

# Designing EnergySHR: A platform for energy dataset sharing and communications

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## Abstract

The UN developed 17 sustainable development goals to get us to climate neutrality by 2030. In part, those goals focus on changing the ways we produce and consume energy, often called the energy transition. The energy transition is reliant on data, software, algorithms, and people. In order to address the growing reliance on data, increase transparency, and reduce redundancy in project development, the Center for Energy System Intelligence (CESI), a Convergence collaboration between TU Delft and Erasmus University Rotterdam, has developed EnergySHR, a platform where researchers on the energy transition can share, publish, and/or find energy-related datasets and algorithms and develop partnerships with other researchers. EnergySHR, was designed and deployed using sustainable software engineering and FAIR principles of open data with the aim of facilitating connection, building networks, and developing new, innovative projects while reducing redundancy.

## Background

The energy transition is global, complex, and multi-faceted, so to work on the transition, computer science students should have access to the most current knowledge across multiple sectors in the field. Chen [1] points out that the energy transition requires interdisciplinary knowledge concerning advanced technologies that drive the transition. This is echoed in Betz and Penzenstadler [2], where they state that sustainability, responsibility, inclusion, and ethics must be incorporated into the classroom. In addition, adequate cooperative education and training shaped by energy transition challenges are necessary to achieve European Union's climate goals [3]. The transition, and therefore education, should be mindful of inclusion, energy justice, energy poverty, and other social aspects and stakeholder groups [4,5].

## Platform Design

Key features of the platform include:

- Every dataset has a Digital Object Identifier (DOI)
- Purpose-built to support sharing, discovery, and management
- Emphasizes collaboration, data integrity, and robust access control
- Designed to streamline open and reproducible science.
- Applies the FAIR principles through features

EnergySHR provides an integrated environment for open, trustworthy, and efficient data and code sharing across platformization and energy research.

## ENERGY DATA SHARING HOUSE

Erasmus Data Collaboratory | House of AI  
Erasmus Center for Data Analytics  
Erasmus University Rotterdam

