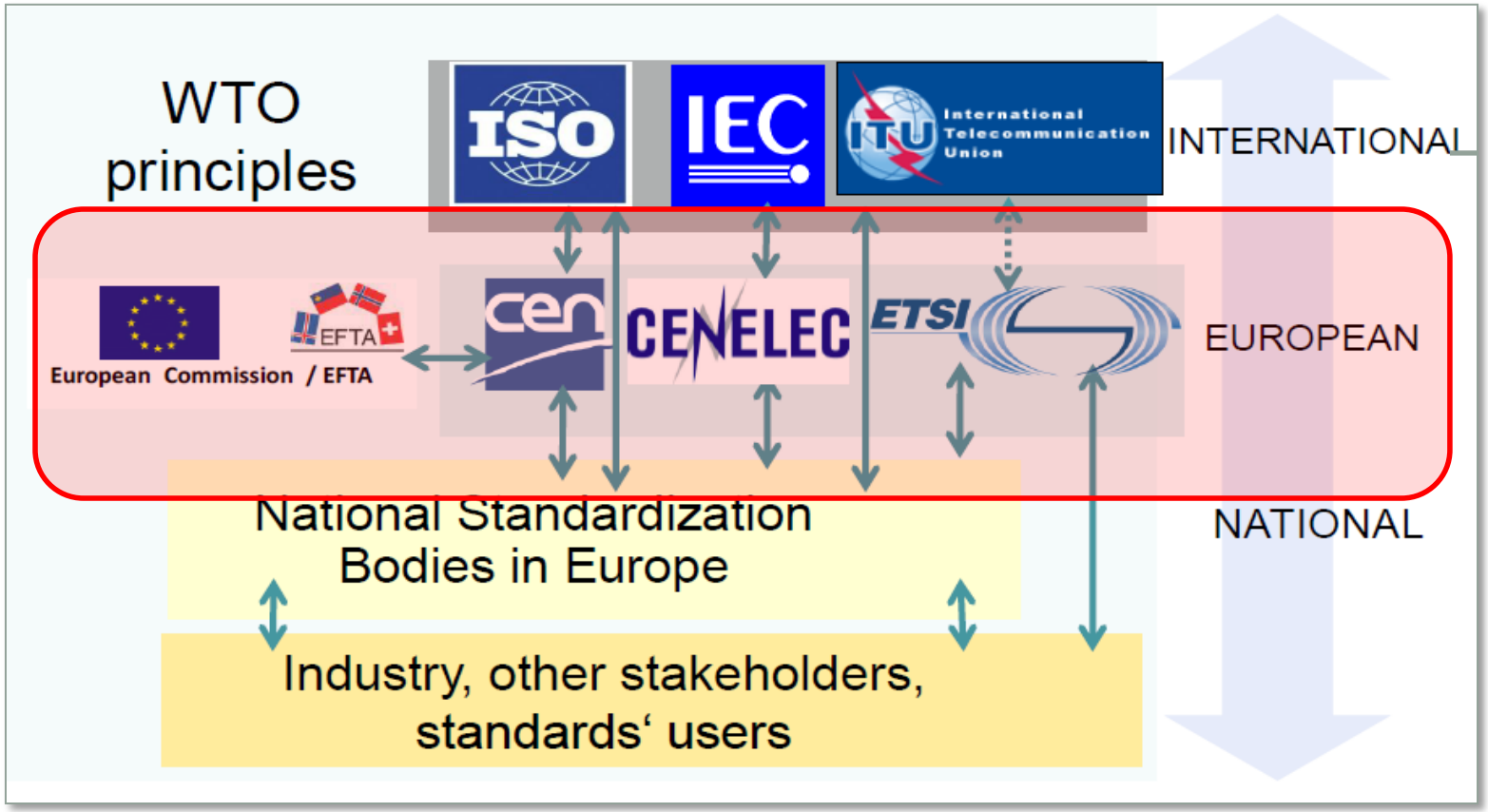
DIRECT CURRENT STANDARDISATION OVERVIEW

CEB BEC

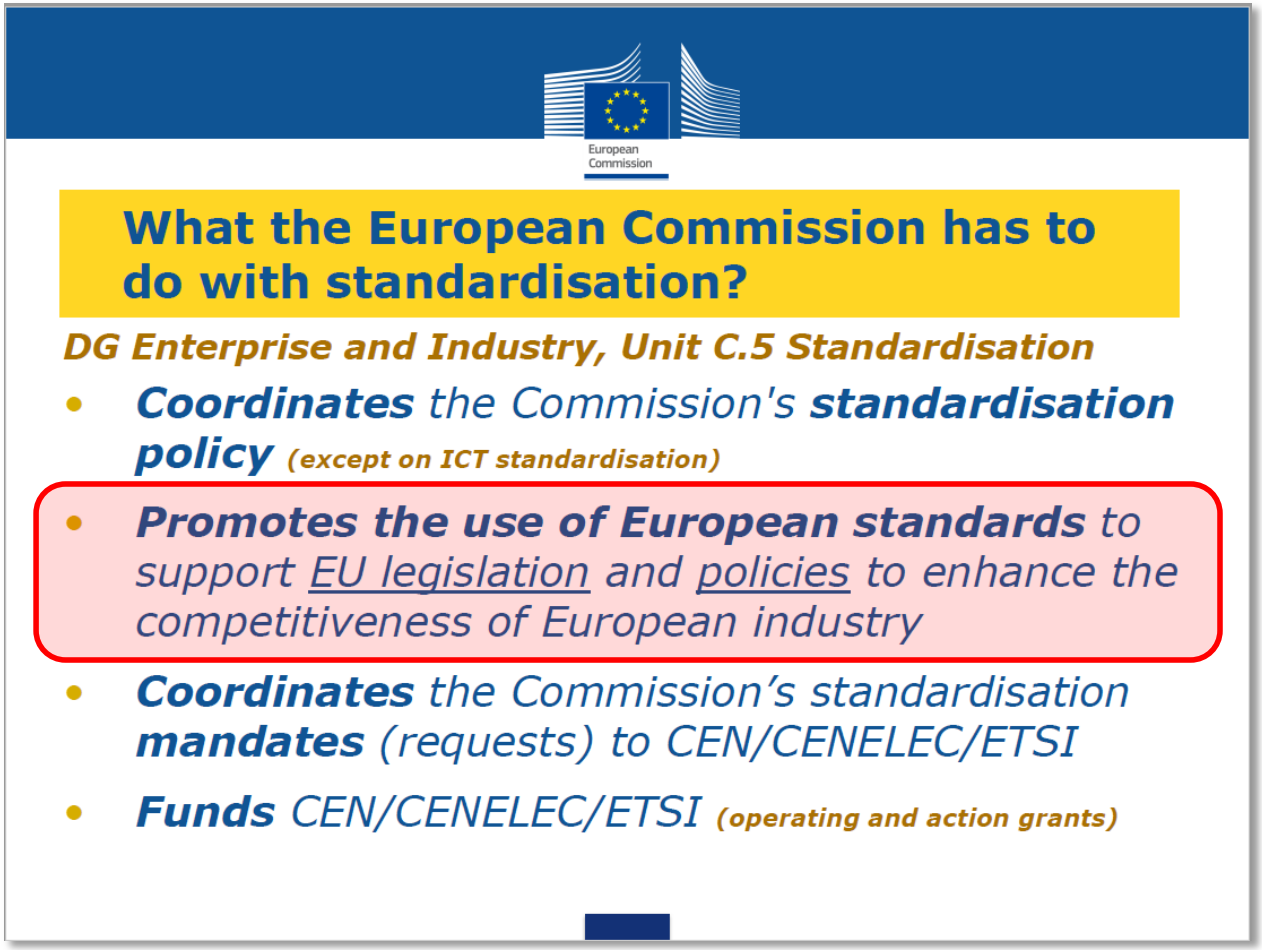
Global Gateway to Electrotechnical Standards in Belgium

