

C1 STATUS, LAVORI IN CORSO, ANNUAL MEETING 2023 A CAIRNS (AUSTRALIA)

Antonio Iliceto - Presidente CIGRE C1



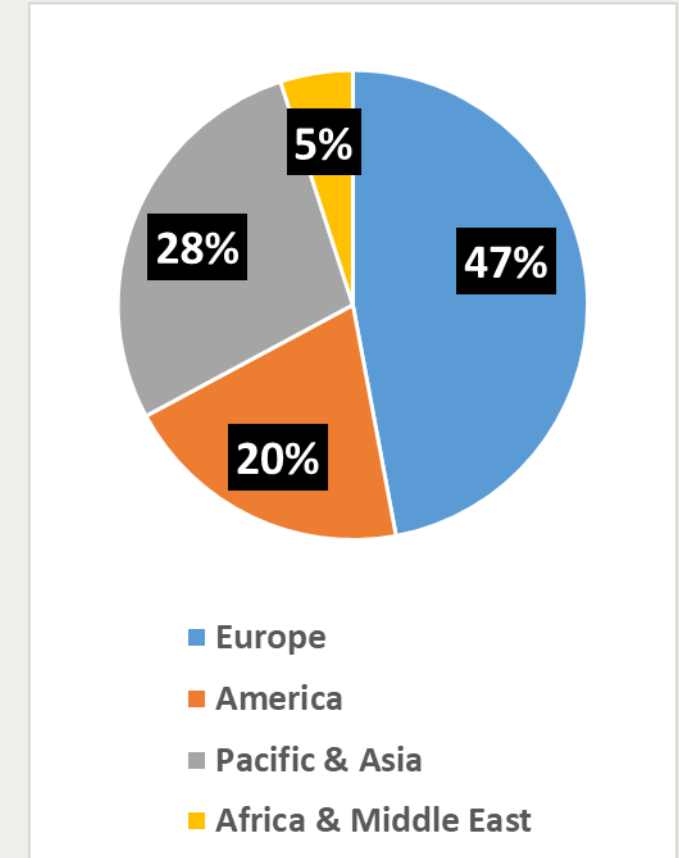
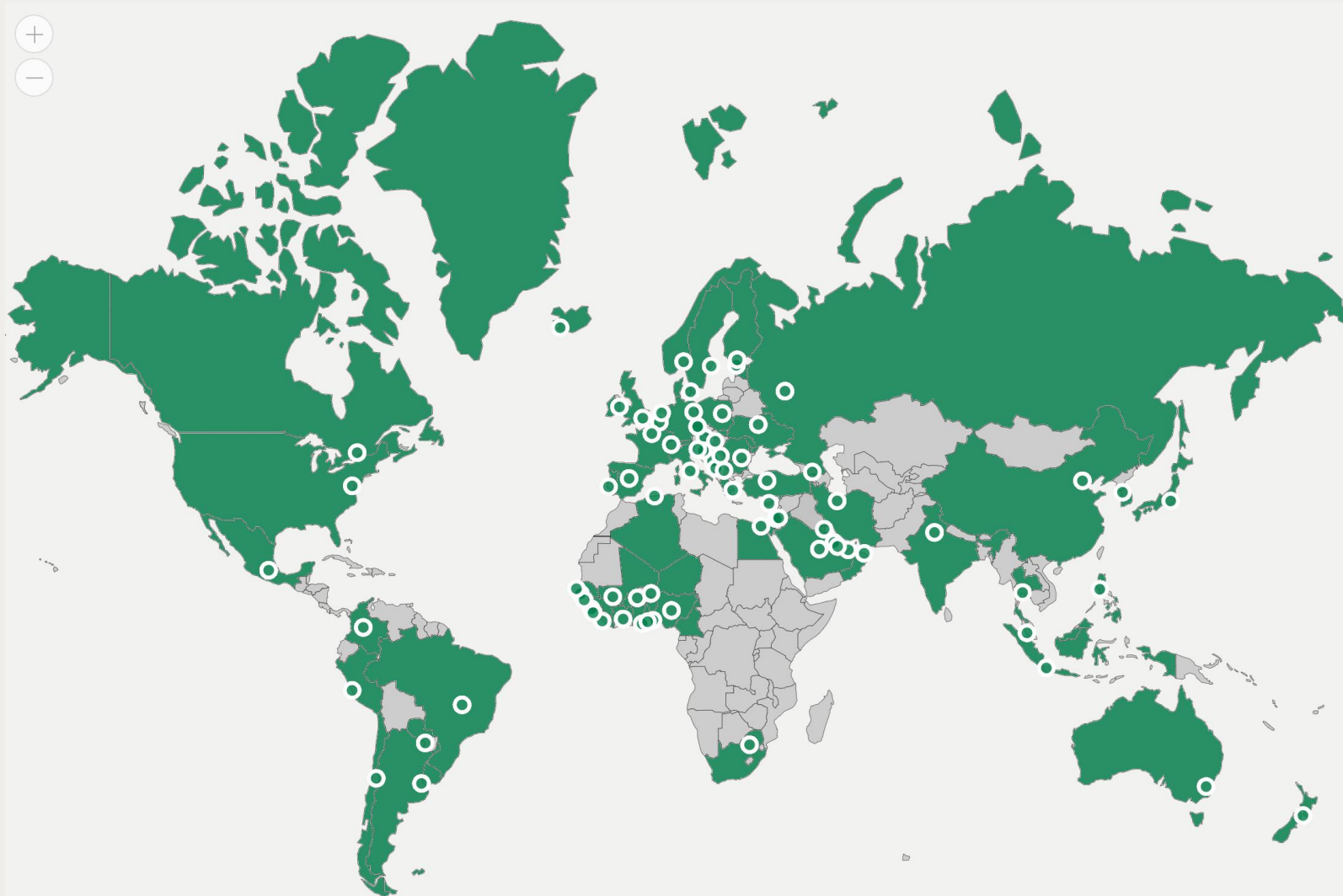
cigre

For power system expertise

Contenuti

- 1. Aggiornamenti su organizzazione e trends nel Cigre internazionale**
- 2. Aggiornamenti su Comitato C1 internazionale**
- 3. Ultima riunione di Comitato a Cairns (sett 2023)**
- 4. Attività in sviluppo e prossimi WG**
- 5. Aggiornamenti su Paris 2024 General Session**

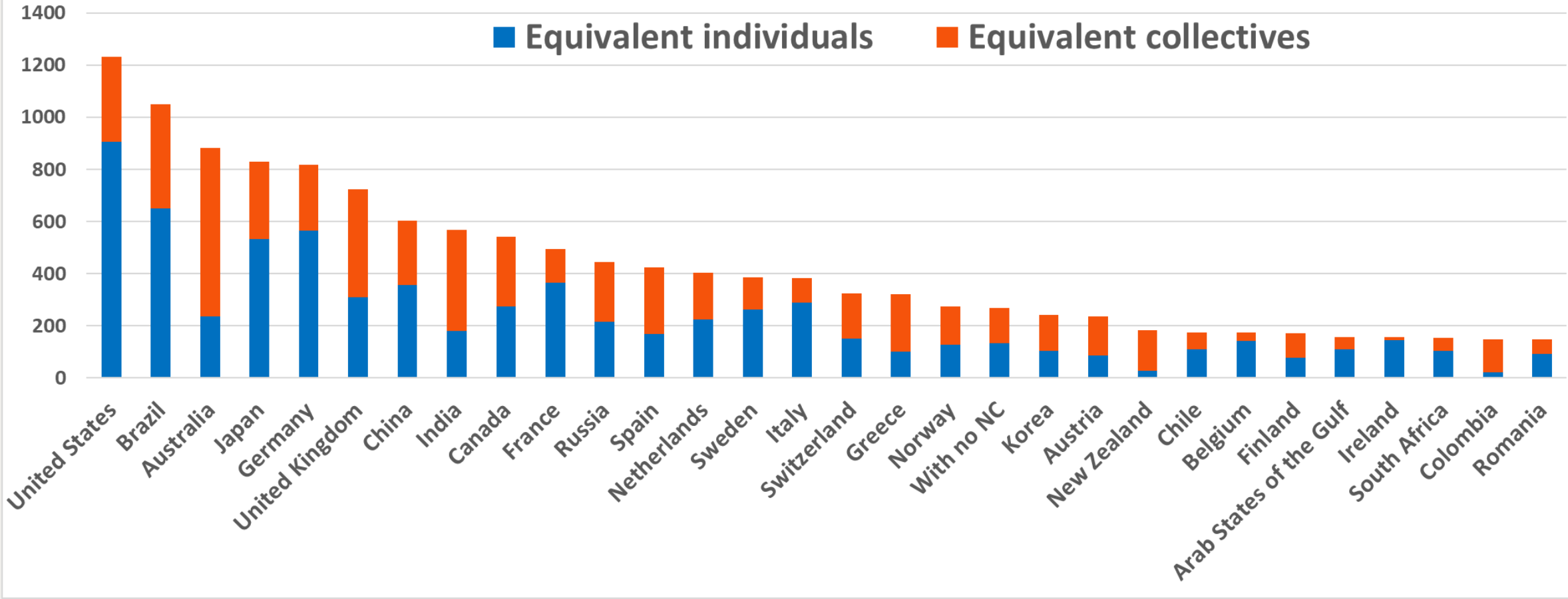
The CIGRE community in 2022 = 61 National Committees



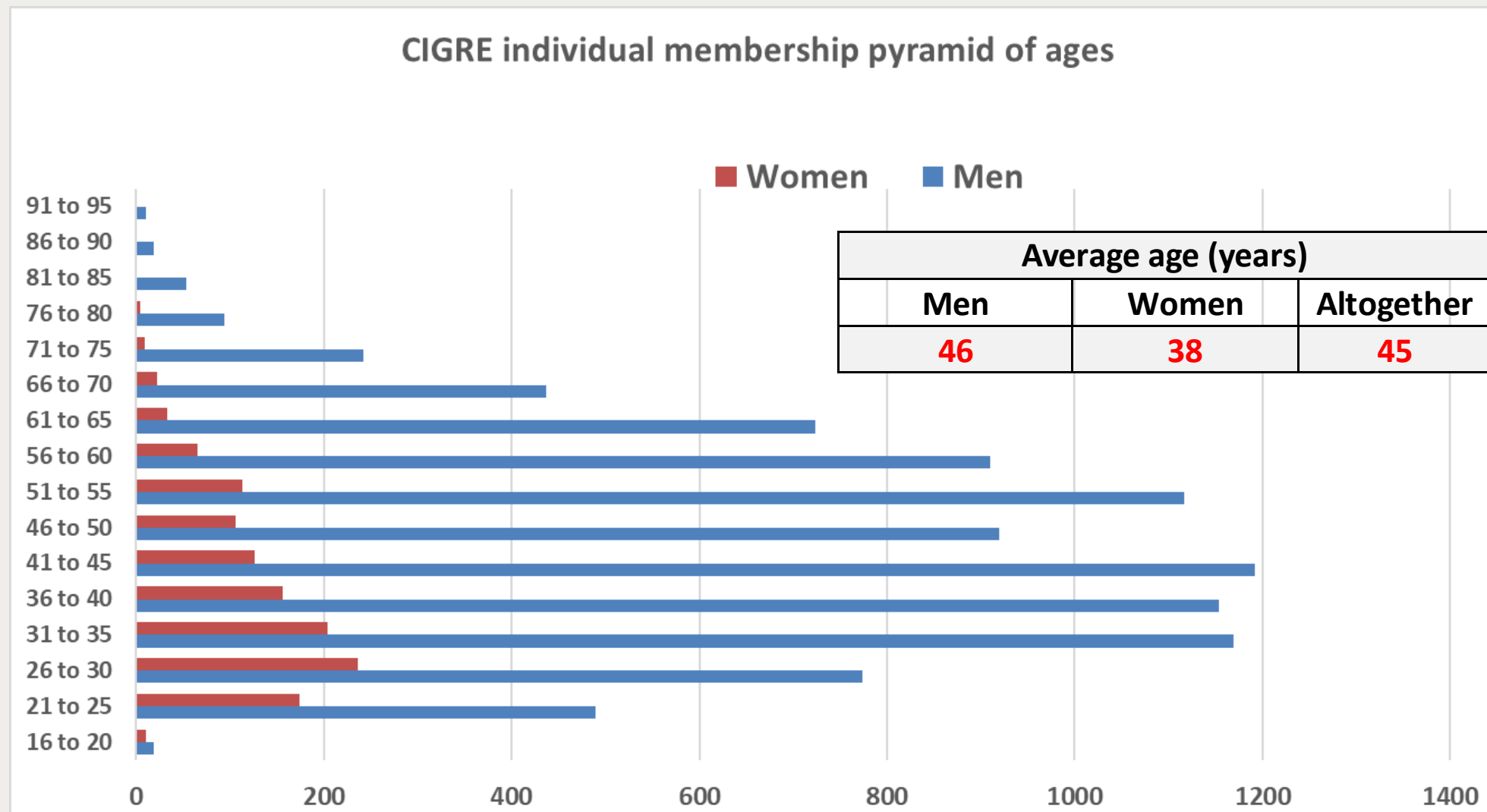
More than 15.000 members worldwide



2023 National Committees ranking by equivalent membership (1st half)



CIGRE individual membership pyramid of ages



CIGRE websites and platforms

2015	2016	2017	2018	2019
NC Data Base	e-cigre V2		CIGRE.org V3	CIGRE.SC.org V3
Session papers	KMS		Marketing resources	Session website
Registrations V1	SC renewal			

2020	2021	2022	2023	2024
ELECTRA.cigre.org	CSE.cigre.org		Session website 2.0	
	Session papers V2		Registrations 1.1	
	Session contributions		eCIGRE 2.0	
	JOIN.cigre.org		WG management 0.1	
	video library			

