



## SELECTED PROJECTS

**Phase II study on Ancillary Services Requirements for the Power Sector in Kenya (January 2025 – December 2025).** Client: Get.transform and Kenya's Energy and Petroleum Regulatory Authority (EPRA) with support from Get.transform and GIZ Kenya.

Objective: This ongoing project builds on the phase I ancillary services study carried out in 2022 - 2023 and aims at undertaking a comprehensive techno-economic study on ancillary services needs of the Kenya power system from both a technical and commercial perspective. Ea Energy Analyses leads the task and cooperates with GME (Argentina) and IED (France) which are part of a consortium together with Energynautics (Germany). The project consists of four work packages: (1) Situational Analysis, (2) Power Systems Modelling, (3) Financial modelling and Pricing Methodologies, (4) Capacity Building and Knowledge Transfer. It is the intention of the project to facilitate the creation of a framework for the provision and compensation of ancillary services in Kenya. **Role:** Project Manager for the entire project, Key Expert on Task 2 (Situational Analysis) and Task 4 (Financial and Pricing Methodologies).

**Electricity Market Reform in Kenya – June 2023 - ongoing.** Client: Energy and Petroleum Regulatory Authority (EPRA) with support from the Danish Energy Agency.

Objective: The main objective of this assignment is to produce a common vision for a Kenyan national electricity market, shared by a broad array of Kenyan stakeholders, including KPLC, KETRACO, KenGen, MoE and the Ministry of Energy. The assignment aims at supporting Kenya in its transition from the existing single buyer model with Power Purchase Agreements (PPAs) as the main trading tool towards a liberalized market comprising day-ahead, intra-day, ancillary services trading as well as long-term hedging opportunities. Through direct engagement and six workshops held, Kenyan counterparts have managed to produce their first complete draft of a Market Vision Document with the facilitation of Ea Energy Analyses. **Role:** Project Manager, Market Design Expert, Facilitator.

**Value of offshore development for the Baltic Sea Region (July – October 2024).** Client: 50Hertz (TSO of North and Eastern Germany)

Objective: The project aimed at identifying and analysing the broader economic benefits and geostrategic advantages of offshore wind development and cooperation in the Baltic Sea region.

Geographically, the study focused on Denmark, Germany, Sweden, Finland, Latvia, Lithuania, Estonia and Poland, and provided both quantitative and qualitative insights to foster stakeholder dialogue about the broader benefits of offshore wind development.

As part of the project, an extensive literature review that mapped and investigated the different socio-economic benefits from offshore wind development was conducted. Furthermore, interviews with market participants, interest organizations and authorities to determine the relevance of the identified benefits supplemented the findings of the literature review.

On the quantitative side, the project estimated the employment impacts of realizing the offshore wind ambitions of the Baltic Sea Region countries, including the development of Power-to-X and hybrid interconnectivity.

A bottom-up approach based on the direct job creation of developing, establishing, maintaining, connecting, operating and decommissioning an offshore wind farm was complemented by a top-down approach. This top-down approach relied on a dedicated Input-Output analysis of the Baltic Region, based on detailed statistical information contained in the FIGARO tables produced by EUROSTAT. **Role:** Project Manager, Data Analytics and Statistics expert.

**Developing the appropriate policy framework for hybrid interconnections in Ireland (as part of Ireland's move to a plan-led regime for offshore renewable energy) – December 2022 - ongoing.** Client: Ireland's Department of the Environment, Climate and Communications (DECC) and EU's Directorate-General for Structural Reform Support (DG REFORM).

Objective: to design the appropriate policy framework to incentivize hybrid interconnections in Ireland and to propose appropriate cost recovery mechanisms, which secure compatibility between

partners participating in a hybrid interconnection project as well as appropriate risk mitigation measures for commercial actors involved. The project builds upon the identification of best hybrid interconnection practices in selected jurisdictions (Denmark, Netherlands, UK) and responds to Ireland's ambitious Climate Action Plan which sets a 5 GW target for offshore wind development in Ireland by 2030. As part of the project, Ea has facilitated workshops and discussions with industry stakeholders, the Irish TSO EirGrid and Ireland's National Regulatory (Commission for Regulation of Utilities). **Role:** Project Manager, Key Energy Policy and Regulation Expert.

