



CLEANHORIZON

CLEAN HORIZON COMPASS

A unique platform for your storage market intelligence

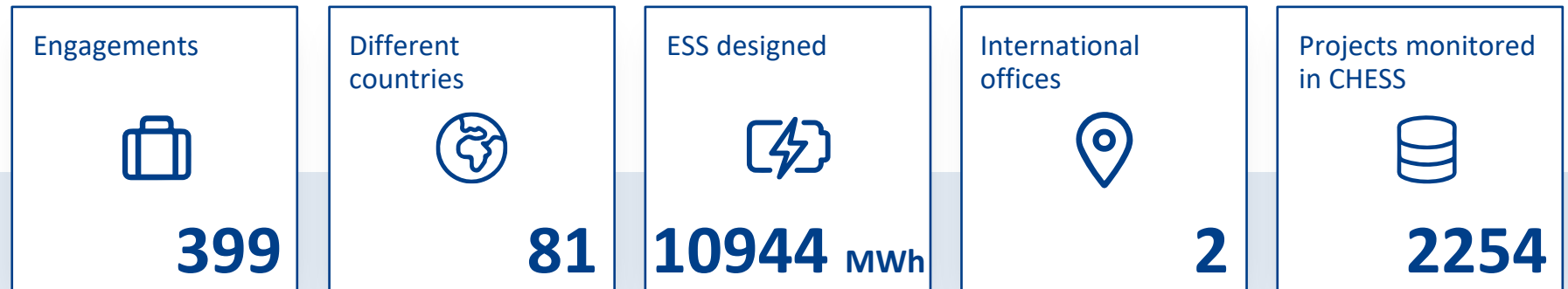
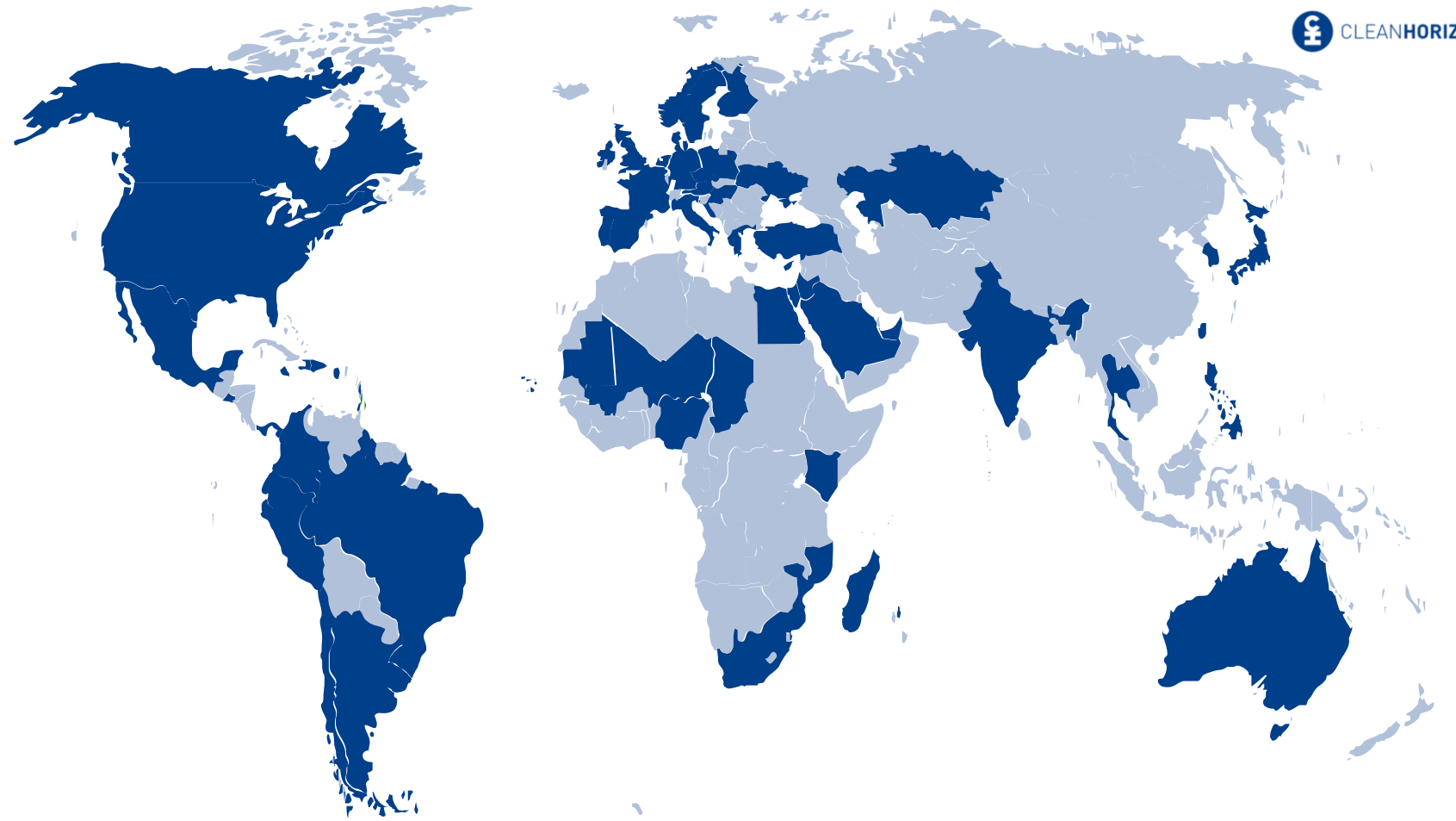
Q1-2023