Serge Noels, Business Development
serge.noels@ceb-bec.be
May, 2018

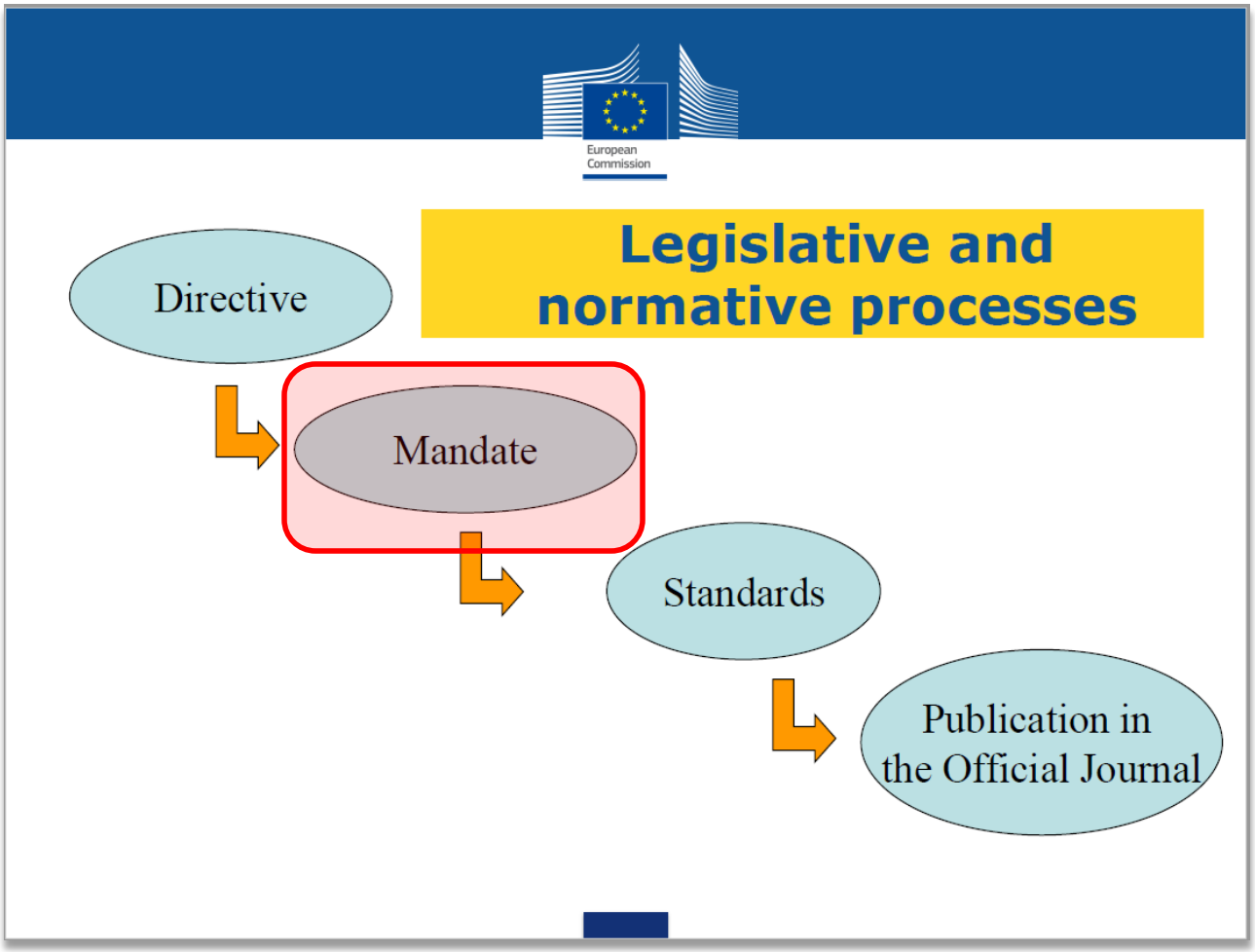
Standardisation bodies: Geographically & Sectors



