إلى استعراض صورة متكاملة للجمعية من وجهة نظر الأعضاء والجهات الأخرى إضافة إلى الخدمات المقدمة.

نحن نشهد اليوم تحولات واسعة النطاق في قطاع الطاقة، إذ تختلف وتيرة التغييرات في مجالات التوليد والشبكات وأسواق البيع بالتجزئة وجوانب المستهلكين اختلافاً كبيراً عن السنوات المنصرمة. وهذا ما جعلنا نعيد النظر في استراتيجيتنا لعام 2018 وطرح برامج جديدة ضمن الرؤية الجديدة والتي تتمثل في "أن نكون منصة مرجعية لأفضل الممارسات والخبرات الدولية في قطاع تنظيم الطاقة الذي يتسم بالتطور المضطرد"

إن جميع البرامج والمشروعات التي قمنا بتنفيذها في عام 2018 تم إعدادها لتكون متوافقة مع رؤيتنا الجديدة، وبالتالي لعلكم لاحظتم برامج ومحتويات وتقنيات جديدة وأفكارًا مبتكرة وذلك من أجل مساعدة أعضائنا على البحث والتخطيط بشكل أفضل خلال أوقات التغييرات المختلفة. وسوف نستمر في تعزيز الابتكار ضمن برامج الجمعية خلال عام 2019 ونأمل أن تكونوا شركائنا في التكيف مع التغيير.

ونرحب بالأعضاء الجدد المنضمين إلى الجمعية في عام 2018 وهم:

- هيئة تنظيم الطاقة - جمهورية النمسا
- هيئة تنظيم الطاقة- جمهورية أذربيجان الديمقراطية
- مؤسسة تنظيم الطاقة- جمهورية التشيك
- جهاز تنظيم أنشطة سوق الغاز- جمهورية مصر العربية
- مجلس تنظيم قطاع الكهرباء الفلسطيني- دولة فلسطين
- مؤسسة تنظيم الاستثمار في الطاقة والتعدين- جمهورية البيرو

وأود في الختام أن أنتهز الفرصة لأتقدم بالشكر أولاً لكافة المنظمين الأعضاء لإخلاصهم وحماسهم ودعمهم، ولموظفي الأمانة العامة الذين هم المحرك الرئيسي لأعمال وأنشطة الجمعية، كما أوجه تقديري الجزيل لجميع شركائنا نظير ثقتهم ومشاركتهم الفعّالة وتعاونهم المنشود!

مارت أوتس
رئيس الجمعية الإقليمية لمنظمي الطاقة

Отчет о деятельности ЭРРА за 2018 год

Для меня большая честь представить Вам Годовой отчет ЭРРА за 2018 год, в котором отражены многочисленные способы сотрудничества регулирующих органов ЭРРА и широкий спектр программ, которые наша Ассоциация предоставляет своим членам и партнерам. В отличие многим годовым отчетам, данная публикация не будет предоставлять своим читателям цифровые данные, цель отчета скорее в том, чтобы представить описание ЭРРА с точки зрения ее членов, предоставляемых услуг и всех, с кем мы взаимодействуем.

Мы являемся свидетелями значительной трансформации энергетического сектора. Темпы и масштабы изменений в генерации, сетях, розничных рынках и потребительских аспектах существенно отличаются от того, с чем мы сталкивались когда-либо ранее. Именно это заставило нас в 2018 году пересмотреть нашу стратегию, внести определенные изменения и внедрить новые программы под эгидой усовершенствованной стратегии ЭРРА: «быть ориентиром по практике и знаниям в постоянно изменяющейся среде регулирования».

Все программы и проекты, которые мы реализовали в 2018 году, были разработаны с учетом вышеизложенного, поэтому Вы, возможно, заметили изменения, внесенные в программы, откорректированное содержание, новые методы и инновационные идеи, с целью оказать содействие нашим членам для более эффективного ориентирования и маневрирования в эти неспокойные времена. Отмечу, что и в 2019 году ЭРРА продолжит разработку инновационных программ, и мы надеемся, что Вы и в дальнейшем будете сотрудничать с нами для адаптирования к изменениям.

Мы приветствуем наших новых членов, которые вошли в состав ЭРРА в 2018 году. Этими организациями являются:

- Energie-Control, Австрия
- Агентство по регулированию энергетических вопросов Азербайджана
- Управление по регулированию природного газа, Египет
- Совет по регулированию электроэнергии Палестины
- Агентство по регулированию инвестиций в области энергетики и горнодобывающей промышленности Перу
- Управление по регулированию энергетики, Чешская Республика

В заключении разрешите выразить слова благодарности. Прежде всего нашим членам за их усилия и преданность, которые делают ЭРРА тем, чем она является. Затем, персоналу Секретариата, который является двигателем работы, осуществляемой ЭРРА. А также всем нашим партнерам за доверие, участие и сотрудничество!

Мярт Отс
Председатель ЭРРА

ABOUT ERRA

The Energy Regulators Regional Association (ERRA) is an inter-institutional non-profit organisation unified by the shared goal of its 43 regulatory members to improve energy regulation and to make progress as stable, effective energy regulators with the necessary autonomy and authority to make positive change. ERRA is widely seen as an example of an extremely successful regional association and is recognized as an important international institution.

ERRA has played a vital role in accelerating energy reform and market development in Europe and Eurasia, and the journey from formation to the present day offers important lessons on how to support progress toward self-reliance in energy regulation.

Member regulators exert substantial ownership of ERRA designing the organisation to be demand driven and responsive to its members' needs. ERRA members voluntarily commit their time and expertise to grow the organization, contribute to internal capacity building programs and prepare technical and benchmarking reports, which serve as a key mechanism to spread expertise and best practices among the membership.

ERRA General Assembly meeting

April 23, 2018 // Sochi, Russian Federation

PRESIDIUM

PRESIDIUM MEMBERS

The Presidium is the representative and executive body of the Association. It is subordinated directly to the General Assembly. The Presidium consists of seven Assembly Representatives (each from separate Full Members), its members serve for a two-year period.

MÄRT OTS
ERRA Chairman
DIRECTOR GENERAL
ECA, ESTONIA

H.E. DR. ABDULLAH M. AL-SHEHRI
Presidium Member
GOVERNOR
ECRA, SAUDI ARABIA

NEW in the Presidium since 2018!

ATTILA NYIKOS
ERRA Vice-Chairman
VICE-PRESIDENT FOR INTERNATIONAL AFFAIRS
HEA, HUNGARY

MARIA MANICUTA
Presidium Member
DIRECTOR GENERAL
ANRE, ROMANIA

ROLANDS IRKLIS
Presidium Member
CHAIRMAN
PUC, LATVIA

MUSTAFA YILMAZ
Presidium Member
PRESIDENT
EMRA, TURKEY

MAIA MELIKIDZE
Presidium Member
COMMISSIONER,
GNERC, GEORGIA

NEW in the Presidium since 2018!

MAIA MELIKIDZE
ERRA Presidium Member, Commissioner
GEORGIAN NATIONAL ENERGY AND WATER SUPPLY REGULATORY COMMISSION

WHAT IS YOUR PERCEPTION OF ERRA AS A NEW MEMBER OF THE ERRA PRESIDIUM?

- ERRA – is the opportunity for sharing expertise over smart, national regulation and technical progress taking place in other ERRA member countries;
- It's a really good platform for exchanging information and experience;
- ERRA is the organization which benefits on its own as well as ensures prosperity of member countries' regulatory standards, it is the best example of win-win situation and peer to peer education;
- Networking with other NRAs and companies are necessary and useful for future cooperation.

HOW CAN YOU CONTRIBUTE TO THE FUTURE SUCCESS OF ERRA?

- Active participation; Broadcasting ERRA through media, social networks and making ERRA more outstanding;
- Providing initiatives, ideas, mostly focusing on women participation enhancement in energy sector;
- Attending meetings/workshops/seminars and making contribution in order to make them more interesting and fruitful; discussing challenges existing in different countries' regulations.

WHERE WOULD YOU LIKE TO SEE ERRA IN THE NEXT 2-3 YEARS?

- I wish ERRA to extend and join other additional country members, also ERRA to be more innovative and I see steps taken broadening the fields of markets as well as works;
- ERRA experts to review the idea of implementing twinning programs that will provide NRAs with relevant expertise.

JANUARY

- Joint Virtual Meeting of ERRA Licensing/ Competition and Tariff/Pricing Committees
- 3 new video presentations available: Capacity Remuneration Mechanisms and the UK Experience, EU's REMIT regulation, Electricity security of supply and generation adequacy in Finland

FEBRUARY

- 5th ERRA Training Course: Renewable Energy Regulation
- ERRA has released the 2017 Q3 and Q4 electricity and gas tariffs of its select member countries

MARCH

- ERRA launched its 1st Educational workshop on Energy Capital Investment Programs with exceptionally high number of participants
- ERRA participated in VII World Forum on Energy Regulation in Cancùn, Mexico
- ERRA signed cooperation agreement with partner organisations from developing regions of Africa, the Mediterranean, Central and South America, Central and Eastern Europe, Middle East and Asia
- ERRA online library has been renewed and refreshed: +500 files, English and Russian language materials and Video podcasts are available

APRIL

- Benchmark Analysis on Switching Process by the ERRA Customer and Retail Markets Working Group
- 2018/1 Issue of the ERRA Newsletter
- ERRA General Assembly meeting: New Members joined ERRA and New Presidium Members assumed Office
- Gábor Szörényi (former General Secretary and Chairman of ERRA) was elected as Honorary Member of ERRA

MAY

- 6th ERRA Training Course on Principles of Electricity Markets
- ERRA Customers and Retail Markets Working Group Meeting in Tallinn, Estonia
- ERRA offered limited number of subsidies for Ad Hoc Member and Ad Hoc Consultancy Projects

JUNE

- First meeting of the Liaison officers held in the ERRA office
- Mr. Mart Ots, ERRA Chairman spoke at ETCSEE 2018 Conference in Budapest
- ERRA joined the 7th Workshop of Eastern Partnership Energy Regulatory Bodies organised in Budapest

JULY

- 16th ERRA Summer School – Nearly 50 Regulators and Energy Sector Participants were gathering in Budapest
- ERRA Training Participants' visit to the Paks Nuclear Station
- ERRA 8th educational seminar for Newly Appointed Commissioners and Chairmen

SEPTEMBER

- Best Conference Abstracts Selected
- Innovation and Regulation was presented with a distinguished set of speakers in the framework of ERRA's new educational workshop

NOVEMBER

- ERRA Small Scale Consultancy Project for the Bhutan Electricity Authority (BEA) on RAB
- ERRA's 5-day Training Course on Gas Market Regulation
- 2018/2 Issue of the ERRA Newsletter
- The 7th High-Level Meeting of Regional Associations of Emerging Markets

AUGUST

- New video podcast: Innovation and Regulation

OCTOBER

- 17th ERRA Energy Investment Conference, Conference Abstracts and Posters 2018 and Conference Statement in Antalya, Turkey
- New Members joined ERRA
- 17th ERRA Energy Investment and Regulation Conference: Newsletter Special Edition
- ERRA Member Projects: Estonian Study Visit at the Irish Regulator

DECEMBER

- ERRA Tariff Regulation Training Course for the Oman Power and Water Procurement Company
- ERRA Customers and Retail Markets Group meeting in Istanbul
- ERRA-MEDREG joint training course on Electricity Market Monitoring Tools
- ERRA's Regulatory Specialist, Mr. Ardian Berisha participated in the Arab Electricity Regulators' Forum

ERRA **FULL MEMBERS**

Albanian Energy Regulatory Authority

Public Services Regulatory Commission of **Armenia**

E-Control, **Austria**

Tariff (Price) Council of **Azerbaijan**

Bhutan Electricity Authority

State Electricity Regulatory Commission of **Bosnia and Herzegovina**

Energy and Water Regulatory Commission of **Bulgaria**

Electricity Sector Regulatory Agency of **Cameroon**

Croatian Energy Regulatory Agency

Energy Regulatory Office of **Czech Republic**

Estonian Competition Authority

Georgian National Energy and Water Supply Regulatory Commission

Hungarian Energy and Public Utility Regulatory Authority

Committee on Regulation of Natural Monopolies and Protection of Competition of **Kazakhstan**