New tools: WG management - prototype

- Requirements:
 - Creation of a new WG
 - Collecting members for a new WG
 - Reporting on the progress of WGs
 - Collecting WG deliverables
 - Providing statistics on WG for the TC reports
- Project schedule:
 - The tool goes online : mid-December 2023

TC Presentation | ETMR

Marketing strategy for achieving new entrant growth

Strategic context

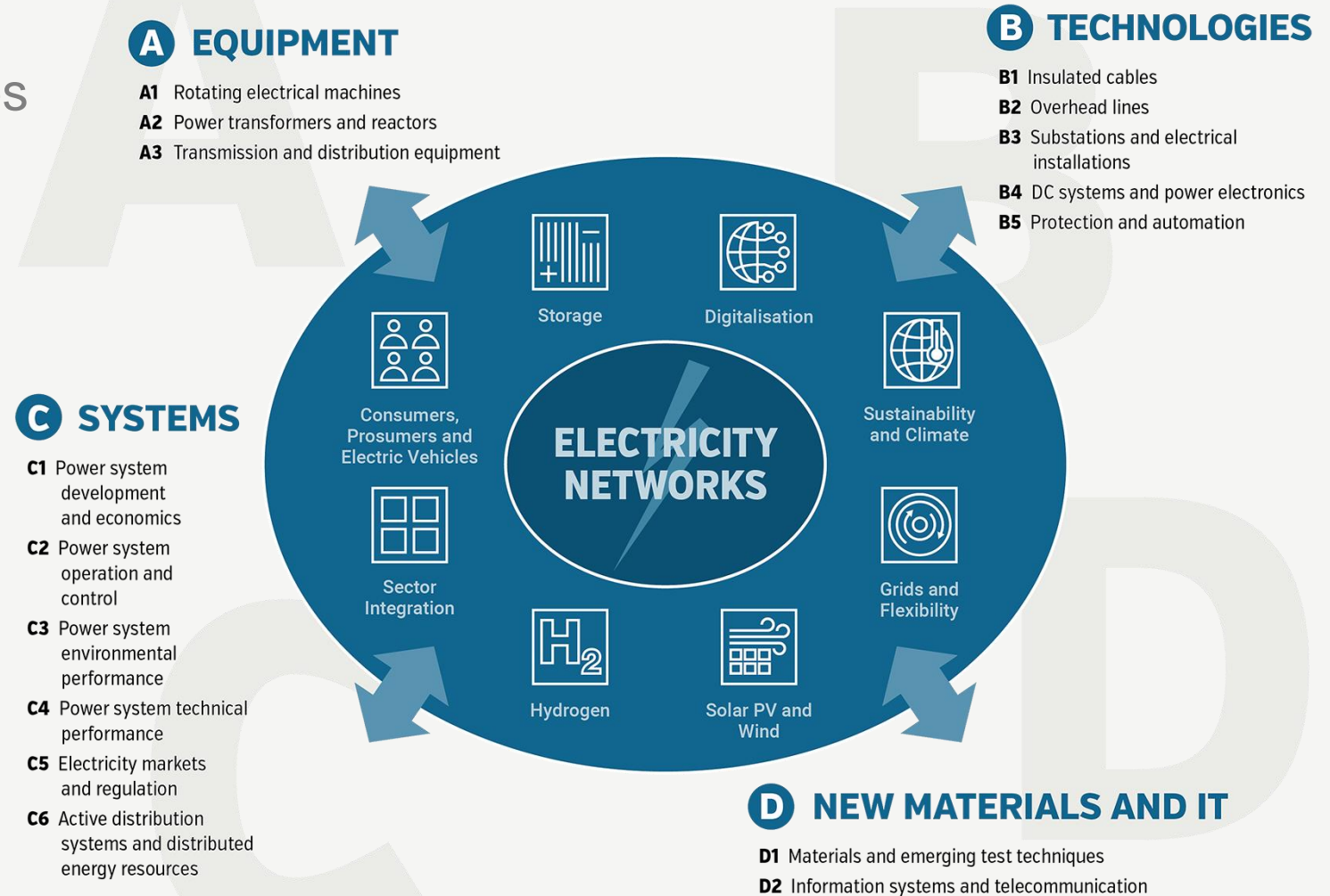
Attract new entrants involved in the ET to CIGRE

Expose CIGRE'S ET role and demonstrate focus

Create awareness within existing membership

Capturing the value

- TC identified key activities by hot topics
 - TBs
 - WGs
 - Scope
 - Events



1. Create perceived value

- New substance layer on cigre.org
- Show how CIGRE is already creating value
- Available in [beta version now](#)
- Marketing gold!

2. Create brand profile and associate value

- Be known for the value!
- Promote the new section
- Initially existing channels
- CIGRE community will help spread the word
- Reach beyond our bubble
 - LinkedIn promotions now
 - Then new channels

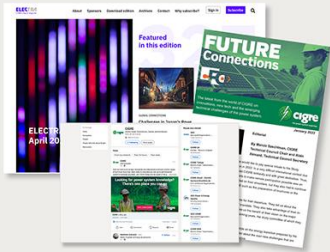


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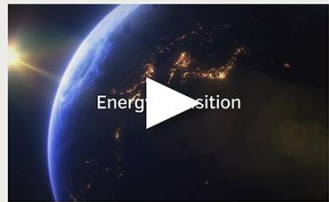


Multi-channel comms



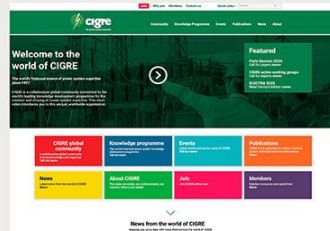
visitors

Video

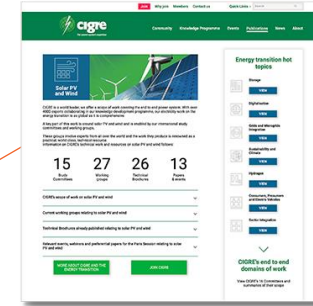


visitors

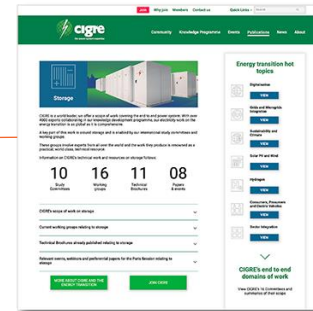
cigre.org



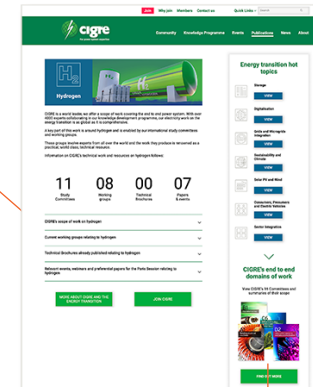
visitors



visitors

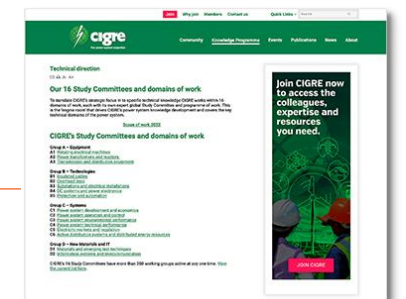


visitors



visitors

Hot topic page promotion

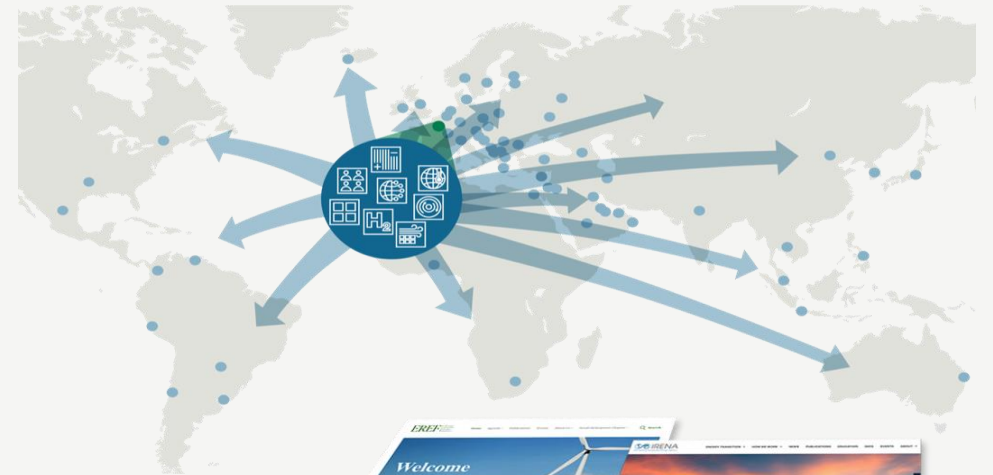


Understand our data better

- Refined data strategy in progress
- Understand the segment members come from
- Stocktake our new entrants
- Assess success rate

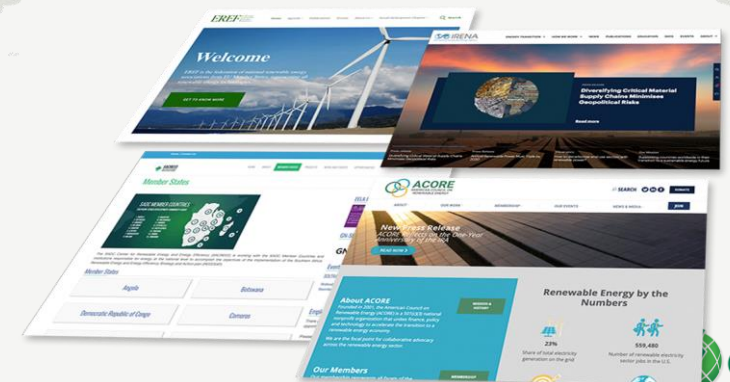


Engage NCs with promotional tools



Find new channels

- Explore new partnerships that help increase our reach beyond our traditional sector



The eCIGRE 2.0 project

2023 PHASE 1

1.0 Release : November

Delivers

- World class user experience
- Responsive modern design
- SEO
- SSO ELECTRA
- CM access rights management

2024 PHASE 2

2.0 Release : TBC provisionally November

Delivers

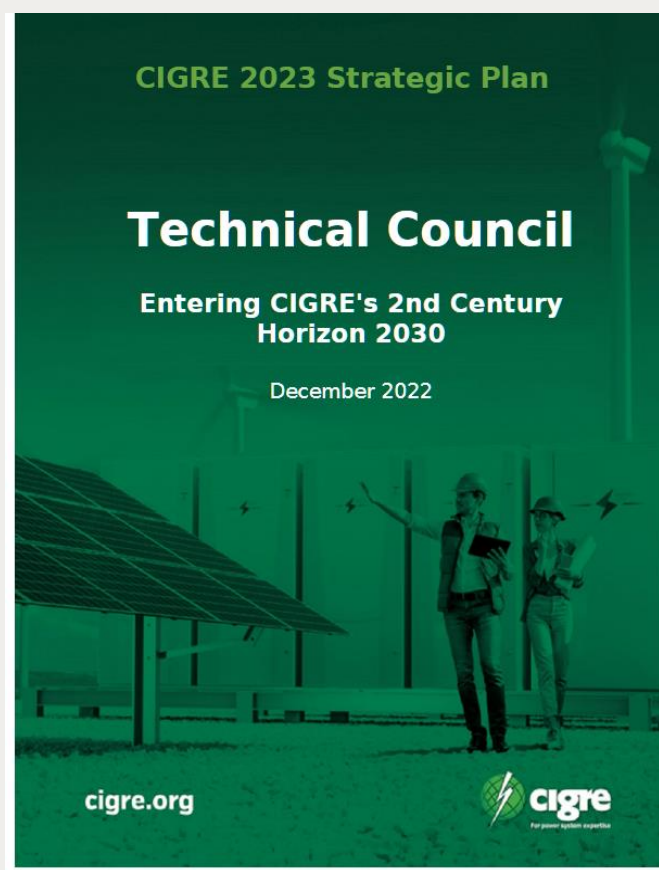
- Digitisation of content
- System ease
- Stability, resilience, security
- Data, CRM
- Intelligent UX

Key developments in CIGRE – new Strategic Plan

- Finalised and ready for publication, after final approval by Administrative Council in Sarajevo Sept 2023
- More outreach to external stakeholders and industry
- End-to-End System and Energy Transition at center stage
- New website with more graphical interaction, to attract newcomers

- No SC restructuring, but greater visibility to the following topics:

- Hydrogen
- Storage
- Solar PV and Wind Sources
- Grid and Flexibility
- Consumer Participation
- Sustainability and Climate
- Sector Coupling
- Digitalisation



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Strategic Plan main targets

- New website and repository for searchability via any search engine for all CIGRE material based on key words as a minimum; this includes technical material, publications, papers in CIGRE Science and Engineering (CSE) journal, conferences, and Symposia, as well as CIGRE Academy webinars, and other e-products
- Expand CIGRE Academy webinars by remote workshops on emerging topics and podcasts, including executive panels, policy makers, regulators, and technical experts
- Develop greater sourcing of articles, papers and thematic material for Cigre publications; make CSE a recognized and even more prestigious technical/scientific journal
- Develop better citation indexing ability (e.g., Scopus)
- Develop means by which members can attain continuing education or professional development credits.
- Develop alternatives for traditional Working Group to shorten publication timelines to about one year; not replacing current Working Group efforts, but additional, to support decision makers
- Membership Growth Plan and regional / gender / age rebalancing

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4. **Attività in sviluppo e prossimi WG**
5. **Aggiornamenti su Paris 2024 General Session**