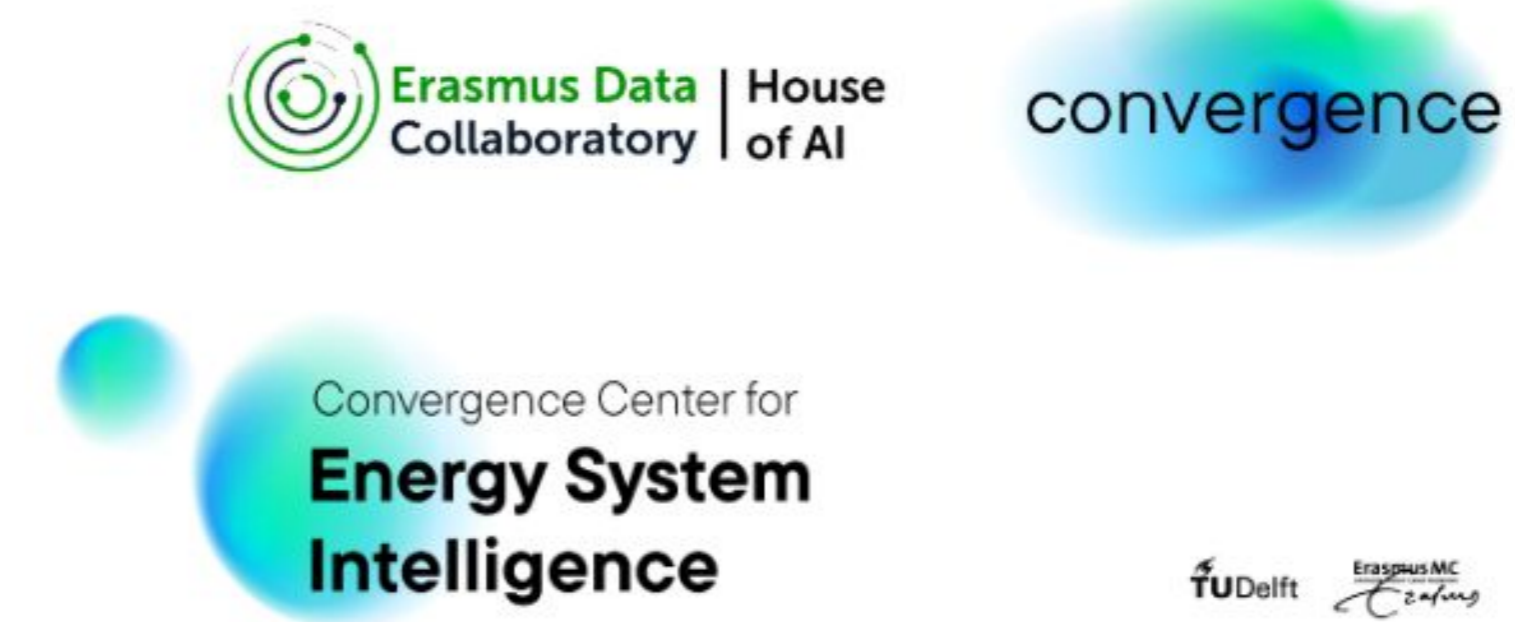
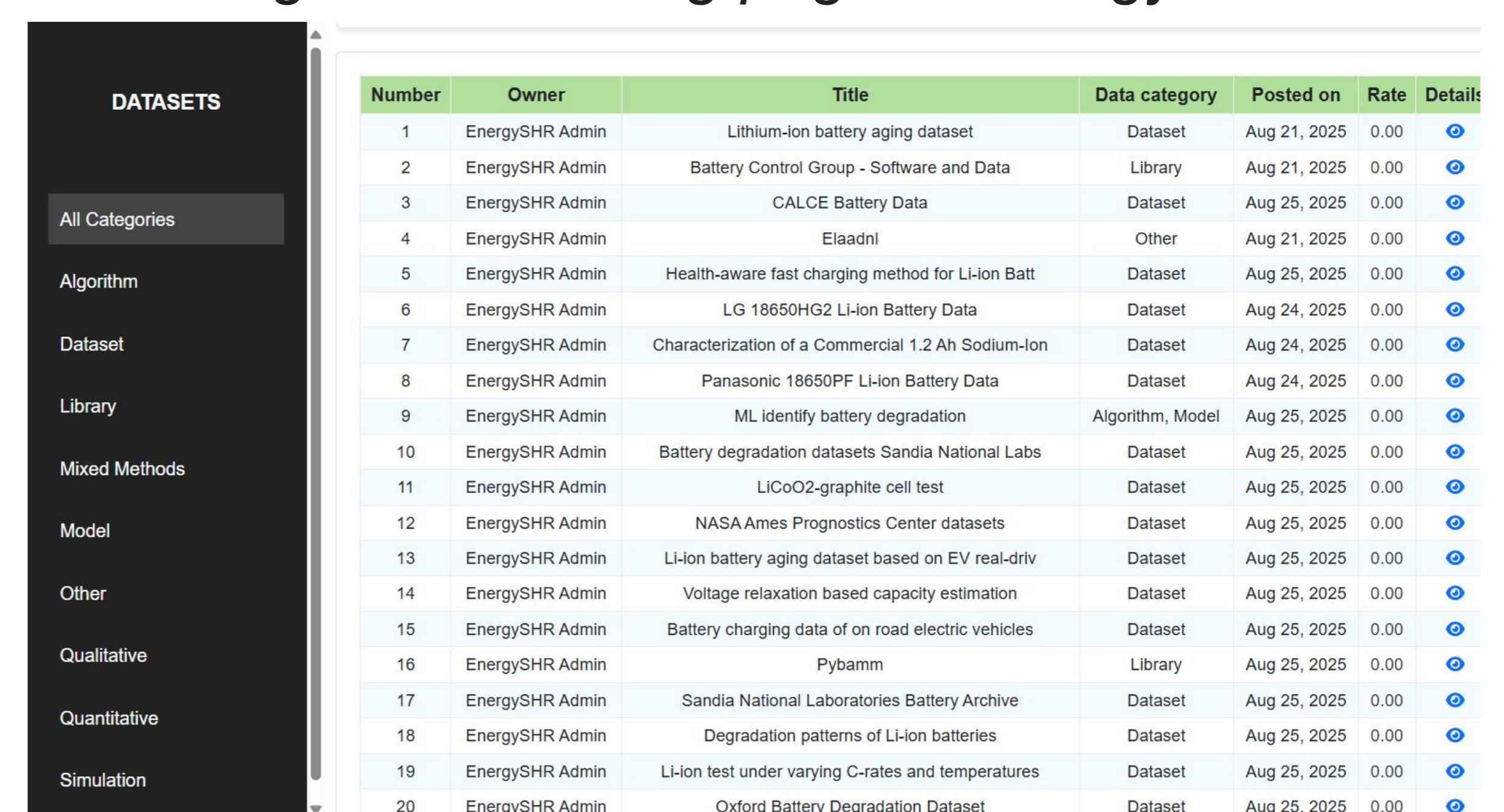