What the European Commission has to do with standardisation?

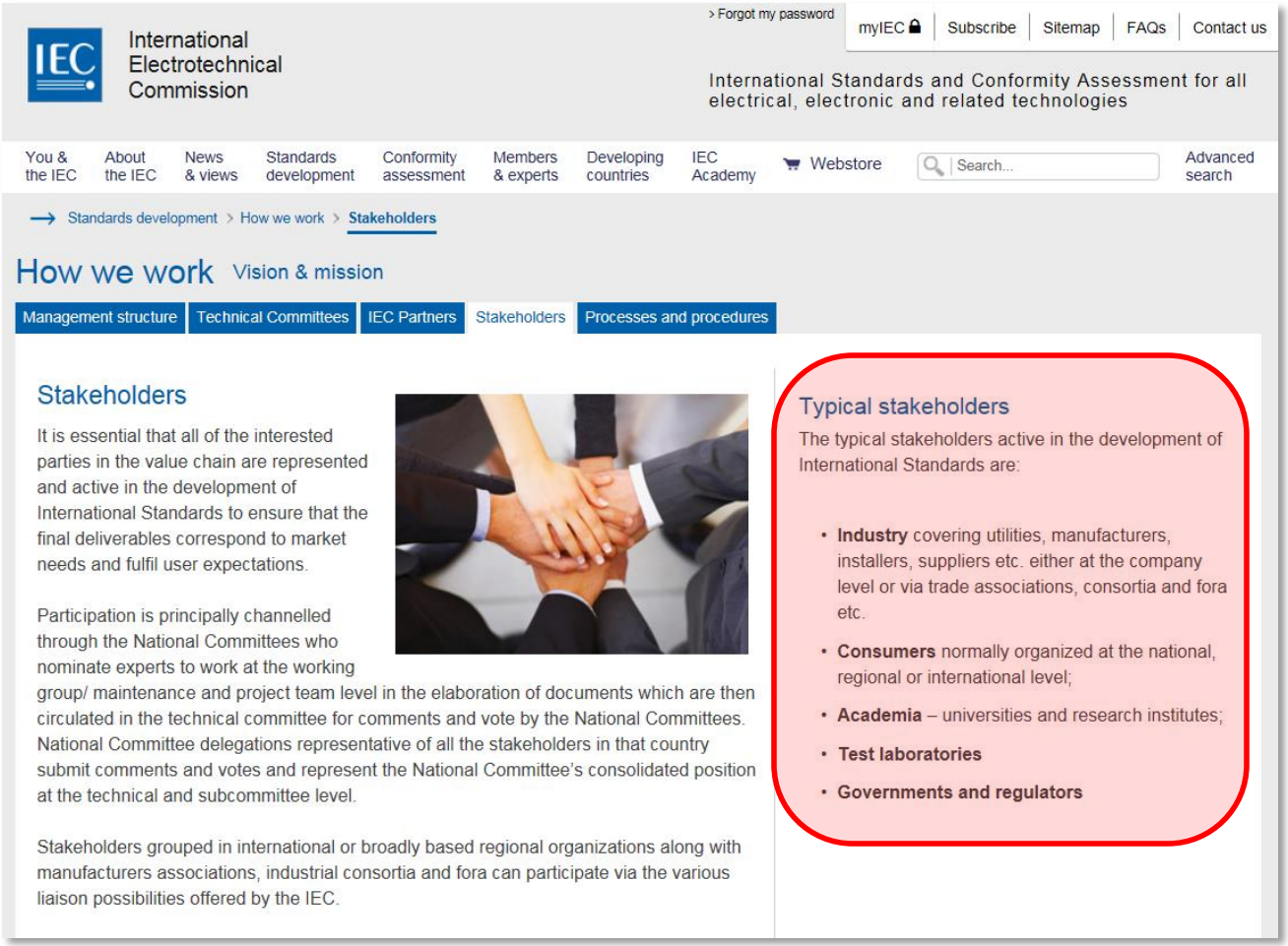


European Commission issues Mandates to standardisation bodies



What is a Mandate?