Member list – 50 countries and all continents represented



Study Committee C1

NC	Previous Members	Nom.	New Members	Nom.
HR	BAJS Davor dbajs@eihp.hr	Observer 2020	BAJS Davor dbajs@eihp.hr	Regular 2020
DK	RIS Henrik hri@energinet.dk	Regular 2016	BRENDSTRUP Bjørn bjb@energinet.dk	Regular 2022
TR	BUE Emmanuel emmanuel.bue@begrid-consulting.com	Regular 2020	BUE Emmanuel emmanuel.bue@begrid-consulting.com	Regular 2020
PT	CAROLA Pedro pedro.carola@ren.pt	Regular 2020	CAROLA Pedro pedro.carola@ren.pt	Regular 2020
IE	DUARTE Mario mario.duarte@eirgrid.com	Regular 2016	CARROLL Derek derek.carroll@eirgrid.com	Regular 2022
FR	LAURENT Séverine severine.laurent@rte-france.com	Regular 2017	DENOIZAY Wilfried wilfried.denoizay@rte-france.com	Regular 2022
ES	DÍAZ-GUERRA Belén bdguerra@ree.es	Regular 2020	DÍAZ-GUERRA Belén bdguerra@ree.es	Regular 2020
RU	DIYACHKOV Vladimir diyach@so-UPS.ru	Regular 2020	DIYACHKOV Vladimir diyach@so-UPS.ru	Regular 2020
IL	ELLENBOGEN Marcel marcello@ec.co.il	Regular 2020	ELLENBOGEN Marcel marcello@ec.co.il	Regular 2020
BR	SIMÕES DE JESUS Valdson valdson.jesus@eletrobras.com	Observer 2014	FARNHA Marcos marcos.farinha@epe.gov.br	Regular 2022
DZ	HABIB Mohamed Lakhdar habib.mohamed.lakhdar@sonelgaz.dz	Observer 2018	HABIB Mohamed Lakhdar habib.mohamed.lakhdar@sonelgaz.dz	Regular 2018
GB	HIGGINS Charlotte charlotte.higgins@tneigroup.com	Regular 2018	HIGGINS Charlotte higgins.charlotte@gmail.com	Regular 2018
US	JEFF Palermo jeff@pjp-consulting.com	Regular 2016	JEFF Palermo jeff@pjp-consulting.com	Regular 2016
SE	JONSSON Mattias mattias.jonsson@svk.se	Observer 2016	JONSSON Mattias mattias.jonsson@svk.se	Regular 2016
PL	PRZYGRODZKI Maksymilian maksymilian.przygodzki@pse.pl	Regular 2018	PRZYGRODZKI Maksymilian maksymilian.przygodzki@pse.pl	Regular 2018
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AU	SCHAEFER Christian christian.schaefer@aemo.com.au	Regular 2020	SCHAEFER Christian christian.schaefer@ghd.com	Regular 2020

NC	Previous Members	Nom.	New Members	Nom.
DE	SCHÄFER Michael m.schaefer@transnetbw.de	Regular 2018	SCHÄFER Michael m.schaefer@transnetbw.de	Regular 2018
NL	SEMENYUK Maksym (Substitute) maksym.semenyuk@dnv.com	Regular 2021	SEMENYUK Maksym (Substitute) maksym.semenyuk@dnv.com	Regular 2021
IN	SEN Dr. Subir subir@powergridindia.com	Regular 2020	SEN Dr. Subir subir@powergridindia.com	Regular 2020
BE	DE SUTTER Stijn stijn.de.sutter@elias.be	Regular 2016	SPROOTEN Jonathan jonathan.sprooten@elias.be	Regular 2022
IT	COVA Bruno bruno.cova@cesi.it	Regular 2016	VERGINE Chiara chiara.vergine@tema.it	Regular 2022
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CN	ZHANG Yan zhangyan6660@163.com	Regular 2018	ZHANG Yan zhangyan6660@163.com	Regular 2018
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SI	JAMSEK Sasa sasa.jamsek@eles.si	Observer 2016	ANDREJ Bucar andrej.bucar@eles.si	Observer 2022
CH	DEL DEGAN Marc marc.deldegan@bouygues-es.com	Observer 2020	DEL DEGAN Marc marc.deldegan@bouygues-es.com	Observer 2020
PE	AGUILAR QUIROZ Ricardo r.aguilarquiros@cloud.com	Observer 2018	FRANCISCO Torres f.torres@coes.org.pe	Observer 2022
CSR			HRUSKA Zdenek hruskaz@ceps.cz	Observer 2022
KS	KABASHI Gazmend gazmend.kabashi@kosti.com	Observer 2020	KABASHI Gazmend gazmend.kabashi@kosti.com	Observer 2020
KR	LEE Chulhyu chulhyu.lee@kepco.co.kr	Regular 2016	KWAK Eunsup eunsup.kwak@kepco.co.kr	Observer 2022
ZA	MOKWANA Tebogo mokwantj@eskom.co.za	Regular additional 2018	MOKWANA Tebogo mokwantj@eskom.co.za	Observer 2018
TH	PAMORNPATHOMKUL Nattasak nattasak.p@egat.co.th	Observer 2020	PAMORNPATHOMKUL Nattasak nattasak.p@egat.co.th	Observer 2020
GR	LEONIDAKI Eirini e.leonidaki@deddie.gr	Regular 2020	PAPATHANASIOU Stavros st@power.ce.ntua.gr	Observer 2022
AR	PEREZ Pablo Roberto pablo.perez@transener.com.ar	Observer 2020	PEREZ Pablo Roberto pablo.perez@transener.com.ar	Observer 2020

NC	Previous Members	Nom.	New Members	Nom.
CL	ARANEDA Juan Carlos jaraneda@hotmail.com	Observer 2018	SANTANDER Alex asantander@minenergia.cl	Observer 2022
IR	SHIRANI Alireza shirani.alireza@monenco.com	Observer 2018	SHIRANI Alireza shirani.alireza@monenco.com	Observer 2018
RO	DIACONU Ciprian Gheorghe ciprian.diaconu@tranelectrica.ro	Observer 2014	ZAHARIA Virginia virginica.zaharia@tranelectrica.ro	Observer 2022
EG	MAHMOUD Hassan hassan04_egypt@yahoo.com	Observer 2020		
RO	ALBULESCU Eduard Florin eduard.albulescu@distributieoltenia.ro	Regular additional 2020		
IN	SEN Santanu santanu.sen@prag.in	Regular additional 2020		
AT	BACHHIESL Udo bachhiesl@tugraz.at	Regular additional 2020	BACHHIESL Udo bachhiesl@tugraz.at	Regular additional 2020
IR	BERAHMANDPOUR Homayoun h.berahmandpour@nri.ac.ir	Regular additional 2018	BERAHMANDPOUR Homayoun h.berahmandpour@nri.ac.ir	Regular additional 2018
ZA	THEKUM Makanyane thekum@eskom.co.za	Regular 2016	BREEDT Jana jana.breedt@eskom.co.za	Regular additional 2022
CN	LI Jinchao lijc78@163.com	Regular additional 2018	LI Jinchao lijc78@163.com	Regular additional 2018
RU	UTTS Stanislav uts-sa@so-UPS.ru	Regular additional 2018	UTTS Stanislav uts-sa@so-UPS.ru	Regular additional 2018
NO	YTERLI Fim fimyteri@hydro.com	Regular additional 2018	YTERLI Fim fimyteri@hydro.com	Regular additional 2018

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CIGRE SC C1 ITALIA

Strategic Plan of SC C1 - Organisational structure



- The Strategy Advisory Group consists of SC C1 members with particularly strong expertise and demonstrable leadership in each of the SC's main topics. It discusses and evolves the overall strategy of the SC, monitors the progress of all WGs and supports preparation of annual SC meetings. It holds quarterly online meetings
- Previous C1 chairman Konstantin Staschus is attending and contributing as well the SAG meeting

Ref.	Title	Convenor/ Lead
C1. SAG	Strategy Discuss, propose and fine-tune SC strategy. Coordinate all WGs for the C1 strategic goals.	Antonio Iliceto (Italy)
	• System Planning	Ronald Marais (South Africa)
	• Asset Management	Graeme Ancell (New Zealand)
	• Business & Economics	Chongqing Kang (China)
	• Interconnections – Horizontal, Vertical	Juan Carlos Araneda (Chile)
	• Education and Tutorials	Keith Bell (UK)

Working Groups – present situation

WG No.	WG Name	WG Convenor
C1.23	Transmission investment decision points and trees	R. Marais
C1.33	Interface and allocation Issues in multi-party and/or cross-jurisdiction power infrastructures projects	(To be confirmed)
C1/C4.36	Review of the metropolitan area power system development trends taking into account new generation, grid and information technologies	V. de Simoes & S. Utts
C1/C6/Cired.37	Optimal transmission and distribution investment decisions under growing uncertainty	J-C Araneda
C1/C6.42	Planning tools and methods for systems facing high levels of distributed energy resources	C. Higgins
B2/C1.86	Approach for Asset Management of Overhead Transmission Lines	
C1.44	Global interconnected and sustainable electricity system: Effects of storage, demand response and trading rules	G. Sanchis
C1.45	Harmonised metrics and consistent methodology for benefits assessment in Cost-Benefit Analysis of electric interconnection projects	P. Vicini
C1/C4.46	Optimising power system resilience in future grid design	C. Schaefer
C1.47	Energy Sectors Integration and impact on power grids	N. Zhang
C1.48	Role of green hydrogen in energy transition: opportunities and challenges from technical and economic perspectives	A. Oudalov
C1-C4.49	Off Shore Transmission planning	Cornelis Plet
C5-C1.35	Hydrogen certification	A. Oudalov
C5-C1-36	Hydrogen regulation and market	Dejan
C6-C1.82	Electric mobility energy supply	Maria Mele

C1 Objectives and Strategic Directions

- Shaping the electrical power system of the future
- Making the best use of the existing system
- Focusing on the environment and sustainability
- Adopting and fostering systemic approach for capturing, the benefits and equitably share the costs interconnections and system developments
- Consider and integrate the prospectives of both macro grids and microgrids
- Dissemination and involvement for technical audience as well as for non technical decision makers, regulators and stakeholders
- Creating added value to members and society (also through the Africa Initiative), actively liasing with IEC, CIRED, ENTSO-E and global R&D and Innovation Institutions (ISGAN, MISSION INNOVATION, ETIP SNET, EPRI, GEIDCO, etc.)
- Increasing the recognition of CIGRE, strengthening support and cooperation with National Committees and the Central Office

Enhancement vs previous Strategic Plans



- Introduction of Hydrogen topic in WGs and papers, as well as in Cigre TC & SAG Energy Transition
- Introduction of explicit Sector Coupling topics in WGs and papers
- Advanced studies on Global Grids
- Increased emphasis on Flexibility at planning stage
- Increased emphasis on Resilience, at system level
- Increased work on TSO-DSO coordination
- Introduction of explicit / dedicated actions on sustainability of future development
- Advance studies on economic assessment, business models, Cost-Benefit analysis, KPI definition, optimisation metrics in the changing and complex power system

New Strategic Plan - C1 activities in the “new” topics

Study Committee C1, Power System Development & Economics

Topic	Areas of interest	Ongoing / just finished WG	Technical Brochures	Events, tutorial and other
Hydrogen	<ul style="list-style-type: none"> Studies of technical and economic aspects of H₂ supply chain and use, as well as supporting national policies and implementation strategies Use cases in industry, transport, heating sectors and as energy storage and other system services including RES supply needs, land and water requirements Technology solutions for grid code compliance and to enable market-based provision of local and system wide flexibility services by large scale electrolyzers Role as long term storage for seasonal balancing of energy system 	<p>C1.48 - Role of green hydrogen in energy transition: opportunities and challenges from technical and economic perspectives</p> <p>C1.47 Energy Sectors Integration, and system impact</p> <p>C5/C1.35 Certification of the electricity used to produce hydrogen</p> <p>C5/C1.36 Certification of the electricity used to produce hydrogen</p>		<p>Hydrogen Work given in Paris 2</p> <p>Tutorial C1.48 to be delivered in Cai Sep 2023</p>
Storage	<ul style="list-style-type: none"> Role in facilitating a global electricity network Role in managing gluts and deficits in national and distribution systems Long term storage options for energy system balancing Energy storage, peak load reduction, Frequency 	<p>C1.44 Global interconnected and sustainable electricity system: Effects of storage, demand response and trading rules</p> <p>C1.47 Energy Sectors Integration, and system impact</p> <p>C1.51 (to be started) The potential roles of energy</p>	<p>TB 775 Global Electricity Network – feasibility study</p> <p>TB 666 Technical risks and solutions form periodic, large surpluses or deficits of available RES</p>	<p>Paris Session 2</p> <p>Tutorial of TB 775</p>