**Analysis and capacity building for the analysis of security of supply in the Java-Bali system (Indonesia) – June 2023 - Ongoing.** Client: Danish Energy Agency and Indonesia's Ministry of Energy

Objective: this project has the twofold objective of building capacity in the Indonesian power sector to analyze and understand security of supply in the power system from a stochastic perspective, as well as analyzing relevant scenarios of the Java-Bali system in Indonesia which can inform decisions. The project builds on the SisyfosR modelling tool, which provides a systematic framework based on Monte Carlo simulations and the modelling of system generation and transmission outages.

**Role:** Project Manager/Key Expert

**Energy Security in the context of China's energy transformation.** Client: Danish Energy Agency and China's Energy Transformation Program.

Objective: to propose an analytical framework to understand energy security in a Chinese context under alternative scenarios of climate neutrality. The framework identifies the risks for energy security in the context of several scenarios for China's energy transformation, proposes a series of metrics to assess these and analyses a series of possible mitigation measures. **Role:** Project Manager/Key Expert

**Preparation of a special report for COP27 on the Danish experience reaching climate targets – policy implementation and case studies (October 2022).** Client: Danish Energy Agency (DEA).

Objective: to prepare a report summarizing the existing Danish policy framework on climate change, including Denmark's climate ambitions and commitments. The report also deals with the most pressing challenges in Denmark's decarbonization pathway. The document also presents several relevant case studies – on energy islands, district energy, Power-to-X and CCS – which could become part of the climate change mitigation strategy in other countries with which Denmark has established government-to-government cooperation. The [report](#) was translated into Chinese as part of a joint effort between China and Denmark. **Role:** Project Manager/Key Expert

**Workshop on the future electricity market – implications for Bornholm (September 2022).** Client: Bornholms Energi & Forsyning (Utility company of Bornholm).

Objective: to give an overview of the current status and future developments in the Nordic and European electricity market, deriving specific implications for the island of Bornholm, which will be connected to one of Denmark's planned energy islands by 2030. **Role:** Market design & Regulation Expert

**Post-2030 electricity study of the Baltic Sea Region (April 2022 – December 2022).** Client: Elering (Estonian TSO).

Objective: in this study, the Ea team analyzes the development of the Baltic region's offshore wind infrastructure, in line with the countries' long-term decarbonization goals towards 2050. The project investigates the necessary transmission infrastructure that is in line with the Baltic Offshore Grid Initiative (BOGI), which is advanced by all the Baltic Countries. As part of the project, a detailed socio-economic analysis based on the detailed representation of the Baltic energy system is developed. **Role:** Market design & Regulation Expert

**North Sea Wind Power Hub (NSWPH) – Pathway study 2.0 – (September 2022 – March 2023).** Client: North Sea Wind Power Hub (NSWPH).

Objective: to follow up on the Pathway 1.0 study, this study focuses on a baseline scenario leading to full carbon neutrality in 2050. In the scenario, the hubs-and-spokes offshore meshed grid concept is tested against 17 different sensitivities. The study aims at identifying the drivers and

design principles for possible integration routes for offshore wind in the North Sea, potential challenges and bottlenecks, as well as the robustness of the hub-and-spokes concept to various factors, such as costs and barriers preventing the emergence of an offshore meshed grid. **Role:** Team member

**Kenya long-term energy planning (November 2022 - ongoing).** Client: Danish Energy Agency (DEA).

Objective: to support Kenya's long-term decarbonization strategy and with the aim of ramping up Kenya's ambition in relation to the Green Transition, this project supports the government-to-government cooperation between Denmark and Kenya. In this capacity, Ea is facilitating an anchoring mission to Kenya which will initiate longer-term technical assistance involving the energy systems model Balmorel. Both the anchoring mission and the technical assistance will entail direct engagement with Kenya's Ministry of Energy, its regulatory authority, the transmission company, and the main electricity utility. **Role:** Market design & Regulation Expert

**Development of the Danish retail market for electricity (Dec 2021-March 2022).** Client: Danish Energy Agency (DEA).

Objective: Background report with focus on the status of demand response and retail consumers' green choice in Denmark. Independent aggregation, citizens' energy communities, and renewable energy communities have also been part of the analysis. The report is part of a background analysis to evaluate the Danish retail electricity market. **Role:** Market design & Regulation Expert

**Analysis of Chinese power sector reform issues (December 2021 – June 2022).** Client: Regulatory Assistance Project (RAP).

Objective: In this project, Ea Energy Analyses contributes with its expertise on European electricity markets design and regulation to bring a critical perspective and recommendations to Chinese decision makers involved in China's power sector reform. Specific issues analyzed have ranged from Time-of-Use pricing, to transmission pricing, electricity network planning and overall electricity market design considerations. **Role:** Market design & Regulation Expert

**Analysis of Denmark's electricity market design including the possibility of performing a bidding zone review (December 2020 – January 2021).** Client: Danish Energy Agency (DEA).

