

# Scaling Energy Storage Breakfast

25 September 2024

Climate Week NYC, Sept 2024



# Hosts



**Thomas Birr**

Chief Strategy & Innovation Officer  
E.ON



**Ely Sandler**

Policy Advisor, Seagrass  
Fellow, Harvard Kennedy School



# Opening Remarks



**Thomas Birr**

Chief Strategy & Innovation Officer, E.ON





Background



# About Seagrass

Seagrass is a climate finance company, helping buyers to source carbon credits and deliver capital to high-integrity climate projects.

We're supporting clients across the voluntary and compliance markets, with holistic solutions that cover the entire carbon lifecycle:



Carbon Sourcing

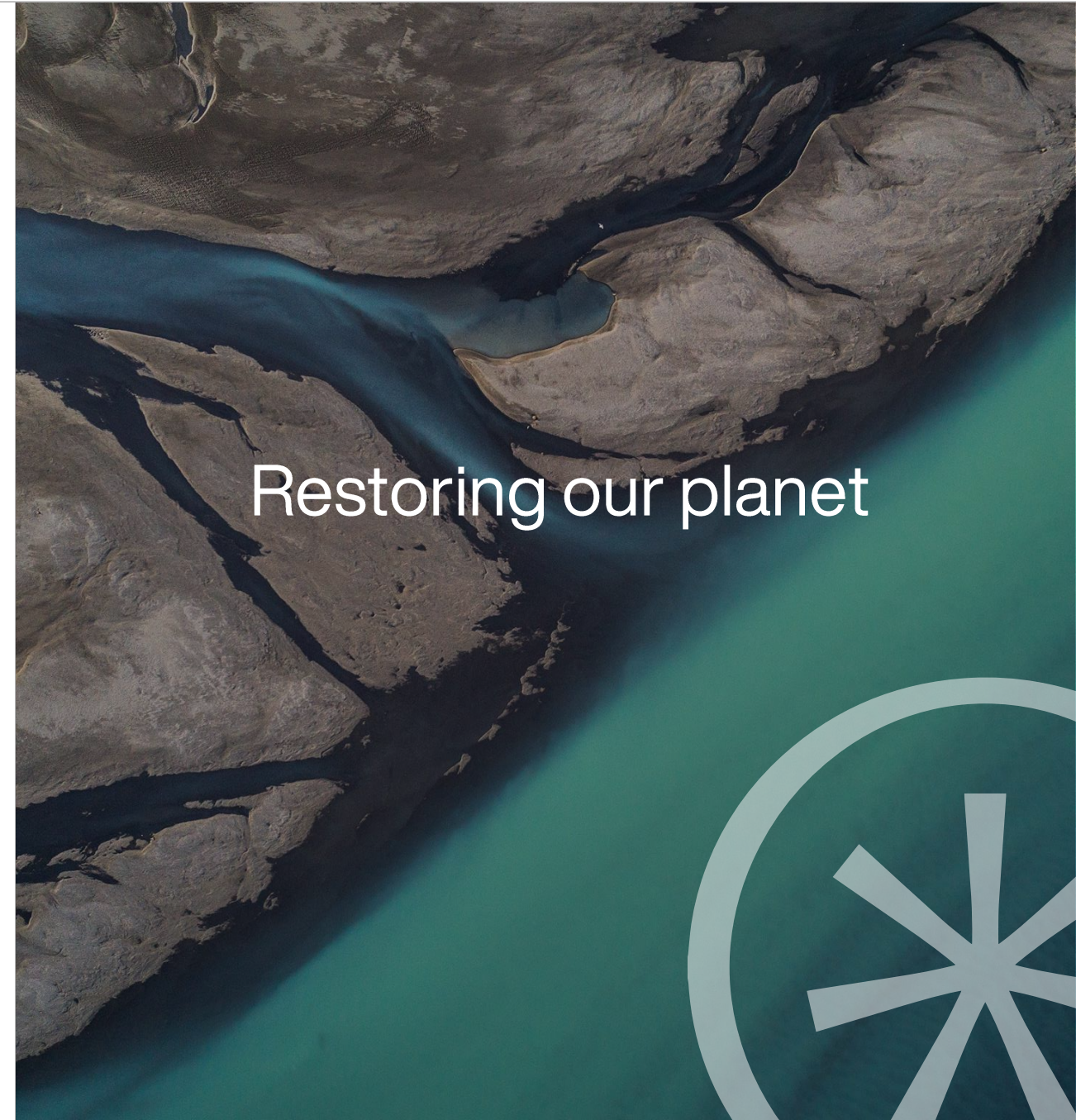


Carbon Strategy



Carbon Financing

We're a wholly-owned subsidiary of E.ON SE, one of Europe's largest energy and grid providers.