New Strategic Plan - C1 activities in the “new” topics

Study Committee C1, Power System Development & Economics

Topic	Areas of interest	Ongoing / just finished WG	Technical Brochures	Events, tutorials and other
Wind & Solar	<ul style="list-style-type: none"> Impact of RES growth on planning uncertainty, and on interaction between transmission and distribution networks and how this can be <u>modelled</u> Forecast, observability, controllability, inertia, micro and mini distributed generation (MMDG), aggregators, huge offshore wind generation plants 	<p>C1/C4.36 <u>Large</u> city & metropolitan area power system development trends, taking into account new generation, grid and information technologies</p> <p>C1/C6.42 <u>Planning</u> tools and methods for systems facing high levels of distributed energy resources</p> <p>C1.49 (to be started) <u>Off shore</u> grids</p>	<p>TB <u>775</u> <u>Global</u> Electricity Network – feasibility study</p> <p>TB <u>666</u> <u>Technical</u> risks and solutions form periodic, large surpluses or deficits of available RES</p>	
Grids and Microgrid integration	<ul style="list-style-type: none"> Energy Communities, impact on power grids Coordination among TSO-DSO- other grid operators 	<p>C1.40 Planning coordination TSO-DSO</p> <p><u>C1.47</u> <u>Energy</u> Sectors Integration, and system impact</p>	<p>TB 848 Planning coordination TSO-DSO</p> <p>TB 863: Multi-energy System Interactions in Distribution Grids</p>	<p>Tutorial TB 848 given in Kyoto 2022</p> <p>Green Book Future Energy System</p> <p>Tutorial on C1.33 'Interface & Allocation issues in multi-jurisdiction infrastructure projects' given in Cigrè SEERC Vienna 2022</p>
Consumer, Prosumers and EV	<ul style="list-style-type: none"> Impact of customer flexibility and EV growth on system planning, and development of methods / simulation Demand response, unobservable <u>wind</u> and solar generation Energy Communities impact on grid planning 	<p>C1/C4.36 <u>Large</u> city & metropolitan area power system development trends, taking into account new generation, grid and information technologies</p> <p>C1/C6.42 <u>Planning</u> tools and methods for systems facing high levels of distributed energy resources</p>		

New Strategic Plan - C1 activities in the “new” topics

Study Committee C1, Power System Development & Economics				
Topic	Areas of interest	Ongoing / just finished WG	Technical Brochures	Events, tutorials and other
Sustainability & Climate Change	<ul style="list-style-type: none"> Resilience, high impact low probability high impact events Network resilience implications of changing climatic <u>condition</u> Network planning for a range of scenarios of performance against government sustainability targets Dependency on scarce raw materials and natural resources constraints 	<p>C1/C4.46 <u>Optimising</u> power system resilience in future grid design</p> <p>C1.41 Closing the gap in understanding between stakeholders and electrical energy <u>specialists</u></p>	<p>TB 820 <u>Optimal</u> power system planning under growing uncertainty.</p> <p>TB 882 Closing the gap in understanding between stakeholders and electrical energy <u>specialists</u></p> <p>Green Book: Power System Assets - Investment, Management, <u>Methods</u> and Practices</p>	
Digitalization	<ul style="list-style-type: none"> End-user requirements of asset analytic data platforms Enhanced capture and analysis of data to support asset management decisions Demand response, integration of MMDG, observability of wind and solar generation connected to distribution systems, flexibility, AI and ML new applications will override the distribution / transmission / generation borders 	<p>C1.43 Defining a typical set of requirements for Asset Analytics data platforms and tools aimed at supporting Asset Management decision making <u>processes</u></p> <p>B2/C1.86 <u>Approach</u> for Asset Management of Overhead Transmission Lines</p>		
Sector integration	<ul style="list-style-type: none"> Decarbonized power systems Interactions with Heating & cooling sector Interactions with transport and electric mobility sector Interaction with gas/hydrogen sector 	<p>C6/C1.33 <u>Multi-energy</u> system interactions in distribution grids</p> <p><u>C1.47 Energy</u> Sectors Integration, and system impact</p> <p>See Hydrogen topic</p>	<p>TB 863</p>	<p>Tutorial given in Paris 2021 on TB 863</p>

Contenuti

1. Aggiornamenti su organizzazione e trends nel Cigre internazionale
2. Aggiornamenti su Comitato C1 internazionale
3. Ultima riunione di Comitato a Cairns (sett 2023)
4. Attività in sviluppo e prossimi WG
5. Aggiornamenti su Paris 2024 General Session

Cairns Symposium



This Symposium is now ended

The CIGRE Australia contact details are:

anc@cigreaustralia.org.au

02 8896 4356

Cairns 2023 - Programmed activities

- **Technical**

- 11 Tutorials
- 1 workshops
- SC and WG meetings
- Technical tours on Friday
- NGN and WIE meetings

- **Opening Speakers**



David Shankey

*Deputy Director-General of the Energy Division in the
Department of Energy and Public Works, Queensland.*



Adam Middleton

Vice President - Western Europe, Siemens Energy

- **Social**

- Reception on the Monday evening
- Women in Energy breakfast on Tuesday
- NGN Networking and Happy Hour function on Tuesday 5.30pm
- Soiree on Wednesday evening in the rainforest

- **Accommodation**

- Arrangements with local hotels shown on the website
- 50 rooms reserved for TC, SC and ANC at the Pullman hotel

Review of Cairns 2023 C1 activities

- C1 Paper Session – Tuesday (all day, 4 subsessions) + best paper selection, around 90 attendees, quite interactive (Q&A received and discussed for all papers) → feedback?
- WG Africa – first meeting after two years – C1 is Chair, call for contributions for training programs
- C1 Tutorial by C1.48 on Hydrogen – Wednesday morning, duration 2 hours; 2 speakers in room, convenor and other 2 speakers in remote (exception granted to C1 for importance of topic) ; more than 100 attendants, a number of Q&A (time extended half hour ...) → feedback?
- WG meetings, included kick-off of Storage C1.50 → feedback?
- C1 annual closed meeting – Thursday hybrid event
- TC meeting with C1 contributions – Friday



Cairns 2023 – Open session , Papers statistics

- 330 Synopses accepted, 243 received and accepted
- 49% are local authors
- 31 Countries in total
- Many rejected synopses were directed to other CIGRE activities, including SEAPAC
- C1 papers received and accepted = 25
- All C1 accepted papers have been presented
- No poster session
- Some papers from SC C6 are be presented as part of CIDER

Presented at	All	▼	232 papers for the Symposium			
Presentation submitted?	All	▼	211/243 presentations submitted			
Distribution copy submitted?	All	▼	212/243 distribution copies uploaded			
Study Committee	▼	paperID	▼	title	▼	Number
+ SC A3						11
+ SC B1						6
+ SC B3						15
+ SC B5						30
+ SC C1						25
+ SC C2						29
+ SC C4						45
+ SC C5						19
+ SC C6						30
+ SC D1						11
+ SC D2						22
Grand Total						243

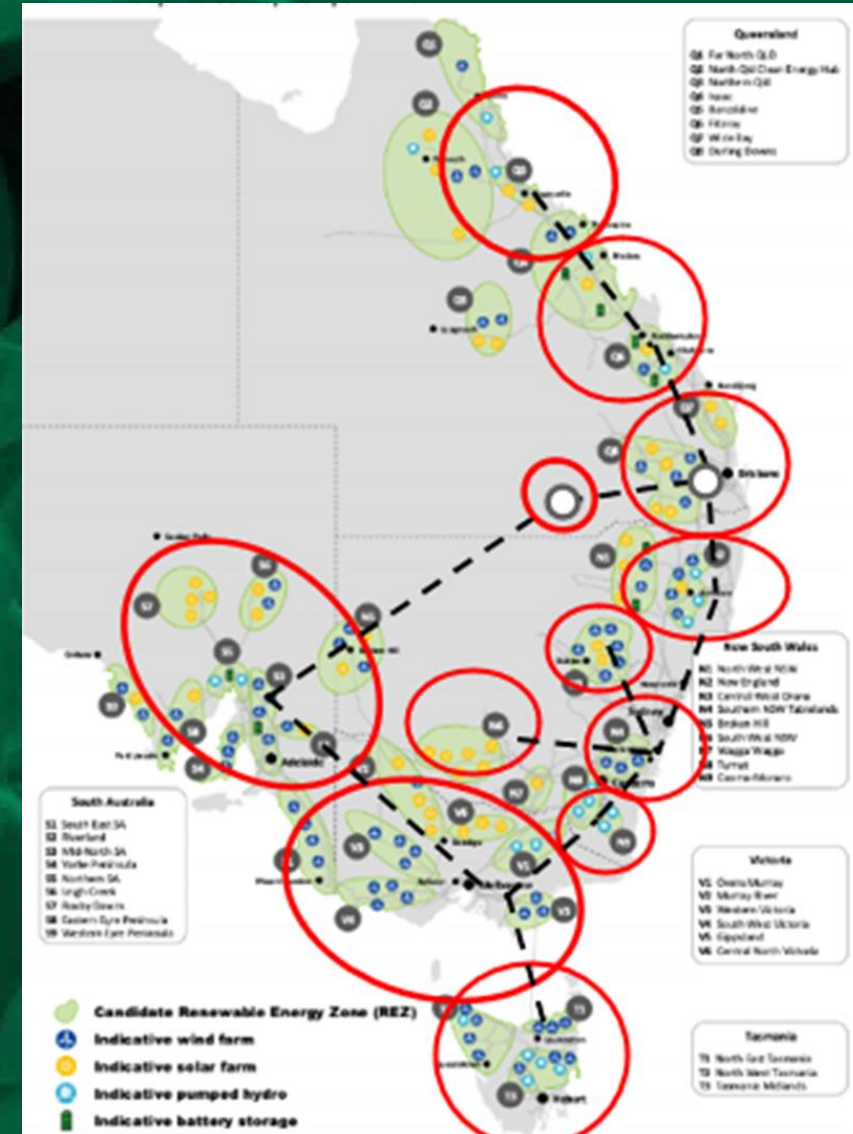
➤ Note this is not a hybrid event*

Cairns Symposium, 4-7 September 2023

Australia's unmitigated planning disaster

Hub and Spoke Transmission Planning - Simon Bartlett

- HVAC network stretching 5,000 km
- Aversion to HVDC except for undersea
- Concoction of transmission * voltages – 110, 132, 220, 275, 330, 500 kV – all running in parallel !
- Severe issues with loop flows, voltage stability, severe congestion, sub-synchronous resonance
- Mindless insistence on massive HV OL through national parks, scenic areas, prime agricultural land, even into cities
- Zero resilience of proposed 500 kV network will cause massive blackouts



Agenda

Agenda of CIGRE SC C1 annual meeting in Cairns (AU) on September 7th 2023								
in yellow topics/issues where SC members contributions/ engagement are more expected								
No	Topic	Start	Finish	Duration				
0	Pre-meeting informal session on Australian system development (Simon Bartlett)	09:00	09:45	00:45				
1	Coffee break	09:50	10:20	00:30				
2	Introduction, Welcome and Overview (Antonio), including anti-trust Welcome to / Introduction of new C1 members (Antonio) Attendance check (Peter) N.B. <i>it will continue during the meeting for remote attendants with large timezone difference</i>	10:20	10:30	00:10				
3	Review of March 2023 SC C1 meeting minutes (Peter) Previous Actions check	10:30	10:40	00:10				
4	Review of Cairns 2023 - C1 activities (Antonio) General remarks on the Symposium, C1 Open meeting, C1 Tutorial, C1 WG meetings etc Feedback from C1 members	10:40	11:05	00:25				
5	C1 organisation, recent and future CIGRE events involving C1 - <u>excl.</u> Paris 2024 (Antonio) Tanzania, August 2023 Invitations for C1 meetings for 2025 Next C1 remote meeting and Paris meeting Other	11:05	11:20	00:15				
6	Webinars, Tutorials and Publications (Antonio) TBs published since our last meeting Tutorial of C1.45 in Istanbul Cigre SEERC November 2023 (PierLuigi) Articles in Electra, CSE, etc. Other webinars, presentations on C1 topics Other events, info from members	11:20	11:45	00:25				
7	Key developments in CIGRE – input from Technical Council (Antonio) Input, requests and info from TC Requests of contributions from other WGs and TC	11:45	12:05	00:20				
8	Lunch break	12:05	13:10	01:05				
8	Lunch break						12:05	13:10
9	Collaboration with other organisations (Antonio and other members) IEC, ETIP SNET (Antonio) + ENTSO-E, IEEE, NERC/FERC						13:10	13:30
10	Paris 2024 General overview of the organisation of General session, Paper processing C1 activities - Status of reviews and identified reviewers for abstracts/papers C1 activities - Convenor for Poster Session needed						13:30	14:05
11	New WGs Status of C1.49, C1.50 and C1.51 Already discussed, pending convenorship and/or ToR (Chongqing/Quixin, Bruno/Chiara, Jana) Other proposals from members Next steps for starting new WGs						14:05	15:00
12	Coffee break						15:00	15:30
13	WGs - Progress updates <u>System Planning</u> JWG C1/C4.36 (V. Jesus/S. Utts) [Syst. Plan] JWG C1/C6.42 (Rama Ganguli) [Syst. Plan] WG C1.47 (N. Zhang) [Syst. Plan] <u>Business Management</u> WG C1.23 (R. Marais) [Bus. Mgmt] JWG C1/C6/Cired.37 (J. Araneda) [Bus. Mgmt] WG C1.48 (A. Oudalov) [Bus. Mgmt] <u>Asset Management</u> JWG C1/C4.46 (C. Schaefer) [Asset Mgmt] WG B2/C1.86 (Y. Tsimberg) [Asset Mgmt] <u>Interconnection</u> WG C1.33 (A. Iliceto) [Interconnect.] WG C1.44 (G. Sanchis) [Interconnect.] WG C1.45 (P. Vicini) [Interconnect.]						15:30	17:53
14	C1 communications Newsletter (Pierluigi) Social media (Wilfried)						17:53	18:18
15	Wrap up and re-cap of assignments for C1 tasks (Antonio & Peter)						18:18	18:30
								01:05
								00:20
								00:35
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								00:15
								00:12

In yellow highlight topics/issues where SC members contributions are mostly expected

Member list updating & KMS

- Biannual renewal/confirmation process carried out in 2022; new nominations from National Committees are effective since Sept Paris C1 meeting
- No changes since last C1 meeting:
 - UK representative modification: Bless Kuri substituted Charlotte Higgins
- Some past members are invited to attend SC meetings and all can actively contribute to WG works, for example as Convenors
- Updated list of members and access permissions are in KMS C1 page
- Any problems when accessing and using KMS? (Korea member, missing address)