www.cleanhorizon.com



CLEAN HORIZON

is active
on energy storage
worldwide



A DIVERSE TEAM OF STORAGE EXPERTS



MICHAEL SALOMON, Ph.D
CEO

Expertise:

Global storage markets, ESS strategy

Languages:



Countries and areas:

Israel



SAMUEL PORTEBOS, MSc.
HEAD OF TECHNICAL CONSULTING

Expertise:

Feasibility and sizing studies, technical due diligence, system design and audits

Languages:



Countries and areas:

Eastern Africa, Middle Africa, France, Belgium



CORENTIN BASHET, MSc.
HEAD OF MARKET ANALYSIS

Expertise:

Market analysis, revenue stream forecast, economic due diligence, trading strategies, market forecasts

Languages:



Countries and areas:

Southern Africa, UK, Ireland, Moldova, Ukraine, Turkey, Georgia, Armenia, Azerbaijan, Thailand



NAIM EL CHAMI, MSc.
SENIOR ENERGY STORAGE ANALYST

Expertise:

Technology monitoring, financial and regulatory assessment, market forecast, procurement management, market analysis

Languages:



Focus countries/area:

USA, Oceania, Middle East, Canada, Pakistan, Palau, Vietnam



KREHI SERGE AGBLI, Ph.D
SENIOR ENERGY STORAGE ANALYST

Expertise:

Power systems modeling and analysis, storage- and hydrogen-based hybrid systems techno-economic analysis, hydrogen projects deployment

Languages:



Focus countries/area :

Netherlands, Central America, Western Africa, Algeria, Namibia, Zambia



KEILA SANTIAGO, MSc.
ELECTRICAL DESIGNER

Expertise:

Electric system design and protection

Languages:



Focus countries/area:

Portugal, Italy, Brazil



RACHEL LOCQUET, MSc.
SENIOR ENERGY STORAGE ANALYST

Expertise:

Trading strategy simulation, feasibility and sizing studies, hydrogen production system design optimization, electricity prices forecasts

Languages:



Countries and areas:

Austria, Germany, Switzerland, Slovenia, Slovakia, Greenland, Southern Asia, The Nordics, The Baltics



ROSEMARY COLAERT, MSc.
ENERGY STORAGE ANALYST

Expertise:

Sizing of standalone / hybrid storage systems, market analysis

Languages:



Countries and areas:

Greece, Poland, the Nordics, Central Asia



MOHAMED AMINE BENCHRIFA, MSc.
ENERGY STORAGE ANALYST

Expertise:

Trading strategies, market analysis, sizing studies

Languages:



Countries and areas:

Northern Africa, Southeast Asia, Japan



CHARLY BARRAL, MSc.
ENERGY STORAGE ANALYST

Expertise:

Hybrid/standalone storage system design and evaluation, market analysis

Languages:



Focus countries/area :

Taiwan



BEATRIZ BARROS, MSc.
ENERGY STORAGE ANALYST

Expertise:

Feasibility studies, technical due diligence, market analysis

Languages:



Focus countries/area :

Spain, South America, The Caribbeans, Portugal



OXSANA SHKIRAY, MSc.
SENIOR ENERGY STORAGE ANALYST

Expertise:

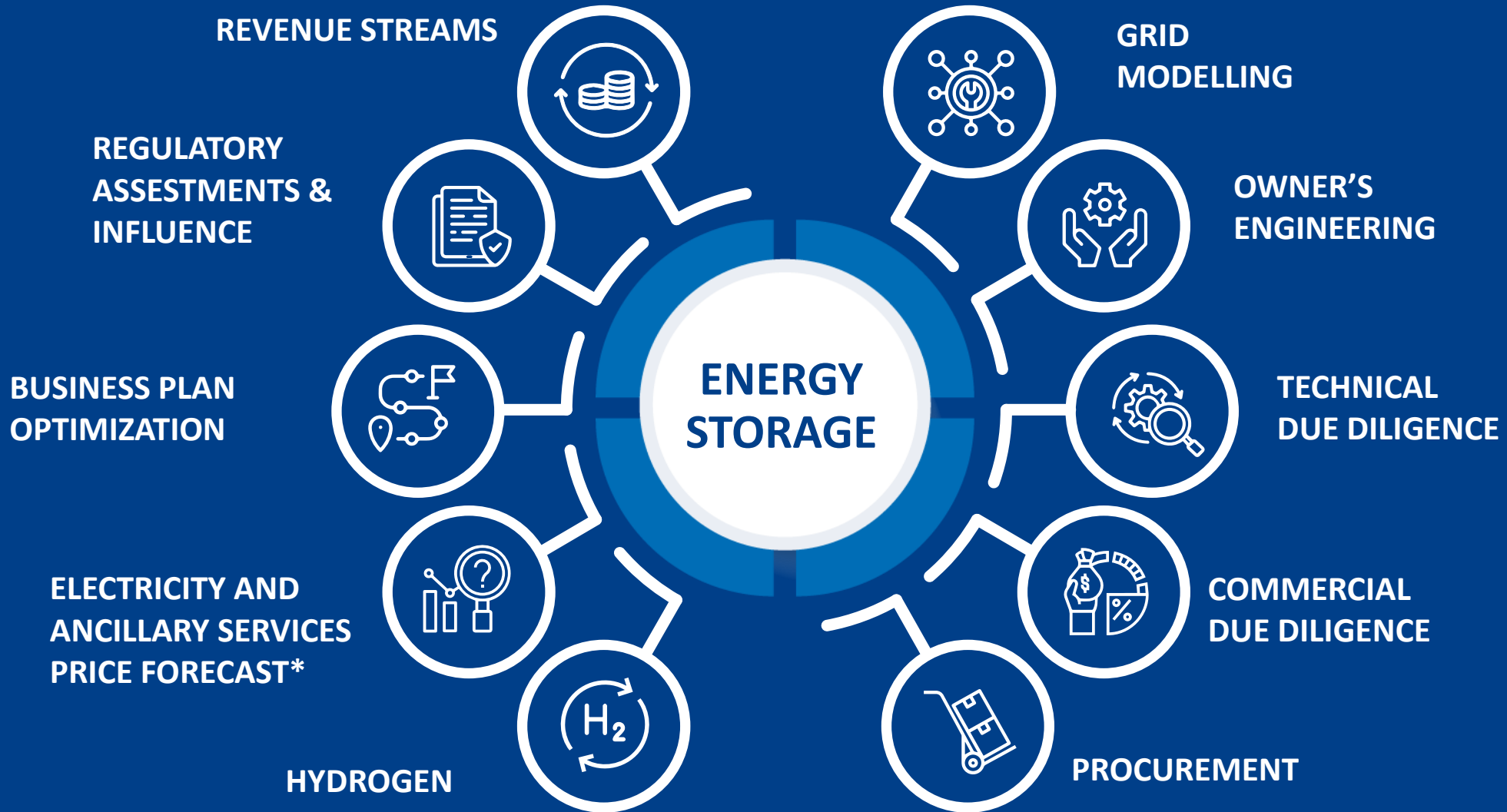
Market analysis, regulatory studies, marketing and communication