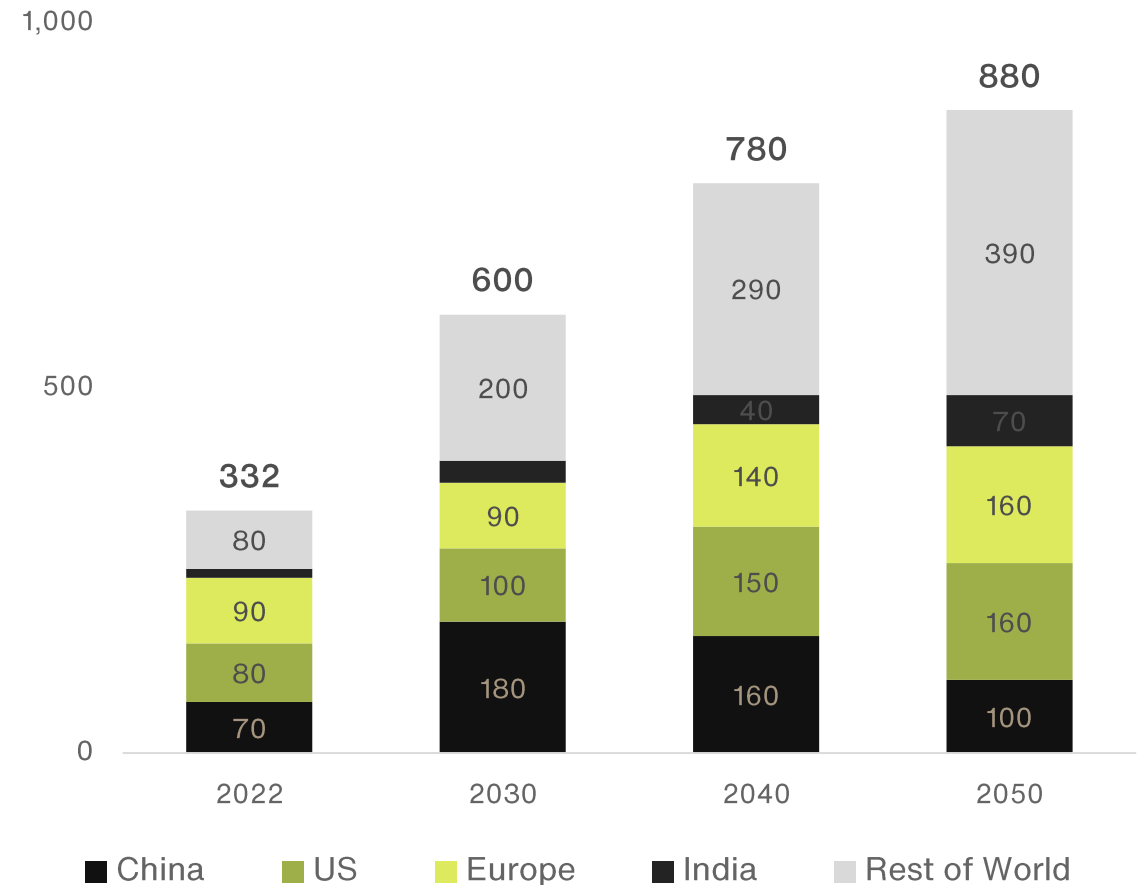
Restoring our planet

# Net zero requires huge grid investment, including in energy storage

## Global Annual Grid Capex Need (\$Bn)

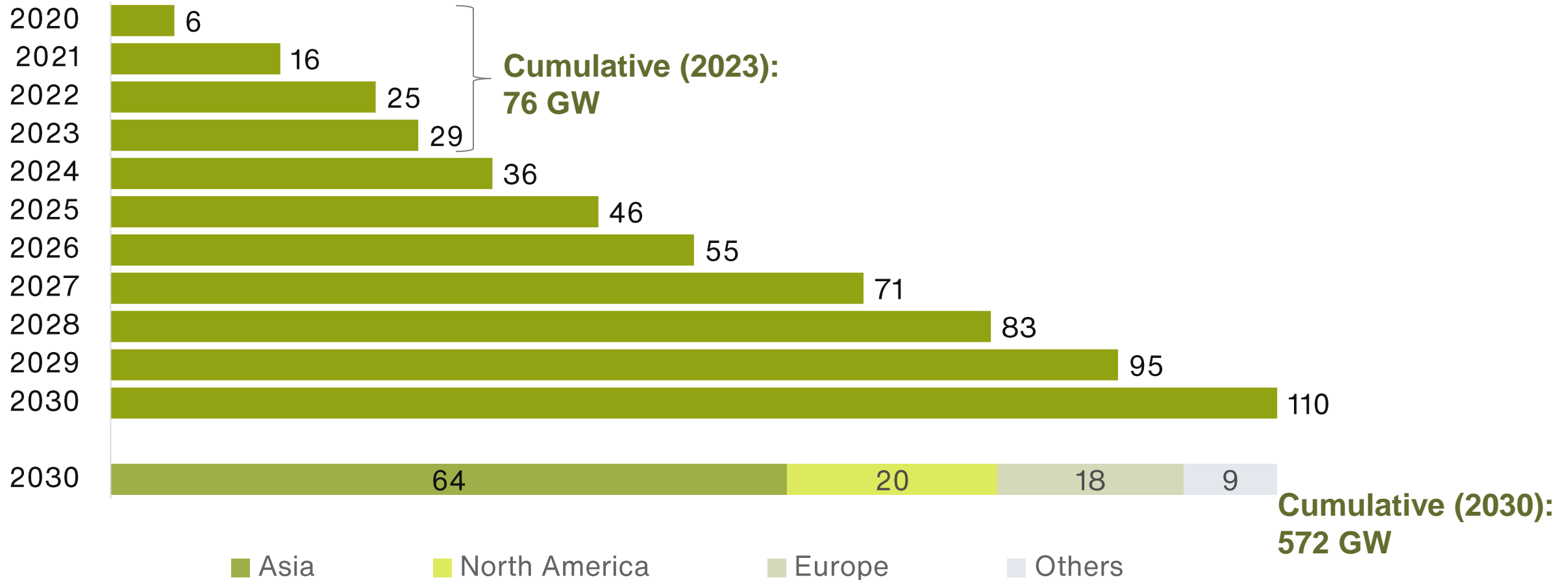
**(i) Electrify the economy**

**(ii) Decarbonise the grid**



# This investment represents a huge increase in battery financing

## Global Annual Capacity Additions (GW)



# We are leading research to scale energy storage investment

## Expert Interviews

**nationalgrid**

**IFC** | International  
Finance Corporation  
WORLD BANK GROUP

**HSBC**

**e-on**

**Kona Energy**  
DELIVERING THE ZERO CARBON FUTURE

**BARCLAYS**

**Environmental  
Defense  
Fund**

**REsurety**

**tierra**  
CLIMATE

**Gresham House**  
Specialist investment