Name	Country
Bjarne BRENDSTRUP	Denmark
Marcos FARINHA	Brazil
Chiara VERGINE	Italy
Abeer ALMAIMOUNI	Kuwait
Bucar ANDREJ	Sloveina
Torres FRANCISCO	Spain
Zdenek HRUSKA	Tzcheck Republic
Ensup KWAK	Korea
Stavros PAPATHANASIOU	Greece
Alex SANTANDER	Chile
Virginica ZAHARIA	Romania

Recent and forthcoming CIGRE events involving C1 - excluding Paris 2024

- Oman Symposium, March 2023 in Muscat, organized by GCC feedback from members?
- Next C1 web meeting to be scheduled second half of February , when peer review of full papers will start
- Next C1 physical meeting shall be in Paris Session, last week of August 2024
- As Symposium for 2025, C1 has accepted invitation by Israel NC, so the physical meeting shall be there, April or May; location moved from Tel Aviv to Jerusalem
- Tutorial of C1.45 Cost Benefit Analysis in Istanbul Cigre SEERC November 2023 (by Convenor PierLuigi Vicini)
- Tutorial of C1.46 or C1.47 in Paris 2024 session and in Israel 2025
- Launch event of Cigre Academy in Tanzania, July 2023



CIGRE role in Africa can be relevant

- ❑ Sub-Saharan Africa suffers largest number and largest percentage of people **without access to electricity**; n.b. no access can mean no grid connection but also no affordability
- ❑ High demographic and economic growth need reliable power as **fundamental enabler**
- ❑ Digitalization, RES and microgrids allow Africa to **leapfrog development** steps and use latest technology & control systems for increased and enhanced electricity service
- ❑ CIGRE role, perfectly in line with its Mission, Strategic Plan and distinctive strengths **can and should be** a systematic dissemination of CIGRE results focused on target groups
- ❑ World Bank **can and should be** the enabler of such role, through dedicated financing and institutional support vs national authorities



*Apparently low hanging fruits and win-win solutions,
but we need to start moving the wheel, and then to keep it moving*

Tanzania event - July 2023

❑ Organisation

1. Hosted by University of Dar es Salaam in their new & well IT equipped Library, as a joint event with an EU funded program (UMEME), which has paid live expenses
2. Week-long event, first 3 three days CIGRE Academy + a field visit to largest Tanzanian power plant; following 3 days hands-on training on design and specification of PV plants at utility scale
3. More than 40 attendees in person, plus several in remote, including academia world, utilities and institutions like REA (Rural Electrification body)

❑ Outcome and considerations

1. Deep promotion of CIGRE, in very concrete manner, through its best distinctive feature: capacity building
2. Physical interaction is necessary for Cigre Academy (it is more than a webinar) for deeper & broader exchanges, creating enduring networking opportunities.
3. Exploit the momentum created in Tanzania and broaden its territorial base by targeting in particular young engineers and Women in Engineering



CIGRE Africa WG Report of the July 2023 “CIGRE Academy” launch event with a 5-day capacity building endeavour

University of Dar es Salaam, Tanzania
College of Engineering & Technology
28 July to 02 August 2023
by the CIGRE African Work Group in conjunction with the EU-funded project UMEME

A. Illiceto – Africa WG Chair and Chair SC C1; K. Dedekind - Chair SC C6

Introduction



Tanzania event – contents about Rural Electrification

- ❑ **Promotion of Cigre and establishing enduring relations**
 1. Tanzanian authorities, UMEME project coordinators, welcome message by CIGRE Secretary General, Philippe Adam
 2. Comprehensive description of CIGRE by Antonio Iliceto, with contribution by Konstantin Staschus, highlighting opportunities for new CIGRE members
- ❑ **Rural Electrification contents delivery**
 1. Kurt Dedekind unpacked in-depth Rural Electrification Technical Brochure (TB 835 by WG C6.38), of which he was Convenor
 2. Session very interactive, with many questions, spontaneous clarification and solicited contributions on real cases
 3. Rural Electrification would be the precursor to many more such specific interventions within sub-Saharan Africa by various Study Committee's within CIGRE



Next Cigre Academy training events

❑ Further options

- Similar to the Launch event, on other topics where CIGRE SCs already have a portfolio of ready material and a roster of experts to present such interactions → “CATALOGUE”
- Already identified / volunteered SCs / Topics: B3 on stations, B2 on OHL, B5 on protections C6 on DER and microgrids
- Repeat Rural Electrification in another African location, possibly involving also other TB authors besides Kurt, in person and/or in remote
- Check with CO if a budget to cover airway ticket for speakers can be envisaged also for next events (temporary solution)
- Ask formally to World Bank to finance these capacity building training programs, as agreed in the initial MoU



As priority n. 2, WG Africa to receive from SCs / WGs availability for topics and speakers from the CATALOGUE

Publications, Technical Brochures & Green Books

➤ In year 2022:

- **C1.41: Closing the gap in understanding between stakeholders and electrical energy specialists**
- **C6/C1.33: Multi-energy System Interactions in Distribution Grids**
- **Green Book: Power System Assets - Investment, Management, Methods and Practices:**

➤ In year 2023: C1.43 BUSINESS REQUIREMENTS FOR ASSET PERFORMANCE MANAGEMENT, published in July 2023

➤ On the way to Central Office:

- **WG C1-C4.36 “Large City & Metropolitan Area power system development trends”** , TB circulated, commented, adjusted and approved by both C1 and C4; ready to be sent to publication
- **WG C1-C6.37 “OPTIMAL TRANSMISSION AND DISTRIBUTION INVESTMENT DECISIONS UNDER INCREASING ENERGY SCENARIO UNCERTAINTY”** (joint with C6 and also with CIRED) TB circulated, commented, adjusted and approved by both C1 and C6; ready to be sent to publication
- **Expected soon:**
 - **WG C1.23 “Transmission Investment Decision Points and Trees”**
 - **WG C1.44 (global grids), C1.45 (CBA), C1.46 (Resilience), C1.47 (Sector Coupling), C1.48 (Hydrogen)**
- **Q1 2024: C1-C6.42 (DER representation in planning studies)**

Dissemination of C1 outcomes

- Electra articles / other Cigre journals: **feedback from members?**
- 2 peer reviews organised by C1 with experts, including C1 chair in first half of 2023; both approved for publications, with some comments and minor adjustments:
 - FORECASTING PEAK LOAD HOURS OF REGIONAL POWER SYSTEMS USING MACHINE LEARNING METHODS
 - Approach to Estimate Congestion Management Related Flexibility Needs in Outage Planning of a Transmission Grid
- Each WG is required to plan and deliver a webinar / tutorial of about 40 – 60 minutes minutes (longer for deep dive topics), plus interactive Q&A
- Each SC should make and update an yearly plan, i.e. a repository table on KMS
- Webinars, presentation, Tutorials on C1 topics can be organised at different levels and audience, also outside Cigre

Please advise Peter of such occurrences to update the repository

feedback from members?

Requests from Technical Council , Central Office and from other WGs

- WG C5-C1.35 and C5-C1.36 on hydrogen need C1 contributions:
 - Integration of hydrogen in electricity markets and sector regulation
 - Certification of the electricity used to produce hydrogen
- JWG B2/C1.86 on OHL Asset Management → C1 members from Italy (CESI & TERN) have joined the WG
- WG D2.56 Interdependence and Security of Cyber-Physical Power System → C1 liaison sought
- WG C5.37 : Regulatory Framework on Modernization and Extension of Useful Life of Transmission Assets
→ looking for C1 contribution

feedback from members?

- Duties towards Central Office: Activity Report 2022, done in June 2023

Collaboration with other organisations

- IEC → see separate slide
- NEW COLLABORATION STARTED WITH IEEE-PES ; C1 Chair is part of the liaison team; first target is elaboration of a joint paper on DER & RES based systems
- ETIP SNET (European Platform for Innovation management and prioritisation, funded by European Commission and participated by many stakeholders) : MoU has been renovated, on topics relevant for C1 (promoted by C1 Chair) for:
 - ✓ reciprocal knowledge exchanges; Secretary General attended and gave a Cigre presentation to the Governing Board meeting of Etip Snet in June 2023
 - ✓ EtipSnet stand in the Technical Exhibition area of Paris sessions
 - ✓ In Paris 2022, a joint Panel on EV impact on power grids was held, with C1 contributions from C1 Chair and Ning Zang

ENTSO-E, IEEE, NERC/FERC → any members' info?



ETIP SNET

Event Invitation

European Commission



Panel at CIGRE Paris Session
"The interaction of electromobility with the power grids"
2nd September 2022

ETIP SNET

[Register now!](#)



cigre

European Commission

Mapping of correspondances IEC TC8 – Cigre WGs

- ACTAD Ad Hoc Group IEC TC8 – Cigre “C” Study Committees, together with TT6 (Chaired in IEC by Antonio) have completed mapping existing liaisons of corresponding topics between IEC – Cigre ----->
- Such mapping should be implemented through the identified contact persons
- Mr Hervé Rochereau (EDF, France) as TC8 Convenor, asked also to C4 and C6 to do the same C8 and CIGRE SC C4 and C6:
- Actually, little or no activity has been carried out in this respect

➤

Table 1 – proposed CIGRE/TC8 Liaisons

CIGRE/TC8	TC8	SC8A	SC8B	SC8C
B5				
C1				
C2				
C4				
C5				
C6				

Table 2 - TC 8 Liaison officers (outgoing liaisons, to be confirmed by TC8)


CIGRE/TC8	TC8	SC8A	SC8B	SC8C
B5		Yongning CHI		
C1			Raffael LaFauci	Tatsuya Kato
C2				Bijun Li
C4	Xavier Yang	Yongning CHI		Xijian Dong
C5			Raffael LaFauci	Hiroaki MOTOKI
C6	Liangzhong Yao		Raffael LaFauci	

Table 3 - Cigrè Liaison Officers (to be confirmed by CIGRE)

CIGRE/TC8	TC8	SC8A	SC8B	SC8C
B5		Farfilho		
C1			Antonio Iliceto	Antonio Iliceto
C2				Jayne Darriba
C4	Zia Emin	Zia Emin		Zia Emin
C5			Alex CRUICKSHANK	Alex CRUICKSHANK
C6	Christine Schwegerl or Regine Belhomme		Christine Schwegerl or Regine Belhomme	

Communication channels for C1 - newsletter

- C1 decided to start an internal newsletter, following the example of SC A2
- Initially it will contain info exchanged in internal meetings + relevant Cigre info, like new WGs approved, Green Books under way, etc
- Then it will collect info from members' dissemination activities
- Responsible is PIERLUIGI VICINI starting Q3 2023 with issue # 0
- Please feedback from members !



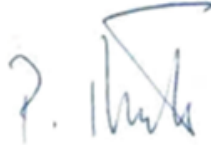
Power Transformers and Reactors
Quarterly Newsletter: March 2023

Dear Members and Friends of Study Committee A2,

With this first newsletter in 2023, we would like to give you an overview of the activities to expect from our Study Committee in the coming year. The main highlight should be the high number of Technical Brochures that are planned to undergo final review by the SC and be published. This unusual high volume is mainly an after-effect of the difficulties to meet during the pandemic.

You will also find some information on the topics discussed within our Advisory Groups for three new joint working group proposals that are planned to start in 2023.

With my best regards,



Pascal MÜLLER,
SC A2 Chair

1- Changes in the Study Committee Structure

Knowledge sharing is at the core of CIGRE vision and mission. Together, the World Bank and CIGRE established a process for the enhancement of know-how transfer for Africa based on providing access to unbiased, up-to-date technical experience in several innovative ways. CIGRE and the World Bank are thus cooperating to achieve the following general goals:

Communication channels for C1 - LinkedIn

- Use social media (LinkedIn) creating a larger 'follower Group'
- Wilfried Denoizay (FR) has created a LinkedIn page and presents how to manage it (see separate slide set)

Please feedback from members !