Languages:



Focus countries/area :

Ukraine, Romania, Bulgaria, Croatia, Czech Republic, Hungary



*IN EUROPE



MARKET ANALYSIS

Strong market studies expertise worldwide in energy storage systems.

Our experts have technical, economic, regulatory expertise, and cover different geographies, constantly tracking market evolutions.

The expertise of the Clean Horizon team enables extensive understanding of challenges and opportunities for energy storage and hydrogen.



TECHNICAL CONSULTING

Relying on CRE-STORE, our dedicated energy storage modeling tool, we act as owner's engineer and lender's engineer for IPPs and lenders worldwide.

We also work for national utilities to help them quantify their energy storage master plan.

OUR UNIQUE OFFERING

Realistic assumptions & accountability for results

We accompany your projects from conception to commissioning

Reliable forecasting

OUR SCOPE OF WORK FOR ENERGY STORAGE OR HYDROGEN PROJECTS



We assist decision makers, utilities and planners assessing:

- the impact of energy storage on renewable integration and grid stability
- markets for energy storage and green hydrogen projects

From conception to commissioning, including procurement, due diligence and monitoring

Clean Horizon's value added is our capability to use the same methods at the design phase and during operation, maximizing investor confidence

* In Europe

CLEAN HORIZON COMPASS



UFTF

Update From the Field

Discover our monthly analysis note on key data and trends affecting the energy industry worldwide.

Update from the Field presents the main regulatory changes, projects and the most relevant topics in the energy storage field, covering 7 continents.



CHES

Clean Horizon Energy Storage Source

Access our dedicated platform with a worldwide database of all storage projects larger than 500kW, updated every week by our experts.



TRAININGS

- ✓ Energy storage
- ✓ Hydrogen

Join our trainings or gain access to recorded sessions.

Clean Horizon delivers business-to-business training sessions related to the energy storage and hydrogen sectors.

The content can be adapted to the specific needs of our clients and spans from the technological aspect to business models and revenue streams as well as project procurement best practices.



CLEANHORIZON



CLEAN HORIZON COMPASS



COMPASS, a unique platform for your storage market intelligence

OUR COMPASS PLATFORM IS ACCESSIBLE ON OUR WEBSITE WWW.CLEANHORIZON.COM AND FEATURES 2 OFFERS



UFTF

Update From
the Field



CHES

Clean Horizon Energy
Storage Source

UPDATE FROM THE FIELD: WHAT IS INCLUDED?

Make the most of our analyses on key data, changes, and trends in the energy storage industry worldwide



CONTENT

Every month benefit from:

Analyses of regulatory changes and incentives for storage worldwide

Summary of the latest projects announced and commissioned

A focus on key trends affecting the energy storage business worldwide



FORMAT

Annual subscription which includes:

11 monthly analyst reports (the 15th of every month except August)

One presentation summing up the key findings of each report

One 45-min webinar presented the week following each report delivery

Up to 4 hours of Q&A every month with our analysts

Energy storage tender tracking service



Annual or monthly subscription based

UPDATE FROM THE FIELD: PAST «FOCUS OF THE MONTH»

THE WHOLE WORLD OF ENERGY STORAGE

2022

- European subsidies for energy storage
- New frequency response services in Great Britain
- Main difficulties in energy storage development
- The Texan energy storage market: a new eldorado?
- The Iberian Peninsula
- Pros & cons of local production versus import of green hydrogen: a case study
- The potential for battery storage systems in Latin America
- The Canadian energy storage market
- Long-duration energy storage, challenges and opportunities
- Renewable plus storage around the world