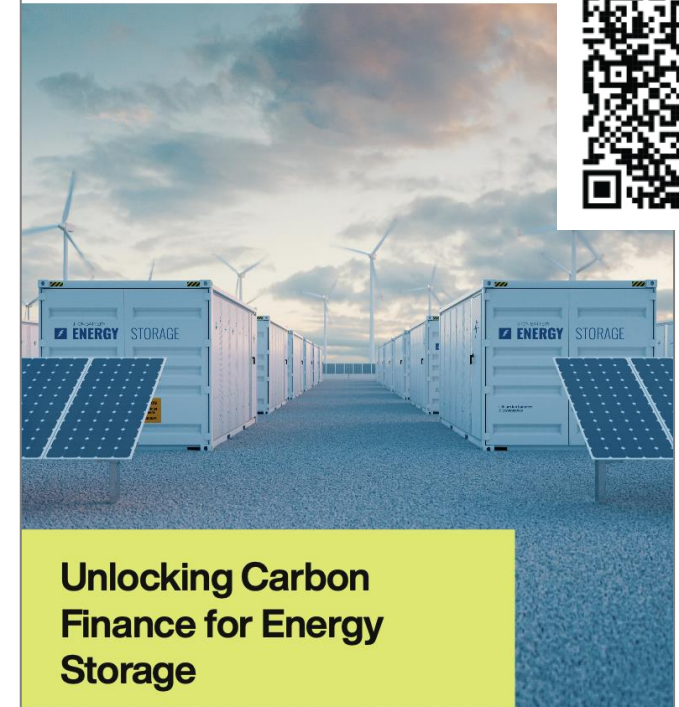
**Novuna** Business Finance

**modo**

**pwc**



⊛ SEAGRASS | **e-on**



## Unlocking Carbon Finance for Energy Storage

New policies to support the scale-up of storage and long-duration batteries



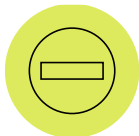
# Not all battery revenue streams are bankable, leading to under-investment and perverse incentives



Historically, **batteries relied heavily on a mix of capacity markets and ancillary services** such as frequency response, balancing services and congestion management.



As more batteries have come online, **competition makes these markets less profitable**, while increased renewable penetration can make energy markets more volatile, creating **opportunities for energy trading**.



