

# CIGRE strategic direction and technical focus

Rannveig S. J. Løken  
CIGRE Vice-president Technical

CIGRE UK Technical Conference, Birmingham  
20. November 2025



**cigre**

For power system expertise

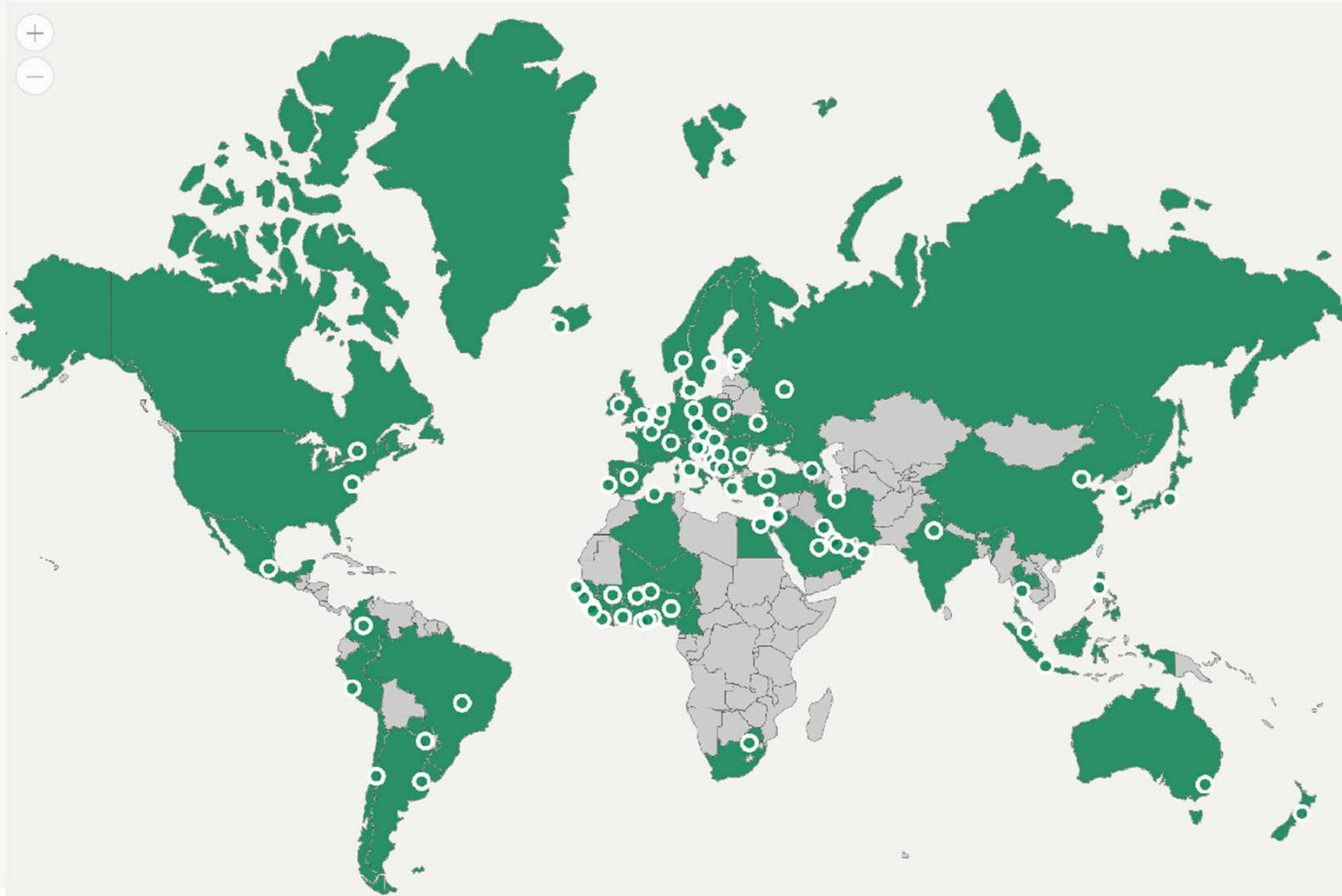


## Rannveig S. J. Løken

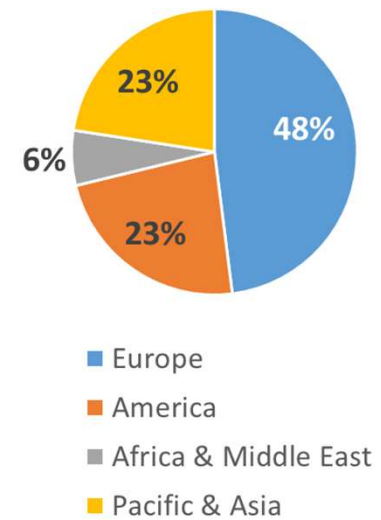


Rannveig Løken has worked in the power system sector for more than 30 years. She works for Statnett, the TSO of Norway, and holds a Master of Science in Electric Power engineering from the Norwegian University of Science and Technology (NTNU). She is the Chair of the Norwegian Committee of CIGRE. She has been involved with CIGRE since 2006. She was the Chair of CIGRE SC B5 Protection and Automation between 2018 and 2024. In 2024 she received the Honorary award from CIGRE.