Action list after Cairns meeting

set-23	1	P. Roddy	Email all presenting authors thanking them and informing them that the best paper was that of Professor Mancarella
	2	P. Roddy	Share links with C1 members to examples of where WGs are using YouTube to publicise their reports
	3	A. Illiceto	Seek an opportunity for C1/C4.36 to deliver a Tutorial or Workshop
	4	A. Illiceto/ A. Oudalov	Check that the C5 representative is primed to capture the feedback of C5 as and when chapters of the draft TB have been completed.
	5	A. Illiceto	Antonio to confirm to the Chair of C5 that Alexandre Oudalov has volunteered to represent C1 on JWG C5/C1.35 & JWG C5/C1.36 AND that Gary Ford has volunteered to represent C1 on WG C5.37
	6	P. Roddy / A. Illiceto	Issue invite for a C1 remote meeting in February 2024
	7	P. Roddy	Check that Atha Scott (Special Reporter) is on the C1 distribution list and has access to KMS
	8	P. Roddy / A. Illiceto/ C. Higgins/ A. Scott/ V. de Simoes	Now that the number of synopses per Preferential Subject has been confirmed, review the allocation of Preferential Subjects (PS) to the Special Reporters taking into account the number of synopses per PS (perhaps ensure that Atha Scott has the lowest number as she is new to C1)
	9	P. Roddy/ Special Reporters/ Reviewers	Register in ConfTool for Paris 2024
	10	P. Roddy	Check if the ToR for C1.49 was sent to all members.
	11	K. Staschus / C. Schaefer	Propose revised wording for the upcoming WG on Virtual Power Plants (see minutes for feedback delivered on the day)
	12	All	By 13 October 2023, provide feedback on draft ToR on system reserves & flexibility needs
	13	B. Cova	Act on the feedback from today's meeting (see minutes) and on feedback resulting from Action 12. In addition, try to find a Convenor for the upcoming WG on system reserves & flexibility needs
	14	J. Breedt	Sharpen the scope of the draft ToR on forecasting demand to include consumer behaviour decisions influenced by market signals (see minutes for feedback received)
	15	J. Breedt / N. Zhang	Check that key points arising from C1.47 (Ning) are fed through to upcoming WG led by Jana
	16	P. Roddy / All	Peter to re-circulate details of the C1 communication channel on LinkedIn - all C1 members to follow

Contenuti

1. **Aggiornamenti su organizzazione e trends nel Cigre internazionale**
2. **Aggiornamenti su Comitato C1 internazionale**
3. **Ultima riunione di Comitato a Cairns (sett 2023)**
4. **Attività in sviluppo e prossimi WG**
5. **Aggiornamenti su Paris 2024 General Session**

New WGs – Off shore grids C1.49

- Off – Shore Transmission planning, convenor Cornelis Plet (NL)
- After articulated discussion at Technical Council level, some adjustments have been made, and scope reduced slightly
- Moreover, SC C4 on HVDC asked to make it a joint WG, although off shore grids will not all be in HVDC, some can be in HVAC.
- Approved August 2023, membership being built

C1 members to prepare to be member or propose suitable experts – through their National Committees - for new WGs

CIGRE Study Committee SC C1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP



WG N° C1.49	Name of Convenor: Cornelis Plet (CANADA) E-mail address: cornelis.plet@dnv.com													
Technical Issues #²: 3, 5, 7 & 10		Strategic Directions #³: 1												
The WG applies to distribution networks⁴: No														
Potential Benefit of WG work #⁵: 1, 2, 3 & 4														
Title of the Group: Offshore transmission planning														
Scope, deliverables and proposed time schedule of the WG: Background: The use of offshore transmission infrastructure has grown significantly over the last decade and is set to undergo exponential growth in the near future, spurred on by four factors: <ul style="list-style-type: none">- the realisation of offshore renewable energy sources such as offshore wind farms- the interconnection of different countries and market zones- the electrification of offshore oil & gas platforms and islands- the need for reinforcements to the onshore grid, effectively implemented by means of offshore circuits Compared to onshore transmission developments, offshore transmission infrastructure is often unique because typically:														
Time Schedule: <table><tr><td>• Recruit members (National Committees)</td><td>Q2 2023</td></tr><tr><td>• Develop final work plan</td><td>Q2 2023</td></tr><tr><td>• Draft TB for Study Committee Review</td><td>Q4 2024</td></tr><tr><td>• Final TB</td><td>Q1 2025</td></tr><tr><td>• Tutorial</td><td>Q2 2025</td></tr><tr><td>• Webinar</td><td>Q3 2025</td></tr></table>			• Recruit members (National Committees)	Q2 2023	• Develop final work plan	Q2 2023	• Draft TB for Study Committee Review	Q4 2024	• Final TB	Q1 2025	• Tutorial	Q2 2025	• Webinar	Q3 2025
• Recruit members (National Committees)	Q2 2023													
• Develop final work plan	Q2 2023													
• Draft TB for Study Committee Review	Q4 2024													
• Final TB	Q1 2025													
• Tutorial	Q2 2025													
• Webinar	Q3 2025													

New WGs – Global grids C1.50

- Third occurrence of Global Grids study, this time including also hydrogen, on top of generation and transmission (first study, C1.35) adding storage and demand response (second study, C1.44)
- Convenor Nicolas Chamollet (FR)
- ToR circulated for SC members revision and then sent for TC approval – expected soon

C1 members to prepare to be member or propose suitable experts – through their National Committees - for new WGs

CIGRE Study Committee C1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP



WG ¹C1.50	Name of Convenor: Nicolas CHAMOLLET E-mail address: nicolas.chamollet@edf.fr												
Technical Issues #²: 4, 5, 7 and 8	Strategic Directions #³: 1, 2, 3, 4												
The WG applies to distribution networks⁴: No													
Potential Benefit of WG work #⁵: 1, 2, 3, 7													
Title of the Group: Global sustainable energy system coupling electricity and hydrogen													
Scope, deliverables, and proposed time schedule of the WG: Background: Sustainability is a key driver of many developments world-wide, and quite notably for power systems, thanks to the December 2015 Paris Agreement on climate protection with its actionable worldwide consensus. CIGRE, as the 'global expert community for electric power systems', is engaged in supporting the Paris Agreement, and sustainability in general, and pursues sustainable electricity for all. In this context, CIGRE WG C1.35 and C1.44 ("Global interconnected and sustainable electricity system: Effects of storage, demand response and trading rules") have performed the first known quantitative pre-feasibility studies for the concept of a global electricity network, exploring the economic costs and benefits of interconnections, storage, and demand response as key enablers of the development of clean energy worldwide by 2050.													
Time Schedule: <table border="1"><tr><td>• Recruit members (National Committees)</td><td>Q2 2023</td></tr><tr><td>• Develop final work plan</td><td>Q2 2023</td></tr><tr><td>• Draft TB for Study Committee Review</td><td>Q3 2024</td></tr><tr><td>• Final TB</td><td>Q4 2024</td></tr><tr><td>• Tutorial</td><td>Q3 2024</td></tr><tr><td>• Webinar</td><td>Q1 2025</td></tr></table>		• Recruit members (National Committees)	Q2 2023	• Develop final work plan	Q2 2023	• Draft TB for Study Committee Review	Q3 2024	• Final TB	Q4 2024	• Tutorial	Q3 2024	• Webinar	Q1 2025
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• Draft TB for Study Committee Review	Q3 2024												
• Final TB	Q4 2024												
• Tutorial	Q3 2024												
• Webinar	Q1 2025												
Approval by Technical Council Chairman:													
Date:													

New WGs – Storage C1.51

- Storage , a first comprehensive WG as milestone for future specific topics
- Convenor Jeff Palermo (US)
- ToR circulated for SC members revision and then sent for TC approval – expected soon
- It is intended as fast work, on fundamentals of storage features and performances impacting grid planning, operation, and in general the development of the system

C1 members to prepare to be member or propose suitable experts – through their National Committees - for new WGs

CIGRE Study Committee C1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG N° C1.51	Name of Convenor: Jeff Palermo (USA) E-mail address: jeff@pjp-consulting.com
Strategic Directions #²: 1	Sustainable Development Goal #³: 7, 9, 13
The WG applies to distribution networks: <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	
Potential Benefit of WG work #⁴: 2	
Title of the Group: The potential roles of energy storage in electric power systems	
Scope, deliverables, and proposed time schedule of the WG: <p>This will be an 18-month working group defining the range of possibilities for energy storage in electric power systems. The WG will deliver a Technical Brochure, Electra article, and tutorial by the 2024 Paris session.</p> <p>Background: Successfully decarbonizing the electric power system will need energy storage for a range of roles. Some roles for storage are clear while others lie in the future.</p> <p>Purpose/Objective/Benefit of this work: Initiate CIGRE's efforts in the use and application of energy storage, work that should lead to a line of future Working Group efforts.</p> <p>Scope: The working group would investigate and report on:</p> <ol style="list-style-type: none">1. Types of energy storage—electrical, physical, chemical.2. Energy storage uses in time and space—from energy balancing to long-term storage, and mitigating transmission congestion to local storage to reduce losses3. Technical functions of energy storage—capacity and energy needs, rapid and slow discharging and charging4. Future needs for implementing energy storage—what factors/variables influence the various roles5. Delineating the generation and transmission functions of energy storage—the energy storage characteristics that distinguish these two functions <p>Remarks:</p>	

New WGs – proposed ToR on Virtual Power Plants

- Virtual Power Plants
- ToR proposed by Prof. Qixin Chen (CH), who can be Convenor
- To be discussed in the meeting

CIGRE Study Committee C1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP



(J)WG 1N° <u>XX.YY</u>	Name of Convenor: Qixin Chen (China) E-mail address: qxchen@tsinghua.edu.cn
Strategic Directions #2: 1,2,3	Sustainable Development Goal #3: 7,11,13
The WG applies to distribution networks: <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	
Potential Benefit of WG work #4: <u>1,3</u>	
Title of the Group: Virtual Power Plants role and deployment in large power systems' operation and planning	
Scope, <u>deliverables</u> and proposed time schedule of the WG: <u>Background:</u> Current power systems are witnessing great changes and challenges coming from: (1) Global consensus on carbon neutrality goals has encouraged high penetration of renewables into the power systems. (2) Electrification of other industrial sectors (such as the transportation sector) is undergoing, which shall increase the new electricity load and change the characteristics in power systems. (3) Due to the intermittent nature of renewables and randomness of electricity load, the need for flexibility resources, such as peak shaving, ramping, and regulation reserves, is on the rise. (4) Extension of flexible resources, including Virtual Power Plants (VPPs) shall be needed, to alleviate the extreme peak demand load, reducing ineffective generation, <u>transmission</u> and distribution investments. (5) Dispatching architecture of bulk power system and wholesale market mechanisms shall have to accommodate the new entities (like VPPs).	

New WGs – proposed ToR on Reserves assessment

- Assessment of reserves and flexibility needs
- ToR proposed by Bruno Cova (IT) with contributions of others
- To be discussed in the meeting
- Convenor to be found



CIGRE Study Committee C1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG N° C1.xx	Name of Convenor: to be identified E-mail address: xxx
Strategic Directions #²: 1,2,3	Sustainable Development Goal #³: 7, 9, 13
The WG applies to distribution networks: <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	
Potential Benefit of WG work #⁴: 1, 2, 3, 4	
Title of the Group: Assessment of system reserves and flexibility needs in the power systems of the future	
Scope, deliverables, and proposed time schedule of the WG: The scope of this WG is the evolution and harmonisation of criteria and methodologies for quantifying power system reserves and flexibility needs with special focus on systems with dominant variable RES (v-RES) and inverter-based devices. Background: The progressive decarbonisation of power systems entails a substantial transformation of: <ul style="list-style-type: none">✓ generation fleet, which will mostly rely on v-RES such wind and PV,✓ load growth rate and profile, considering e-mobility and green hydrogen generated through electrolyzers and in general deeper electrification of final <u>uses</u>✓ T&D network to accommodate the new forms of power generation and consumptions.✓ Storage devices and energy conversion equipment like electrolyzers shall become new system components. Thus, to ensure the current security and reliability standards, there is worldwide consensus on the need to enhance system flexibility considering increased variability of generation and	

New WGs – proposed on Demand Forecast

- Demand forecasting
- ToR received from Jana Breedt (SA), who would be Convenor
- To be discussed in the meeting

(J)WG 1N° <u>XX.YY</u>		Name of Convenor: Jana Breedt (SOUTH AFRICA) E-mail address: Jana.breedt@eskom.co.za	
Strategic Directions #2: 1,4		Sustainable Development Goal #3: 7,11,12	
The WG applies to distribution and transmission networks: <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No			
Potential Benefit of WG work #4: 1,3,5			
Title of the Group: Forecasting demand to include consumer behaviour decisions influenced by market signals.			
<p>Scope, deliverables and proposed time schedule of the WG:</p> <p>This WG aims to establish a better understanding of how to synergise market signalling, consumer behaviour and resultant integration of Renewable generation sources and its subsequent influence on demand forecasting (peak capacity and energy). It will deliver a Technical Brochure, Electra article, progress feedback at the 2024 Paris and a final paper at 2025 Symposium.</p> <p>Background:</p> <p>The End-to-End electricity ecosystem used to be <u>fairly stable</u> and quantitative demand forecasting was the norm. This has shifted to include the connection of renewable generation to the network, the timeous decommissioning of older coal-fired power stations and the adoption of new technology by the consumer influences the management of supply and demand significantly.</p> <p>Electricity demand forecasting is the foundation for electrical power system planning and informs important power system planning investment decisions.</p> <p>Forecasts range from short-term to strategic long term, energy forecasting and peak demand forecasting. All these forecasts used to be derived by quantitative forecasting, however, the inclusion of localised renewable sources that are often initiated and controlled by the consumer (large customers from the Transmission grid as well as smaller Distribution grid customers), now complicates the demand analysis. Factors such as the global decarbonisation drive towards a greener future, market signals from utilities such as price signalling, availability of supply by large-scale generation and economic viability are driving consumers to the installation of localised generation and storage systems. The affordability and availability of new technology such as Rooftop PV, Battery systems and Electric Vehicles is inducing a new market that influences demand profiles significantly and therefore influences the demand forecasting from a utility perspective, both on network peak capacity forecast (MW), as well as energy demand forecasting (MWh).</p>			

Contenuti

1. **Aggiornamenti su organizzazione e trends nel Cigre internazionale**
2. **Aggiornamenti su Comitato C1 internazionale**
3. **Ultima riunione di Comitato a Cairns (sett 2023)**
4. **Attività in sviluppo e prossimi WG**
5. **Aggiornamenti su Paris 2024 General Session**

Paris 2024

- 25 – 30 August 2024
- Some organisational and logistic improvements
- Papers processing under fine-tuning to eliminate some tweaks especially in liaising with authors during peer review stage
- Role of National Committees decided, after several ad hoc plenary meetings with all NC: even in absence of national quotas, they keep filtering (especially at synopsis stage) for quality, compliance and general balancing
- Risk of having too many papers: 1700 synopsys received, 103 for C1 (42 PS1, 40 PS2, 21 PS3)
- Risk of receiving papers written by Artificial Intelligence / Chat Bot

CIGRE SESSION 25-30 AUGUST 2024

Palais des congrès - Paris - France



Call for papers

RECEIPT OF SYNOPSES
AT CIGRE CENTRAL OFFICE:
26TH AUGUST 2023

SYNOPSIS NOTIFICATION
OF ACCEPTANCE:
6TH NOVEMBER 2023

RECEIPT OF FULL PAPERS
AT CIGRE CENTRAL OFFICE:
6TH FEBRUARY 2024

FULL PAPERS NOTIFICATION
OF ACCEPTANCE:
6TH MAY 2024

Submit a Paper for the leading global event for Power System Expertise 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 the Session attendees in a convivial working atmosphere.