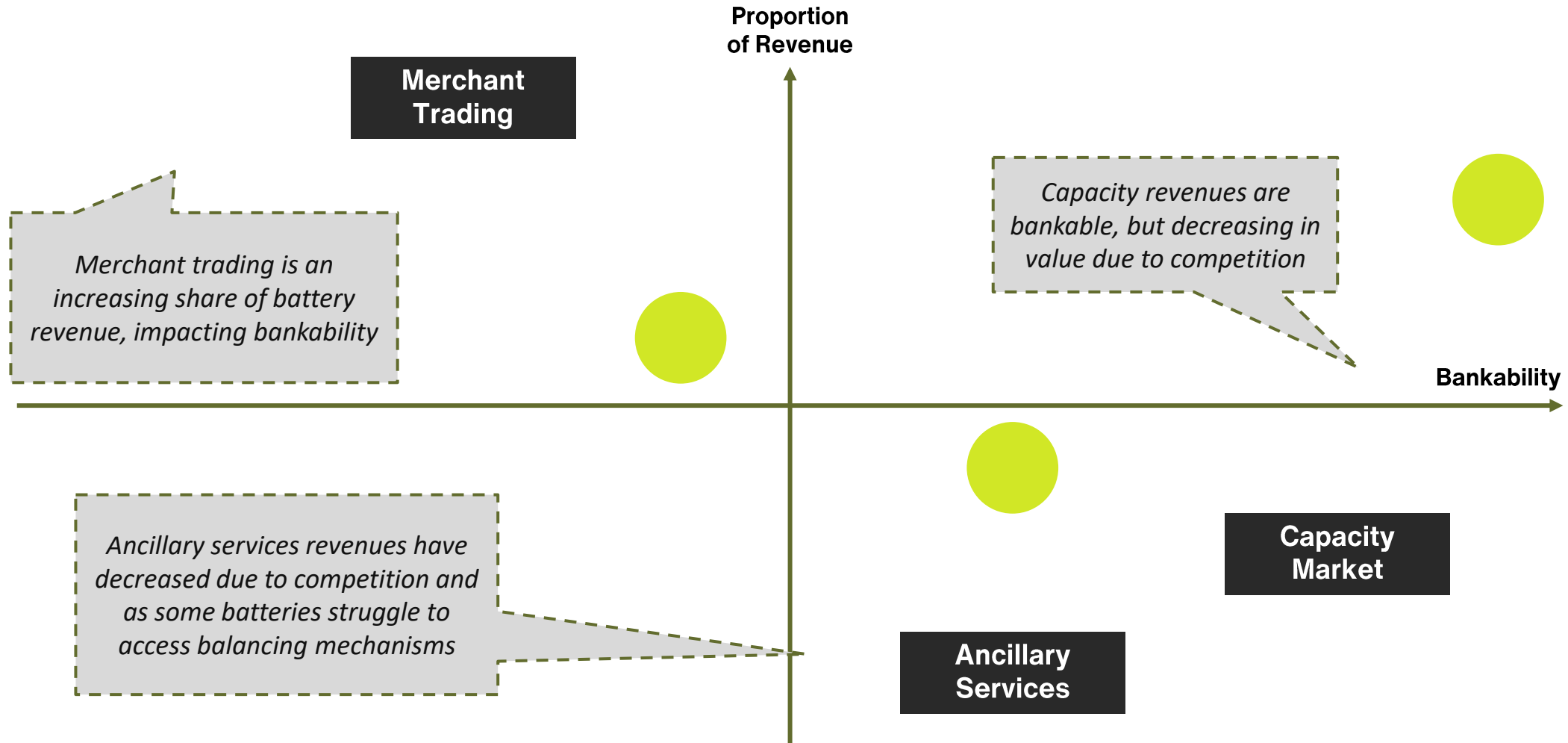
Energy trading revenue streams are often **less bankable or heavily discounted by investors**. This **constricts investment** and can also create **perverse incentives that limit emissions impact**.



This research analyzes how government policies could support battery business models to optimize emissions impact while also making batteries bankable for large investors.



# Shifts in revenues are impacting the bankability of batteries





# Policy support for batteries fits into three streams



**Improving Current  
Market Mechanisms**



**New Government  
De-Risking**



**Carbon Finance  
Subsidization**



# Policy Tools - Improving Current Market Mechanisms

## Expand Existing Carbon Tax / Pricing

- Some jurisdictions like the UK and EU already carbon taxes baked into electricity prices
- This gives batteries a competitive advantage, generating revenue by outbidding fossil fuels
- Increasing tax rates or expanding coverage would boost the prospective returns of batteries, as well as incentivizing emissions-limiting operations



Higher Carbon Price

Lower Comparative Price

## Reforms to Balancing Mechanisms

- UK batteries have **high skip rates** in the balancing mechanism, i.e., bids are passed vs traditional energy
- This may be **technical issues** with **assessing capacity** for distributed batteries vs single larger generation assets, as well as **fear around duration**
- Fixing balancing mechanisms – as is happening in the UK – would unlock revenue and improve investment