State Agency for Fuel and Energy Complex Regulation of the **Kyrgyz Republic**

Public Utilities Commission of **Latvia**

National Commission for Energy Control and Prices of **Lithuania**

National Energy Regulatory Agency of **Moldova**

Energy Regulatory Commission of **Mongolia**

Nigerian Electricity Regulatory Commission

Energy and Water Services Regulatory Commission of **North Macedonia**

Authority for Electricity Regulation of **Oman**

National Electric Power Regulatory Authority of **Pakistan**

Palestinian Electricity Regulatory Council

Energy Regulatory Office of **Poland**

Romanian Energy Regulatory Authority

Federal Antimonopoly Service of the **Russian Federation**

Electricity & Co-Generation Regulatory Authority of **Saudi Arabia**

Energy Agency of **Serbia**

Regulatory Office for Network Industries of **Slovakia**

Energy Market Regulatory Authority of **Turkey**

Regulatory and Supervisory Bureau of Electricity and Water of Dubai, **UAE**

National Energy and Utilities Regulatory Commission of **Ukraine**

ERRA **ASSOCIATE MEMBERS**

Azerbaijan Energy Regulatory Agency

Regulatory Commission for Energy in Federation of **Bosnia and Herzegovina**

Regulatory Commission for Energy in Republika Srpska, **Bosnia and Herzegovina**

ERERA: ECOWAS (Economic Community of West African States) Regional Electricity Regulatory Authority

Gas Regulatory Authority of **Egypt**

Public Utilities Regulatory Commission of **Ghana**

Energy and Mineral Regulatory Commission of **Jordan**

Energy Regulatory Office of **Kosovo***

Peru's Regulatory Agency for Investment in Energy and Mining

National Association of Regulatory Utility Commissioners, **USA**

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

NEW MEMBERS IN NUMBERS

AUSTRIA

Energie-Control

- 8.8 Population (millions)
- 47,971 GDP/Capita (USD)
- 70,823 Total Generation (GWh)
- 11,856 RES Generation (GWh)
- 25,413 Installed capacity (MW)

AZERBAIJAN

Azerbaijan Energy Regulatory Agency

- 9.9 Population (millions)
- 4,131 GDP/Capita (USD)
- 24,337 Total Generation (GWh)
- 233 RES Generation (GWh)
- 8,017 Installed capacity (MW)

EGYPT

Gas Regulatory Authority

- 95.1 Population (millions)
- 2,413 GDP/Capita (USD)
- 189,392 Total Generation (GWh)
- 15,630 RES Generation (GWh)
- 45,008 Installed capacity (MW)

CZECH REPUBLIC

Energy Regulatory Office

- 10.6 Population (millions)
- 20,368 GDP/Capita (USD)
- 87,038 Total Generation (GWh)
- 5,824 RES Generation (GWh)
- 22,267 Installed capacity (MW)

PALESTINE

Palestinian Electricity Regulatory Council

- 4.7 Population (millions)
- 3,094 GDP/Capita (USD)
- 382 Total Generation (GWh)
- 13 RES Generation (GWh)
- N/A Installed capacity (MW)

PERU

Peru's Regulatory Agency for Investment in Energy and Mining

- 31.2 Population (millions)
- 6,571 GDP/Capita (USD)
- 48,993 Total Generation (GWh)
- 31,693 RES Generation (GWh)
- 12,508 Installed capacity (MW)

MR. IGOR ARTEMIEV
Head of the FAS Russia
FEDERAL ANTIMONOPOLY SERVICE
RUSSIAN FEDERATION

WHAT IS A RECENT REGULATORY CHALLENGE IN YOUR COUNTRY?

The law enforcement practice of the Russian Federation in recent years has been showing that in the conditions of fragmented legislation it is almost impossible to ensure high-quality legal regulation in the sphere of state price and tariff regulation. Nowadays, there are different regulatory approaches to the similar issues, there are no clear rights and obligations for participants of tariff relations.

The FAS Russia is elaborating the largest draft law in the field of tariff regulation, that will secure changes in the existing negative practice by creating of the unified system of control of state price and tariff regulation, as well as transparent and understandable decision-making and predictable procedures in the field of tariff regulation. The draft law includes an exhaustive list of spheres and types of price regulation, as well as uniform methods of tariff setting for all regulated areas. The method of comparative analysis is proposed as a priority. In addition, the draft law creates the procedure of consideration of cases on violation of legislation in the field of state price and tariff regulation that is unified for all spheres. The procedure is based on the principles of objectivity, competitiveness and transparency.

HOW CAN ERRA ASSIST IN THE GIVEN REGULATORY CHALLENGE?

We are always glad to cooperate with ERRA in any format. Of course, great work has been done on the preparation of the draft law. Interested government agencies, organizations, companies, experts were involved in the process. However, it is not a problem, rather it is an achievement that we are happy to share with others.

MSC. MARKO BISLIMOSKI
President
ENERGY AND WATER SERVICES REGULATORY COMMISSION
NORTH MACEDONIA

WHAT IS A RECENT REGULATORY CHALLENGE IN YOUR COUNTRY?

In May 2018, the Parliament of the Republic of Macedonia adopted the new Energy Law, transposing the EU Third Energy Package. Main reforms based on the new Energy Law are the certification of electricity and gas TSO's, establishing concept of universal service in electricity and public service in natural gas sector, as well as the full liberalization of the electricity retail market starting from 2019, when households and small customers will gain eligibility to freely choose electricity supplier.

It's been an intensive period for ERC Macedonia with preparation and adoption of all necessary bylaws regarding electricity, natural gas, district heating and oil and oil derivatives.

At the same time, the tendering procedure for Universal Service Supplier has been opened by the Government of the Republic of Macedonia and it is expected to be finished in the coming months. Upon completion of the evaluation phase envisaged at the end of December 2018, the companies that meet the requirements will be invited to participate in an electronic auction, on the principle of negative bidding on the offered margin. The bidder who offers the lowest margin at the electronic auction will be invited to sign the Universal Electricity Supplier contract.

HOW CAN ERRA ASSIST IN THE GIVEN REGULATORY CHALLENGE?

ERC Macedonia takes full advantage of all ERRA events with continuous participation by ERC staff. All ERRA trainings, workshops, meetings are on up-to date topics which is of great importance to our authority. Following the anticipated substantial increase of employees in 2019 and next years, ERC Macedonia will nominate the new staff for participation at the ERRA Summer School, Tariff Trainings, Training Courses and Workshops on Electricity and Natural Gas Markets, Market Monitoring, Water Regulation etc. We value ERRA events as essential part of the professional capacity development in the field of energy and water regulation.

MR. QAIS SAUD AL ZAKWANI
Executive Director
AUTHORITY FOR
ELECTRICITY REGULATION
OMAN

WHAT IS A RECENT REGULATORY CHALLENGE IN YOUR COUNTRY?

The Authority's scope of responsibilities is expanding and will soon encompass the water and wastewater sectors as well as regulation of the gas transmission network. Whilst we view this as a positive development and one that reflects the Government's confidence in independent utility regulation, we also need to ensure that the organization is sufficiently resourced and skilled-up to undertake these new responsibilities.

Furthermore, the Authority published Forward Work Programme which included the following:

1. Electric Vehicles

The Authority intends to carry out a review of international best practice in relation to the regulatory framework to support the introduction of Electric Vehicles (EV) in the Sultanate of Oman. The review will look into potential capital costs from development of public EV recharge stations, network and connection issues, safety issues, metering costs and the required licence and Code modifications required in relation to Distribution Network Operator responsibilities.

2. Assessment of Cost Reflective Tariffs

Following the completion of a full year from the implementation of Cost-Reflective Tariffs, the study will assess how different categories of consumers (Industrial, Government and Commercial) have responded to the new tariffs. We will also explore possible refinements to the CRT.

3. Establishment of an ESCos Market

The Authority undertook a number of government building audits in 2017. In 2018, the Authority intends to build on the work undertaken in 2017 with the objective of establishing local Energy Services Companies to support the government's energy efficiency objectives. This includes assessing best sectors in the country to target and ensure reasonable demand, and raise the capabilities of local SMEs to undertake the work of ESCos.

HOW CAN ERRA ASSIST IN THE GIVEN REGULATORY CHALLENGE?

ERRA runs regular training programmers that not only cover a broad range of regulatory topics but also, importantly for us, different utility sectors. The Authority expects to continue to participate and benefit from the high quality training offered by ERRA.

ERRA also provides a very good platform for the exchange of knowledge and information among regulatory professionals.

We will look to ERRA to continue create such professional networking opportunities that will allow us to engage with and learn from the experiences of other regulators across different countries.

CHAIRMEN MEETINGS

In two meetings organized in Sochi, Russia and in Antalya, Turkey, ERRA Chairmen participated in policy-level discussions on Regulatory roles to technological innovation, promoting the development of new power plants, market coupling experiences in Central and South-East Europe and Regulatory roles in the development of Mini-Grids.

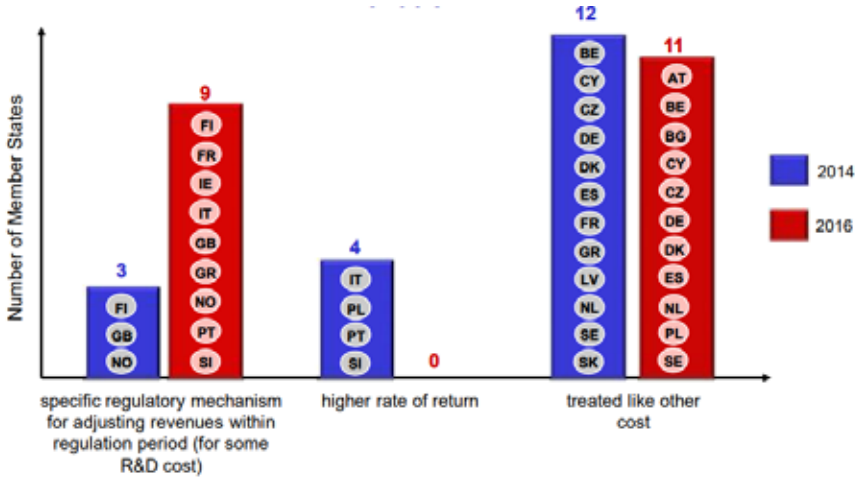


Figure 1 Responses to a EURELECTRIC report on whether the regulation system in the respondents' country contains a specific mechanism for innovation.

Nick Haralambopoulos' presentation on Regulatory Roles to Technological Innovation and Incentives, ERRA Chairmen Meeting, Sochi, Russia, 2018.

On the increasingly important topic of innovation, ERRA Chairmen sought to define the role regulators have in promoting technological innovation among regulated industries to enhance system resilience and flexibility as a means of accommodating the effects that disruptive technologies are having in decentralizing energy services. An increasing number of European regulators is allowing specific regulatory mechanisms for adjusting revenues for innovation within the regulatory period. The discussions recommended that ERRA regulators can also employ a mix of regulatory measures to ensure that any regulatory capital expenditure biases are reduced, that rigorous investment appraisal procedures are put in place and that network businesses are required to demonstrate the net benefits of capital expenditure proposals, including comparing them to non-network solutions.