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

INTRODUCTION



Dear Colleagues,

Considering the full success of the 2022 CIGRE biennial Paris Session, we now turn our eyes to the preparation of the 2024 Session, having in mind all the challenges the Electrical Power Industry is facing with the Energy Transition process, Hydrogen perspectives, advances in Storage, reinforcement of our End-to-End approach, Flexibility and Resilience of Power Systems, as well as capturing all relevant aspects of ESG - "Environmental, Social, & Governance" practices.

The 2024 Session will be based on the new procedure of no more countries quotas and full papers Session selection, which started in 2022, incorporating some necessary improvements, as lessons learned.

The 2024 Session will prioritize all relevant topics related to:

- the 4.0 Industry thinking and the new 5.0 arrival,
- the impressive development of digitalization,
- the proliferation of Active Distribution Networks combined with the dramatic need for increasing the utilization of renewable energy sources towards reaching a carbon-free society,
- the absolute need for keeping the resilience, stability and security of power systems,
- new edge developments on Hydrogen and Storage technologies, all these factors represent a major change on mindset regarding scopes of new Working Groups, Symposia, Workshops and, certainly, in the selection of Preferential Subjects for the forthcoming Biennial Sessions.

In addition, we may see in 2024 the remarkable growth already accomplished in our Women in Energy and New Generation Network groups.

The new paradigms derived from the above mentioned facts bring up an effect of vanishing of frontiers, which turns out to be a big challenge for us as an international organization based on volunteer work, to address timely and exciting subjects for discussion and publications, with an optimal and suitable allocation of contributions at each Study Committee.

Every challenge, at the end, 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 here selected 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 a large number of high quality, interesting and exciting papers with the objective to exceed all expectation for the 2024 CIGRE Paris Session.

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

Marcio Szechtman - Technical Council Chair

Synopses due date	milestone	26/08/2023
Synopsis review complete and notified	milestone	06/11/2023
Papers due date	milestone	06/02/2024
Paper review complete and notified	milestone	06/05/2024
Publish Special Report	milestone	31/05/2024
Poster and contribution due date	milestone	16/08/2024

Paris 2024 Opening Panel

C1 invitations in all 3 sessions

Time	Title	Main line of discussions
08:30-08:35	Welcome and introduction to the Paris session, and to the keynote speaker	Marcio Szechtman, CIGRE TC Chair
08:35-08:45	Introduction to the panel structure, panelists, chat function; handover to keynote speaker	TC Chair and Moderators
08:45-09:40	Session 1: Energy Grid Viewpoints: 1) GO15 SR Narasimhan (India), incoming 2024 President 2) China Southern Power Grid CSG (TBD) 3) Damian Cortinas, Chairman of the Board of ENTSO-E.	Moderators: SC B4, B5 and C1 - What are we to expect of the energy supply system of the future? - How TSO and or Transmission Utilities are preparing themselves to all those changes in the Electricity Sectors: new practices, innovation actions, AI in predicting critical issues?
09:40-10:00	Break	
10:00-10:55	Session 2: Distribution Companies Viewpoints 1) Ercole de Luca, Innovation Director of ARETI (DSO of Rome region) and engaged in the new Organisation of European DSOs 2) Terence Donnelly – COMED - USA 3) DSO from Australia (TBD).	Moderators: SC A3 and C6 - How is the proliferation of DER integration driving grid optimization and innovation? - DSO capabilities to enable DER related services? Accelerating towards and equitable energy transition. - The convergence between Climate Change and Community?
11:00-11:55	Session 3 Regulatory and Market aspects of DER 1. OFGEM, UK (Marzia Zafar?); Smart Systems and Flexibility Plan (from 2017) 2. Luciano Martini, Director of Power System dept at RSE, Italian Research Institute on energy Systems, Chair of ISGAN and of Mission Innovation (both worldwide public organisations on innovation for energy transition) 3. Ron Ben David; previous Chair of the Victorian Essential Services Commission - Australia.	Moderators: SC C5 and D2 - Driving community resources via markets and effective regulatory approaches and structures and en Distributed Energy Resources DER Programs: - Regulatory initiatives to support the balanced supply of energy, particularly plan the expansion of DER
11:55-12:00	Concluding remarks	TC Chair

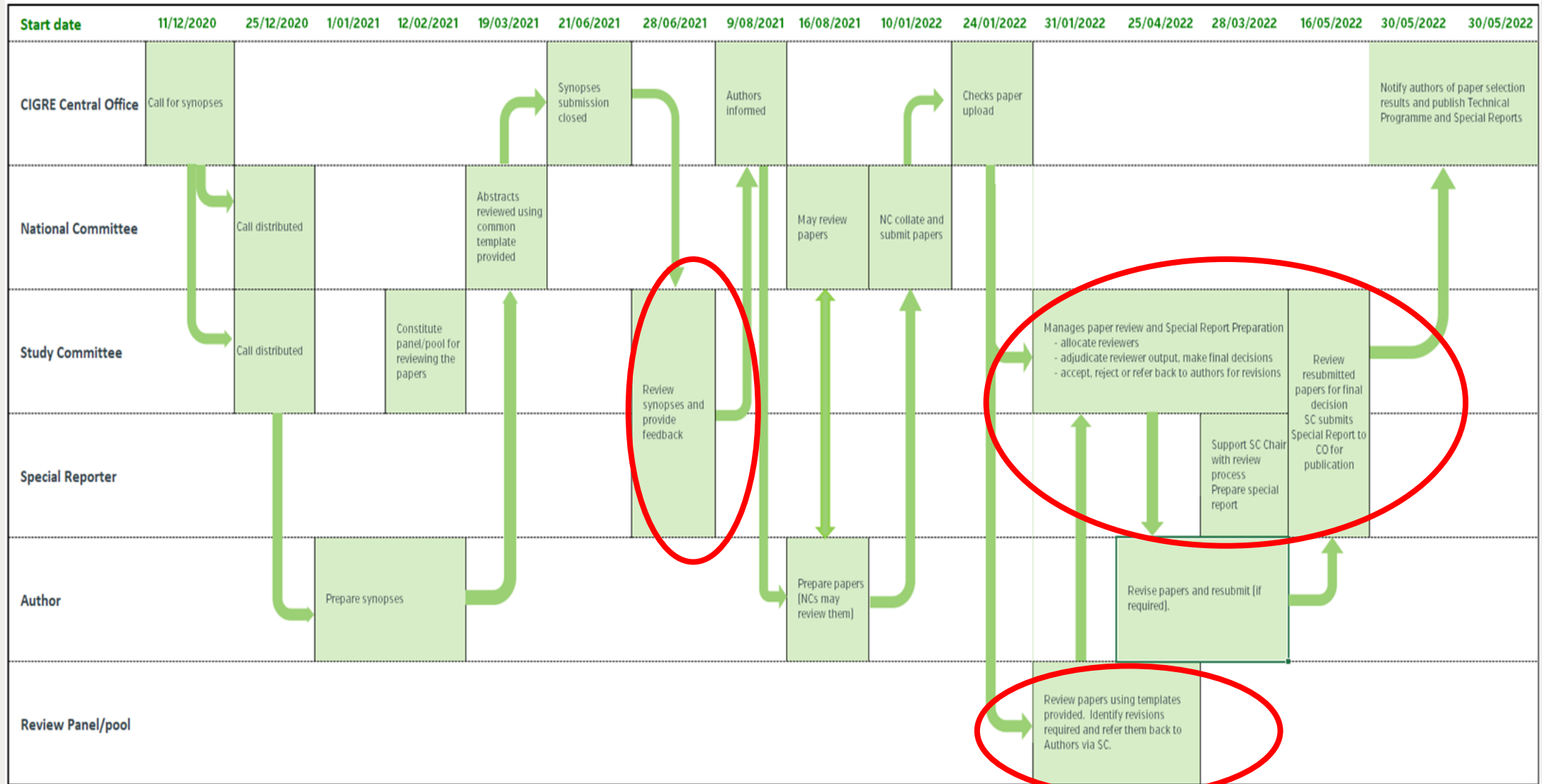
Paris 2024 – schedule of C1 enegagements

- GDM fixed by CO
- If C1 meeting is on Friday, Monday is free, for attending opening events
- Both one Tutorial and one Workshop to be scheduled
- Workshop on resilience , joint with C4 and maybe also with C6

2024	Sunday 25/08		Monday 26/08		Tuesday 27/08		Wednesday 28/08		Thursday 29/09		Friday 30/09		Rooms
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
		Opening ceremony 16:00 - 17:30	CEO forum 12:00 - 14:00		AdCo meet 9:00 - 12:00	NC forum 2:00 - 5:00	NGN forum 11:00 - 2:00		WiE forum 11:00 - 2:00				
Time schedule			8:45 - 12:00										
Panel			Opening panel										Grand Amphi
Time schedule					08:45	18:00	08:45	18:00	08:45	18:00	08:45	18:00	
Group Discussion Meetings					B5		B3		B4		B2		Grand Amphi
					A3		C2		C1		C4		Bordeaux
					D1		C6		B1		A2		Bleue
					C3		A1		C5		D2		Havane
Time schedule			9:00 - 12:30	14:30 - 18:00	9:00 - 12:30	14:30 - 18:00	9:00 - 12:30	14:30 - 18:00	9:00 - 12:30	14:30 - 18:00			
Poster Sessions				B5?				C1 ?					
Time schedule			8:30-10:20 10:40-12:30	14:00-15:50 16:10-18:00	8:30-10:20 10:40-12:30	14:00-15:50 16:10-18:00	8:30-10:20 10:40-12:30	14:00-15:50 16:10-18:00	8:30-10:20 10:40-12:30	14:00-15:50 16:10-18:00			
Tutorials							B5? C1 ?						
Time schedule				14:00-18:00	8:30-12:30	14:00-18:00	8:30-12:30	14:00-18:00			8:30-12:30		
Workshops				C2-C5 ?	C1-C4-C6?								
Study Committee meetings									B5?		C1		

Paris 2024 – scheme of process for Papers management

CIGRE PAPER PREPARATION FLOWCHART



Note: Column widths do not indicate duration. Refer to column heading

Paris 2024 - C1 Preferential Subjects and Special Reporters

- Identified the 3 Special Reporters:

- ✓ Charlotte Higgins UK
- ✓ Jana Breedt switched than to Atha Scott SA
- ✓ Valdson Simoes BR

- Assigned PS to Special Reporters:

- ✓ Charlotte PS1 ?
- ✓ Atha PS2 ?
- ✓ Valdson PS3 ?

Call for Papers

CIGRE SESSION - 25-30 AOÛT 2024



C1 Power system development & economics

PS1: Steering the energy transition: cooperation, achieving top-down targets through bottom-up investment decisions

- › Governance of the different sectors of the integrated energy system, role of system operators, role of regulation & markets; achieving public targets through private investments, coordinated decision-making processes and international cooperation.
- › Power-to-gas & hydrogen as energy carrier and as long-term storage; energy efficiency & infrastructure efficiency in the interconnected electricity/gas/hydrogen system; large interconnection projects.
- › System aspect aggregation of the electrification of transport, industry, and buildings: conditions and barriers, role of stakeholders in the end-to-end system.

PS2: Flexibility as pivotal criterion for system development

- › Including in the planning process the flexibility options both within and outside the grids; non-network-assets and non-electric solutions: storage, demand response, energy communities, behind-the-meter resources.
- › Matching flexibility needs with flexibility sources: market design evolution, value of various flexibility products, optimal flexibility portfolio; prioritization of sector coupling initiatives; role of forecasts of demand and variable generation.
- › Storage device evolution, technical & economic performances, short/medium term measures for balancing the grid, and managing the energy system in the longer term, including thermal & molecular long duration energy storage.

PS3: Resilience as pivotal criterion for system development

- › Metrics and criteria to plan resilience and strength of the future power system; flexibility means as enhancers also of resilience.
- › Optimal planning and efficient use of resilience measures: risk assessment, prevention, mitigation, adaptation, re-start measures.
- › Resilience improvements from grid architecture and grid components: including the role of power electronics control and grid forming features, smart load shedding, and fast restoration methods.