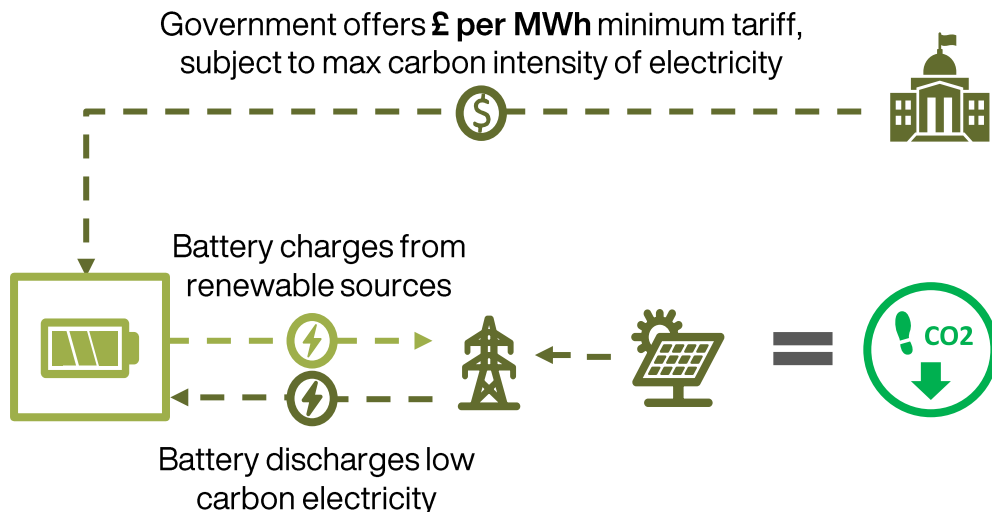
Selecting Economic Battery Bids



# Policy Tools - New Government De-Risking

## Carbon Feed-in Tariff

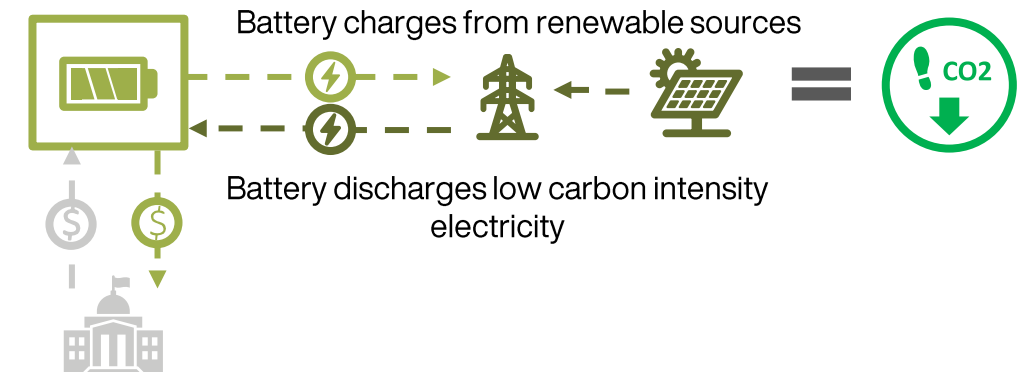
- Feed-in tariffs grew the renewable market in Europe
- By guaranteeing a floor price, feed-in tariffs **eliminate risks for investors**, but **end up cost free**