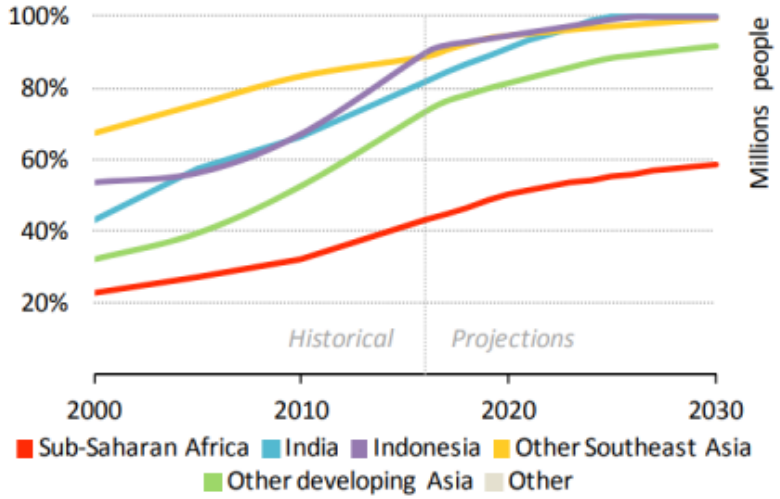


Figure 2 IEA World Energy Outlook 2017: Forecast global electrification rates.

Ardian Berisha's presentation on Regulatory Roles in the development of Mini-Grids, ERRA Chairmen Meeting, Antalya, Turkey, 2018.

ERRA Chairmen also reviewed examples of tariff methodologies applicable to Mini-Grids. Mini-Grids will play an important role in rural electrification, with 60% of additional investments to achieve universal electricity access coming from off-grid solutions according to IRENA. The discussions in this area concluded that regulators should adopt a simplified and light-handed approach to the tariff regulation of Mini-Grids and should consider avoiding price-regulation altogether for smallest-sized Mini-Grids (<100 kW), considering the high dependency of the costs of such Mini-Grids on their location and the technology employed. Exempting Mini-Grids from Nationally-Uniform tariff policies and allowing them to charge tariffs equivalent to the cost of service is a fundamental prerequisite for their sustainable development, as is their ability to apply a flexible tariff design that better suits customer preferences.

TARIFFS AND PRICING COMMITTEE

CHAIRPERSON:
Ms. Andrijana Nelkova-Chuchuk
Deputy Head of Economic Department
Energy Regulatory Commission of Macedonia

VICE CHAIRMAN:
Mr. Viesturs Kadiķis
Senior Expert, Electricity Division
Public Utilities Commission of Latvia

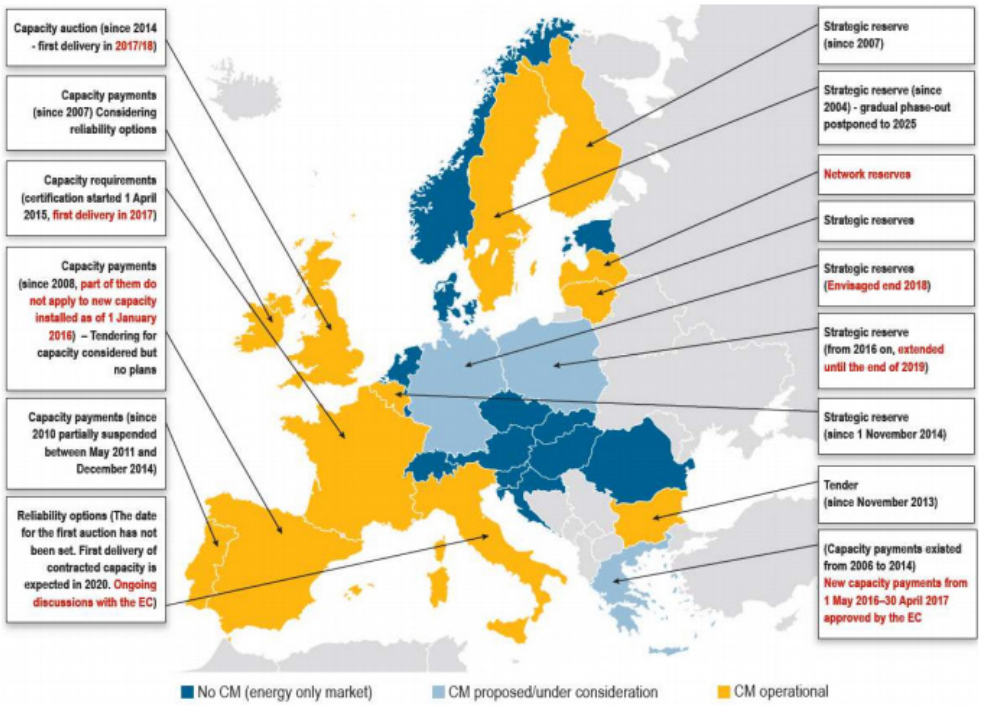


Figure 1 Alexandros Pramagioulis' presentation on Capacity Remuneration Mechanisms in UK

Alexandros Pramagioulis's presentation on Capacity Remuneration Mechanisms and the UK Experience, ERRA Virtual joint Licensing/Competition and Tariff/Pricing Committee Meeting, 2018

The Pricing and Tariffs Committee (TAR) continued its work on implementing a busy work plan throughout 2018 with one virtual meeting organized in January and two physical meetings which took place in Sochi and in Antalya in April and October.

The Virtual Meeting was organized jointly with the Licensing and Tariffs Committee and included discussions on issues related to generation adequacy, market transparency and price comparison tools, which are topics of common interest for both committees. The Generation Adequacy discussions focused on the problem of "missing money" in energy markets with fixed costs of marginal units not being recovered through the market price. The promotion of wind and solar units exacerbated the problem as the merit order effect shifted the supply curve, effectively reducing incentives for conventional plants required for firm generation. Committee members discussed examples of capacity remuneration mechanisms in UK and in Finland which were put in place to address the adequacy issue. The Virtual Meeting also discussed EU's Regulation on Wholesale Energy Market Integrity and Transparency (REMIT) and the progress made by ERRA Members who are Signatory Parties to the Energy Community Treaty towards implementing it in an effort to increase confidence in markets and price formation, enhance market transparency and punish market abuse behaviour.

The Sochi meeting covered a wide array of discussions, starting with the introduction of new data which will be collected by the Tariff Database, lessons learned from the Energy Capital Investment Programme workshop organized in Budapest and Regulatory aspects and implementation challenges of renewable energy cooperatives (community solar).

ERRA Secretariat is presently working in close coordination with the TAR Committee to revise some terms of the existing tariff database definitions in order to reflect new developments on energy markets. This initiative is also looking into new data that can be collected from members, mostly focusing on network data which will continue to be regulated despite market developments and data on regulatory inputs which are determinants to the regulated utilities' allowed revenues such as Weighted Average Cost of Capital (WACC), allowed and actual network losses and efficiency factors.

The TAR Committee was also provided with a presentation summarizing the Energy Capital Investment Review and Assessment Tools workshop which was organized by ERRA in March. The presentation highlighted key messages of the workshop, emphasizing the importance of having a clear, stable and predictable regulatory framework as a means of addressing policy risks in infrastructure investments. This also included discussions on tools that regulators employ in reviewing the reasonableness of capex plans, ENTSO-e CBA guidelines and examples of international best practice in capex regulation, including case studies from Germany, UK and Lithuania.

In recognition of their great work, in the last meeting organized in Antalya in October 2018, the TAR committee voted unanimously to re-elect Andrijana Nelkova-Chuchuk and Viesturs Kadikis to lead the Committee for a new term of 2 years. Additionally, the Antalya meeting presented a great opportunity to discuss new Incentive-based Tariff Methodology for Natural Gas Distribution in Turkey, as well as the Last Resort Electricity Tariffs applied in the country. Mr. Haliru Dikko of ECOWAS Regional Electricity Regulatory Authority (ERERA) provided a presentation on the Implication on revenue requirements with the introduction of eligible/customer choice in the retail market of electricity while the Chair of the Committee provided a presentation on a Study which ERRA intends to conduct in 2019, which comprises of a comprehensive benchmarking report on Distribution and Transmission Tariffs.

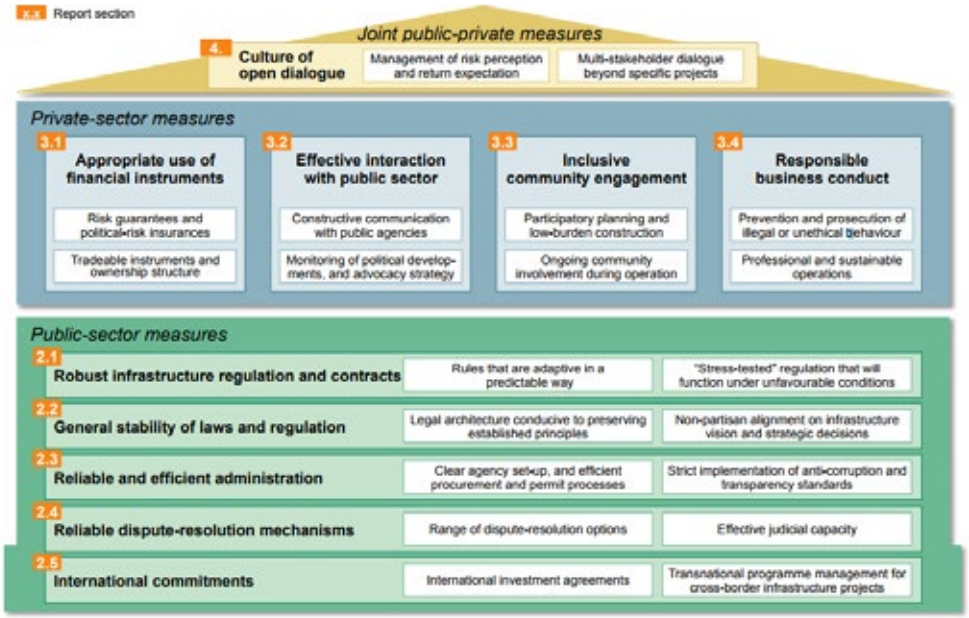


Figure 2 Capex Review and Assessment Tools (WEF 2015 study)

Ardian Berisha's presentation on ERRA Workshop on Capital Review and Assessment Tools, ERRA Tariff/ Pricing Committee Meeting, April 24, 2018, Sochi, Russian Federation

LICENSING AND COMPETITION COMMITTEE

CHAIRMAN:
Mr. Saša Šćekić
Head of Licensing and Technical Affairs Department
State Electricity Regulatory Commission (SERC), Bosnia and Herzegovina

VICE CHAIRMAN:
Dr. Mustafa Gozen
Head of Group for Market Monitoring and Legislation
Energy Market Regulatory Authority (EMRA), Turkey

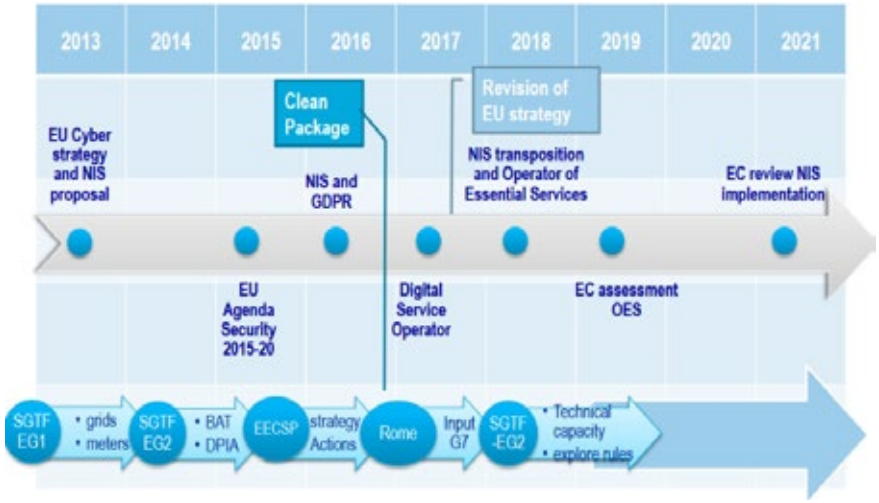


Figure 1 EU's Cyber Security road map and specific energy activities

Eva Szolnoki's presentation: Energy Information and Analysis Center in Hungary, Antalya, 2018.