# The CIGRE community in 2025 = 60 National Committees



2024



## CIGRE members' profiles

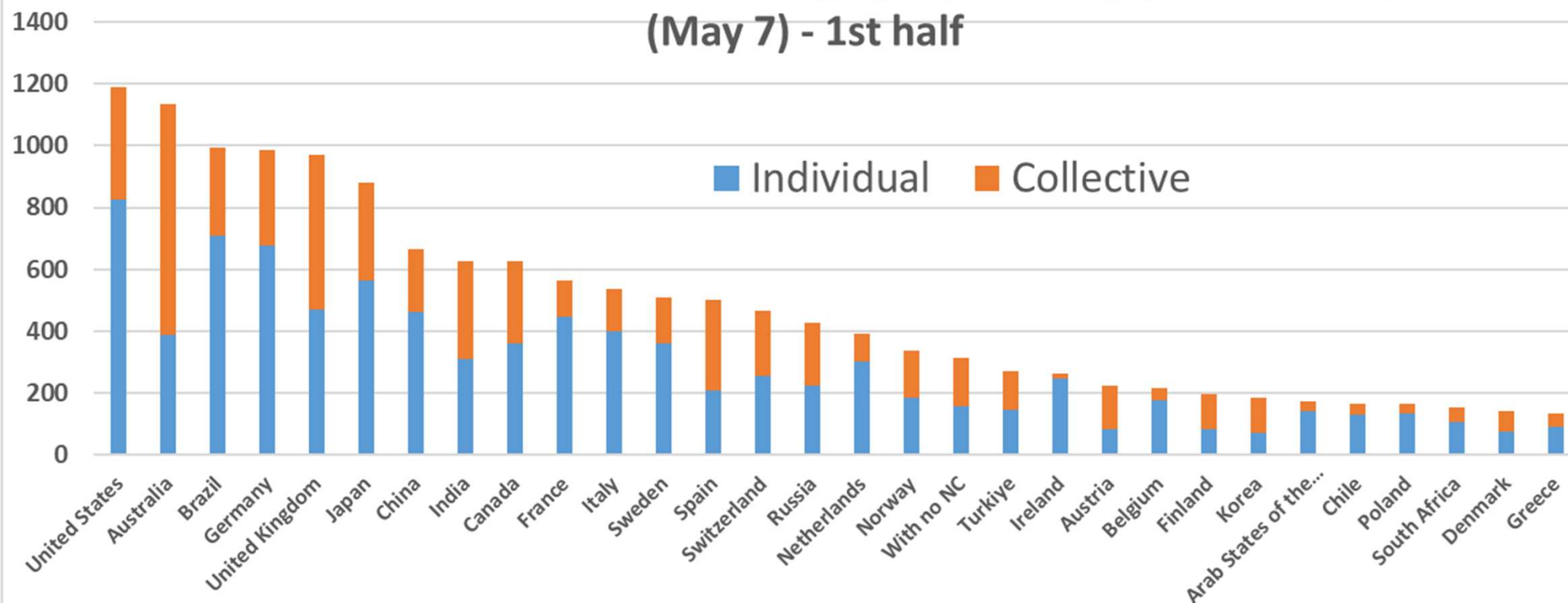
- Operators:
    - Transmission Systems (TSO)
    - Distribution Systems (DSO)
    - Power generators
    - Utilities
    - Independant Systems (ISO)
    - T&D asset owners
    - Power markets
  - Consulting companies
  - Testing laboratories
  - Research centres
  - Universities
  - Regulators
  - Professional associations
  - Power users
- 13,000 individual members**
- 30% young professional (<35)**
- 13.8% women**
- 1,450 collective members**





