



INTERNATIONAL

# Strategic Advisory

Energy Engineering • It's in our DNA



Utility to Utility Power Generation Transmission & Distribution **Strategic Advisory** Specialist Services



The mission of ESB International is to unlock value for energy utilities and developers right around the globe.

# Welcome

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ESB International provides strategic advice, executive management support, project management, engineering expertise and utility solutions to governments, utilities, private developers and other key stakeholders in the power sector.

ESB International, which is wholly owned by Electricity Supply Board (ESB), Ireland's foremost energy company, is a leading engineering consultancy firm to the global power sector. We are headquartered in Dublin, Ireland, with a central hub in the Kingdom of Bahrain and have operations in Europe, the Middle East, Africa, the Caribbean and South East Asia. We have a fully-integrated structure with a team of 7,500+ experts.

In all our markets, we are faced with strategic challenges that affect millions of people – and our solutions help to transform economies, societies, and the lives of individuals and communities.

Our success is built solidly on our experience in delivering electricity to our own country, resulting in a social and economic revolution over many decades.

At ESB, we believe that electricity is a social good that should be accessible and affordable for all. ESB has brought electricity to Ireland's major towns and cities; a Rural Electrification Scheme brought the transformative power of electricity to even the most remote corners of the country.

We have drawn on this experience in over 120 countries around the world, offering not just technical expertise, but also the leadership and personal commitment to succeed in some of the most demanding economies and geographical regions around the globe.

We would be delighted to share our Strategic Advisory expertise with you, and we assure you of our unstinting support throughout whatever journey you may now be embarking on.

# The problems we solve for our clients

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ESB International's Strategic Advisory has a primary goal "to enhance the ability of our clients to meet their key business objectives". This involves us addressing a number of significant, recurring challenges throughout the world.

## Lack of access to power

733 million people lack access to electricity. ESB International has demonstrated success in rural electrification and has helped to transform communities worldwide.

## Attracting private sector investment

ESB International has worked with developers and government agencies to identify regulatory framework conditions or other industry factors to promote the optimum development of energy assets.

## Market reform

Electricity markets around the world are experiencing enormous change with competition, unbundling of services, tariff reform, renewable integration and new technologies. ESB group has been a leader in the transformation of the Irish & UK electricity markets and a respected advisor on power sector reform internationally.

## Utility corporatisation and performance improvements

ESB International has assisted government agencies and utilities with corporatisation, restructuring and local capability development. We work with existing management teams and also harness the expertise of our own specialists and senior managers in capacity building and knowledge transfer.

## Utility turnaround

Power utilities in many developing countries are often overburdened with debt, insufficient investment, inflexible organisations and tariffs which are not cost-reflective. ESB International has a wealth of experience in utility management, assisting the transformation of these utilities into efficient, technically capable and financially viable entities.









# Strategic advisory services in greater detail

ESB International has developed a multifunctional, expert team that specialises in a range of consultancy services for the power sector and this is reflected in the range of services that we offer.



## Strategic & Regulatory Advice

- Industry, market and organisation review
- Investment studies and advisory support
- Development of turnaround strategies
- Asset performance & due diligence
- Tariff study and designing of tariff structures



## Operational Performance

- Audits of power utilities & operating assets
- Utility support services & systems
- Management contracts



## Project Development

- Techno-economic & project feasibility studies
- Risk analysis
- Lender's and owner's advisor



## New & Emerging Technologies

- Economics of power assets
- Energy innovations
- Emerging utility models



## Training and Knowledge Transfer

- Capacity assessment and development
- On-the-job training
- Knowledge transfer and up-skilling local staff



# Strategic Regulatory Advice

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ESB International has provided consultancy services for energy markets on behalf of various stakeholders, including incumbents and potential entrants. These studies typically involve industry and market analysis, supply and demand forecasts, operating regimes, network configurations and the potential for renewables, industrial and municipal co-generation.

## Market Economics Services

- Market analysis
- Economic modelling & tariff analysis
- Pre-privatisation, privatisation and deregulation advice
- Electricity and gas market regulation
- Climate services – emissions management & offsets
- Fuel strategies & carbon abatement

## Investment Appraisal Services

- Pre-feasibility studies
- Due diligence studies
- Financial and economic modelling
- Risk analysis
- Contracting advice
- Asset valuation
- Demand forecasting, forward pricing
- IPP frameworks & agreements
- PPA support

### Completed Project

Technical advisor on PSP options, Zanzibar







## Project Development

ESB Group has developed a number of plants in open competitive electricity markets, most notably Combined Cycle Gas Turbine (CCGT) and wind power plants in Spain, the UK and Ireland.

These projects have provided the ESB International engineering teams with extensive experience of managing a wide range of market, design and performance issues. ESB International provides a complete range of services covering all stages of the asset life cycle, which include feasibility studies, project management and commissioning & maintenance.

### Commercial Services

- Feasibility studies
- Project valuation
- Determination of pro forma business case
- Information memoranda

### Technical Services

- Risk analysis and mitigation
- Frameworks and agreements
- Commercial due-diligence

#### Completed Project

Feasibility study for Aluminium Bahrain  
(Alba), Bahrain





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## Operational Performance

Operational performance in non-performing utilities and other power sector organisations can often be improved very effectively by utilising management contracts. The turnaround management contract is a useful alternative to privatisation, or it can be used in preparing a utility for privatisation.