In addition to the virtual meeting organized jointly with the Tariff and Pricing Committee, the Licensing and Competition (LIC) Committee organized two physical meetings over the course of 2018 in Sochi and Antalya in April and October, respectively.

During the first meeting, which took place on April 24, the LIC Committee shared experiences in addressing challenges related to electricity market liberalization, reviewed examples of effective supply-switching procedures and discussed TSO-DSO cooperation in harmonizing system development plans, especially to address emerging DSO-embedded generation facilities. A step-wise deregulation process was implemented, in order to allow market players to gradually get acquainted with procuring energy in the market. Regulators of ERRA Member Organizations who are signatory parties to the Energy Community Treaty (EnCT) are gradually deregulating all retail tariffs, with tariffs of Universal Service Supply customers (households and small businesses) continuing to be regulated in most cases.

The second Licensing and Competition Committee meeting discussed policy recommendations in streamlining the licensing and authorization procedures for RES projects, reviewed the ongoing developments with the changes stemming from the Winter Package, saw examples of international best practice in reviewing and approving capital expenditure plans and discussed cyber security, latest developments in the area and the role of regulators in improving the resilience of energy infrastructure to cyber threats.

In recognition of their great work, in the last meeting organized in Antalya in October 2018, the LIC committee voted unanimously to re-elect Saša Šćekić and Mustafa Gozen to lead the Committee for a new term of 2 years.

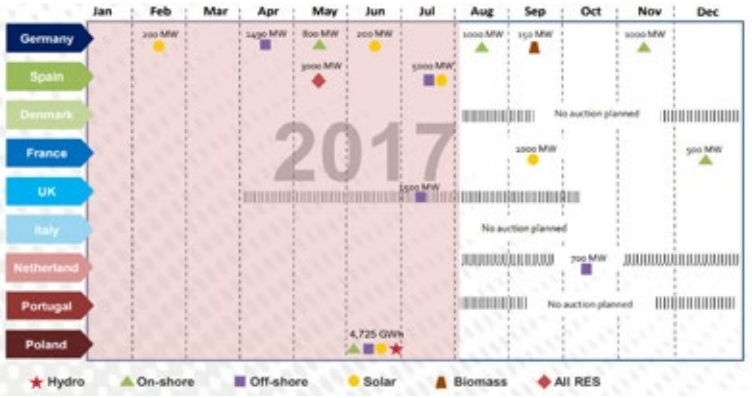


Figure 2 Examples of Auction Schemes in EU

Konstantin Petrov's presentation: The EU Winter Package – new EU Legislation for the electricity sector, Antalya, 2018.

CUSTOMERS AND RETAIL MARKETS WORKING GROUP

CHAIRPERSON:
Mr. Margus Kasepalu
Head of Energy and Postal Communications Department
Estonian Competition Authority

VICE CHAIRMAN:
Mr. Martin Martinoski
Head of Energy Markets Monitoring Department
Energy and Water Services Regulatory Commission of North Macedonia

ERRA Customers and Retail Markets Working Group (CRM WG) had two meetings organized in Tallinn, Estonia and in Istanbul, Turkey, where key discussions and presentations referred on the trending topics of smart metering and price comparison tools. Assessing retail market functioning, easy bill concept and alternative dispute resolution were additional topics on which CRM WG members focused as well.

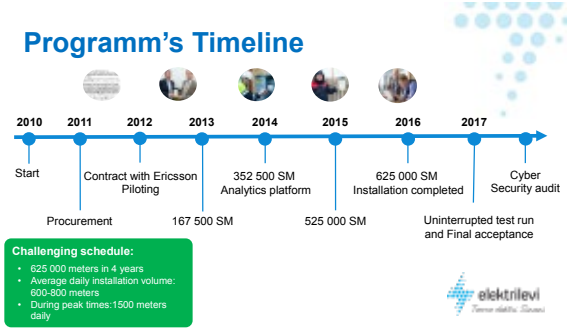


Figure 1 Elektrilevi timeline for rolling out smart meters in Estonia

Mait Rahi's presentation on Elektrilevi Smart Metering Programme in Tallinn, Estonia (2018)

Processes for deployment of smart meters are becoming increasingly important topic especially for the European regulators, both from the aspect of cost reduction and increased effectiveness, as well from the customers satisfaction point. Lessons learned from Elektrilevi LLC and Elering Ltd on the steps for rolling out smart meters and features of data hubs in Estonia were very enlightening for CRM members. Investments in new technologies and innovations are must in an everyday changing information society and regulators must keep pace aiming to increase overall effectiveness, reduce regulated utilities costs and network losses, enhance retail market functioning and competition, promote energy efficiency, as well as empower customers to be more proactive.

Development and functioning of Price Comparison Tools (PCT) was also very important and trending topic that was discussed during both meetings of CRM WG in 2018. Importance of PCT's is growing as the scope of retail market regulation is declining. Customers need such web-based tools to acquire adequate information on suppliers' offers on the liberalized electricity/gas retail market, compare with the offer of their incumbent supplier and accordingly make a choice whether to switch or remain. Meetings were used to exchange information and knowledge on the existing PCTs in well-functioning retail markets, such is the case in Austria, with the ongoing projects for developing price comparison web applications in emerging liberalized energy markets in Southeast Europe, supported through technical assistance provided by USAID and NARUC. In Bosnia and Hercegovina, the process of development of the PCT was finished and the tool is online at https://uporedistruju.ba/, while in North Macedonia this process is in the final stage of development and www.switch.mk is expected to be launched in Q1 of 2019. In the other countries in Southeast Europe processes for development of such web tools are ongoing and the lessons learned will be worth sharing in the following period.

Figure 2 ERC Macedonia Online PCT Design

Martin Martinoski's presentation on ERC Online PCT – Support for effective electricity retail market opening in Istanbul, Turkey (2018)

PUBLICATION

Benchmark Analysis: Elements, steps and time-frame of the switching process in electricity market. Handling payment obligations during the switching process.
by Romulus Tatar, Romanian Energy Regulatory Authority (ANRE)

Available in ERRA's Online Library!

SOMETHING ELSE, SOMETHING NEW, SOMETHING SPECIAL

OPEN GATES

From 2018 ERRA modified its policy regarding member projects in order to open the opportunity for ERRA Members to connect with non-member regulators for partnership or exchange program.

ESTONIAN STUDY VISIT AT THE IRISH REGULATOR

Republic of Estonia
Competition Authority

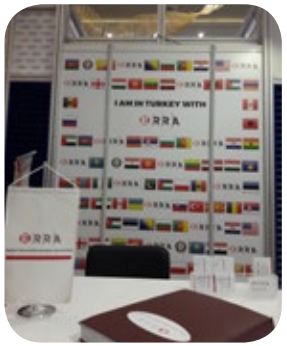
An Coimisiún um Rialáil Fóntais
CRU
Commission for Regulation of Utilities

The visit of the Estonian Competition Authority (ECA) at the Commission for Regulation of Utilities (CRU) allowed the Estonian regulator to improve its knowledge in:

1. Price regulation of electricity, gas and water networks
2. Renewables integration
3. Electricity and Gas Market design
4. Cooperation between regulators, competition agencies, consumer protection agencies
5. Ways to improve cooperation between ERRA and CEER

SMALL SCALE CONSULTANCY PROJECT FOR THE BHUTAN ELECTRICITY AUTHORITY ON REGULATORY ASSET BASE

The purpose of the project was to develop a guideline on determination of RAB for Hydropower Projects using the case of 720 MW Mangdechhu Hydroelectric Project in Bhutan. The guideline will help the BEA to establish the true and efficient RAB of the utilities regulated by the BEA and thereby determine a fair tariff.



ERRA EXHIBITION STAND DURING THE 17TH INVESTMENT CONFERENCE

For the first time in its history ERRA represented itself with a trendy exhibition stand during the 17th Investment Conference and Turkey Energy Summit in Antalya. The stand attracted a large number of visitors throughout the Conference. A great pride for ERRA was to host The Honorable Fatih Dönmez, Minister of Energy, Turkey in the stand. Minister Dönmez was happy to see and greet his former Presidium Member fellows as he served on the ERRA Presidium from 2008 to 2012 as Commissioner of the Energy Market Regulatory Authority of Turkey.

The stand allowed ERRA to reinforce our efforts, core values and messages to our visitors. We were happy to host many members of our association in the stand and to use the booth as a meeting point with potential new partners.

SUCCESS OF CAPACITY BUILDING

ERRA was selected by the European Commission to assist the **Cyprus Energy Regulatory Authority** (CERA) in the full implementation of the Third Energy Package of the European Union. The assistance program included 6 tailor-made training programs on electricity, natural gas and renewables between March 2018-September 2018.

ERRA was invited to organize a custom-made training course on Tariff Regulation for the staff of the **Oman Power and Water Procurement Company** in December 2018 in Muscat, Oman.

PLANNING THE FUTURE

The **ERRA Strategy Planning Ad Hoc Task Force** was put up in order to:

- to assess the progress made since the 2012 Strategic Plan;
- to evaluate ERRA's current position;
- to set new goals and tasks;
- to make recommendations for adjustment of the 2012 Strategic Plan.

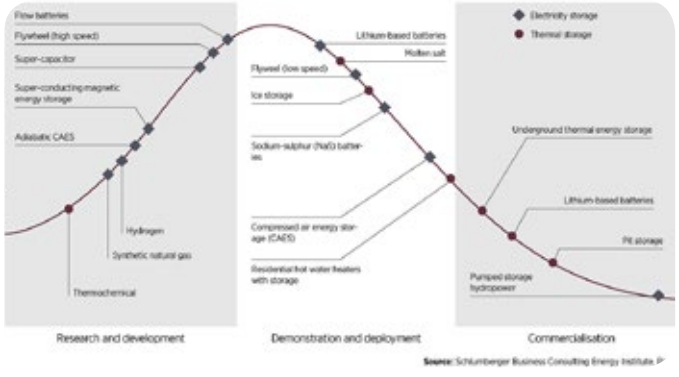
INNOVATION

Realizing the increasing need for regulatory capacity building in technological innovation, ERRA organized it first Workshop on **Innovation and Regulation in September 2018**.

Keywords from the Agenda:

- distributed generation
- flexibility
- storage
- demand response
- e-mobility
- digitalization
- blockchain

Topped with discussions, discussions, discussions….



Maturity of Energy Storage Technologies

Dr. Okan Yardimci's presentation: Overview of new technologies possibly affecting energy regulation; Regulatory roles and economic incentives for innovation, Budapest, 2018.

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ERRA is increasing its efforts and presence in social media. Follow and like our daily posts, photos from our life at:

Like, share and enjoy the live tweets during events that you missed.

DR. KONSTANTIN PETROV

Managing Consultant
DNV GL – Energy,
Germany

Q: Mr. Petrov, you have been directly involved in most ERRA activities since its establishment in the early 2000s. What is your general observation about the progress made in regulating the energy sector over this period?

A: Indeed, I have been closely following ERRA activities since the establishment of the association in 2001. There has been a significant development in the regulatory arrangements since those years.

For the EU ERRA members the developments have been driven by the evolution of the policy arrangements in EU stipulated in a series of directives and regulations. The non-EU ERRA members that acceded to the Energy Community committed to national transposition and implementation of the Energy Community acquis. However, as the Energy Community acquis mostly reflected the spirit and principles of the EU directives and regulation, the countries have been often exposed to similar requirements as those of the EU.

It is useful to look back at the process of energy sector liberalisation. It was in 1996 when Directive 96/92/EC was adopted and introduced competitive arrangements in the electricity industry.[1] In 1998 it was followed by Directive 98/30/EC aiming to establish competitive arrangements in the gas industry. The industry was divided into two categories: the natural monopolies of the transmission and distribution networks; and the potentially contestable activities of production and supply.