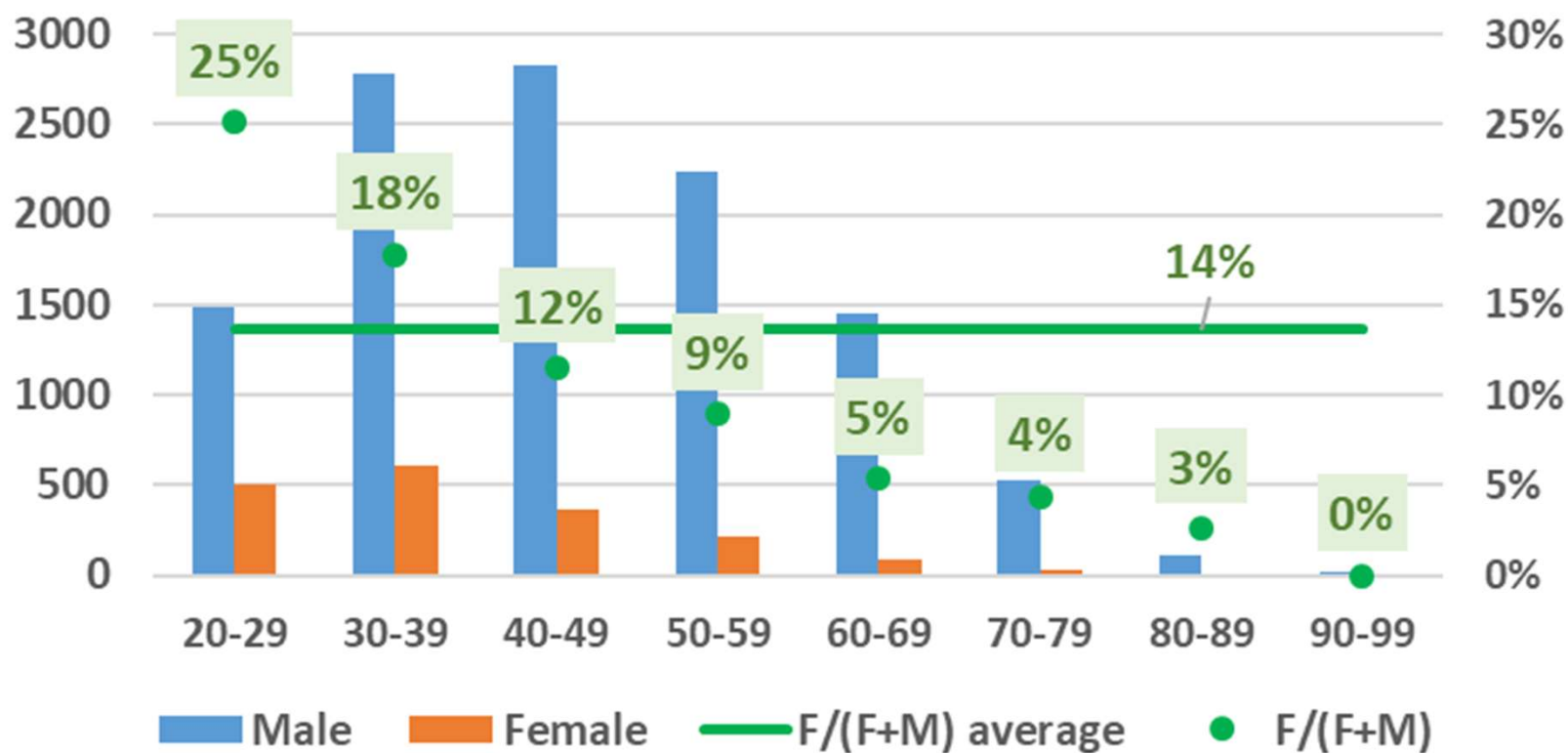
# Membership

2025 National Committee ranking by equivalent(n) membership  
(May 7) - 1st half



# CIGRE membership

## CIGRE membership per age ranges in 2024



# CIGRE is an event organiser

**In total, several hundreds of CIGRE events per year**

- **Paris Session** in even years, the reference congress for all members organized by the Central Office (CO) (4,575 delegates from 99 countries in August 2024)
- **Symposia**, two per odd years outside of Paris, organised by one National Committee (NC), the Technical Council (TC) and the CO
- **Colloquia** organised by a Study Committee in association with a NC
- **Regional conferences** organised by groups of NCs
- **National Conferences** organised by NCs
- **Webinars** organised by the Study Committees with the CO or by the NCs



# CIGRE Paris 2026 – 23-28 August 2026- Full paper



## PARIS FRANCE SESSION 2026 PALAIS DES CONGRÈS 23-28 AUGUST

**CALL FOR PAPERS SESSION 2026**

KEY DATES	
<b>JULY 7, 2025</b> DEADLINE TO SEND SYNOPSIS TO NATIONAL COMMITTEES	<b>OCTOBER 20, 2025</b> SYNOPSIS NOTIFICATION OF ACCEPTANCE
<b>JANUARY 12, 2026</b> DEADLINE TO SEND FULL PAPERS TO NATIONAL COMMITTEES	<b>APRIL 10, 2026</b> DEADLINE TO SEND REVISED VERSION OF FULL PAPERS
<b>MAY 11, 2026</b> FULL PAPERS NOTIFICATION OF ACCEPTANCE	<b>JUNE 29, 2026</b> DEADLINE FOR POSTER PRESENTATIONS
<b>AUGUST 7, 2026</b> DEADLINE FOR CONTRIBUTIONS AT GROUP DISCUSSION MEETINGS	

## PARIS SESSION 2026

**CALL FOR PAPERS SESSION 2026**

**EDITORIAL** By Rannveig S.J. Loken - CIGRE Technical Council Chair

Dear Colleagues,

After the remarkable success of the 2024 CIGRE biennial Paris Session, we now turn our eyes to the preparation of the 2026 Session. CIGRE at its core is the development and dissemination of unbiased technical knowledge for power system expertise, for electricity end-to-end, and to broaden to all facets of the energy transition.

The 2026 Session will prioritise relevant topics related to:

- Development of new technologies, new standards, and new uses of existing technologies.
- Sustainability and governance aspects of modern power systems.
- Development of the knowledge and experience gained around the world.
- Requirements to develop and operate current and future power system, such as interconnections, cyber security, disaster management, self-healing networks, capacity markets, storage, and grid edge solutions.
- Energy transition and dispersed generation sources with interactive consumers and prosumers.
- Global best practices and guidelines enabling provision of sustainable electricity to areas currently without access.

All these issues represent a major change of mindset which will be reflected by new Working Groups, Symposia, Workshops and, certainly, in the selection of Preferential Subjects for the forthcoming Biennial Sessions.

CIGRE is an international organization based on volunteer work, who address timely and exciting subjects for discussion and publications. Every challenge would mean an opportunity for our growth and knowledge sharing. This is the main target of all 16 Study Committees that compose the Technical Council of CIGRE.

The Preferential Subjects selected in this call for paper, are in line with thoughts, concerns, vision of the future, new trends, as well as the establishment of CIGRE as an outstanding platform for power system expertise. On behalf of CIGRE Officers, Study Committees Chairs, allied with our main governing bodies (Administrative Council and Steering Committee), I therefore urge authors to examine the proposed Preferential Subjects for each Group Discussion Meeting and look forward to receiving many high quality, interesting and exciting papers with the objective to exceed all expectation for the 2026 CIGRE Paris Session.

Please join us, you are all and always most welcome to CIGRE!

**SUBMIT A PAPER** for the number one global Power System event in the world and experience an exclusive opportunity as author to take the floor and address a large audience!

**TWO DIFFERENT MEETING FORMATS** for an in-depth interactive congress

**POSTER SESSIONS**  
Present the main aspects of your Paper to Session attendees during one-on-one discussions.

**GROUP DISCUSSION MEETINGS**  
Present your point of view and experience around selected key questions before an audience of experts.

Call for papers | Session CIGRE





# CIGRE's 16 domains of work = 16 Study Committees



More than 260 active Working Groups

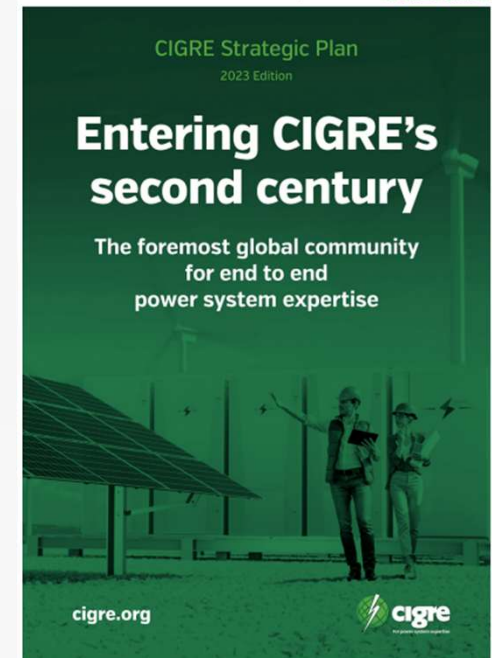


# CIGRE Strategic Plan – 2023 Edition

## Technical Knowledge Advancement

- CIGRE at its core is the development and dissemination of unbiased technical knowledge for power system expertise, for electricity end-to-end (E2E), and to broaden to all facets of the energy transition.
- The CIGRE Technical Council is the center of this advancement as are the National Committees with their local initiatives in conferences and in assisting the Technical Council.