Stakeholders in the development of standards



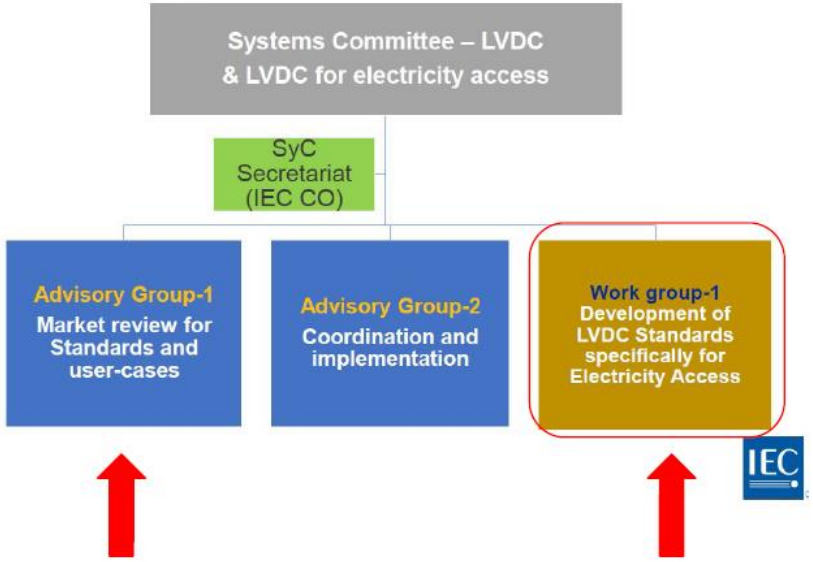
http://www.iec.ch/standardsdev/how/stakeholders.htm

IEC Standardization for Low-Voltage DC Systems Committee LVDC (SyC LVDC)

Two main market drivers:

- Energy Efficiency in developed countries
- Electricity Access in developing countries

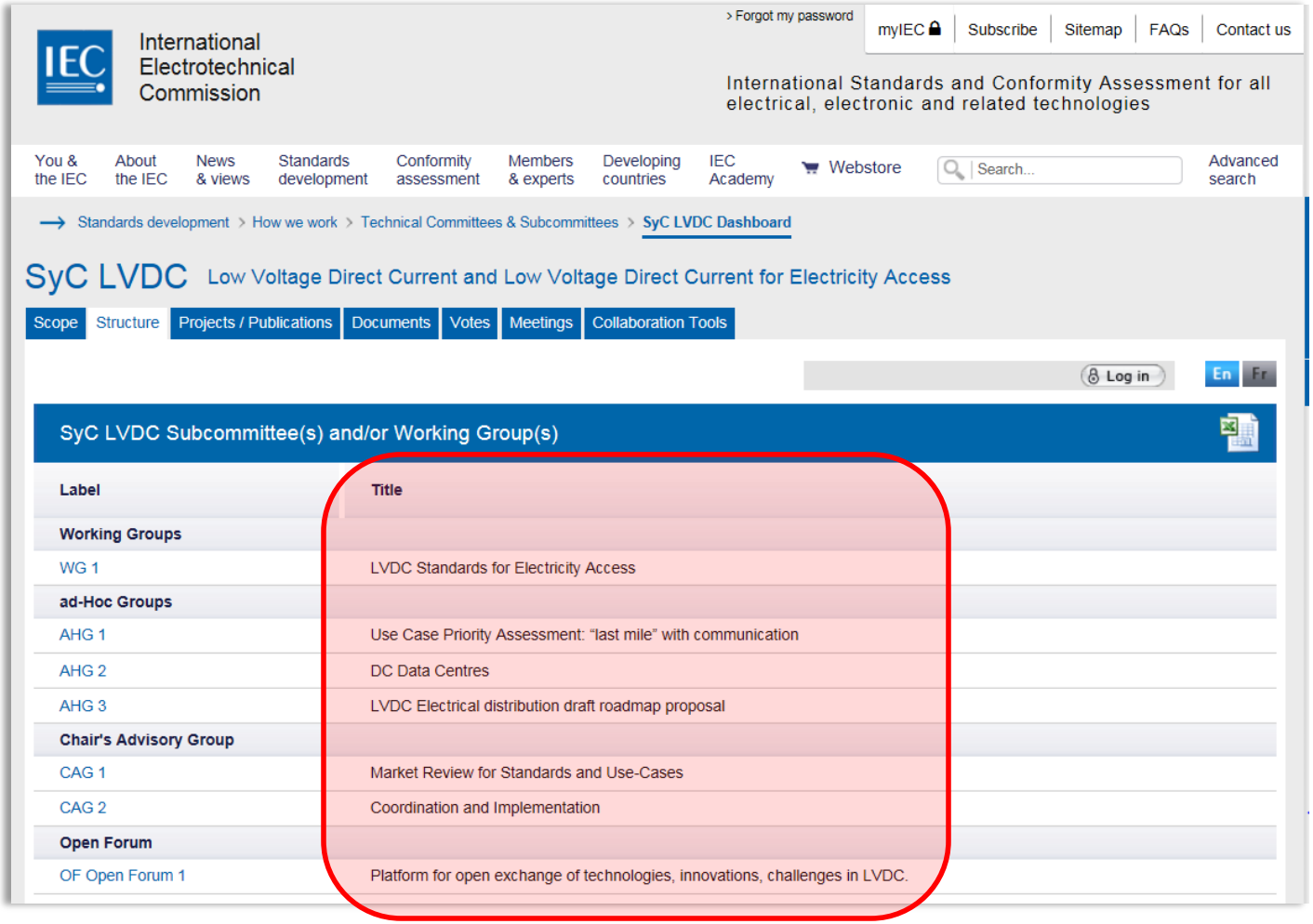
Standardization of LVDC incl. for electricity access



