



Enhancing the Utility System Resiliency

Moderator Pitch

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The increased frequency, severity, and impact of physical events highlight the growing concerns facing energy production, distribution & critical infrastructure



How to ensure resilience?

Dynamic trends-

- **Risks are driving system design and adaptation** in warped and critical ways
- Interactions across **multi-jurisdictional and subsystems critical**
- **Overcoming:** System vulnerabilities, Supply chain vulnerabilities, Resource vulnerabilities, and Market vulnerabilities
- **Integrating equity** considerations requires new questions, linkages, and supports

Things to consider-

- Where in my network is at greatest risk?
- What infrastructure should be prioritized for hardening? How much downtime can be expected for critical infrastructure?
- How to conduct criticality analysis: Target investment where it matters most? How should it be invested?
- What changes call for shifting perspectives in order to broaden our perspectives?



Stochastic events



Hazard



Exposure



Vulnerability



Financial



FOUNDING PARTNERS



Call for Actions & Way Forward

20 - 21 February 2023

Sustainable Transformation of Utilities



Strengthen infra-resilience governance

Risk Assessment & Resilience Planning

Improve data collection and sharing

Adequate financing mechanism

Capacity Building

- Improve outcomes
- Create comprehensive roadmaps
- Integrate Resilience
- Tool to support legislations & regulations

- Identify & manage risks.
- Update & Introduce regulations/codes/std
- Adopt whole of system approach
- Align outcomes for regulators/utility/Owners

- Integrate disaster & climate risk into the maps
- Equitable access & standardize natural hazards/climate risk data & EWS

- Incorporate resilience risk into infrastructure investment
- Adequate financing
- Develop tools to justify resilience's economic benefits that outweigh its costs.

- Support knowledge development /building capacity of local institutions
- Develop capacity for interpreting climate and disaster risk for infrastructure





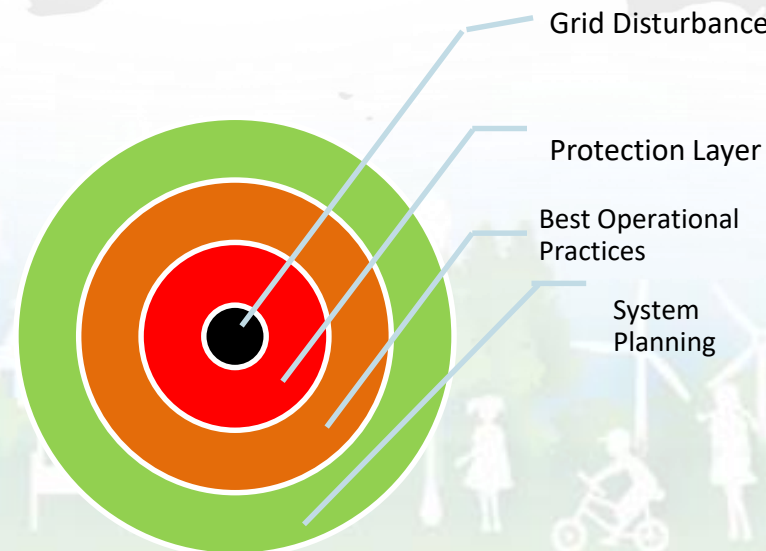
Grid Operation

Major grid disturbances across the globe[@]

Sl. no	Black out	Population affected - Millions	Country	Incidence date
1	2023 Pakistan blackout	230	Pakistan	January 23, 2023
2	2022 Pakistan blackout	200	Pakistan	October 13, 2022
3	2022 Bangladesh blackout	140	Bangladesh	October 4, 2022
4	2021 Pakistan blackout	200	Pakistan	January 9, 2021
5	2020 Sri Lankan blackouts	21	Sri Lanka	August 17, 2020
6	2019 Venezuelan blackouts	30	Venezuela	March 7, 2019–July 23, 2019
7	2019 Java blackout	120	Indonesia	August 4–5, 2019
8	2019 Argentina, Paraguay, and Uruguay blackout	48	Argentina, Paraguay, Uruguay	June 16, 2019

@ https://en.wikipedia.org/wiki/List_of_major_power_outages

- Interconnection of the power utility networks, has resulted in the better usage of the natural resources, optimization in the infrastructure, and enhancing the security and stability of the grid.
- However, this interconnection has also resulted in affecting the major population when un-foreseen grid disturbances occur.
- It can be observed that with higher interconnection, if the grid disturbance results in the major cascaded tripping in the network, more and more populations are vulnerable to such disturbances.



Disaster Funding

- In many countries the disaster risk concerns are integrated into the government budgets to ensure that levels of public expenditure on risk reduction are sufficient and that there are adequate financial arrangements to manage the residual risk.
- The schema of funding for disasters is expected to provide a dependable source of assistance to meet their disaster response, relief, recovery, and reconstruction needs.