<https://www.cigre.org/GB/about/official-documents>



# CIGRE Energy Transition Topics

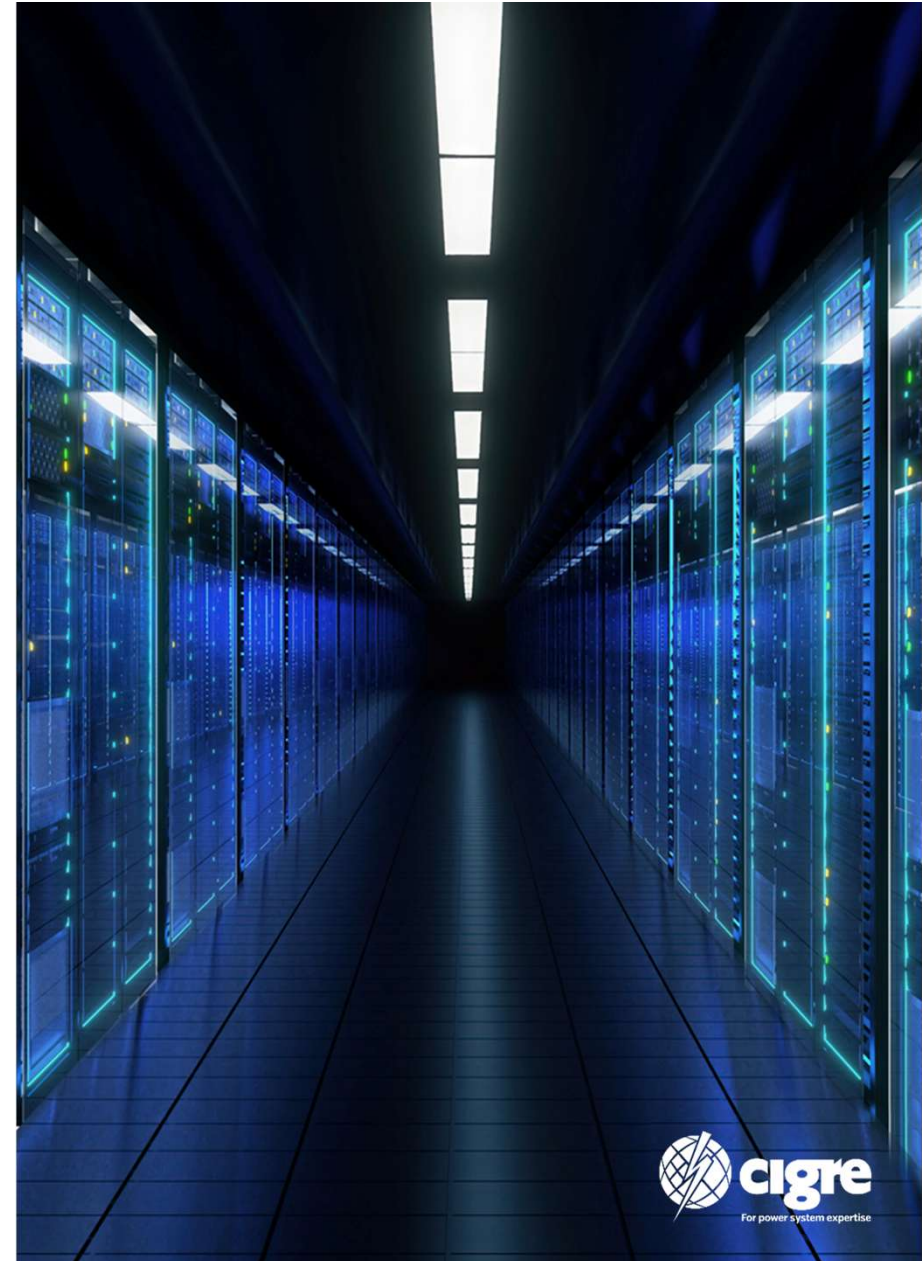
	<b>Digitalisation</b> <a href="#">VIEW</a>		<b>Solar PV and Wind</b> <a href="#">VIEW</a>
	<b>Storage</b> <a href="#">VIEW</a>		<b>Hydrogen</b> <a href="#">VIEW</a>
	<b>Grids and Flexibility</b> <a href="#">VIEW</a>		<b>Consumers, Prosumers and Electric Vehicles</b> <a href="#">VIEW</a>
	<b>Sustainability and Climate</b> <a href="#">VIEW</a>		<b>Sector Integration</b> <a href="#">VIEW</a>





# DIGITALISATION:

- ▶ Transformer Digital Twin – concept and future perspectives
- ▶ Tools for lifecycle management of T&D switchgear based on data from condition monitoring systems
- ▶ Condition monitoring and remote sensing of overhead lines
- ▶ HVDC Digital Twin – concepts and roadmap
- ▶ **Requirements for Information Technologies (IT) and Operational Technology (OT) managed of Protection, Automation and Control Systems (PACS).**
- ▶ Technology and Applications of Internet of Things in Power Systems







# STORAGE:

- ▶ Global interconnected and sustainable electricity system: Effects of storage, demand response and trading rules
- ▶ The potential roles of energy storage in electric power systems
- ▶ **Development of Grid Forming Converters for Secure and Reliable Operation of Future Electricity Systems**
- ▶ Industrial implementation and application of grid forming energy storage systems (GFM ESS)
- ▶ Wholesale and Retail electricity cost impacts of flexible demand response