SEG 4 (used) to be open for everybody:
SyC LVDC is for members only

…Two main market drivers

SyC LVDC
Subcommittees and Working Groups



SyC LVDC
Subcommittees and Working Groups

Title & Task

WG 1

LVDC Standards for Electricity Access

Federate specifications and standardization work on Electricity Access
- Develop Systems Level publications for electricity access
- Engage and Coordinate with TCs to embed Electricity Access provisions in existing publications.
- Engage electricity access practitioners to seek ground level experiences and expectations

(from SyC LVDC)

Title & Task

AHG 1

Use Case Priority Assessment: "last mile" with communication

1. Validate the priority of the said Use Case
2. If considered significant, write use-case and scope for standardization (if needed) and which TC to do the work?
3. Review (list) current standards available in the area.

Title & Task

AHG 2

DC Data Centres

Title & Task

AHG 3

LVDC Electrical distribution draft roadmap proposal

SyC LVDC
Subcommittees and Working Groups

Title & Task
CAG 1
Market Review for Standards and Use-Cases
Provide recommendations about the following matters: Scan and review external environment and industry for needs for standardization • Highlight areas for future external cooperation with external stakeholders • Promote IEC's LVDC standardization work and standards • Use-case listing, mapping and prioritization • Participate to define Program of Work (PoW) and Strategic Business Plan (SBP)

Title & Task
CAG 2
Coordination and Implementation
Provide recommendations about the following matters: • Coordinate between TCs/SCs and other groups in IEC • Review and highlight overlap of work • Support work of the SyC • Coordination of Maintenance of Existing publications • MT for Existing standards to harmonize Voltages • Participate to define Program of Work (PoW) and Strategic Business Plan (SBP)

Current Work in progress: domains

Topic	Expert	Organization or Company
LVDC Voltages and Systems Aspects	Herve Rochereau	Chair, IEC/TC8
Protection Technology and Development Trend of LVDC Equipment	Jisheng Sun	Technical director, SEARI
DC Devices and Safety	Wim de Kesel	Secretary, IEC/TC23
Application of DC Energy Storage Technology in Grid-connected Photovoltaic system	Yunfeng Liu	Director of energy R&D department, Huawei Technologies Co., Ltd.
The status of LVDC in Solar Inverter Application	Jun Xu	Technical director, Sungrow Power Co.,Ltd

Current Work in progress : domains

LVDC Safety of Installations	Jacques Peronnet	Chair, IEC/TC 64
LVDC Technology Application in Micro Grid	Zhao Ma	Chief expert, State Grid, China
New Systems Approach of Standardization	Gennaro Ruggiero	Secretary, IEC/SyC LVDC
LVDC device R&D Or LVDC application usecase	Bai Li	Technical director, Shanghai Liangxin Electrical Co., Ltd.
LVDC for Electricity Access, Opportunities and Standards	Rajeev Sharma	Chair, IEC/SyC LVDC /WG1
LVDC Distribution Standardization	Xiaodong Yuan	State Grid, China