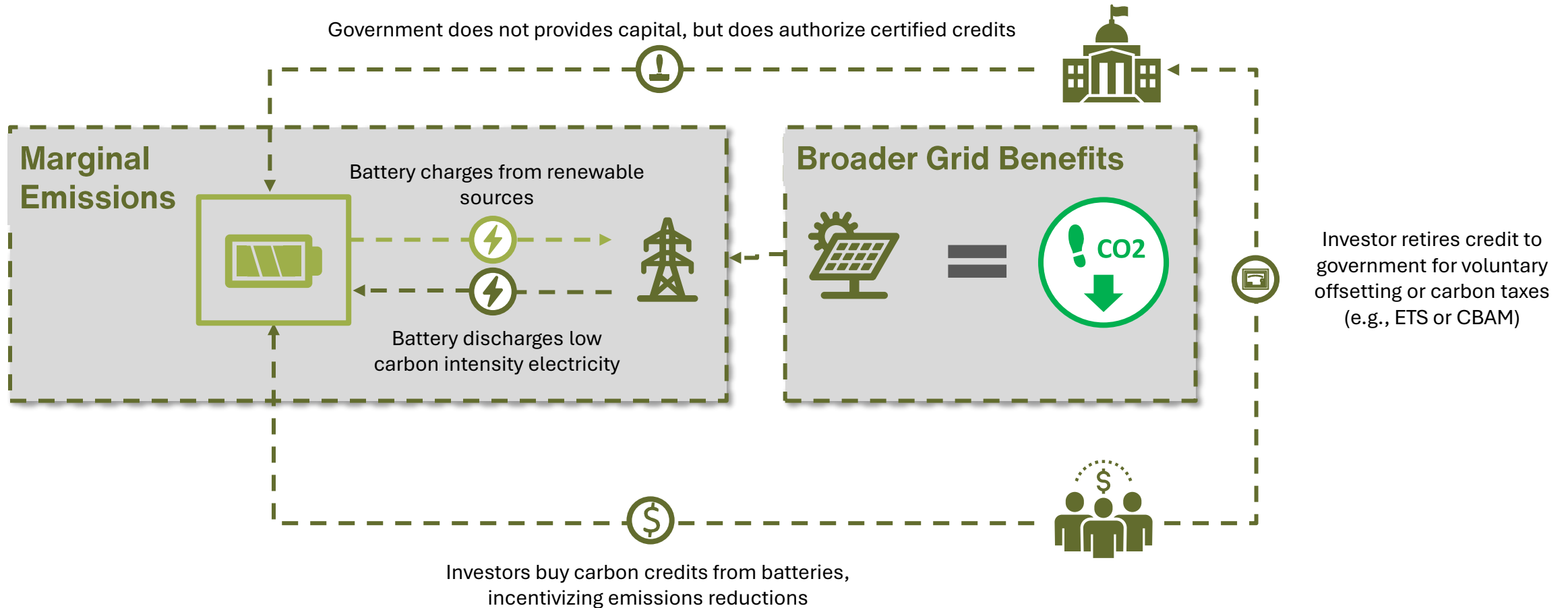
## Carbon Contracts for Difference

- Contracts for difference based on carbon intensity can remove price risk while affecting revenue optimization
- Like feed-in tariffs, if calibrated correctly, CFDs can minimize public spending while altering behavior

Variable fee based on carbon intensity



# Policy Tools - Carbon Finance Subsidization





# We are developing a financial model for governments, developers, and investors to evaluate these policy tools

## Model Inputs



Construction / capex assumptions



Battery revenue profile / assumptions



Other operating assumptions



Financing structure



Policy tool / subsidy assumptions



Financing terms



Baseline emissions profile



## Key Model Outputs



Profit and loss statement



Cash flow statement



Credit and returns analysis



Balance sheet



Policy tool cost



Returns impact of policy tools



Carbon emissions impact

# Using the model, we will profile the real-world impact of these policy tools with data from E.ON



- An **E.ON** grid-connected battery asset in South England is serving as our case study
- The case study will show how different policy options will impact:
  - **Emissions** from **revenue maximization**
  - **Public spending** on **subsidies**
  - **Bankability** and knock on effects on **IRR** and **investment**
- E.ON's pilot will also demonstrate the **carbon credit policy proposal** specifically
- We are adding other pilots: **get in touch!**





# Next Steps

COP29 & Practical Implementation



# Next Steps

- Seagrass and E.ON UK are continuing to develop this white paper in consultation with subject matter experts to feed-in into high-level policymaking
- E.ON UK's battery asset, along with other partners, allows us to see the real-world impact of potential policy solutions
- The white paper will be presented at COP29, alongside practical next steps for how governments can implement the paper's solutions
- Get in touch if you would like to contribute to the work, have pilot projects to recommend, or are interested in supporting this research



# Research results will be presented at COP29 before moving towards practical implementation avenues

*Phase 1 | Apr – Jun 2024*

*Phase 2 | Jun – Sep 2024*

*Phase 3 | Oct 2024 & Beyond*

## London Climate Week Launch

- **Launch** via initial concept note at London Climate Week
- Built an initial **coalition of subject matter experts**
- Developed initial **financial feasibility assessment**

## White Paper Delivery

- Designing **white paper** with detailed methodology and **real-world case study**
- Hold **coalition events** to gather knowledge and inputs
- Presenting findings at **New York Climate Week** and other **key international events**

