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Leaders of the global electrical power sector believe that the international electrical power industry is facing new challenges. The energy sector is currently experiencing new trends that are significantly affecting the current business models. These new trends merge and sum up with the essential priorities of ensuring security of supply while providing affordable energy for all in a sustainable and environmentally friendly manner. Among such main trends there are:

- growth of renewable energy generation and technological development acceleration;
- development of distributed generation;
- use of demand-side energy-efficient solutions enhancement;
- use of the internet and modern telecommunication technologies to manage both the system and consumption patterns;
- appearance of new classes of consumption and usage, such as electric vehicles, smart houses, etc.

Among the most critical technical issues of supplying residential, commercial and industrial electricity consumers, the industry must address:

- new flexibility needs and a stronger integration between conventional and intermittent sources;
- higher load volatility, leading to major fluctuations in electricity rates in some countries;
- geographical imbalances between power production and consumption.

Unless properly addressed, these trends might represent significant financial and operational challenges, and at the same time represent major uncertainties for the development of the future energy systems.

In this context, there are many signs that a transition to a new paradigm of the electricity industry is in front of us.

The Global Sustainable Electricity Partnership (GSEP) is committed on all of these issues and is actively working on identifying the appropriate solutions for all the categories of electricity users. As these issues are directly relevant to GSEP's mission and overall vision the GSEP seeks to take a leading role in finding solutions by involving major stakeholders at the global level.

GSEP believes that creating the energy systems of the future means successfully maintaining and improving the efficiency and effectiveness of traditional generation while also managing the challenges facing the sector today.

Looking forward, we see an effective solution in the creation of flexible and adaptive energy systems consisting of several key elements: energy storage and smart grid solutions well integrated with electricity generation and distribution systems, regional energy hubs and long-range ultra-high-voltage (UHV) lines. A more reliable and efficient electric grid should be a solid foundation consolidating these components.

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Such adaptive energy systems of the future would facilitate the seamless integration of renewable energy and distributed generation with existing plants, while also providing much better tools for volatility management. They would also help to reduce systemic geographical imbalances and assure efficient power usage by bringing power generation closer to consumers.

Also the regulatory systems together with market models should be adapted to allow the spreading and development of new technologies, while maintaining regulatory stability and transparency to reduce overall costs and risks, avoid free-riding, and promote efficient investments.

To achieve the vision of this adaptive energy system, GSEP believes that effective, reliable technology roadmaps are key for a successful transformative move. GSEP sees the importance of involving government authorities, international forums and industry associations on a global scale in joint efforts to share and implement such technology roadmap.

On their part, GSEP members have agreed to undertake coordinated actions toward the sustainable development of more flexible and adaptive energy systems. Specifically, GSEP members are committed to:

- promoting and supporting R&D by leveraging the engineering competencies of existing GSEP working groups in order to promote best practices in developing innovative solutions for adaptive energy systems;
- promoting reliance on these best practices by key policy- and regulation-makers;
- subsequently leveraging GSEP's global influence to gradually promote adoption of the new regulations within the energy sector;
- conducting public/government relation activities to promote the GSEP's overall vision for energy systems of the future among key global stakeholders.

GSEP is convinced that active steps will remove the obstacles to achieving sustainable development in the power industry and promote investments. Addressing current challenges will require a coordinated global effort among all stakeholders. GSEP is firmly committed to playing a leading role in this process.

**About the Global Sustainable Electricity Partnership (GSEP):**

*The Global Sustainable Electricity Partnership (GSEP) is a non-profit organization composed of the leading international electricity companies. Our mission is to play an active role in global electricity issues in an international framework and to promote sustainable energy development.*

*Working with local partners and key international organizations, we develop projects and capacity-building activities in developing nations that allow our members to share their field-proven expertise in the effective deployment of low-carbon technologies and implementation of energy access initiatives with their counterparts in developing countries.*

*Our members are: American Electric Power (United States); Comisión Federal de Electricidad (Mexico); EDF (France); Eletrobras (Brazil); ENEL S.p.A. (Italy); Hydro-Québec (Canada); Iberdrola, S.A. (Spain); JSC RusHydro (Russia); Kansai Electric Power Company, Inc. (Japan); RWE AG (Germany); SGCC (China); and Tokyo Electric Power Company, Inc. (Japan).*