Submission by the Coalition for Disaster Resilient Infrastructure (CDRI) regarding views on opportunities, best practices, actionable solutions, challenges and barriers relevant to the Eighth Global Dialogue and Investment-focused Event under the Sharm el-Sheikh mitigation ambition and implementation work programme.

Introduction

Decarbonization efforts are entering a capital-intensive phase. To meet the Paris Agreement mitigation ambition, there is need for Disaster Resilient Infrastructure and Systems, especially those using renewable energy, green hydrogen technologies, carbon capture technologies, and new transmission and grid infrastructure. Much of this infrastructure is yet to be built, in a world with increasing frequency of extreme events. This is an opportune moment to lock in resilience in decarbonation frameworks through resilient infrastructure.

The Coalition for Disaster Resilient Infrastructure (CDRI) welcomes the opportunity to highlight the need to consider Disaster Resilient Infrastructure in the design, implementation, and accounting of mitigation infrastructure, ensuring life-long outcomes from the mitigation investments.

Opportunities, best practices, and actionable solutions (Discussion Area 1)

Quality infrastructure standards

The International Renewable Energy Agency (IRENA)'s 2025 guidance on renewable power systems shows the growing exposure of solar photovoltaic and wind assets to negative impacts of climate change and other disasters and sets out standards and codes to ensure resilience of this infrastructure[1]. As the share of electricity in final energy consumption rises from 23 percent in 2022 to a projected 52 percent by 2050, good engineering will come to determine whether the wider mitigation pathway holds[2].

Decentralized, dual-use design

CDRI Fellowship aided research on agrivoltaic systems in Nagpur, India, found that co-locating solar generation with agricultural land, connected through microgrids, sustained power for irrigation and processing through grid failures caused by extreme weather, while resolving land-use competition between energy and food production[3]. The same design principle of using decentralized, dual-use, microgrid-connected generation, transfers directly to energy-intensive production sites and special economic zones, seeking to cut emissions and single points-of-failure together, rather than in sequence.

Risk-informed technology and siting choices

CDRI's Global Infrastructure Risk Model and Resilience Index (GIRI) produces publicly available, comparable financial risk metrics across infrastructure sectors, against the full range of climate

[1] IRENA (2025). Quality infrastructure for renewables facing extreme weather. https://www.irena.org/Publications/2025/May/Quality-infrastructure-for-renewables-facing-extreme-weather
[2] IRENA (2025). Enhancing resilience: Climate-proofing power infrastructure. https://www.irena.org/Publications/2025/Dec/Enhancing-resilience-Climate-proofing-power-infrastructure
[3] CDRI Fellowship (2025). Feasibility Study for Agri-Voltaic Energy Security in India. https://cdri.world/fellowship/feasibility-study-for-agri-voltaic-energy-security-in-india/

and geophysical hazards[4]. Currently, this aspect of evaluating siting choice is missing in most decarbonization technology roadmaps.

Challenges and Barriers

i. **Physical exposure of new assets:** The renewable energy infrastructure that decarbonization depends on, faces the same hazards as the fossil fuel infrastructure it replaces, and is not yet consistently designed to withstand them.

ii. **Concentrated, disruptable supply chains for technologies that mitigation depends on:** Green hydrogen depends on platinum and iridium for electrolyser manufacture[5], both concentrated in a small number of source countries and trade routes. Modelling of European Union (EU) hydrogen import planning finds that ignoring supply disruption risk in infrastructure planning produces welfare losses of around 12 percent, equivalent to EUR 24 billion, compared with risk-aware planning[6].

iii. **Disproportionate exposure in Small Island Developing States (SIDS):** CDRI's Global Infrastructure Resilience (GIR) working paper on SIDS finds disproportionately high average annual losses concentrated in the energy and telecommunications sectors, driven by limited land area, small economic scale, and the concentration of infrastructure on exposed coastlines[7]. This is the same infrastructure any SIDS decarbonization build-out would have to rely on.