Objective: the central purpose of this project was to analyze the main challenges facing Denmark's electricity market design in the present and forthcoming years. These challenges arise from the foreseeable deployment of wind and solar installations in specific areas of Denmark together with the high ambitions on electrification, which are already creating significant challenges in the Danish electricity grid. In addition to a detailed quantitative analysis of the current situation, the project made a series of technical, regulatory and policy recommendations to address these challenges. **Role:** Market design & Regulation Expert

**Analysis of Greenland's energy policy (January 2021 – February 2021).** Client: Government of Greenland.

Objective: the government of Greenland requested a detailed overview of its possible energy policy pathways in the context of the ongoing transition to renewable energy sources on a global scale. The study evaluated a series of alternatives, several fuel price projections as well as a risk assessment. **Role:** Team member

**Benchmarking study for Indian transmission planning (February 2021 – April 2021 ).** Client: Danish Energy Agency (DEA) in the framework of the India-Denmark partnership.

Objective: the objective of this study is to perform a detailed comparative analysis of the transmission planning methodologies employed Europe and the Nordic region, in order to facilitate the integration of renewables in the Indian electricity grid. The comparative assessment includes aspects such as: modelling tools used, scenario development approach, statistical analysis, cost-benefit analysis, stakeholder involvement as well as the application of a cost-benefit analysis approach and the usage of welfare theory. **Role:** Market design & Regulation Expert

**Fuel price projections for Vietnam (February 2021 – April 2021).** Client: Danish Energy Agency (DEA) in the framework of the Vietnam-Denmark partnership.

Objective: the objective of this study is to analyze the evolution of the relevant fuel prices for Vietnam's energy economy both in the short, the medium and long-term. The study is one of the quantitative bases to produce Vietnam's forthcoming energy outlook. **Role:** Team Member

**Implications of tariff structure on the profitability of PtX (February 2021).** Client: Copenhagen Infrastructure Partners.

Objective: to analyze the implications of tariff structure on the profitability of a PtX facility in Denmark. **Role:** Team Member

**Implications of a more ambitious EU climate policy on the creation of Danish employment (February 2021).** Client: Synergi.

Objective: to quantify the implications for job creation resulting from increased Danish exports in the clean energy technology sector in the coming 10 years. **Role:** Team Member

**Analysis of the power system in Lolland (Denmark).** Client: Lolland utility company.

Objective: to identify challenges and solutions arising from the increasing deployment of renewables around Lolland. This includes, inter alia, the establishment of local flexibility markets to alleviate congestion in the transmission and distribution networks. **Role:** Team Member

**Projection of economic variables for Ethiopia.** Client: Danish Energy Agency

Objective: To analyze the implications and internal consistency of economic variables for electricity demand projections in Ethiopia. **Role:** Team Member

## SELECTED PREVIOUS EXPERIENCE

### **Danish Utility Regulator (DUR) (September 2019 – November 2020)**

- Project leader for DUR's Anthology Project "Energy Regulation in the Green Transition", the first volume on a series on Better Regulation in the Energy Sector. Available online at: <https://forsyningstilsynet.dk/media/8866/danish-utility-regulators-anthology-project-series-on-better-regulation-in-the-energy-sector-vol-1.pdf>
- Led the decision review process for the approval of the allocation method for cross-zonal capacity for long term transmission capacity in CCR Nordic and CCR Hansa (jointly with Germany's BNetzA and Holland's ACM).
- Market surveillance of electricity and gas markets in compliance with the REMIT regulation. Analysed transaction-level data in connection with potential cases of insider trading and market manipulation, developed periodic reports focusing on Denmark's balancing reserve capacity markets.
- Surveillance of electricity and gas markets from a structural perspective: data analysis of flows, prices, CZC. Particular focus on TSOs' compliance with the 70% requirement, established in art. 16 of the recast EU Electricity Regulation.

### **SEMI project (July 2017 – August 2019). Client: EUDP (earlier called ForskEL).**

Objective: This project had as objective investigating the future integrated energy system from a market perspective. To this end, 3 working packages (WPs) were included:

- WP1 focused on the interaction and unification of gas and electricity wholesale market.
- WP2 was to work on the dynamic management of flexible sources for the integrated distribution systems to participate in the short-term market.
- WP3 was to develop business models for the optimal investment on the emerging technologies to enhance the synergies between multiple energy systems.