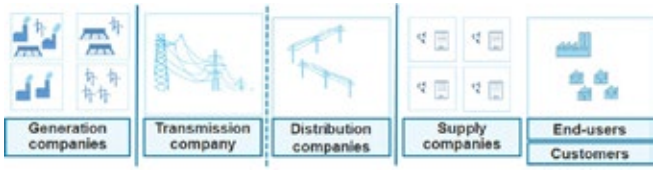

Figure 1: Electricity Industry Unbundling

Source: DNV GL

It is interesting that the first Directives did not require separate regulatory institutions and also allowed negotiated access to networks. It was Directive 2003/54/EC (Electricity) and Directive 2003/55/EC (Gas) that required the establishment of independent national regulatory authorities and abolished the negotiated network access in favour of explicit regulation. In addition, it strengthened the unbundling requirements for network operators and set requirements for a full retail competition.

In 2009 the European Commission adopted two further directives, Directive 2009/72/EC (Electricity) and Directive 2009/73/EC (Gas). These directives together with some other regulations constitute the Third Energy Package and provide the main legal framework governing the EU energy market.[2] The Third Energy Package includes provisions in relation to the independence, powers and duties of the national regulatory authorities, increasing regional coordination, further unbundling requirements etc. One of its major objectives is to support the establishment of a functional internal energy market.

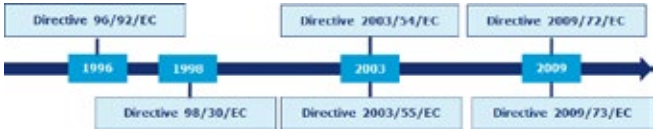

Figure 2: Timeline of the Development of the Main EU legislation

Source: DNV GL

Based on the requirements set out in the EU directives and regulations, regulatory authorities dealt – among others – with implementation of industry unbundling, opening of the energy markets, establishment of non-discriminatory access and setting of network tariffs.

With respect to unbundling, regulators aimed to prevent unintended interactions between the regulated and contestable sectors in terms of cost and revenue allocation, as well as accessibility and sharing of information. Together with policy makers and industry stakeholders, regulators developed the principles and the rules for the new competitive markets. As energy trading is conducted through different consecutive time periods, different markets

1. As a matter of fact, competitive arrangements in the European electricity industry already existed in Great Britain and Scandinavia since the 1980s/early 1990s.
2. Further development in EU energy policy took place in November 2016, when the European Commission (EC) presented a legislative package ('the Winter Package'), which consists of a bulk of legislative measures to facilitate the transition to a clean energy economy, i.e. for the EU energy sector to become "more stable, more competitive, and more sustainable".

have been designed: namely forward, day-ahead, intra-day and balancing markets.

Drawing on the underlying concept of competitive markets and the requirements of the EU and Energy Community, there is no scope for a direct price regulation of supply to end consumers except for the targeted protection of vulnerable consumers. However, in practice, price regulation of end-user prices, particularly household consumers, is still widely applied in European countries. This is often associated with the existing high concentration and the low switching activity from consumers in specific countries. In addition, regulated prices for household consumers are also justified by policy makers for protecting vulnerable consumers. As a matter of fact, in some countries price regulation exists even for production and wholesale supply. In practical terms, it means that in such cases wholesale market consists of a regulated market segment and a competitive market segment which are based on freely negotiated prices (hybrid markets).

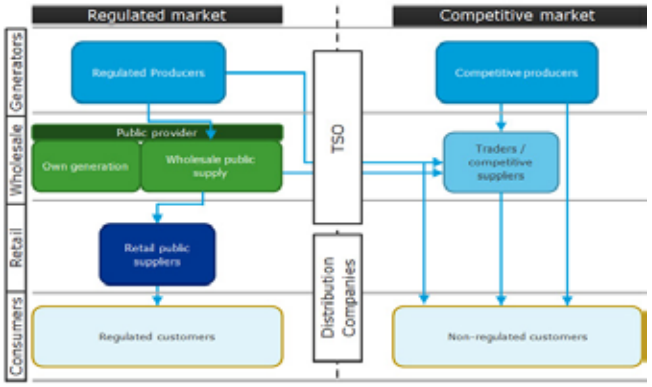

Figure 3: Typical Design of Hybrid Electricity Market (simplified illustration)

Source: DNV GL

I believe that national regulators should continue to focus on the further enhancement of the competition framework (e.g. facilitating market entry and improving switching procedures) and consumer empowerment and protection. However, the gradual abolishment of retail price regulation must follow the establishment of functional competition, while ensuring the effective and targeted protection of vulnerable consumers. Where retail prices remain regulated, it is important that they should reflect the underlying cost of energy supply and should not hamper the development of competitive retail markets. Departing from such principles may discourage market entry and innovation, increase suppliers' uncertainty and consequently hinder competition in retail energy markets.

Regulation has also been observed in the areas of ancillary services (for example provision of reserves), gas storage and LNG terminal activities. While these services are potentially contestable, in specific cases regulation has been justified by a limitation of their competitive procurement due to operational or physical constraints, or requirements of administrative permission rules. Another reason may be the limited size of the relevant market that hinders the establishment of functional competition.

The European regulators have been using incentive schemes to encourage the construction of RES producers. The schemes aimed to promote the development of new production technologies with favourable environmental impact (positive externalities). As a result, the share of RES generators has rapidly increased. While at the beginning regulators applied mainly technology-specific feed-in tariffs and premium systems, in the last years we observe the application of organised auctions.

In contrast, to contestable activities, prices for use of networks require ongoing regulation as they exhibit natural monopoly characteristics and cannot be exposed to competition. Such regulation should ensure that companies can recover the reasonable costs for the provision of regulated services. In addition, it should encourage network operators to deliver efficient services with adequate quality. In ERRA countries, we have witnessed the implementation of price control models with an increasing degree of complexity. In most cases these models set ex-ante the allowed revenues and apply a system of incentives to encourage the companies to improve their efficiency. Furthermore, in addition to price control, regulators have implemented quality of supply regulation based on standards setting minimum service levels and incentive schemes.

Last but not least, one should also mention those new members of ERRA that are not members of EU or Energy Community. These regulators have often been operating in industries where no open access and competitive arrangements exist, i.e. single buyer models or vertically integrated industries combined with external IPPs. Depending on the specific industry structure and the contractual arrangements, different forms of regulation have been applied on wholesale and retail supply.

Over the years we have observed numerous achievements ranging from institutional restructuring to implementation of rather elaborate regulatory

systems. One of the major future challenges for the regulators in the countries that have opted to establish competitive markets will be to manage the transition process and to redesign the regulatory arrangements. Among these challenges are the implementation of unbundling, development of wholesale market design, coordination of market opening, integration of existing long-term power purchase agreements, establishment of explicit network regulation etc.

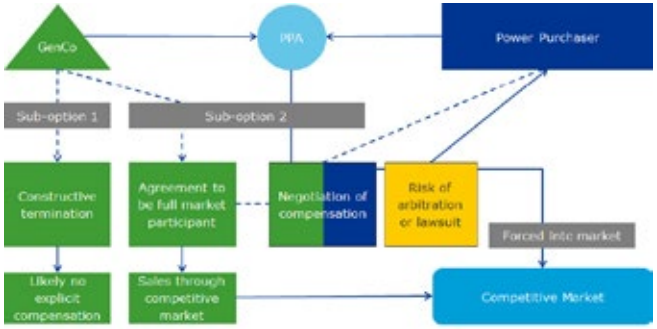

Figure 4: Example of Forced Market Integration of PPAs (simplified illustration)[3]

Source: DNV GL

Q: Many regulators, including some in our member base, have indeed adopted fundamental structural reforms to foster competition in wholesale and retail electricity markets. Despite this progress, there is often doubt among policy makers and regulators on the ability of markets provide the expected welfare to customers. Can market integration support market functionality and to what extent can market coupling plays a role?

A: Indeed, the regulators of several countries have adopted competitive arrangements in their electricity industries. At the beginning electricity markets often used to be organised nationally with each country focusing on self-sufficiency in terms of electricity supply. At certain point policy makers recognised that selling electricity across borders would integrate and enlarge the national markets, and consequently improve the market functionality through better liquidity and enhanced competition.

In the EU, the implementation of the internal electricity market is based on a reference market model (Electricity Target Model). This model takes a zonal approach, building on a number of interconnected markets (bidding zones). Within each zone, electricity can be traded freely without taking into account network constraints. The cross-zonal capacity should be allocated to market participants in a non-discriminatory fashion by using market-based methods. More specifically, the capacity allocation on the day-ahead and intra-day markets should apply market coupling based on implicit auctions.[4]

Technically, implicit auctions describe a mechanism that simultaneously allocates the cross-border transmission capacity and determines the value of electricity in both market zones. The cross-border capacity between them is automatically allocated to the transactions with the highest arbitrage potential and the price of capacity is equal to the price difference of the two zones. There is no separate capacity auction, the capacity is allocated implicitly. Each market participant sells and buys energy in its home market, and inter-zonal arbitrage opportunities are exploited automatically by the auction mechanism. As the method does not separate energy flows from transmission capacity, market coupling removes the problems related to uncertainty about energy prices and ensures that all capacities, which are allocated to the market, are also used.

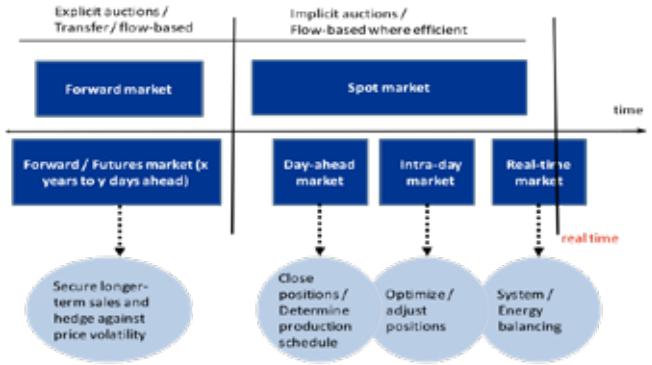

Figure 3: EU Electricity Target Model (simplified representation)

Source: DNV GL

The figure below provides a simplified example illustrating the principle of market coupling. The left side of the figure shows the supply and demand curve for a local market zone X. By determining the horizontal difference between these two curves for each price, i.e. the market surplus or deficit for each price, it is possible to determine derive the net export curve. The net export curve effectively shows the volume, which could be exported from respectively imported into the corresponding zone for each price. Next, we add a second zone Y and exhibit the two different net export curves. By 'flipping' the net export curve of the zone with higher prices around the vertical axis, we can now determine the net import curve of this zone Y and depict it

3. PPAs have been facing substantial challenges whenever power markets have been opened for wholesale competition, mainly due to prevailing lower market prices. The contract terms of a PPA might appear to be expensive, especially when cheaper power on more flexible terms becomes available through competitive market arrangements. The main challenges with PPAs and their integration into a competitive wholesale market is caused by their: (1) relatively long duration; (2) lack of requirements for the generators to assume market risks; (3) pricing provisions designed to ensure a stable and predictable revenue stream for the generators; and (4) contract provisions that are different from market rules developed to establish a competitive environment.
4. The term 'market coupling' itself has evolved over the past years and intends to describe the integration of two previously separate energy exchanges by using implicit auctions. However, implicit auctions have been also used in the context of "market splitting", which was developed and introduced in the Norwegian electricity wholesale market already in the early 1990s, and later extended to evolve into the all-Scandinavian power exchange Nord Pool.

in the same diagram as the net export curve (see the right side below). This diagram represents the new combined market. Consequently, it is possible to identify the price at which the combined market would clear, as well as the resulting exchange from zone X to zone Y.