Crosscutting issues: synergies, trade-offs, and co-benefits (Discussion Area 2)

Decentralized generation is a synergy: it lowers emissions and lowers risk exposure through decentralized, dual-use design choices. Concentrated technology supply chains are a trade-off: relying on a few centres of mineral production or component manufacturing speeds deployment but concentrates risk.

CDRI argues that resilience is a prerequisite for a transition that does not deepen existing inequality. Communities that reorganize around new renewable energy or low-carbon infrastructure inherit the resilience or fragility of the infrastructure those value chains are built on. International cooperation initiatives, such as the Leadership Group for Industry Transition (LeadIT)[8], are increasingly naming resilience as part of this picture rather than treating it as separate. CDRI would encourage the co-chairs to invite cooperation mechanisms under the work programme to adopt language with metrics attached, rather than leaving resilience as an adjective.

Specific needs and circumstances of developing country Parties

SIDS face a structural overlap. Mitigation infrastructure and disaster-exposed infrastructure are frequently the same. A single port or airport often serves as the lifeline for both existing trade and any future green fuel bunkering capacity. Multi-modal redundancy and early warning

[4] CDRI (2023). Global Infrastructure Risk Model and Resilience Index (GIRI). https://giri.unepgrid.ch/

[5] Potential vulnerability of US green hydrogen in a world of interdependent networks. PMC (2025). https://pmc.ncbi.nlm.nih.gov/articles/PMC12446187/

[6] Radke, S.M., Verpoort, P.C., Ueckerdt, F. & Musgens, F. (2025). Planning resilient hydrogen supply chains under disruption risk. https://arxiv.org/pdf/2606.09190

[7] CDRI (2025). GIR Working Paper: Small Island Developing States. https://cdri.world/global-infrastructure-resilience-working-paper/

[8] SEI. Leadership Group for Industry Transition. https://www.sei.org/projects/leadership-group-for-industry-transition-leadit/

systems for these nodes should be treated as part of the enabling environment for mitigation in SIDS, not discussed separately under adaptation.

Least Developed Countries face a financing problem as much as a technology one. CDRI's Action Agenda[9] recommends layered financing instruments such as blended concessional finance, parametric insurance, and risk-informed public investment frameworks, to close this kind of gap.

Experts, potential financiers, and investors

CDRI suggests the co-chairs consider the following for the eighth global dialogue and investment-focused event.

Resilience and risk analytics expertise

- CDRI
- INGENIAR Risk Intelligence and CIMA Foundation, members of the GIRI consortium
- IRENA

Financiers and investors

- Climate Investment Funds
- Green Climate Fund
- International Finance Corporation

Infrastructure operators

- Representatives from hard-to-abate sectors based in developing countries, to ground the dialogue's technology and finance discussions in deployment reality.

Conclusion

The Sharm el-Sheikh work programme was established to scale up mitigation ambition and implementation, without prescribing new commitments. Making that ambition durable depends on whether the underlying infrastructure is built to withstand impacts of climate change. With 75 percent of the infrastructure required by 2050 yet to be built, Parties have a choice between building resilient or fragile mitigation infrastructure. CDRI encourages Parties to use the eighth global dialogue to choose in favour of resilience.

Request to Parties and the UNFCCC Secretariat

CDRI confirms its availability to provide technical expertise, including GIRI analytics, to support the work of the UNFCCC on resilient mitigation infrastructure, and to serve as a thematic resource to future dialogues.

CDRI's analysis on Disaster Resilient Infrastructure, developed in parallel submissions to UNFCCC processes, provides further evidence to the recommendations made here, and is available to the UNFCCC and Parties on request.

[9] CDRI (2025). Action Agenda: Integrating Disaster Resilient Infrastructure in National Adaptation Strategies. https://cdri.world/action-agenda/

Submitted by: Coalition for Disaster Resilient Infrastructure (CDRI)

The Coalition for Disaster Resilient Infrastructure (CDRI) is a global coalition of 70 Members, comprising of national governments, international organizations, academia, and the private sector. CDRI is dedicated to enhancing the resilience of infrastructure systems to climate- and disaster risks.

To learn more about CDRI visit https://cdri.world/

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