Current work in progress Electricity Access

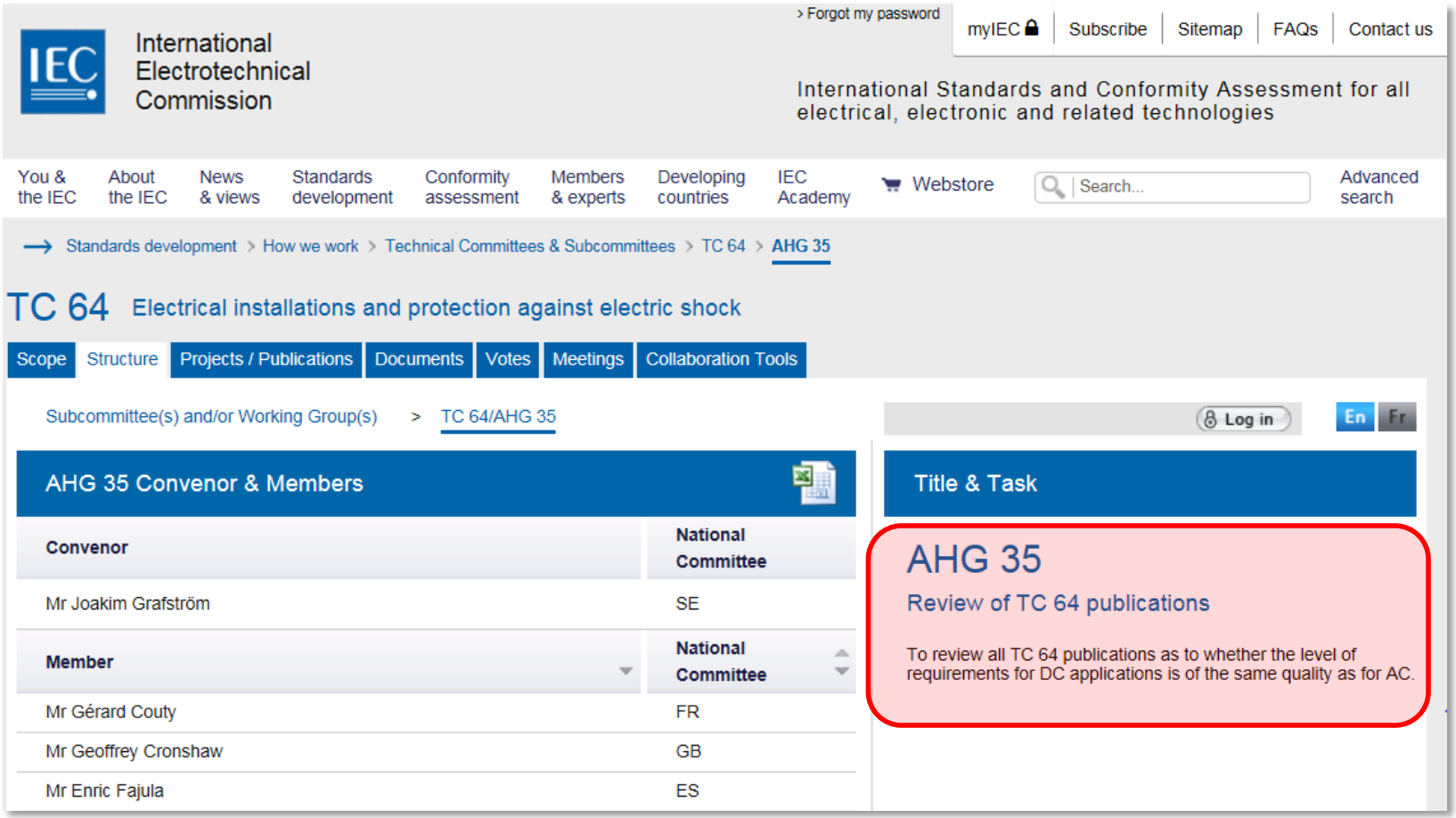
MB/NC	Line number (e.g. 17	**Clause/ Subclause** (e.g. 3.1)	Paragraph/ Figure/ Table/ (e.g. Table 1)	Type of comment	Comments	Proposed change	Observations of the secretariat	CAG1 Meeting 2018-03-28
IN		Clause 73(LVDC for Electricity Access)		Ge	Subjects to be taken up for LVDC standardisation on priority needs to be elaborated.	1. As an urgent requirement, an International Standard addressing requirements of Electricity Access for 48V ELVDC System of Tier-2 and Tier 3 SEforALL multi-tier framework needs to be developed. 2. Subsequently following subjects related to LVDC standardization need to be taken-up on priority. 1. Standards for 380V (or any suitable voltage) for high power application	Suitable text will be included in the SBP as 'future areas of standardization'. We also encourage WG1 to review this information in its SBP and PoW.	To address in the CAG1, together with highlighting the needs of developing use cases in SyC LVDC (explore possibilities of large workshop to invite relevant TC to develop use cases) The comment from India should be part in the SBP in parts regarding electricity access To convey from WG1

Current work in progress
Grid Connected LVDC

MB/NC	Line number (e.g. 17	**Clause/ Subclause** (e.g. 3.1)	Paragraph/ Figure/ Table/ (e.g. Table 1)	Type of comment	Comments	Proposed change	Observations of the secretariat	CAG1 Meeting 2018-03-28
						2. Standards for Grid connected LVDC systems. 3. Standards for DC appliances; • Desert coolers • Fans • LED lighting • Domestic kitchen appliances such as Mixer, Grinder etc. • Small TV set • Mobile charger • Plugs and sockets • Wires can cables	Ref your comment c) These standards may be referred to respective TCs. If appropriate TCs do not exist, please highlight and this can be discussed in SyC LVDC to see how to take such matters forward.	SyC LVDC secretariat to invite the TCs to come Hangzhou