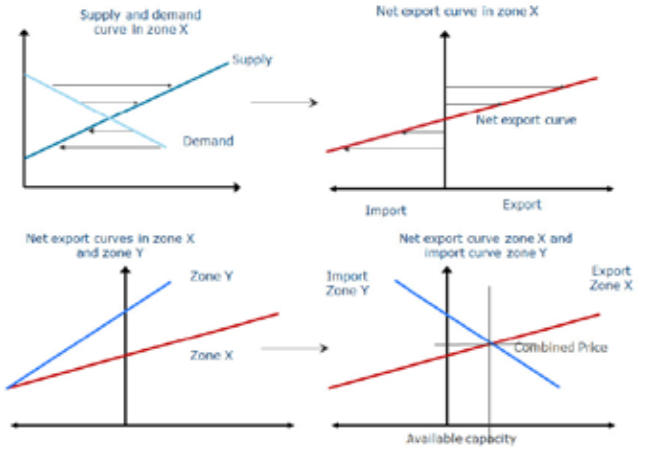

Figure 5: Market Coupling (simplified representation)

Source: DNV GL

In Europe, the market integration initiatives are strongly associated with the so-called Price Coupling of Regions (PCR)[5] and Multi-Regional Coupling (MRC).[6] In general, MRC is the successor of the PCR after the accession of new regions to the pan-European cooperation in the energy market since the establishment of the PCR. The underlying framework of the cooperation involves three basic principles: uniform algorithm for price discovery, robust functioning and individual accountability of the local energy markets.

The benefits of market coupling are stated in the latest ACER/CEER Market Monitoring Report (MMR).[7] ACER/CEER state that the use of the interconnectors improved from approximately 60% in 2010 to 86% in 2017. This is due to the day-ahead market coupling of two thirds of European borders (i.e. 23 European countries in 2017). The consequent benefits to European consumers are estimated to be around 1 billion euros per year.

With respect to the Energy Community countries it is useful to mention the WB6 initiative.[8] The WB6 aims to couple national organised day-ahead markets between neighbouring WB6 or EU countries and to implement a cross-border balancing cooperation between the WB6 countries.[9]

Q: The Energy Transition is undoubtedly affecting the conventional thinking of top-down system planning and regulation. Electricity generation is becoming decentralized with an ever-increasing share of variable renewable energy resources. What are the main roles of regulators in the energy transition?

A: Energy transition is a long-term structural change in energy systems. It is triggered by the energy and climate actions/targets of policy makers, such as promoting renewable energies and reduction of greenhouse gas emissions[10] that aim to address the global warming problem. It is also significantly influenced by the rapid development of new technologies (storage, demand response, electric vehicles, smart applications) and digitalisation, affecting inter alia how energy is consumed. In this context I would like to mention that in September 2018 DNVGL published the updated Energy Transition Outlook (ETO) that provides a global quantitative forecast.[11] Below I address several regulatory aspects resulting from energy transition.

In the last decade and more, the share of renewables significantly increased whereas the growth has been predominately driven by support schemes, i.e. feed-in tariffs and premium systems. Recently regulators and policy makers have started replacing the promotional pricing schemes by auction systems. The results of public auctions for solar PV and wind have resulted in surprisingly low prices leading to substantial reduction of renewables subsidies. While this definitely helps market integration of intermittent renewables, the existing further challenges for the electricity industry suggest that new thinking on market design may be required. For example, there is a fundamental debate whether wholesale electricity markets dominated by RES producers with "zero marginal cost" can provide adequate long-run signals for capital investments and what is the role of supplementary capacity mechanisms in this context. Another aspect focuses on the potential development of more sophisticated flexibility/ancillary services markets to ensure the efficient matching of supply and demand in real time in systems with a large share of intermittent renewables. In addition to flexible generation such markets should also integrate demand response and storage technologies. The idea is to mobilise all

5. Price Coupling of Regions (PCR), is the initiative of several European Power Exchanges, to develop a single price coupling solution to be used to calculate electricity prices across Europe and allocate cross border capacity on a day-ahead basis. The initiative was established in 2009.
6. The MRC project is an initiative on the pan-European coupling of the day-ahead markets that currently covers 19 countries. It was established in 2014 when the former North-Western European project was renamed to MRC.
7. ACER/CEER (2018), Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2017 – Electricity Wholesale Markets Volume, 22/10/2018.
8. The WB6 includes Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia.
9. Since the establishment of the WB6 the following EU neighbours adhered to the initiative: Italian NRA and TSO, Croatian NEMO, Bulgarian NRA, TSO and NEMO, Greek TSO and NEMO, Romanian TSO, Hungarian NRA, TSO and NEMO.
10. For example, in EU the policy targets for 2030 adopted in 2014, require to reduce greenhouse emissions by 40 % compared to 1990 levels, improve energy efficiency compared to business-as-usual projections by 27 % and increase the share of RES in the total energy consumption to 27 %. In November 2016, when the European Commission (EC) presented a legislative package (the Winter Package), which consists of a bulk of legislative measures to facilitate the transition to a clean energy economy, i.e. for the EU energy sector to become "more stable, more competitive, and more sustainable".
11. https://eto.dnvgl.com/2018/

flexibility sources and to enable their participation in market but (also network) arrangements that support the valuation of their efficiency.

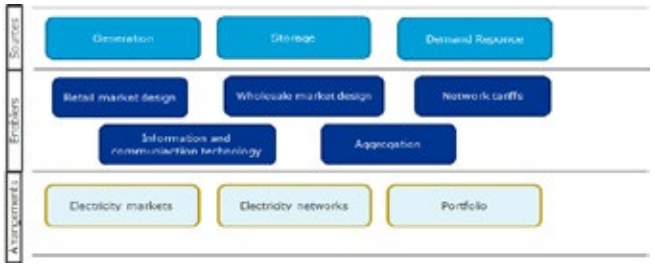

Figure 6: Simplified Framework for flexibility components

Source: DNV GL, based on ACER

Energy transition is accompanied by significant investment costs in electricity networks to accommodate the variability of renewable power generation and new types of load. Regulators should ensure the integration of efficient investment costs in the allowed network revenues. Moreover, they should also consider the existing feasible non-network options related to procurement of flexibility services such as storage, demand response or electric vehicles.[12] For example, battery storage can be used to reduce the electricity delivered from the network at peak times, avoid network investments and/or provide ancillary services. Storage capacity can also be provided by electric vehicles as their demand will be connected to distribution networks and is likely to be rather clustered.

In addition to such explicit external provision, flexibility can be valued implicitly to a certain extent through the signals in the network tariffs. Regulators will need to revisit the cost allocation routines and the principal design of network charges. The tariff concepts should ensure cost recovery and adequate signals in the new network conditions characterised by frequent changes in the direction and volumes of energy flows.

The development of new infrastructure may lead to bypassing/underutilisation and ultimately stranding of existing regulated infrastructure.[13] From a regulator's viewpoint, assets classified as "stranded" would need to be treated on a case-by-case basis to consider the specific circumstances. Often regulatory frameworks do not include specific provisions on stranded assets, therefore regulators may consider adapting the regulatory arrangements and incorporating the potential risk of stranded assets.

Finally, innovation in the energy systems has been explicitly addressed in some regulatory frameworks. The major motive is to facilitate development and drives improvement in processes and technology application. For this reason, national energy regulators should set clear objectives and qualification criteria for what projects would be subject to innovation incentives. For example, innovation incentives can be provided for a new or unproven technology or operational practice directly related to the electricity (or gas) network. The innovation project should relate to the development, and research in a field, or technology that could help achieve certain targets, this may also be environmental targets. Innovation incentives can be incorporated into the regulatory framework by using special allowances, preferential rate of return, depreciation policy, cost-pass through provisions and exemptions from efficiency incentives.

Q: Despite being more environmentally friendly compared to other fossil fuel sectors, the natural gas sector has recently faced a period of uncertainty. You are one of the main authors of a study compiled to assess the possible role of gas in the future. Does gas have a future in Europe and what are the main policy and regulatory implications?

A: Last year DNV GL completed a study for the Council for the Council of European Energy Regulators (CEER) on the future role of gas in the EU.[14] You are right that the European natural gas industry has been exposed to uncertainties regarding its future role in the energy mix. The main reasons stem from the ambitious COP 21 decarbonisation targets in combination with the continuing rise in renewable energy, as well as observed disadvantageous price trends of oil, coal and CO2. To this effect, natural gas has been witnessing challenges regardless of its environmental advantages over other fossil fuels.

Despite these challenges, I believe that the natural gas sector can still play a role in meeting EU future energy demand. In the commodity markets this can be achieved by using natural gas in its current form, and other forms like LNG and CNG (in the land and maritime transportation sector) and penetration of substitutes such as renewable gases. Such gases (biomethane, hydrogen and synthetic gas) have emerged and are expected to grow in the future and contribute to decarbonise various sectors of the economy.

On a policy level, there are multiple measures that can be considered to promote the development of certain new technologies with favourable environmental

12. The alternatives can even include broader solutions leading to coupling with other sectors such as gas or electric transport systems.
13. By the same taken, a continuous growth of RES generation could potentially lead to under-utilisation and stranding of fossil electricity generation. Although electricity generation is competitive activity, generation assets stranding may also have regulatory implications.
14. https://www.ceer.eu/documents/104400/-/-/6a6c72de-225a-b350-e30a-dd12bdf22378

impact. For example, the development of renewable gases can be encouraged, typically at national level, by various incentive schemes ranging from feed-in tariffs, tax breaks and investment support for investments etc. Similar schemes can be used for the purchase of gas-fuelled vehicles. For renewable gases, tradable green certificates could be used to support the establishment of regional markets.

The development on the commodity markets will require adequate consideration of the associated infrastructure. For example, the existing gas infrastructure may not only be dedicated to the commodity gas in its current form but may also be facilitating the penetration of other technologies, and particularly of renewable gases. With respect to biomethane, regulators should set clear connection rules including connection charges, technical connection requirements, responsibilities for setting and maintaining the relevant product quality norms and metering and compression. Regulators may consider providing explicit incentives in national regulation to the parties injecting biomethane into the natural gas networks via the reduction of network tariffs/connection charges.

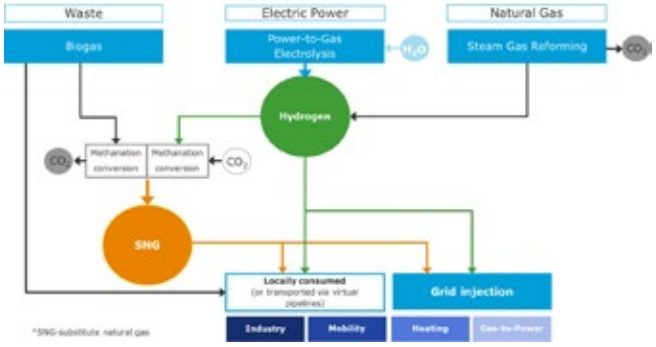

Figure 7: Different Forms of Supplies of Renewable Gases (Simplified Representation)

Source: DNV GL

I would also like to say something about the role of regulators with respect to the future use of hydrogen. Regulators should steer the technology roll-out in terms of time and targeted penetration zones where the hydrogen quantities will gradually grow. They will need to adjust the technical specifications for the blended natural gas and regularly amend/adapt the relevant rules where necessary. Furthermore, regulators will need to develop the design of the commercial and access arrangements of the hydrogen system. I expect that the use of the existing natural gas networks or new special pipelines to transport hydrogen will likely be a regulated activity.

The potential use of CNG/LNG in in the land and maritime transportation sector determines the important role of the infrastructure for these emerging markets. Such infrastructure comprises CNG/LNG refuelling stations, storage, bunkering facilities, transport vehicles etc. Regulators should not intervene where contestable provision of services is possible and effectively leads to sufficient geographical coverage and competitively priced offers. For example, the provision of refuelling station services and CNG/LNG delivery via trucks, rail or ships are typically contestable activities and can be provided in a competitive environment. The competitive provision of other potentially competitive services such as storage and bunkering may be limited due to operational or physical constraints (at ports or other locations) or requirements of the permission rules. In such circumstances, these activities will require regulation.

One important aspect that I would like address is the potential involvement of network operators in contestable activities. For example, operators of natural gas network may seek involvement in competitive activities as the delivery of LNG/CNG, refuelling stations but also P2G plants and other new technologies. Where a combined provision of regulated and competitive services is possible, the regulatory framework should ensure that customers and market participants benefit to the largest extent possible from the range of services. However, regulation must prevent unintended interactions between the regulated and potentially competitive sectors terms of cost and revenue allocation, and information advantages.