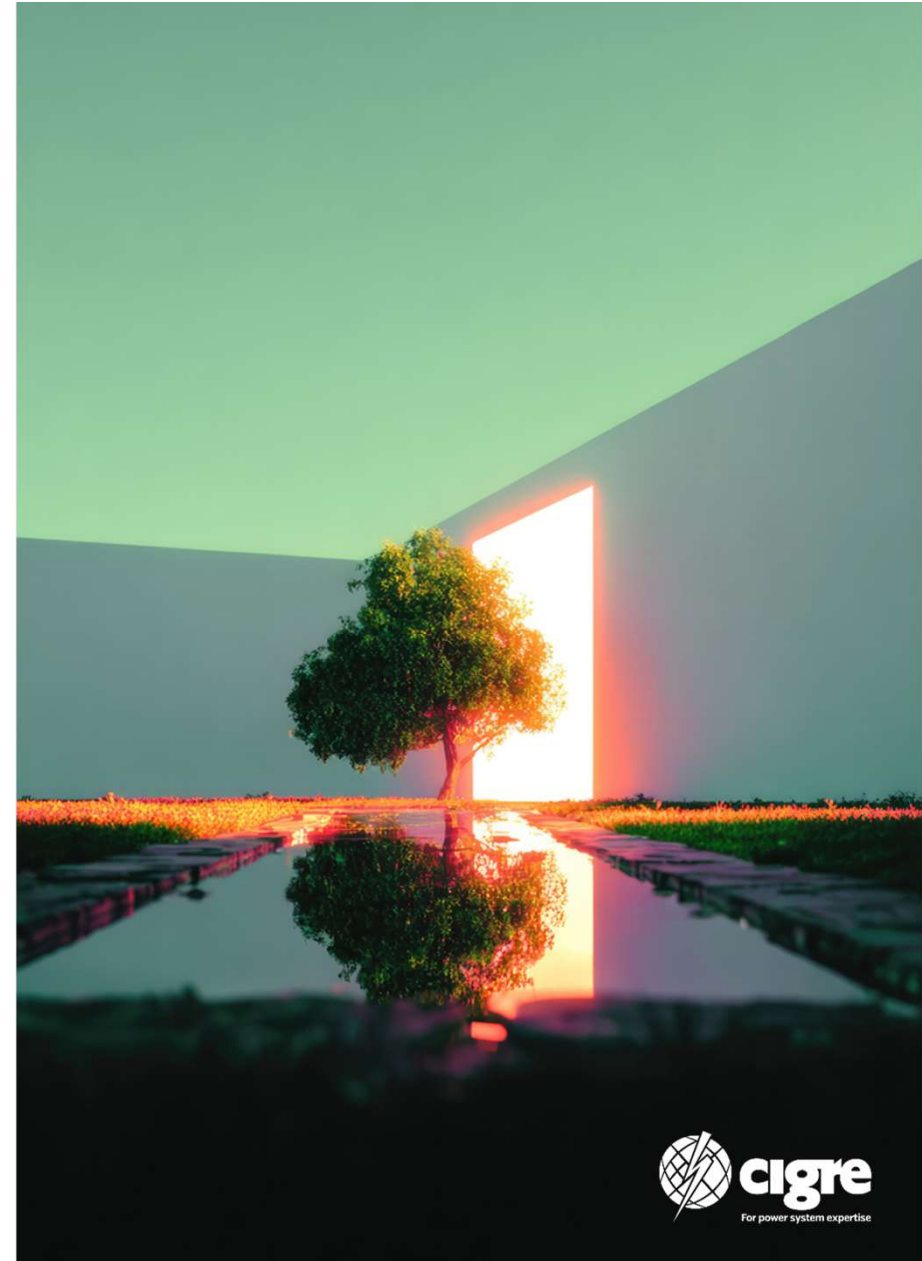
# GRIDS and FLEXIBILITY:

- ▶ **Power-electronics-based transformer technology, design, grid integration and services provision to the distribution grid**
- ▶ Technical requirements and scenario considerations on grid-forming capabilities of VSC-HVDC systems
- ▶ Optimising power system resilience in future grid design
- ▶ Planning tools and methods for systems facing high levels of distributed energy resources
- ▶ The Impact of DER on the Resilience of Distribution Networks
- ▶ Development of Grid Forming Converters for Secure and Reliable Operation of Future Electricity Systems



# SUSTAINABILITY and CLIMATE:

- ▶ **User guide for non-SF6 gases and gas mixtures in Substations**
- ▶ Environmental impact of decommission of cables
- ▶ Replacement gas for SF6 in cable accessories
- ▶ Guidelines for life cycle assessment in substations considering the carbon footprint evaluation
- ▶ Interactions between wildlife and emerging renewable energy sources and submarine cables
- ▶ Partial discharge properties of non-SF6 insulating gases and gas mixtures







## SOLAR PV and WIND:

- ▶ Wind generators and frequency-active power control of power systems
- ▶ Failure survey of lower voltage generator step up transformers installed in wind farms and photovoltaic parks
- ▶ Loading pattern on cables connected to windfarms
- ▶ HVDC connection of power system with high proportion of photovoltaic (PV) generation
- ▶ Protection Roadmap for Low Inertia and Low Fault Current Networks
- ▶ **The impact of offshore wind power hybrid AC/DC connections on system operations and system design**
- ▶ EMC for Large Photovoltaic Systems





# HYDROGEN:

- ▶ Role of green hydrogen in energy transition: opportunities and challenges from technical and economic perspectives
- ▶ **Energy Sectors Integration, and system impact**
- ▶ Integration of Hydrogen into electricity markets and regulation
- ▶ Hydrogen source tracing