Management contracts are also used in “start-up” situations, where a restructured electricity industry requires new entities to take over either new functions or those previously carried out by others. Examples are system and market operations and transmission administration. With its wide experience as an asset owner and operator, ESB International has a proven track record in utility management projects of various ranges of complexity.

ESB International also undertakes a range of audits and reviews of organisations and systems in utilities to support performance improvement across multiple utility functions.

### Operational Improvement

- Strategic & operational reviews
- Business planning & institutional strengthening
- Engineering and business system audits

#### Completed Project

Customer services delivery design & implementation in power distribution sector, Oman









## New & Emerging Technologies

At ESB International, we strive to assist our clients in overcoming policy, technology, and market hurdles when it comes to the integration of renewables. This involves gaining a comprehensive understanding of the specific challenges faced by each client.

### Technological Services

- Performance benchmarking
- Environmental strategies
- Telecoms infrastructure development
- Asset management systems
- Data analytics
- Techno economic studies
- Carbon Credit Advisory

### Renewable Technologies

- Assessing opportunities in renewables including Solar, Wind, Biomass, Hydrogen, Hydro, Tidal energy
- Conceptual design
- Independent engineer on behalf of utility and financial institutions
- Consenting and technical Support

### Emerging Technologies

- Battery storage
- Electric Vehicles (EVs)
- Smart Energy Services
- Life Cycle Assessment

### Low Carbon Economy Transition

- Facilitating strategic, multi-stakeholder coalitions to assist clients in ensuring economically and environmentally sustainable climate policies and transitional stratifies towards Renewable Energy Sources
- Technical methodology development, adaptation, and mitigation policy
- Sustainability reporting, foot printing and impact assessment

#### Completed Project

Electric vehicle infrastructure development, Dubai





— A case study to judge us on



# Consultancy Services for Meeting Obligations After Introduction Spot Market and Renewable Energy Sources

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Client Name	OETC, Oman Electricity Transmission Company
Start Date – End Date	November 2018 - November 2022
Duration of Assignment	4 years

## Background

Oman Electricity Transmission Company (OETC) was granted responsibility for the safe, secure and reliable transmission of electricity from the producers to the distribution networks and directly (transmission) connected customers.

As the development of the energy Spot Market moves ahead at pace in Oman, the combination of technologies, fuel sources, and networks are developing into an ever more complex arrangement. All systems, procedures and operational practices need to evolve to ensure they continue accommodating Oman Spot Market and other developments securely and economically efficiently.

OETC commissioned ESB International to address the fundamental question of how its systems, scheduling and dispatch process, procedures and operational practices should evolve to meet its obligations following the commencement of Spot Market and Renewable Energy Sources. While simultaneously continuing to serve secure and economic scheduling and dispatch (S&D) process in the sector and accommodate future sector developments.

## The project scope:

- Assess Oman Spot Market rules and existing and planned OETC S&D process.
- Assess the existing agreements in place among OETC, OPWP, AER, IPPs and other market players with regards to OETC core role as system operator.
- Review of the Grid Code (GC) and advise of the potential changes required in OETC S&D process as well as GC due to Spot Market.
- Identify the anticipated data exchanges e.g., availability declaration, bid and offer and instructions between OETC and IPPs among OETC, OPWP, IPPs and Non IPPs. Draw strategy on the optimum mechanism to exchange the data.
- Review existing OETC Ancillary Services handling setup. Draw optimum strategy for handling the Ancillary Services and operating practices in the light of the Spot Market (including MVAR, Reserves, Black Start, primary & secondary response, outage management and congestion management).
- Assess the IT tools and infrastructure that are currently deployed in OETC, identify any potential new requirements and prepare a Project Investment Appraisal document for IT system procurement.

ESB International are also commissioned to look after the design, tendering, testing and commissioning of the new IT system.

ESB International hosted workshops in Ireland for OETC where they meet with TSO, Regulator, and several other key stakeholder in the electricity sector.

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# We should be talking to each other

To discuss your Strategic Advisory needs, please get in touch with ESB International at the contact points below.

## ESB INTERNATIONAL

One Dublin Airport Central  
Dublin Airport  
Cloghran  
County Dublin  
Ireland  
K67 XF72

Tel +353 (0) 1 703 8000  
Fax +353 (0) 1 703 8088

## ESB INTERNATIONAL

Bahrain Office  
Office 1002  
Building 655  
Road 3614  
Block 436  
Seef District  
Kingdom of Bahrain

Tel: +973 1770 8118  
Fax: +973 1770 0115

## ESB INTERNATIONAL

Abu Dhabi Office  
Office 25/25  
20th Floor  
Al Wahda Commercial Tower  
Airport Road  
Abu Dhabi

Tel: +971 2815 7999  
Fax: +971 2815 7888

## ESB INTERNATIONAL

Oman Office  
Office 206, 2nd Floor  
Holiday Inn  
Al Mazoon Street  
South Al Mawaleh  
Muscat  
P.O. Box, P.C. 118  
Sultanate of Oman

Tel: +968 2428 7961

Email [marketing@esbi.ie](mailto:marketing@esbi.ie)  
Web [www.esbinternational.ie](http://www.esbinternational.ie)