Paris 2024 C1 peer review

- Identified peer reviewers:
- Emmanuel Bue + volunteers during last meeting:
 - Colin
 - Christian
 - Chiara
 - Stanislav
 - Juan-Carols
 - Marc del Degan
 - A. Almailouni
 - M. Przygridzki
- Next step:
- Assign/confirm Preferential Subjects reviewers
- After synopsis submission : assign reviewers to papers
- To be assigned: Poster session Manager

Paris 2024 – huge number of synopsis submitted , following country quota removal

- Risk of having too many papers: more than 1700 synopsis received, 107 for C1 (42 PS1, 40 PS2, 21 PS3)
- Risk of receiving papers written by Artificial Intelligence / Chat Bot
- TC is discussing how to contain number of synopsis:
 - Preliminary self reduction by NCs
 - Higher severity in quality threshold (ideally around 50 paper per SC)
 - Important, for all reviewers, Special Reporter, Secretary: create NEW profile in ConfTool for Paris 2024 and assign role
- Higher rejection rate:
 - Overall = 20% 1385 synopsis accepted
 - C1 = 24 rejected , equal to 22%
 - Other 6 synopsis directed to other SCs
 - Acceptance rate = 72%

Etichette di riga	Count of title
+ A1	59
+ A2	126
+ A3	88
+ B1	114
+ B2	161
+ B3	93
+ B4	114
+ B5	161
+ C1	107
+ C2	172
+ C3	59
+ C4	153
+ C5	65
+ C6	93
+ D1	85
+ D2	86
Totale complessivo	1736

Paris 2024 – Italian papers C1

paperl	Study	authors	organisations	title	topics	Count	score_av	acceptance
369	C1	TURCHIANO, Marco	TERNA, Italy	How storage is implemented in the network of the major global opera-tors of GO15	C1 PS2 - Italy		76,3	Synopsis Accepted
370	C1	D'ANDREA, Elia	TERNA, Italy	An optimization tool for the planning of transmission grid investments and development	C1 PS1 - Italy		82,7	Synopsis Accepted
371	C1	MIGLIORI, Michela	TERNA, Italy	Off-shore network development to foster the energy transition	C1 PS1 - Italy		72,7	Synopsis Accepted
372	C1	SALAMONE, Sara (1); CAZZANIGA, Andrea (1); CELASCHI, Silvia (1); COLZI, Filippo (1); ILICETO, Antonio (2); MAURI, Giuseppe (1); SOLDAN, Francesca (1)	1: RSE, Italy; 2: Terna, Italy	Impact on the power system of the electrification of transport, both light and heavy-duty vehicles	C1 PS2 - Italy		82,7	Synopsis Accepted
373	C1	CIAPESSONI, Emanuele	RSE, Italy	Application of a multi-hazard risk-based Resilience assessment methodology to real cases in the Italian Transmission System	C1 PS3 - Italy		75,7	Synopsis Accepted

Paris 2024 – transparency and information to authors

Contribution Details

Submission Type / Conference Track: C1 POWER SYSTEM DEVELOPMENT AND ECONOMICS

- Synopses

431

Modelling Risk for the Decarbonization of Electric Systems

Alberto J. LAMADRID L.¹ ✉, Timothy D. MOUNT² ✉, Woo-Young JEON³ ✉

Organisation(s): 1: Lehigh University, United States of America; 2: Cornell University, United States of America; 3: Chonnam University, South Korea

Submitted by: John Douglas MCDONALD (JDM Associates, LLC, US), ID: 1001


Created: 5th Aug 2023, 06:21:48pm

Last Update: 5th Aug 2023, 06:21:48pm · Last Upload: 5th Aug 2023, 06:21:48pm

Topics: C1 PS1 - Steering the Energy Transition: Cooperation, achieving Top-Down Targets through Bottom-Up Investment Decisions

2 pages

Submitted File(s) ▶ History of Uploads

1st file  C1-PS1 Lamadrid.pdf

Submitted File(s) for Final Version

1st file **No upload yet.**

Review Result of the Programme Committee

We are sorry to report that this contribution could not be accepted.

Message from Chairs to Authors

Dear authors,

“risky asset” based portfolio optimization problem is relevant and original for operating and maintaining complex systems, and for C1 in general. However, PS for 2024 session do not contemplate such topics, therefore the synopsis cannot be accepted. Surely it will better received in other Cigre event.

Overview of Reviews

Questions		Review 1 C. RAY ✉	Review 2 A. ALMAIMOUNI ✉	Review 3 C. HIGGINS ✉
Quality of Content	10%	8	10	8
Significance for Theory or Practice	10%	8	10	8
Originality and Level of Innovativeness	10%	8	8	8
Thematic Relevance for the "Call for Papers"	10%	8	10	4
Quality of Presentation	10%	8	10	4
Overall recommendation	50%	8	10	7
Total points (out of 100)		80	98	67

Paris 2024 C1 synopsis submitted

- Risk of having too many papers: more than 1700 synopsys received, 107 for C1 (42 PS1, 40 PS2, 21 PS3)
- Risk of receiving papers written by Artificial Intelligence / Chat Bot
- TC is discussing how to contain number of synopsys:
 - Preliminary self reduction by NCs
 - Higher severity in quality threshold (ideally around 50 paper per SC)
 - Important, for all reviewers, Special Reporter, Secretary: create NEW profile in ConfTool for Paris 2024 and assign roles

Back-up information

Action list of March 2023 C1 meeting

Date	Act #	Who	What
mar-23	1	A. Iliceto	C1.33 - Provide contact names to Peter Roddy for the new Convenors of C1.33
	2	G. Sanchis	C1.44 - Submit draft TB by end April 2023
	3	C. Ray, C. Schaefer, S. Utts, C. Vergine, A. Almailouni, M. Del Degan, J-C. Araneda, M. Przygridzki	Volunteered to act as Reviewers for Paris 2024
	4	Valdson Simoes	Volunteered to join Charlotte Higgins and Atha Scott as Special Reporter 2024
	5	A. Iliceto/ P. Roddy	Assign Special Reporters to their preferred topics (Valdson prefers PS3)
	6	P. Roddy	Make new ToR template available to WG Convenors where ToR has not yet been approve by Technical Council
	7	P. Roddy	Compile a repository on KMS of webinars/tutorials/papers/panel interventions delivered on C1 topics, to which all members are invited to provide info on such events
	8	G. Vicini	provide # 0 of a prototype C1 newsletter
	9	W. Denoizay	Share his proposal for developing a social media presence for C1
	10	All	C1.45 - Volunteer needed to bring a financial viewpoin to Cost Benefit Analysis
	11	All	C1.47 - A couple more case studies are required
	12	A. Iliceto	C1.47 - Antonio to send to Ning details of a group that has been convened to look at Hydrogen sector coupling
	New WGs		
	13	A. Iliceto	Circulate ToR of WG C1.49 (off shore grids) to Technical Council
	14	P. Roddy	Issue draft ToRs to C1 members for C1.50 & C1.51 (they have been updated with new dates) for comment, giving 3 weeks to respond
	15	All	Nominations sought for C1.49, C1.50 & C1.51
	16	J. Breedt	Drafting ToR and act as Convenor of new WG on 'Residual demand forecasting'
	17	B. Cova / C. Vergine	Drafting ToR of a new WG on 'Flexibility, reserves need assessment when planning 100% carbon-free systems' ; find a Convenor
	18	P. Vicini/ C. Vergine	Drafting ToR on 'Planning scenarios with new variables', including a survey on best practices
	19	Qixin Chen (Convenor), supported by Chongqing Kang	Drafting ToR and act as a Convenor of new WG 'Virtual power plant aggregation, operation & trading'
	20	Various volunteers	Drafting ToR on Resilience
	21	Jeff Palermo and others	Drafting a ToR on " System strength "
	22	M. Theku/ P. Southwell	Phil is willing to support Makoanyane in writing a ToR on 'General principles for energy curtailment considerations'
	23	P. Roddy	Monitor through to end April 2023 how many new draft ToRs are created and review with Antonio

C1 contributions to Strategic Plan

- Advance studies on economic assessment, business models, Cost-Benefit analysis, KPI definition, optimisation metrics in the changing and complex power system
- Introduction of Hydrogen topic in WGs and papers, as well as in Cigre TC & SAG Energy Transition
- Introduction of explicit Sector Coupling topics in WGs and papers
- Advanced studies on Global Grids
- Increased emphasis on Flexibility at planning stage
- Increased emphasys on Resilience, at system level
- Increased work on TSO-DSO coordination
- Introduction of explicit / dedicated actions on sustainability of future developments

Deep update of website C1 page



The screenshot shows the C1 website page with a green header. The header contains the Cigre logo and the text 'For power system expertise'. On the right side of the header, there are two links: 'Community' and 'Knowledge'. Below the header, the main content area has a title 'C1 - Power system development and economics' followed by a small icon and the text 'A- A+'. The main content area is divided into two columns. The left column features a large graphic with the text 'C1 Power system development and economics' and a circular diagram with various colored segments. The right column contains the 'Mission' and 'Scope' sections. The 'Mission' section states: 'To facilitate and promote the progress of engineering and the international exchange of information and knowledge in the field of system development and economics. To add value to this information and knowledge by means of synthesizing state-of-the-art practices and developing recommendations.' The 'Scope' section states: 'The scope of Study Committee C1 is to study Economics and system analysis methods for the development of power systems: methods and tools for steady state and dynamic analysis, planning issues and methods in various contexts, asset management strategies, in order to support electricity system planners worldwide to anticipate and successfully manage system changes to address the arising needs, opportunities and uncertainties while respecting multiple constraints..'. Below the 'Scope' section, there is a list of 'Areas of attention include:' followed by 'System planning'.

C1 - Power system development and economics

✉ A- A+

Mission

To facilitate and promote the progress of engineering and the international exchange of information and knowledge in the field of system development and economics. To add value to this information and knowledge by means of synthesizing state-of-the-art practices and developing recommendations.

Scope

The scope of **Study Committee C1** is to study Economics and system analysis methods for the development of power systems: methods and tools for steady state and dynamic analysis, planning issues and methods in various contexts, asset management strategies, in order to support electricity system planners worldwide to anticipate and successfully manage system changes to address the arising needs, opportunities and uncertainties while respecting multiple constraints..

Areas of attention include:

System planning

Highlights & Technical Directions of SC C1



- Highlights: New focus on Energy Transition and sustainability, impact of hydrogen on power system, Electric Vehicles integration with electricity system, sector integration under an end-to-end and One System views; identify mega trends and game changers
- Important activities: Comprehensive studies on off-shore grids, regional and global interconnections, active participation in Hydrogen Forum, Energy Transition SAG and incepting WGs on specific aspects of **Sector Coupling**
- Technical Direction 1: Methods and practices for **system planning** amid increasing uncertainties; multi-criteria scenarios and cost/benefit methodologies; modelling and simulations with digital twins, cross-sector interactions and extensive use of digitalisation / Artificial Intelligence
- Technical Direction 2: Introduce in system development processes all **flexibility** means, all forms of storage (short and long term) and the new active role of end users / demand management
- Technical Direction 3: Coordinated TSO-DSO planning with evolving smart and **active distributed resources**, stakeholders (non-expert) engagement for smooth system development
- Technical Direction 4: **Asset management** through analytics and data platforms, avoiding stranded assets; life-cycle assessment and sustainability targets

New WGs - previous ideas (preliminary)

- Offshore grids - system planning guidelines and compatibility with future system expansion → Convenor found, ToR written and improved with Chair → to be circulated in C1, then to TC for approval; start time August 2022
 - Follow-up of C1.48 (Hydrogen):
 - hydrogen regulation, in JWG C5-C1.35 → starting now
 - flexibility from electrolysers, capabilities, performances, constraints, enablers and barriers → possible further follow-up
 - Proposal by Jeff: System strength (experience from Australia as a starting point) : ToR and Convenor?
 - Proposal by Antonio: Benchmark of Natural resources footprint of power systems' components ; issue is sustainability, and differs from environmental footprint concept for being oriented to early avoidance of natural resources depletion issue when developing a new technology/device/process → ToR and Convenor
 - Follow-up of C1.44 (global interconnections): impact of sector coupling (EV, industrial and buildings electrification, hydrogen) on global electricity interconnections modelling → ToR and Convenor
- C1 members to propose other topics, elaborate ToR, suggest convenorship

Other proposed new WGs

#	PROPOSER	WG NAME/ TOPIC	STATUS
1	<u>Jana Breedt</u>	Residual demand <u>forecasting</u>	TOR TO BE WRITTEN
2	<u>Chiara Vergine</u> , Pierluigi Vicini	Survey on <u>planning criteria</u> and their evolution following <u>new variables and more complex scenarios</u> ; rethink the power system modelling with high penetration of power electronics for stability analysis	TOR TO BE WRITTEN
3	<u>Bruno Cova</u> , <u>Chiara Vergine</u> , Pierluigi Vicini, Angelo L'Abbate	<u>Flexibility</u> : definitions, metrics, methodologies; planning 100% carbon-free systems ensuring adequate flexibility; reserves needs assessment, considering also cross border trading of ancillary services and HVDC, FACTS	TOR TO BE WRITTEN
4	<u>Christian Schaefer</u> / Keith Bell, Colin Ray, <u>Jeff Palermo</u>	<u>Resilience</u> : maintaining adequacy of supply; preparation for and management of compound events; trade off quality and cost of supply (acceptable level of performance); market signals to encourage energy requirement, not just power capability	TOR TO BE WRITTEN, follow- up of C1.46 (Resilience by Design)
6	<u>Jeff Palermo</u> , Keith Bell, Colin Ray, Juan Carlos Araneda	System " <u>strength</u> " (different from Resilience) and how you measure is still a "thing"? And is there any measure beyond fault current?	Pending , check with C2 and C4; also check what will be included in ToR of Flexibility and ToR of Resilience
7	Chongqing Kang / <u>Qixin Chen</u>	<u>Virtual power plant</u> aggregation, planning, operation and trading	TOR TO BE WRITTEN
8	Makoanyane Theku	General principles for energy curtailment considerations to enable more <u>RES penetration</u> ; joint ISO/DSO procedures	To be assessed
9	Antonio Iliceto	<u>Hydrogen</u> zoom-ins	Participation to two JWGs with C5: certification and regulation
10	Antonio Iliceto	Sustainability of <u>materials</u> and industrial processes for the energy transition	Concept stage

C1 members / would be Convenors → to write ToRs

Input, requests and information from TC

Energy Transition SAG (Forum)

- **Duties towards Central Office / Technical Council:**
 - Activity Report 2021 → done
 - Strategic Plan update 2022-2026 → done
- **The new Strategic Advisory Group on Energy Transition had its first webmeeting with high calibre representatives from manufacturing, consultancy and testing laboratories**
- **Objective is to liaise better with industry, attracting company decision-makers to better support Cigre, both with fees and with workforce, ideas, etc.**
- **Proposal: set up a new award for the company/organisation submitting most papers to Cigre annual events**