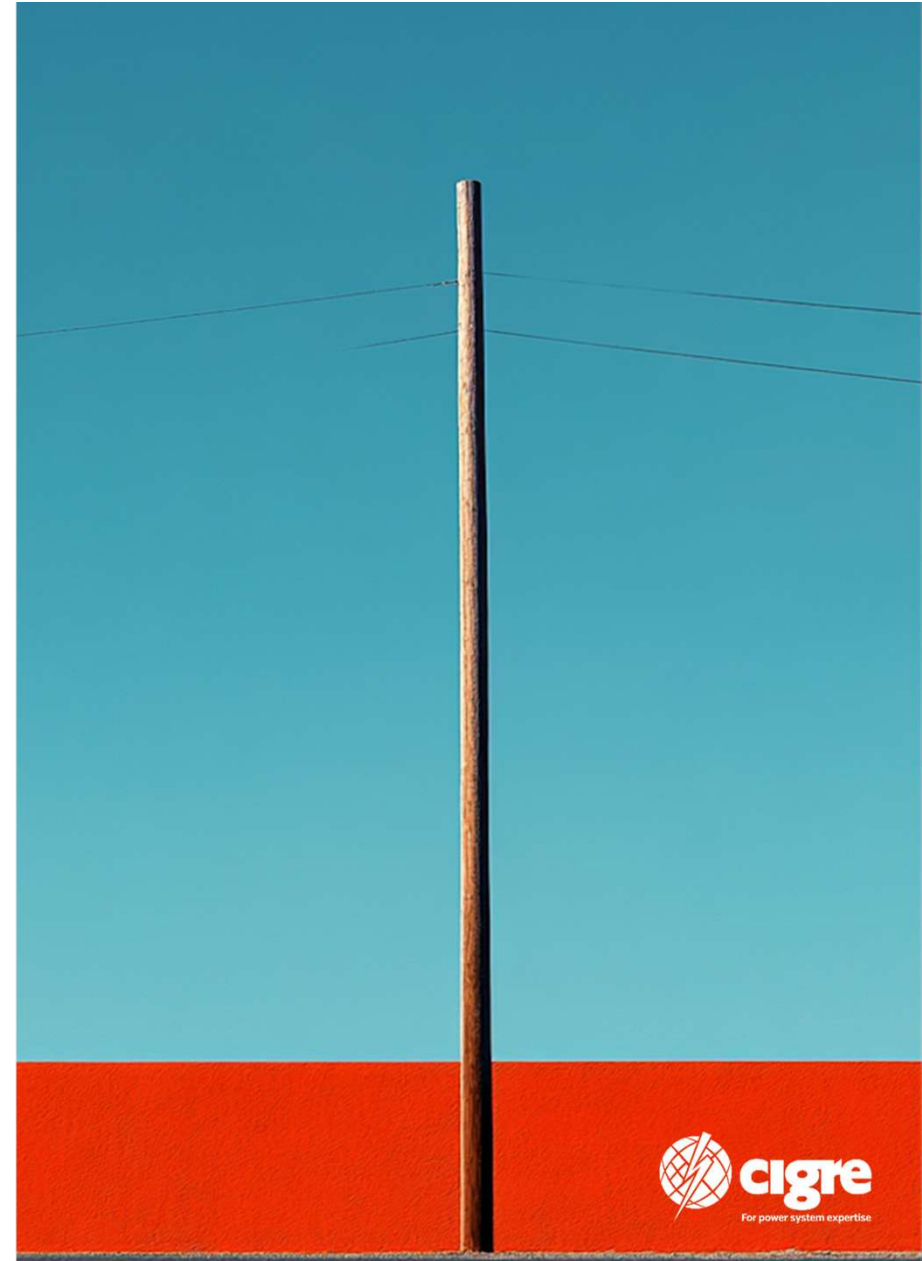
# CONSUMERS, PROSUMERS AND ELECTRIC VEHICLES:

- ▶ Large city & metropolitan area power system development trends, taking into account new generation, grid and information technologies
- ▶ Wholesale and Retail electricity cost impacts of flexible demand response
- ▶ Summary of current uses of electric vehicle charge-discharge flexibility in wholesale energy markets and reliable grid operation
- ▶ **Electric Vehicles as Distributed Energy Resource (DER) systems**



# SECTOR INTEGRATION:

- ▶ **Energy Sectors Integration, and system impact**
- ▶ Market integration of EVs



## CIGRE contribution to the energy transition


1. Based on the experiences of its members, CIGRE is addressing the challenges of the energy transition, and appointed Working Groups to propose state of the art, best practices and recommendations on system planning, design, construction and operation in the new context of the energy transition
2. By selecting relevant topics for its conferences (Paris Session, Symposia), CIGRE facilitates the sharing of operational experiences
3. The « Large disturbance workshop » of the Paris Session is an opportunity for experts to share lessons learnt from large incidents or blackouts due to the integration of large amounts of renewable energy sources
4. CIGRE stimulates technical innovations by bringing together experts from the operators, research centers, consultants, and technology providers, to solve problems at a global level





# WG management tool



 **WORKING GROUPS PLATFORM**

NC45 - NC\_CHAIR NC45 - NC\_MEM

Logout [→]  
Rannveig S. J. Løken


Home ToRs Working Groups WG Member management Reports Forum

### Waiting For

Filter

Show 10 entries

ToRs / WGs	Actor	Task	Date Since	Due Date
JWG A3/D2.52	Løken Rannveig S. J.	Waiting for the proposal of a possible member of this NC	03/02/2025	03/02/2026
WG B5.87	Løken Rannveig S. J.	Waiting for the proposal of a possible member of this NC	03/02/2025	03/02/2026
WG C5.41	Løken Rannveig S. J.	Waiting for the proposal of a possible member of this NC	13/01/2025	13/01/2026
WG B5.88	Løken Rannveig S. J.	Waiting for the proposal of a possible member of this NC	13/01/2025	13/01/2026
WG D2.63	Løken Rannveig S. J.	Waiting for the proposal of a possible member of this NC	13/01/2025	13/01/2026
JWG A2/C4/D1.77	Løken Rannveig S. J.	Waiting for the proposal of a possible member of this NC	13/01/2025	13/01/2026