Position held: **Researcher**

**TotalFlex (October 2012 – June 2016). Client: EUDP (earlier called ForskEL).**

Objective: Based on an innovative data-driven business intelligence concept (called FlexOffers), the objective of this project was to create the engineering and market mechanisms to enable flexibility from distribution-level resources, ranging from heat pumps, EVs or home appliances. An important part of the project consisted in dealing with the contract, product and market design challenges of making FlexOffers operational and applicable.

Position held: **Researcher** (affiliated to WP7)

**Flex4RES (July 2016 – June 2017). Client: Nordic Energy Research.**

Objective: The project demonstrated how the challenge of integrating high shares of variable renewable energy in the energy system can be handled efficiently through a stronger coupling of energy markets across the Nordic region, thereby facilitating a zero-carbon energy transition.

Position held: **Researcher**

## SELECTED PUBLICATIONS

1. **Boscán, L.** "Danish District Heating Regulation: Overview, Recent developments and lessons for emerging and expanding networks", **Oxford Energy Forum, Issue 134**, <https://a9w7k6q9.stackpathcdn.com/wpcms/wp-content/uploads/2022/11/OEF-134.pdf>
2. Lau H. Albertsen, Mads Andersen, **Luis R. Boscán**, Athila Q. Santos (2020), "Implementing dynamic electricity taxation in Denmark", **Energy Policy, Volume 143, 2020, 111543, ISSN 0301-4215**, <https://doi.org/10.1016/j.enpol.2020.111543>
3. **Boscán, LR.** (2020) "European Union retail electricity markets in the Green Transition: The quest for adequate design". *WIREs Energy Environ.* 2020; 9:e359, <https://doi.org/10.1002/wene.359>
4. **Boscán, L.**, Kaiser, B. A., & Ravn-Jonsen, L. (2021). *Beyond Wind: New Challenges to the Expansion of Renewables in Denmark*. In P. Midford, & E. Moe (Eds.), *New Challenges and Solutions for Renewable Energy: Japan, East Asia and Northern Europe* (pp. 319-348). Palgrave Macmillan. International Political Economy Series [https://doi.org/10.1007/978-3-030-54514-7\\_13](https://doi.org/10.1007/978-3-030-54514-7_13)
5. **Boscán, L.**, Skytte, K., Rosenlund Soysal, E. (2017) "Flexibility-friendly support policies: A Nordic and Baltic perspective" In Proceedings of the 14th International Conference on the European Energy Market – EEM 2017. doi: <https://doi.org/10.1109/EEM.2017.7981856>
6. Bergaentzlé, C., Skytte, K., Soysal, E. R., **Boscán, L.**, and Olsen, O. J. (2017). "Regulatory barriers for activating flexibility in the Nordic-Baltic electricity market". In Proceedings of the 14th International Conference on the Energy Market – EEM 2017. doi: <https://doi.org/10.1109/EEM.2017.7981948>
7. **Boscán, L.**, Soysal, E., Koduvere, H, Blumberga, D, Ziemele, J, Karimi, F, Söder, L and Nazari, M. (2017). "Framework conditions for flexibility in the Gas – Electricity interface of Nordic and Baltic countries: A focus on Power-to-Gas (P2G)". <https://www.nordicenergy.org/wp-content/uploads/2017/06/Flex4RES-P2G.pdf>
8. Bergaentzlé, C, **Boscán, L.**, Skytte, K, Soysal, E. and Olsen, OJ (2016) "Framework conditions for flexibility in the electricity sector in the Nordic and Baltic Countries" Flex4RES work package 2: Framework conditions, December 2016. [https://www.nordicenergy.org/wp-content/uploads/2016/12/Flex4RES-Electricity-Report\\_final.pdf](https://www.nordicenergy.org/wp-content/uploads/2016/12/Flex4RES-Electricity-Report_final.pdf)
9. Boscán L. and Söderberg M. (2021) *A theoretical and empirical analysis of district heating cost in Denmark*, *Energy Economics*, Volume 99, 2021. <https://doi.org/10.1016/j.eneco.2021.105304>
10. **Boscán Flores, L. R.**, & Poudineh, R. (2016). "Business Models for Power System Flexibility: New Actors, New Roles, New Rules" In *Future of Utilities Utilities of the Future: How Technological Innovations in Distributed Energy Resources Will Reshape the Electric Power Sector* (pp. 363-382)