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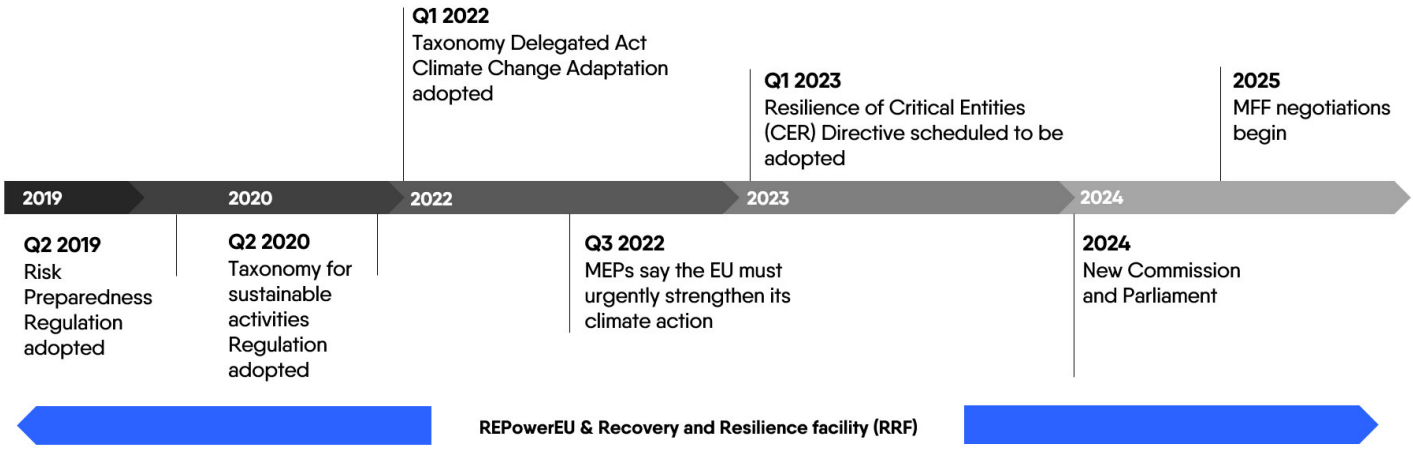
THE COMING STORM

Building electricity resilience to extreme weather

Eurelectric Policy Recommendations

POLICY CHANGE

A holistic perspective is required.
More has to be done to ensure the resilience of our electricity system



Overarching recommendations

Adaptation needs to be considered in partnership with Mitigation

- Mitigation and adaptation are two sides of the same coin and so should be coupled and considered together. Climate law, including Fit for 55 and other related instruments, should address adaptation in partnership with mitigation and not separately. A failure to reach decarbonisation goals could result in long-term increased climate adaptation costs, and a failure to adapt to climate change could be devastating for the European economy.

Policy makers need to take a holistic view to ensure stronger coordination and continuous communication between all power system stakeholders

- European countries and their NRAs need to appreciate that to achieve our decarbonisation targets with adapted and adequate resilience levels, they must plan with a long-term horizon and the perspective of a true Energy Union.
- The power system is closely interconnected, therefore, the fluent cooperation and development of all elements, notably coordination of services between network operators (TSO and DSO), is of utmost importance, as well as in close coordination with generators and other network users.

The regulatory framework for system operators, taxonomy screening criteria for private investments and resilience funding must encourage power system climate adaptation

- Incentivising resilience investments will ensure that customers can rely on a decarbonised power system capable of dealing with the effects of climate change.