 **WORKING GROUPS PLATFORM**

← ToR Members WG Progress

### NC CANDIDATES PROPOSAL FORM FOR JWG A3/D2.52

☐ I will not propose a member OK

☐ If you want to propose a member  
If you know the candidate's Cigre membership number, please enter this number in the field below  
 OK

Or fill in manually the following fields:

Gender Male

Name AWAITEN CANDIDATE FROM NORWAY NC

First Name

Email

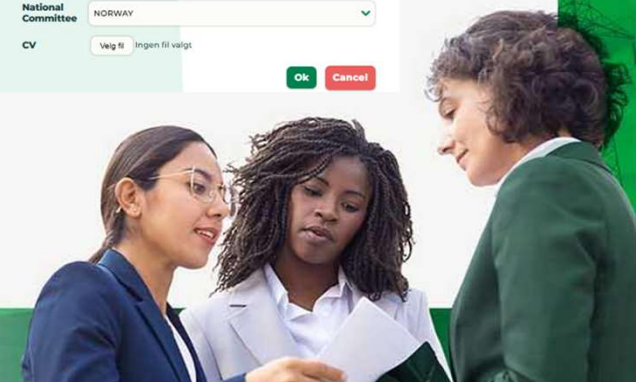
Company

Country -

National Committee NORWAY

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OK Cancel



# CIGRE New Working Groups 2025 (1)



JWG D1/A2.84	Silver Corrosion in Power Transformers	06/11/2025
WG D1.83	Optical Spectral Sensing Technologies for Partial Discharge (PD) a...	06/11/2025
WG A2.81	Guide for Power Transformer Design Review	20/10/2025
WG D2.67	Power Embodied Intelligence Technology and Application	17/10/2025
JWG C4/A3.79	Temporary overvoltage protection technologies for high-voltage t...	31/08/2025
JWG C4/B1/B2/B4.78	Interference effects between HVDC circuits and nearby metallic i...	11/08/2025
JWG A3/A2/B3/B4/C4.53	Inductive load Switching in transmission and distribution systems	13/10/2025
WG B5.89	Protection Redundancy and Backup for Modern Power Systems	29/09/2025
WG B3.73	Asset management and digital integration of mobile substations ...	08/07/2025
JWG C6/C1/CIRE.50	Planning distribution networks under significant uncertainties	14/07/2025



# CIGRE New Working Groups 2025 (2)



WG C6.49	Virtual power plant (VPP) aggregation of distributed energy reso...	02/08/2025
WG C6.48	DER's integration in Distribution Systems Operation and Control	02/08/2025
JWG C1/D2.56	Electrical-Cyber Integration to meet Net Zero Goal by support of ...	16/07/2025
JWG C1.55	A Benchmarking survey on the use of Asset Investment Planning ...	18/06/2025
WG B3.72	Integration of asset information in modern substations for (asset) ...	02/08/2025
WG A2.80	Guide to Transformer Supplier Qualification and Development	27/05/2025
WG A1.78	Guide for the Application of Electrical and Current Signature Anal...	05/06/2025
WG D2.66	Low Voltage Power Line Carrier Communications Application	26/04/2025
WG D2.65	Optical Transport Communication Networks for Electric Power Uti...	26/04/2025
JWG A2/C3.79	Power Transformers and Reactors Sound Levels On Site	08/05/2025



# CIGRE New Working Groups 2025 (3)



WG D2.64	Application of AI in Cybersecurity Defence of Power Systems	18/03/2025
JWG C2/C4.47	Wide Area Operational Security Systems to enable the Energy Tra...	12/05/2025
WG A2.78	Bushing Diagnostics: Off-Line Testing and On-Line Monitoring Sys...	18/03/2025
JWG C5/C1.43	Approaches to account for the contribution of short-duration elec...	11/05/2025
WG C5.42	Market pricing issues and solutions for low short-run marginal-co...	15/03/2025
WG B2.96	Composite Insulated Cross-arms for New-build and Retrofitted Tr...	18/03/2025
WG B3.71	Substations Improvements to Support Network Black Start Capab...	03/11/2025
WG B3.70	Guidelines for the Use of Advanced Technologies for Information ...	14/07/2025
WG B3.69	Process Requirements for Commissioning and Inspection of Air In...	18/02/2025
WG B5.88	Implementation Guide for fully digital IEC 61850-based Protection...	13/01/2025





# CIGRE New Working Groups 2025 (4)



WG B5.87	Digital Transformation of Protection, Automation and Control Syst...	03/02/2025
WG C5.41	Regulation and market design to foster decarbonation through in...	13/01/2025
JWG A3/D2.52	Application of Digital Twin in Switchgear	03/02/2025
WG D2.63	Inter-Control Center Communications Protocol (ICCP) Security an...	13/01/2025
WG D2.62	Efficient spectrum allocation and utilisation for electric power ind...	13/01/2025
JWG A2/C4/D1.77	Design of transformers for very fast transient overvoltages	13/01/2025



# CIGRE is an editor and a publisher >> eCIGRE



**ELECTRA**  
CIGRE's Digital magazine

**CIGRE SCIENCE  
& ENGINEERING**

**CSE N°36** Lightning Transient Se  
**February 20** Monitoring and Applic  
**Electric Power System**

Best Papers  
of the CIGRE Paris Sess

A Scopus registered magazine  
ISSN: 2426-1335

**C4** Power system  
technical  
performance

CIGRE Green Books  
CIGRE Study Committee A2:  
Power Transformers and Reactors

Luiz Cheim · Adish Kumar Gupta ·  
Tara-Lee MacArthur · Simon Ryder  
Editors

## Transformer and Reactor Life Management



Springer

## POWER TALK



**THE CIGRE NEWSLETTER**

Latest news, events and activities from the world of CIGRE



Sandwiched between the Pa  
ended up being a success, a  
who contributed, delegates,  
many service providers.