Figure 1: Landing page of EnergySHR



Number	Owner	Title	Data category	Posted on	Rate	Details
1	EnergySHR Admin	Lithium-Ion battery aging dataset	Dataset	Aug 21, 2025	0.00	
2	EnergySHR Admin	Battery Control Group - Software and Data	Library	Aug 21, 2025	0.00	
3	EnergySHR Admin	CALCE Battery Data	Dataset	Aug 25, 2025	0.00	
4	EnergySHR Admin	Elaadnl	Other	Aug 21, 2025	0.00	
5	EnergySHR Admin	Health-aware fast charging method for Li-Ion Batt	Dataset	Aug 25, 2025	0.00	
6	EnergySHR Admin	LG 18650HG2 Li-Ion Battery Data	Dataset	Aug 24, 2025	0.00	
7	EnergySHR Admin	Characterization of a Commercial 1.2 Ah Sodium-Ion	Dataset	Aug 24, 2025	0.00	
8	EnergySHR Admin	Panasonic 18650PF Li-Ion Battery Data	Dataset	Aug 24, 2025	0.00	
9	EnergySHR Admin	ML identify battery degradation	Algorithm, Model	Aug 25, 2025	0.00	
10	EnergySHR Admin	Battery degradation datasets Sandia National Labs	Dataset	Aug 25, 2025	0.00	
11	EnergySHR Admin	LiCoO2-graphite cell test	Dataset	Aug 25, 2025	0.00	
12	EnergySHR Admin	NASA Ames Prognostics Center datasets	Dataset	Aug 25, 2025	0.00	
13	EnergySHR Admin	Li-Ion battery aging dataset based on EV real-driv	Dataset	Aug 25, 2025	0.00	
14	EnergySHR Admin	Voltage relaxation based capacity estimation	Dataset	Aug 25, 2025	0.00	
15	EnergySHR Admin	Battery charging data of on road electric vehicles	Dataset	Aug 25, 2025	0.00	
16	EnergySHR Admin	Pybamm	Library	Aug 25, 2025	0.00	
17	EnergySHR Admin	Sandia National Laboratories Battery Archive	Dataset	Aug 25, 2025	0.00	
18	EnergySHR Admin	Degradation patterns of Li-Ion batteries	Dataset	Aug 25, 2025	0.00	
19	EnergySHR Admin	Li-Ion test under varying C-rates and temperatures	Dataset	Aug 25, 2025	0.00	
20	EnergySHR Admin	Oxford Battery Degradation Dataset	Dataset	Aug 25, 2025	0.00	

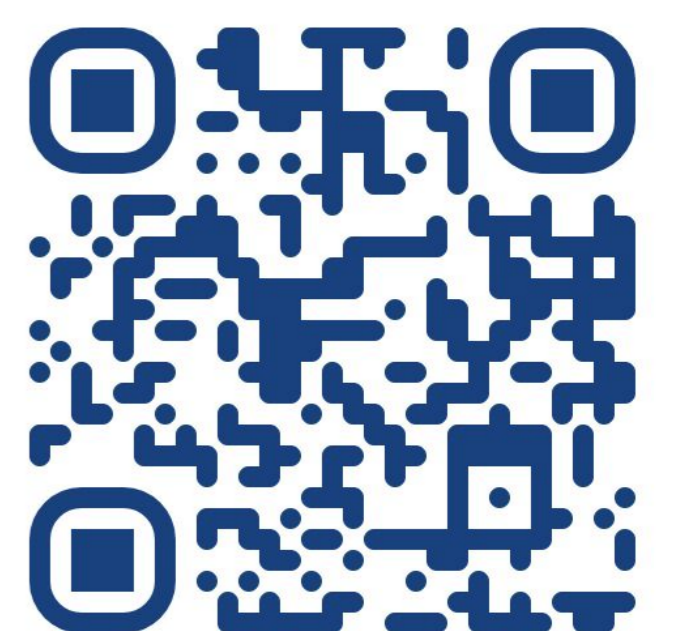
Figure 2: Some publicly available datasets

These figures depict the landing page and a sample of publicly available datasets that can be searched, engaged with, and saved on the EnergySHR platform.

## Next Steps

Continuing using a community informatics approach and participatory design principles, we will survey members of the computing energy transition community ACM SIGENERGY to determine features and uses that are most beneficial to the community. We will also identify ways in which EnergySHR can be used as an educational tool for computer science students and professionals. We will use this data to identify computer science and software engineering educational opportunities. In Fall 2025, we will survey Masters and Doctoral students across disciplines to determine the usefulness and application of the tool in project development.

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## References

1. Bin Chen, Rui Xiong, Hailong Li, Qie Sun, and Jin Yang. 2019. Pathways for sustainable energy transition. *Journal of Cleaner Production* 228 (2019), 1564– 1571.
2. Stefanie Betz and Birgit Penzenstadler. 2025. With great power comes great responsibility: The role of software engineers. *ACM Transactions on Software Engineering and Methodology* 34, 5 (2025), 1–21R
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12<sup>th</sup> ACM Celebration of Women in Computing: womENCourage™  
Braşov, Romania  
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