

**CIGRE Study Committee B2**

**PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP**

<b>WG<sup>1</sup> N° B2.81</b>	<b>Name of Convenor:</b> Árni Björn Jónasson (ICELAND) <b>E-mail address:</b> arni.bjorn.jonasson@norconsult.com
<b>Strategic Directions<sup>2</sup>:</b> 2, 3	<b>Sustainable Development Goal<sup>3</sup>:</b> 7, 9, 11, 13
<b>The WG applies to distribution networks:</b> <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	
<b>Potential Benefit of WG work<sup>4</sup>:</b> 2, 5, 6, 7	
<b>Title of the Group:</b> Increasing the Strength Capacity of Existing Overhead Transmission Line Structures	
<p><b>Scope, deliverables and proposed time schedule of the WG:</b></p> <p><b>Background:</b></p> <p>In many countries the TSOs (transmission system operators) have been facing strong restrictions to enable new corridors for the implementation of new overhead transmission line projects. The solution, in most of the cases, has been to use existing right of ways for increasing power transfer capability by means of upgrading and uprating overhead line projects. In the majority of those cases, reinforcements on the supports are required. In other circumstances, just “refurbishment” or “life extension” procedures are viable, even though, being valuable measures to extend the life of those still important assets. From another perspective, high winds and ice storms and possible climate changes that have triggered failures of structures during the last decades, have resulted in extensive operations organized by TSOs to promote upgrading studies to strengthen transmission lines structures and/or their foundations. The goal of this WG is reviewing the CIGRE TB 230 - <i>Assessment of Existing Overhead Line Supports</i>, to collect and register recent methods and techniques that have been used to upgrade the structural strength capacity of the transmission line structures (case studies) to fulfil the existing demands.</p> <p><b>Scope:</b></p> <ol style="list-style-type: none"> <li>1. Prepare a questionnaire to register the main methods that have been currently been used for strengthening existing structures at various voltage levels, reliability levels, conductor and circuit configurations. The questionnaire would ask the reasons for the reliability and upgrading studies of the structures carried out, and the research that was done before general methods were accepted. Based on the answers, the WG will prepare a TB containing a comprehensive description of all methods reported for strengthening the structures.</li> <li>2. The WG shall discuss the design parameters, specific design considerations (for example serviceability criteria) and best design practices in upgrading, safety, refurbishment or life extension of transmission line structures.</li> <li>3. A description on methods and materials used for reinforcing transmission line structures will be provided.</li> <li>4. Research before strengthening, when available will be outlined and listed.</li> </ol>	

5. Different reinforcing methods for upgrading supports in existing projects will be evaluated, as well as different strengthening methods to increase structures ability to withstand meteorological parameters. Influence on foundations will be described.

6. Life cycle costs analysis of different methods versus new structures will be outlined.

7. Environmental impact of upgraded structures will be discussed.

**Deliverables:**

- Technical Brochure and Executive Summary in Electra
- Electra Report
- Future Connections
- CSE
- Tutorial
- Webinar

**Time Schedule:** start: July 2020

**Final Report:** October 2023

**Approval by Technical Council Chairman:**

**Date:** May, 23rd, 2020



Notes: <sup>1</sup> Working Group (WG) or Joint WG (JWG), <sup>2</sup> See attached Table 1, <sup>3</sup> See attached Table 2 and CIGRE reference Paper: Sustainability – at the heart of CIGRE's work. <sup>4</sup> See attached Table 3

**Table 1: Strategic directions of the Technical Council**

1	The electrical power system of the future reinforcing the End-to-End nature of CIGRE: respond to speed of changes in the industry by preparing and disseminating state-of-the-art technological advances
2	Making the best use of the existing systems
3	Focus on the environment and sustainability (in case the WG shows a direct contribution to at least one SDG)
4	Preparation of material readable for non-technical audience

**Table 2: Environmental requirements and sustainable development goals**

	CIGRE selected the 7 SDGs that are the most relevant to CIGRE. In case the WG work refers to other SDGs or do not address any specific SDG, it will be quoted 0.
0	Other SDGs or not applied
7	<b>SDG 7: Affordable and clean energy</b> Increase share of renewable energy; e.g. expand infrastructure for supplying sustainable energy services; ensure universal access to affordable, reliable, and modern energy services; energy efficiency; facilitate access to clean energy research and technology
9	<b>SDG 9: Industry, innovation and infrastructure</b> Facilitate sustainable infrastructure development; facilitate technological and technical support
11	<b>SDG 11: Sustainable cities and communities</b> Increase attention on sustainable and resilient buildings utilizing local (raw) materials, power for electric vehicles, strengthening long-line transmission and distribution systems to import necessary power to cities, developing micro-grids to reinforce the sustainable nature of cities; protect and safeguard the world's cultural and natural heritage; reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and waste management
12	<b>SDG 12: Responsible consumption and production</b> E.g. Promote public procurement practices that are sustainable; address reducing use of SF6 and promote alternatives, encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting cycle, address inefficient fossil-fuel subsidies that encourage wasteful consumption
13	<b>SDG 13: Climate action</b> E.g. Increase share of renewable or other CO <sub>2</sub> -free energy; energy efficiency; expand infrastructure for supplying sustainable energy; strengthen resilience and adaptive capacity to climate-related hazards and natural disasters; integrate climate change measures into national policies, strategies and planning; improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
14	<b>SDG 14: Life below water</b> E.g. Effects of offshore windfarms; effects of submarine cables on sea-life
15	<b>SDG 15: Life on land</b> E.g. Attention for vegetation management; bird collisions; integration of substations and lines into the landscape

**Table 3: Potential benefit of work**

<b>1</b>	Commercial, business, social and economic benefits for industry or the community can be identified as a direct result of this work
<b>2</b>	Existing or future high interest in the work from a wide range of stakeholders
<b>3</b>	Work is likely to contribute to new or revised industry standards or with other long term interest for the Electric Power Industry
<b>4</b>	State-of-the-art or innovative solutions or new technical directions
<b>5</b>	Guide or survey related to existing techniques; or an update on past work or previous Technical Brochures
<b>6</b>	Work likely to contribute to improved safety.