## COP29 & Pilot Projects

- Publication of White Paper at **COP29**
- **Policy recommendations** together with public sector partners
- Structure and raise financing for **pilot project(s)**

# We'd love to hear from you



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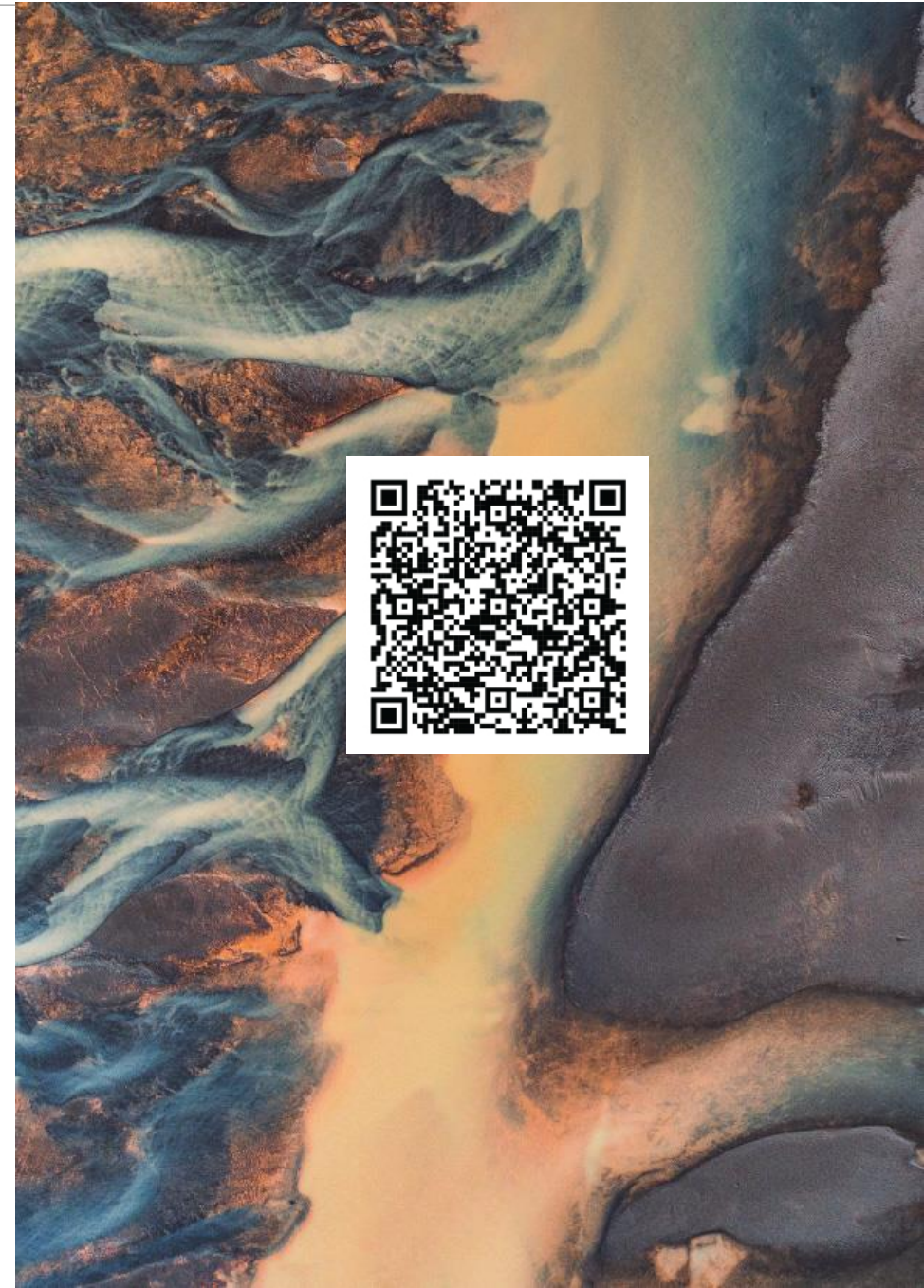
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