Policy makers and regulators can apply additional support schemes such as tax breaks and investment subsidies for CNG/LNG refuelling stations, funding research and development, pilot and innovation projects.

Finally, as already mentioned in my previous answer, regulators can provide explicit incentives for innovation and decarbonisation as part of the regulatory framework. This would facilitate development and drive improvement in processes and technology application in the gas sector.

The complex transition process involves substantial changes along the entire value chain and requires adequate policy and regulatory attention, and effective coordination between policy makers, regulators and industry as well. The overall objective should be to manage the transition to a widely decarbonized energy sector as required by policy until 2050, in the most effective and cost-efficient way. Within this process the (natural) gas industry may play an important role and act as facilitator for the integration of energy from renewable sources in the energy infrastructure. This, in turn, could support sectoral integration and maximise social welfare. ■

Diamond sponsor: SOCAR

FACTS

- Date: October 9-10, 2018
- Location: Antalya, Turkey
- Host: Energy Market Regulatory Authority (EMRA) of Turkey
- In cooperation with: Turkish Energy Summit (TES)
- Number of participants: 194
- Number of speakers: 32

OPENED BY:

In the opening remarks, event organizers, Mustafa Yilmaz, President of the Energy Market Regulatory Authority and The Honorable Fatih Dönmez, Minister of Energy and Natural Resources of Turkey highlighted the "importance of regulatory independence in a period of great transition in the energy sector and encouraged regulators to continue working through a stable and predictable regulatory framework."

CONFERENCE THEMES:

CONFERENCE STATEMENT

The Conference Statement highlights the importance of regulatory independence in a period of great transition in the energy sector and encouraged regulators to continue working through a stable and predictable regulatory framework.

2018 ERRA Energy Investment and Regulation Conference

Conference Statement

Released: October 10, 2018, Turkey, Belek-Antalya

Two hundred participants from 40 countries attended the 2018 ERRA Energy Regulation and Investment Conference in Antalya, Turkey, on October 9-10, 2018. The Conference was hosted by the Energy Market Regulatory Authority (EMRA) of Turkey and co-organized by ERRA and the Turkish Energy Summit (TES).

In the opening remarks, event organizers, the President of the Energy Market Regulatory Authority and the Minister of Energy and Natural Resources of Turkey highlighted the importance of regulatory independence in a period of great transition in the energy sector and encouraged regulators to continue working through a stable and predictable regulatory framework. It was highlighted progress made by member organizations to restructure energy sectors in a way that lays the groundwork for competition to flourish and noted regulators should have the confidence to allow markets to play a bigger role in the energy sector, providing added value and welfare for customers.

CONFERENCE NEWSLETTER

With the 17th ERRA Energy Investment and Regulation Conference behind us we would like to thank everyone who attended and those involved with contributing to another successful ERRA event! Read the attached special edition of the ERRA Newsletter to find out more about the Conference.

Energy Regulators Regional Association // Special Conference Edition // October 2018

ERRA NEWSLETTER

CONFERENCE STATEMENT

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"importance of regulatory independence in a period of great transition in the energy sector and encouraged regulators to continue working through a stable and predictable regulatory framework."

Mart Ots, Chairman of ERRA, pointed to the progress that has been made by member organizations to restructure energy sectors in a way that lays the groundwork for competition to flourish and noted regulators should have the confidence to allow markets to play a bigger role in the energy sector, providing added value and welfare for customers.

The conference discussed regulators' roles in accommodating demand-side dynamics, with the increasing number of customers assuming a more proactive role in the energy market by participating in demand-side management mechanisms or producing energy for their own consumption. Innovation is also affecting the power sector, with e-mobility, digitalization, storage and block-chain technology impacting the composition of the market players in future power markets and the ways in which these market players interact with one another.

IN THIS ISSUE

https://erranet.org/conference/investment-conference-2018/

ERRA EXHIBITION STAND

For the first time in its history ERRA was happy to greet visitors in a custom made exhibition booth during the ERRA Investment Conference 2018 in Antalya.

Honorable Fatih Dönmez

Minister of Energy and Natural Resources of Turkey with ERRA Presidium and Honorary Members

THE CONFERENCE IN SOCIAL MEDIA

INTERVIEW

FAJEZ AL JABRI
Conference Delegate
ECRA, SAUDI ARABIA

WHAT IS YOUR TAKEAWAY FROM TODAY'S CONFERENCE?

„Recently, the function of regulating gas distribution has been added to ECRA, so now we are the Saudi Arabian Regulator for Electricity, Gas and Water Distribution as well. With yesterday's and today's presentations we think that, more or less, we live in the same environment and the problems faced in one country probably have similarities to other countries so there is a huge opportunity for us all to learn from each-other's success factors or even failures sometimes.

So I can't value more the opportunity to be a member of this very honorable association and it is always on our agenda to have some of our colleagues, either from my department or other departments, to attend and see and learn from the activities and events."

HOW WOULD YOU SAY THE ERRA CONFERENCE DIFFERS FROM OTHER CONFERENCES YOU MAY HAVE ATTENDED IN THE PAST?

„I think the other conferences will normally talk about challenges and operational issues but the ERRA conference – because it is mainly for regulators – it talks about regulations, policies, customer empowerment and matters which are at the core business for regulators.

So it is very concise and to the point, I would say, and you have a chance to have a one-to-one relationship with other regulators which we may think have something we can learn from."

CONFERENCE ABSTRACTS AND POSTER EXHIBITION

The purpose of Abstracts and Posters within the ERRA Energy Investment and Regulation Conference was to present new and ongoing research in the energy sector, particularly related to energy regulation and development of energy markets.

Abstract publications submitted to ERRA's Conference Poster project were presented in the coffee break foyer area.

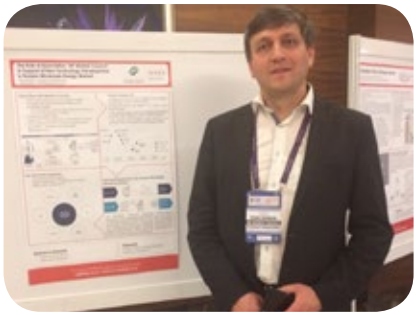
The best 2 abstracts were presented during the Conference:

Abstract Winner #1:
ECRA's Regulatory Approach to Maintaining Security of Supply by Fayez Al Jabri, Mohammed Al Ghwazi and Shareef Al Barrak, Electricity and Co-Generation Regulatory Authority, Saudi Arabia

Abstract Winner #2:
The Role of Association "NP Market Council" in Support of New Technology Development in Russian Wholesale Energy Market by Oleg Barkin and Vladislav Berezovsky, Association "NP Market Council", Russia

Abstract Winner #1

(left to right) Shareef Al Barrak, Fayez Al Jabri, Mohammed Al Ghwazi



Abstract Winner #2

Oleg Barkin

ERRA IS ASSOCIATED WITH **TRAINING**

and education by many of our partners and indeed, we are very proud of our training portfolio, our training expert base and our 2700 training alumni of the past 16 years.

ERRA has developed a range of course offerings, from introductory courses to advanced regulatory techniques and we are expanding our training portfolio with new up-to-date topics. As a result, in 2018 ERRA launched two new workshops – one on **Energy Capital Investment Programs** which aimed to review tools and criteria that regulators can employ to review and approve or reject capital investment programs and to provide examples of regulatory best practice in treating capital investment programs. The second educational programme was about **Innovation and Regulation** with the purpose for regulators to become acquainted with technological advancements, potential new services and solutions likely to affect future power systems. The workshop also looked into examples of regulatory roles in promoting innovation, possible regulatory incentives supporting new technologies and services.

We feel honored that ERRA was invited to implement two **tailor-made trainings** in 2018. ERRA was assisting the **Cyprus Energy Regulatory Authority (CERA)** in the full implementation of the Third Energy Package of the European Union through a series of trainings on electricity, natural gas and renewables. The project was funded by the European Commission. ERRA also organized an on-site custom training course on Principles of Tariff Regulation for the staff of the **Oman Power and Water Procurement Company (OPWP)**.

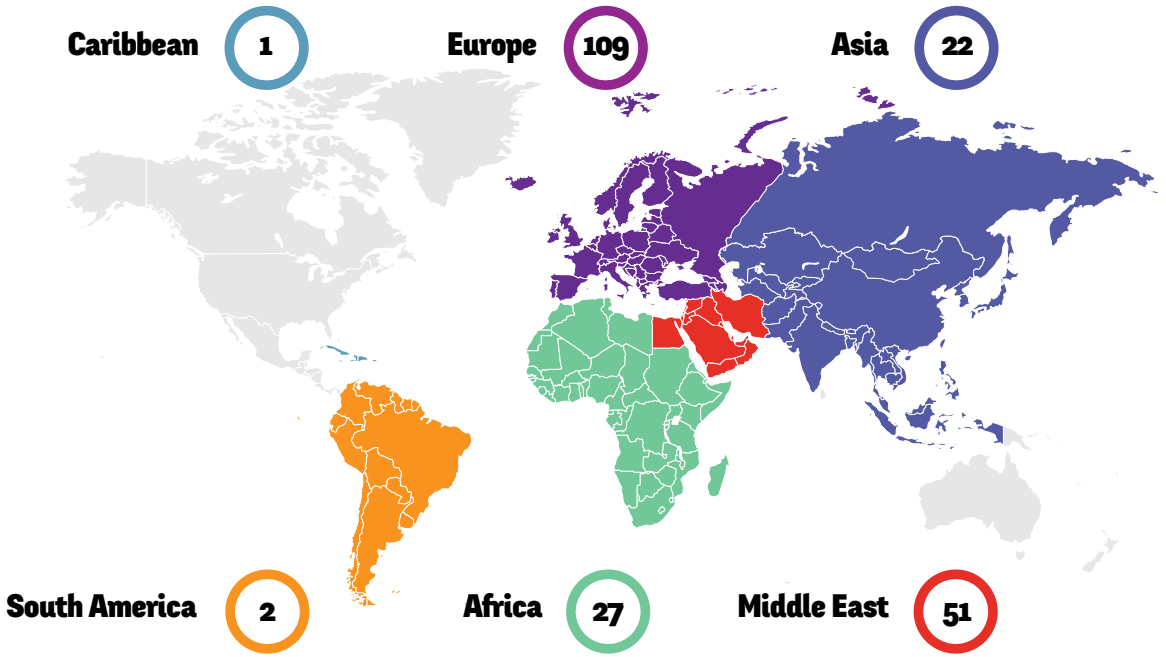
As a result of the Framework Document on Cooperation between regional energy associations signed in March 2018, the first joint training course with MEDREG (Association of Mediterranean Energy Regulators) was organized on **Electricity Market Monitoring Tools**.