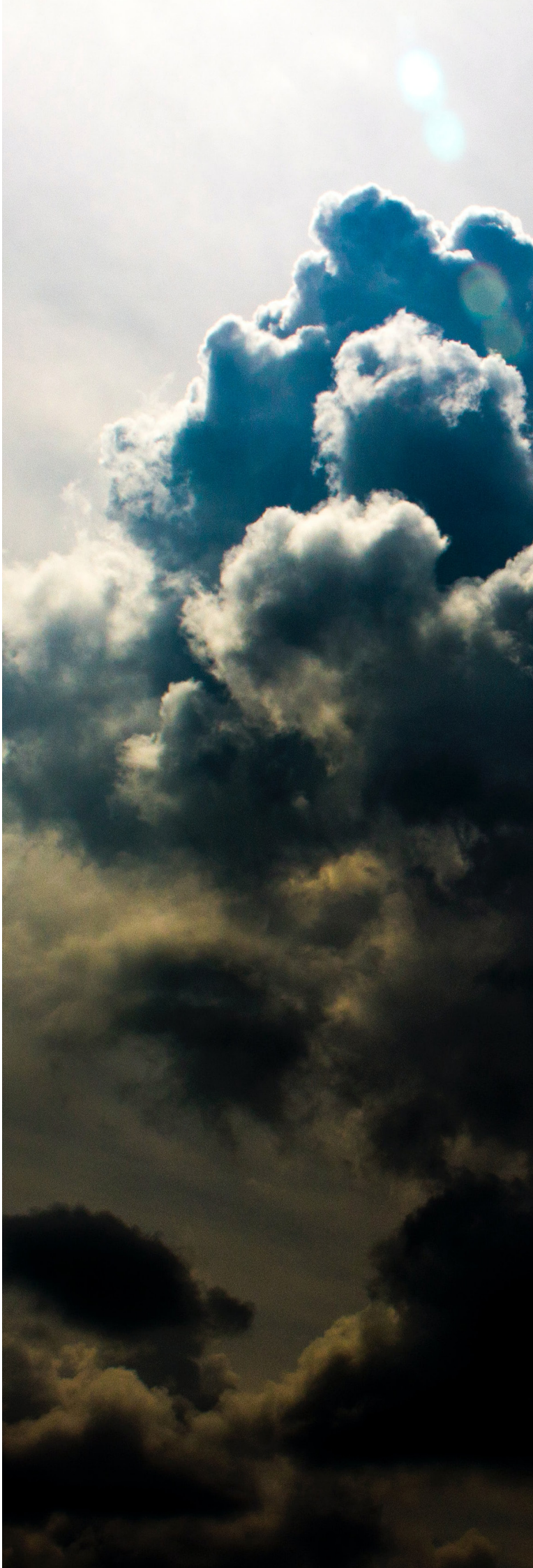
Regulators and Policymakers:

Incentivise resilience investments

- The current model of investments in our power infrastructure is clearly running out of road and we need to acknowledge that more anticipatory investments with a long-term planning horizon are ultimately cost efficient.
- Regulators and policymakers should promote a Resilience Incentive Mechanism to encourage utilities to pursue adaptation measures, such as physical system hardening, improvements in system operation, recovery planning, capacity building, and smart grid technologies like smart meters, remote control, and advanced automation.

Integrate national climate adaptation plans and company investment plans

- Regulators and system operators should cooperate to integrate climate-adaptation plans within multi-year investment plans to protect and upgrade electricity infrastructure.
- Digital investments by system operators should be remunerated and incentivised
- These investments include remote indication and control of networks down to low voltage level, automation, and control room support tools. These bring better visibility and reaction capabilities for quick, safe, and targeted restoration of power.



European Commission:

Re-organise climate adaptation EU funding

- Funding will help to encourage climate adaptation of the electricity sector, ensuring society can depend on a resilient electricity system as part of a fully decarbonised society. Existing funds should be amended to contribute to the required risk-preparedness investments.

Involve all energy sector stakeholders in Climate Adaptation

- Include the EU DSO Entity, as co-author with ENTSO-E, on any new tasks relating to electricity crisis scenarios and methodologies. Add suppliers, balancing responsible parties, and storage providers to the list of consulted stakeholders.
- Electricity market design needs to consider its effect on the resilience of the power system
- Market price signals have a central role in dispatch and investment decisions, affecting the share of renewable energy sources, the extent of centralised or distributed generation, and the strength and stability of the system during extreme weather events.
- Taxes and levies dilute and distort market price signals.
- Interventions in the market can undermine investor confidence and can cause increased costs in the long term.

Flexibility market design should go hand in hand with physical system design

- This will enable flexibility to support the system during extreme weather events.

System Operators & Generators:

Establish emergency management teams, with clearly defined roles, responsibilities, and resources, when an extreme event is forecasted to impact the power system

- The team should coordinate closely with national agencies responsible for event response to ensure a safe and successful restoration process.
- Improve forecasting and warning through better cooperation between different stakeholders. System operators should pre-mobilise appropriate resources to relevant areas.

System operators and generators should adopt a multimedia approach to providing information to the public, including traditional and social media.

- The communication process should be prompt and consistent, emphasising the safety risks to people and the estimated restoration time. System operators may use a map-based fault information system.

System operators and generators should consider redundancy in the design, operation and maintenance of the power system, accounting for dependencies

- Redundancy is required at all levels of power system design to ensure the continuity of all systems, such as telecommunication systems that support system operation, batteries in substations that facilitate restoration, and black start capabilities at generator sites.

Specific adaptation measures should use sound cost-benefit analysis and a consistent impact assessment framework.

- These measures can include flood protection of power system assets, system hardening, digital investments, and n-1 redundancy design, accounting for climate forecasts during the whole asset life cycle.

Support resource sharing between neighbouring system operators

- Encourage resource sharing agreements between neighbouring system operators to accelerate restoration of supply.

Customer flexibility and DER can support the system during extreme weather events

- Demand response can be used to solve local congestion. Microgrids, where permitted, can keep islands of network live during damage to the upstream network.

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