To crown this success, the E  
a trophy that recognises org  
advancement of scientific re

## FUTURE Connections



The latest from the world of CIGRE  
innovations, new tech and the en  
technical challenges of the power



## Leadership Circle

CEO NEWSLETTER

November 2024



**Editorial**  
By Konstantin O. Papailiou, CIGRE President

Dear Friends and Colleagues:

Traditionally the CIGRE Leadership Circle Newsletter presents  
important technology developments and trends but please bear  
with me as I expand instead on one of my main goals as the new

CIGRE President, i.e. strengthening the cooperation between you, the leaders in our  
industry, and CIGRE.

Having been a CEO of an international company for a long time, I understand well that - in  
the heat of daily business - there is little time to consider how and why CIGRE membership  
can be of benefit. Please allow me to add my testimonial to the many already published in  
our site and media:

## CIGRE Technical Brochures published in 2025 (1)



- The impact of offshore wind power hybrid AC/DC connections on system operations and system design, Ref 972 • 2025, SC C2/B4
- Transformer Efficiency, Ref 971 • 2025, SC A2
- The Potential Roles of Energy Storage in Power Systems, Ref 970 • 2025, SC C1
- Forecasting Dynamic Thermal Line Ratings, Ref 969 • 2025, SC B2
- Interaction between cable and accessory materials in HVAC and HVDC applications, Ref 968 • 2025, SC B1/D1
- Mechanical properties of insulation materials for power transformers, Ref 967 • 2025, SC D1
- Sustainable corridor management, Ref 966 • 2025, SC C3
- Best environmental and socioeconomic practices for improving public acceptance of high voltage substations, Ref 965 • 2025, SC C3
- Increasing the Strength Capacity of Existing Overhead Transmission Line Structures, Ref 964 • 2025, SC B2
- Finite Element Analysis for Cable Rating Calculations, Ref 963 • 2025, SC B1
- Guide for transformer maintenance, Ref 962 • 2025, SC A2



## CIGRE Technical Brochures published in 2025 (2)

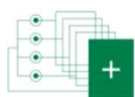


- Interoperability in HVDC systems based on partially open software, Ref 961 • 2025, SC B4
- Certification of the electricity used to produce hydrogen, Ref 960 • 2025, SC C5/C1
- Behaviour of Cable Systems under Large Disturbances, Ref 959 • 2025, SC B1
- Guidelines for use of real-code in EMT models for HVDC, FACTs and inverter based generators in power systems analysis, Ref 958 • 2025, SC B4/IEEE
- Recommendations for dielectric testing of HVDC gas-insulated cable connection assemblies, Ref 957 • 2025, SC B1/B3/D1
- Protocol for Reporting the Operational Performance of HVDC Systems, Ref 956 • 2025, SC B4
- Lightning Transient Sensing, Monitoring and Application in Electric Power Systems, Ref 955 • 2025, SC C4
- Electric Vehicles as Distributed Energy Resource (DER) Systems, Ref 954 • 2025, SC C6
- Tools for lifecycle management of T&D switchgear based on data from condition monitoring, Ref 953 • 2025, SC A3
- Evaluation of Dynamic Hydrophobicity of Polymeric Insulation Materials Under AC Voltage Stress, Ref 952 • 2025, SC D1





# CIGRE membership benefits



## 900+ Technical Brochures

Access to a library of in-depth Technical Brochures growing at around 40 per year and spanning every subject in the power system.

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## Collaborate with experts

Participation opportunities for members are extensive within CIGRE's global knowledge development programme. Typically 250 working groups are active at any one time.

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## Access perspectives and peers from across the globe

Beyond the things your membership qualifies you for there are many benefits to a CIGRE membership. Read about the top nine here.

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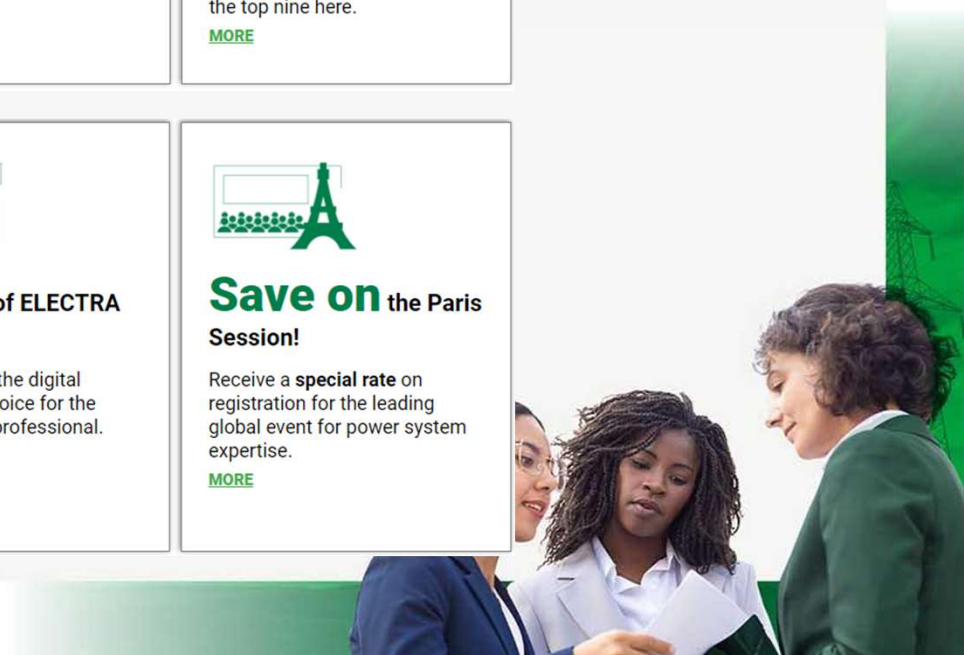
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