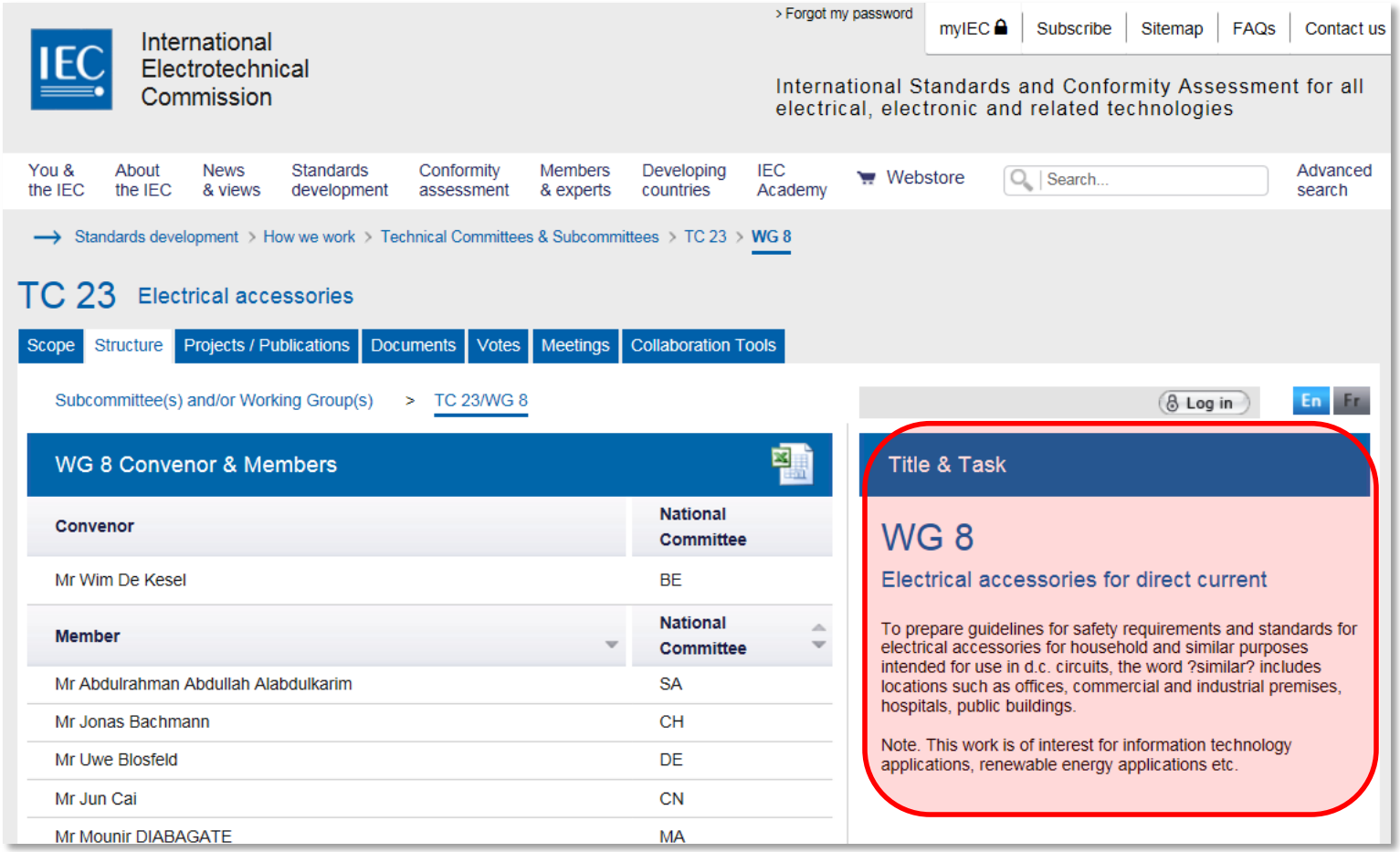
TC 64 (safety) ad hoc Group 35

http://www.iec.ch/dyn/www/f?p=103:14:7327299677510::::FSP_ORG_ID,FSP_LANG_ID:6625,25