2021

- India, a slowly maturing but deep energy storage market
- How does the current energy context impact on energy storage revenues?
- The Nordics - the new wave of storage deployment in Europe
- Poland, a slowly maturing storage market
- Greece, a key storage market ?
- Philippines, what's the rationale for storage?
- Capacity markets throughout the world and associated revenues for storage
- Battery performances
- South Africa: the opportunities for energy storage
- Australia: what's the business case for storage?
- Israel, the (real) 8GWh opportunity

2020

- Europe 2025 battery storage market forecast
- Signed, sealed, delivered: energy storage procurement in the United States
- How Chile paves the way for a new era of large-scale energy storage in Latin America
- Evolution of battery storage system costs and associated O&M services
- The Chinese energy storage market
- PICASSO, secondary reserves harmonized across Europe, what's in it for storage?
- Energy storage contractual arrangements
- Rise of the Iberian peninsula market for stationary storage : Portugal leads the way and Spain slogs along
- Fire Safety of Stationary Lithium-ion Energy Storage Systems
- Hydrogen: the future energy career of Europe?





Database key features:

- ✓ Updated and curated by our experts at least twice a month
- ✓ Advanced and basic searches with modifiable display results
- ✓ Projects across 7 continents

As of July 2022

Number of tracked projects	2166
Announced	1014
Under construction	180
Operational	972
Countries	115

These numbers keep growing



Search and analyze projects by:

Geography
Size (MW/MWh)
Point of connection
Revenue stream
Applications
Stakeholders, from manufacturers to off-takers

One year subscription:

- ✓ Online platform
- ✓ Fully downloadable in Excel

CHESS: REVENUES ASSOCIATED WITH APPLICATIONS TO UNDERSTAND STORAGE BUSINESS MODELS AROUND THE WORLD

Application	Revenue Name	Country (Specific)	
Frequency Control	Frequency Control Ancillary Service (FCAS)	Australia	Clean Horizon has accurately categorized storage projects applications and revenue streams for each project Filtering projects by revenues and applications enables to track business models by geographies
	Enhanced Frequency Response	United Kingdom	
	Firm Frequency Response	United Kingdom	
	PJM Frequency Regulation	United States	
	Frequency Containment Reserve	Europe	
	KEPCO Frequency Control	South Korea	
	IESO Frequency Control	Canada (Ontario)	
	ERCOT Reserve Response Service	United States (Texas)	
	Fast Frequency Response	Ireland	
	Load Shedding Avoidance	-	
	Optimization of Conventional Generation	-	
	Long-term Contract with Utility	-	
Capacity Mechanism	Great Britain Capacity Market	United Kingdom	
	U.S.A. Resource Adequacy (IOU)	United States	
Electricity Bill Reduction	California Demand Charge Management	United States (California)	
	Ontario Global Adjustment	Canada (Ontario)	
Load Shifting	Long-Term IOU Contract (AB2514)	United States (California)	
	Long-Term Contract (IESO)	Canada (Ontario)	
Energy Market Renewable Energy Integration	CAISO Energy Market	United States (California)	Subscribe and track the latest projects with the CHESS database!
	Hokkaido PV + storage Feed-in-Tariff	Japan	
	French Island E13 Tariff	France	
	PV + storage PPA	-	
	PV + storage PPA (Hawaii)	United States (Hawaii)	
Demand Response	French Island RFP (2011- 2015 - 2016)	France	
	California Demand Response Auction Mechanism	United States (California)	
Off-grid	Off-grid Generation Optimization	-	
Grid Congestion Management	Grid Investment Deferral	-	
	T&D Long-Term Contract	-	

CLEAN HORIZON HAS CLIENTS WORLDWIDE ACROSS THE VALUE CHAIN

DEVELOPERS IPPS UTILITIES AND INVESTORS



STORAGE VENDORS AND INTEGRATORS



THEY TRUST US

All of Clean Horizon's clients and engagements are not represented in this list



CLEANHORIZON



**We look forward to
working with you !**

12 rue de la Chaussée d'Antin
75009 Paris, France
contact@cleanhorizon.com
Tél : +33 (0)1 78 76 57 04

Clean Horizon Americas
1200 BRICKELL AVE, SUITE 1960
MIAMI, FL33131, USA
reports@cleanhorizon.com

www.cleanhorizon.com