TRAINING PARTICIPANTS IN 2018 CAME FROM

91,6% PARTICIPANT COURSE SATISFACTION

2700 ALUMNI SINCE 2002

The 31st CER (Certified Energy Regulator) Diplom was awarded during the 2018 ERRA Summer School. Learn more about the CER programme here: https://erranet.org/trainings/cer/



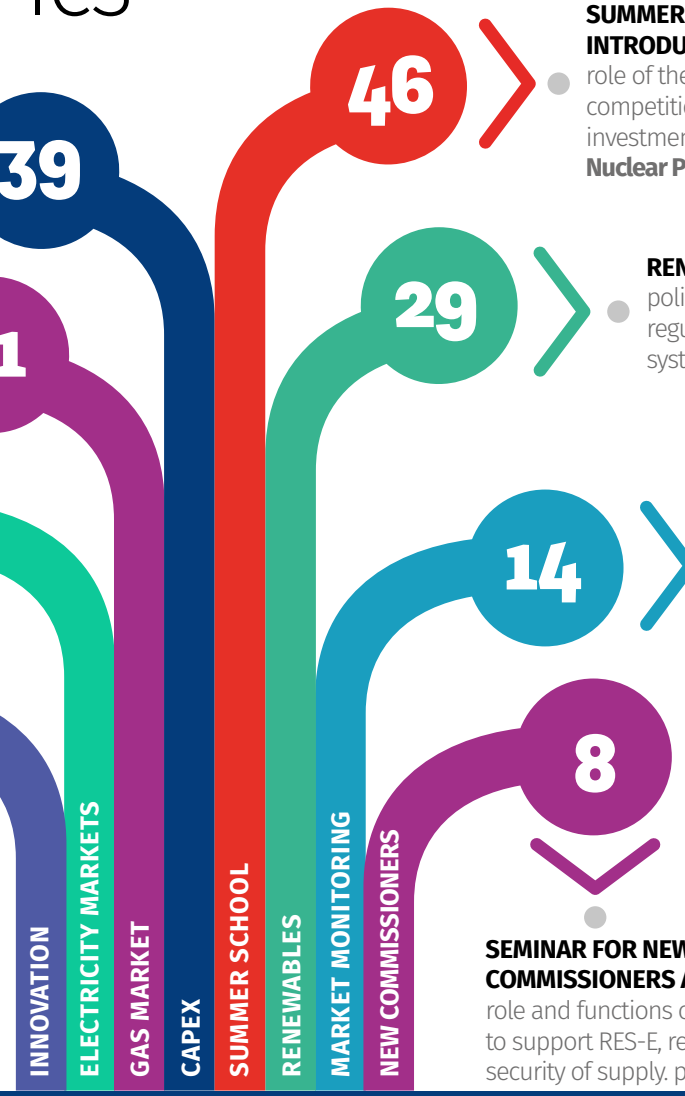
PARTICIPANT NUMBERS OF THE IN-HOUSE TRAINING COURSES AND MAIN TOPICS

ENERGY CAPITAL INVESTMENT PROGRAMS
capital expenditure assessment tools, ENTSO-E/G CBA methodology, prioritizing capex projects, RAB monitoring and verification tools

NATURAL GAS MARKET REGULATION
global gas market developments, wholesale gas markets, trade, transportation, access to infrastructure and tariffs, security of supply and flexibility, retail markets and consumer protection

PRINCIPLES OF ELECTRICITY MARKETS
competitive electricity market designs, regulation of electricity networks, demand and supply of electricity, wholesale and retail markets, market power

INNOVATION AND REGULATION
regulatory roles and economic incentives for innovation, distributed generation and adaptation by DSOs, demand side flexibility and response, energy storage, e-mobility, digitalisation, blockchain



SUMMER SCHOOL: INTRODUCITON TO ENERGY REGULATION
role of the regulator, price and tariff regulation, competition in gas and electricity, energy policies, investment and innovation, **site visit to Paks Nuclear Power Plant**

RENEWABLE ENERGY REGULATION
policy context, renewable support schemes, regulatory tasks in RES-E deployment, system impacts, renewable regulation

ERRA-MEDREG JOINT TRAINING ON ELECTRICITY MARKET MONITORING TOOLS
market power, wholesale market monitoring, REMIT, ancillary services, RES market, retail market monitoring, **site visit to ENERJISA Education and Vocational Center**

SEMINAR FOR NEWLY APPOINTED COMMISSIONERS AND CHAIRMEN
role and functions of the regulator, price regulation, regulatory tools to support RES-E, restructuring the electric power industries, security of supply. privatisation experiences

COURSES IMPLEMENTED in 2018

TRAINING ALUMNI ABOUT THEIR EXPERIENCES WITH ERRA COURSES IN 2018

„Having the opportunity to meet peers from energy regulatory organizations from such a well selected range of countries created a good environment to learn about the opportunities and challenges in each country."
Teodora Stoian and Mihaela Anton, ***Romanian*** *Energy Regulatory Authority*

„The practical know-how to calculate LCOE was a career saver. The country „hot topic" offered insights on how other countries were dealing with their specific energy related problems."
Sydney Mogapi, ***Botswana*** *Energy Regulatory Authority*

„This course was a great experience for me and it is not simply the knowledge given but also the friends I made during this excellent course."
Onur Uyanusta, Energy Market Regulatory Authority, ***Turkey***

„SEC being a new regulatory authority, the seminar for newly appointed commissioners and chairmen came at the right time. The seminar offered good insight on how to effectively regulate concentrated energy (electricity) market. All presenters were knowledgeable and experienced. I have certainly benefited a lot by attending the seminar and it will surely help the SEC propel further."
Colin R. Vel, ***Seychelles*** *Energy Commission*

„Thank you very much for the broad outlook and new perspective on the whole value chain of the natural gas! Perfect organization and friendly environment to have the best of the training."
Vanya Vasileva, Energy and Water Regulatory Commission, ***Bulgaria***

„It was a great opportunity for networking, being in contact with different cultures and get to know that every country has its challenges on the path of building a sustainable and competitive gas market."
Cristina Fetue, TBG – Brazilian Gas Transmission Company, ***Brazil***

„Thank you for the insightful training on electricity markets. It provided an ideal platform for gathering best practice for application in our developing states as we liberalize the electricity sector."
Mzwandile Msibi, ***Swaziland*** *Energy Regulatory Authority*

„A very comprehensive training with a good balance of theoretical background and practical exercises and case studies. Value for money indeed, it was worth all the effort."
Monti Ntlopo, ***Lesotho*** *Electricity and Water Authority*

„I liked most the examples from outside of EU – as we look too often only at European best practice, and also the German presentations. Germany's curiosity to try the effects of different auctions designs is impressive."
Katalin Varga, ***Hungarian*** *Energy and Public Utility Regulatory Authority*

„I particularly enjoyed the practical aspects of the course: the group work and the case studies. They helped to fix the ideas we learnt firmly in my mind. I recommend it to professionals in monitoring and market surveillance."
Frederick Nyang, Energy Regulatory Commission, ***Kenya***

„It was a pleasure meeting such a diverse group of people both instructors and participants. I learned a lot from course materials as well as the interactions with all. No doubt I will stay connected and utilize the new-found friends and collaborate on issues related to gas markets and associated liberalizations and regulations."
Salman Mohammed Alshidi, Ministry of Oil and Gas, ***Oman***

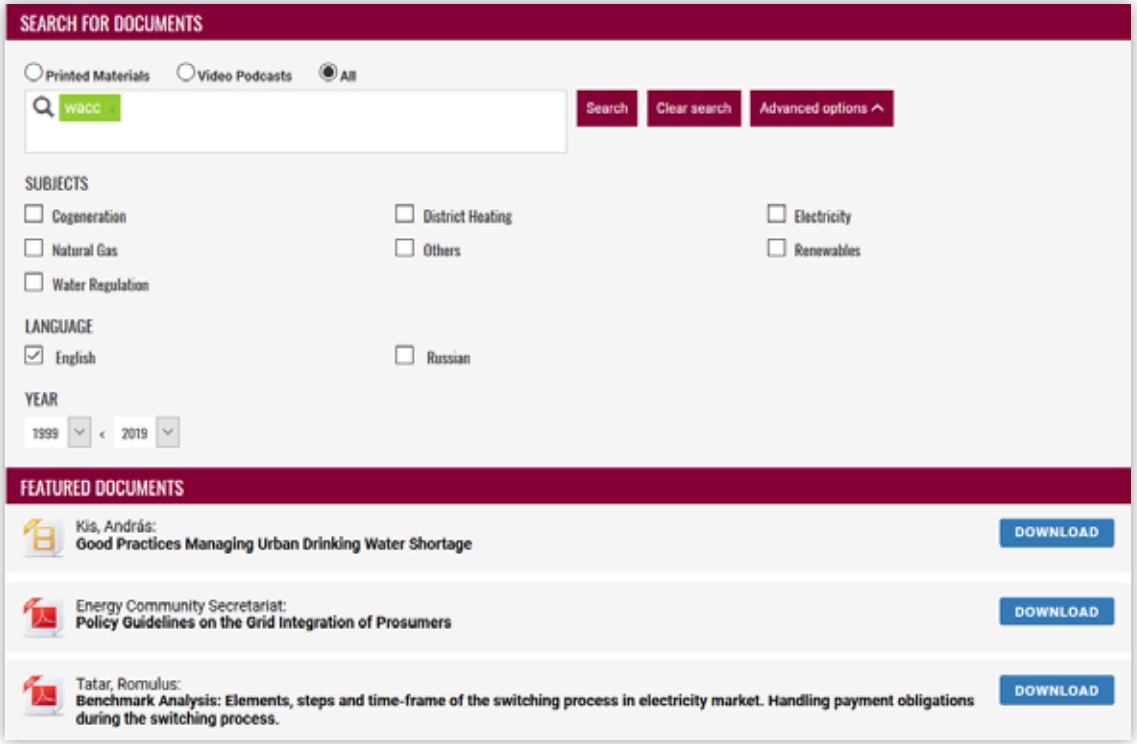
„I gained knowledge from the presenters as well as other participants. The networking of participants with diverse experiences will be very useful."
Chamath Goonewardena, Public Utilities Commission of ***Sri Lanka***

„The training was an eye-opener to the need for me to continually enrich my knowledge base in regulation. It was informative, educative, exciting and interactive."
Onyebuchi Okechukwu, ***Nigerian*** *Electricity Regulatory Commission*

„ERRA courses are full with practical along with academic materials that help to understand the actual situation in the power markets."
Mohamed Yousef AlHamad, GCC Interconnection Authority, ***Saudi Arabia***

NEW SOURCE OF KNOWLEDGE

The ERRA online library has been renewed and refreshed! Our aim was to create a user friendly platform and search engine allowing access to relevant sectoral publications produced by ERRA and by other internationally recognized resources.



https://erranet.org/search-for-documents

VISIT THE LIBRARY AND SEARCH AMONG:

+550 files

+30 podcasts

English and **Russian** materials

SUBJECTS COVERED

Electricity | Natural Gas | Cogeneration | District Heating | Water Regulation | Renewables

Do you have a material in hand, which would enrich the Library? Please feel free to send us the pdf or the link, we will be happy to upload it.

ADAPTING TO CHANGE

ERRA has always been characterized with flexibility to change, receptivity to **innovation and strategic thinking**. Our members and partners will see increased efforts to ensure innovation and transformation in the coming period.

There are fundamental developments in the energy sector that are reshaping the traditional way regulators and policy makers used to work and sought to organise and regulate the power sector. ERRA needs to get its members ready for these new processes and most of our projects will be implemented with this intention on mind. The **18th ERRA Energy Investment and Regulation Conference** organized on September 23-24 in Riga, Latvia will be held **under the motto of Transitional Challenges**, thus the agenda and speaking slots will all be centered around energy transition: regulatory roles in the transition period, impacts and implication of the energy transition on regulation and many more!

ERRA's training portfolio will be remodeled with the same concept in mind. In the coming period, our alumni and future training participants will see a wide variety of educational programs offered. While continuing to fill educational needs related to core regulatory functions, ERRA will start providing very narrow, **fine-tuned topical and** sometimes **very technical programs**. Just to name a few of these: the system flexibility challenge of the regulator, gas transmission tariff setting, renewable energy auctions, Capex Review and assessment tools etc. Watch out for these programs on the Upcoming Events section of the ERRA website!

Our association always stood out with **key sectoral studies** on topics which are very relevant and coherent and address burning regulatory issues. In this spirit we intend to commit additional resources to providing member organizations with research studies and policy recommendations on areas of international best practice for the topics concerned.

ERRA will be more visible and active on **social media**. We expect to deepen our bond with current followers and hope to build new relationships through social media communication. Please **follow us** on the major social media channels and support our communication efforts! And, last but least, please visit the www.erranet.org website frequently! It is constantly updated with upcoming events and fresh news of our association, members and partners.

18TH ERRA
ENERGY INVESTMENT AND REGULATION CONFERENCE
23-24 September
RIGA, LATVIA | 2019

ENERGY REGULATORS REGIONAL ASSOCIATION

ERRA SECRETARIAT

+36 1 477 0456
+36 70 392 59 86
SECRETARIAT@ERRANET.ORG
WWW.ERRANET.ORG