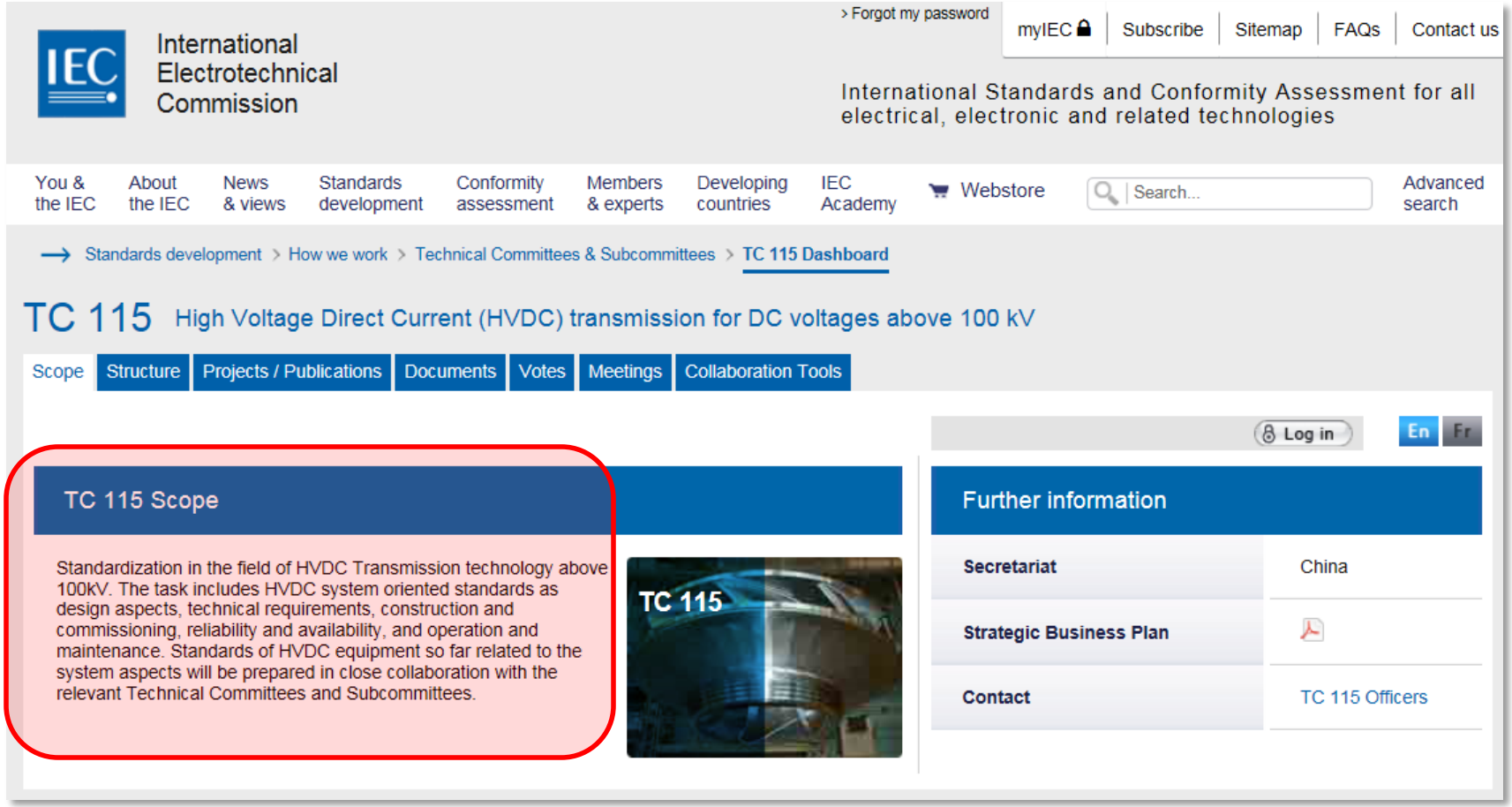


TC 23 WG 8
Electrical Accessories for DC

http://www.iec.ch/dyn/www/f?p=103:14:7327299677510::::FSP_ORG_ID,FSP_LANG_ID:1887,25



TC 115 HVDC transmission for DC



HVDC Structure 1/2

Strategic Business Plan HVDC: http://www.iec.ch/public/miscfiles/sbp/115.pdf

Advisory Group, Working Groups and Maintenance Teams:

AG 1: Road map on standardization of HVDC technology

WG 2: Reliability and availability evaluation of HVDC systems

WG 3: Electromagnetic performance of high-voltage direct current (HVDC) overhead transmission lines

WG 4: Guidelines on Asset Management for HVDC Installations

WG 5: Guideline for the System Design of HVDC Converter Station with Line-commutated Converters (LCC)

WG 6: Guidelines for operation and maintenance of line commutated converter (LCC) HVDC converter station

WG 7: DC side harmonics and filtering in HVDC transmission systems

MT 8: Design of earth electrode stations for high-voltage direct current (HVDC) links - General guidelines

WG 9: High voltage direct current (HVDC) power transmission- System requirements for DC-side equipment - Part 1: Using line-commutated converters

WG 10: Planning of HVDC systems

HVDC Structure 2/2

WG 11: Performance of voltage sourced converter based high-voltage direct current transmission – Part 1: Steady-state

JWG 22: Atmospheric and altitude correction (managed by TC 42)

JMT 1: High voltage direct current (HVDC) substation audible noise (linked to SC 22F)

JMT 3: Maintenance of IEC 60919-1 Ed.3 Performance of high-voltage direct current (HVDC) systems with line-commutated converters - Part 1: Steady-state conditions (managed by SC 22F)

JMT 7: Revision of IEC/TS 61936-2 Power installations exceeding 1 kV a.c. and 1,5 kV d.c. - Part

BECAUSE STANDARDS MATTER...

CEB BEC

Global Gateway to Electrotechnical Standards in Belgium

www.ceb-bec.be
centraloffice@ceb-bec.be
Serge.noels@ceb-bec.be
Thierry.deleeuw@ceb-bec.be
Marc.delens@ceb-bec.be
+ 32 2 706 85 70