Energy Strategy and Economics Capability Brochure
Economics and strategy integrated with technical expertise

Arup provides a range of economic advisory and strategy services on energy market forecast modelling, policy design, regulatory change, strategy development, and impact assessment across the world. Our Energy Economics team is a market leading economics team with senior experts that have a background and experience in energy policy, energy demand forecasting, power market modelling, regulatory tariff modelling, energy market design and cost benefit analysis.

We also have significant experience of reviewing and building power and gas market models, for example combining our market modelling capability, our industry expertise of consumer group demand forecast and our technical operating knowledge of power plants, networks and interconnectors.

We can help you address risks and challenges and support the growth of your business through our deep understanding of energy policy and regulatory issues, our industry networks and economic expertise.

We bring strong market and policy knowledge, drawing on our sector experts and specialists from across the firm to deliver integrated, evidence-based advice to our clients. Our offering includes:

- **Strategy and business case** – Assessing projects or policies feasibility and developing the business case.
- **Policy and regulatory analysis** – Advising clients on key policy issues and development of new regulatory and tariff designs.
- **Economic impact analysis** – Quantifying and assessing the economic impact of policies and investments.
- **Commercial due diligence** – Providing commercial and regulatory advice to public and private sector clients on infrastructure transactions.
- **Energy modelling** – Developing economic and energy models across a spectrum of sectors and geographies.
- **Market review** – Providing advice on market trends, market entry and exit strategies and future scenarios.
Commercial Due Diligence
Technical expertise combined with market knowledge

Arup’s commercial due diligence services build on the technical expertise existing in the team and integrate the market knowledge of our economists to deliver a comprehensive service. Our commercial due diligence cover a range of assets, from power generation to storage terminals, and various types of energy.

Commercial Due Diligence, Finland, Sweden & Estonia
Arup provided commercial due diligence services on the sale of an energy services provider with assets in Finland, Sweden and Estonia to Macquarie. The provider operates across the industrial energy services, geothermal and district heating sectors. Arup conducted analysis of each of the nine markets that the provider operates in order to validate and challenge the management’s business plan growth assumptions and highlight risks.

UK-Ireland Interconnector Due Diligence
Arup developed an economic valuation model for the purpose of understanding revenue streams of a new interconnector between Ireland and the UK. The analysis was developed in Delphi integrated power market modelling framework which includes the dispatch and capacity market models, in addition to the renewable capacity investment decision model.

Market Review
Industry acumen, quality research and global exposure

Arup’s bespoke market review ranges from different industries to regions, including the African continent, Asia and Europe. Arup has extensive experience and capability to develop, demand, supply and tariff analysis based on our understanding of commercial and regulatory environments in the UK and Europe, as well as developing expertise in African and Asian projects.

Hydro Market Review, GB
Arup conducted a review of the GB hydro market in order to determine the potential acquisition targets for the developer.

This study included a review of the current hydro market scope and size as well as the analysis of historical asset performance.

Arup developed a screening framework based on asset type, size, location and portfolio importance in order to approach as potential target acquisitions.

Ghana Power Market Study
Arup provided an outlook of the Ghana power sector for the client as a part of a technical due diligence of a 370MW HFO fired power plant. Our commercial review included a detailed overview of market structure, policy and PPA arrangements in the Republic.
Arup provides advisory services on policy design, regulatory advisory and policy impact assessment across the world. We bring strong market and policy knowledge, drawing on our sector experts and specialists from across the firm to deliver integrated, evidence-based advice to our clients.

**Indonesian Geothermal Regulation Advisory Services**
Arup provided regulatory advice and modelling services to the Indonesian Ministry of Energy and Mineral Resources, on the behalf of an MoU with DECC.

Arup proposed a new regulatory framework to remove bottlenecks from geothermal development in Indonesia and help the country meet its clean energy goals. Arup built a tariff model and suggested feed in tariffs which were dependent on resource size and geographical location.

**Ireland Regulatory Tariff Model**
Arup was commissioned to develop the regulatory tariff model for 2rn (“RTENL”), the largest broadcaster in Ireland. The model was established in advance of the regulator’s decision for price control and it was used for the negotiation and determination of detailed charging and allocation principles. The final model has been approved and has been declared to be transparent and objective.

**Arup’s energy modelling has a strong foundation and established framework, from which we develop bespoke models for various clients in the public and private sector. We have developed Delphi, a proprietary market modelling framework for power markets in the UK and Europe, with the scope to expand the framework to other markets.**

**Demand Forecast Modelling**
Arup has provided advice to National Grid to forecast the electricity and gas demand in the UK. We developed a UK energy economic model tool to study the impact on energy demand of macro-economic factors, new technologies and regulation, to be used in National Grid’s Future Energy Scenarios and business plan.

**UK CCGT Asset Valuation**
Arup developed an economic valuation model for the purposes of CCGT plants acquisition in the UK.

The analysis was developed in Delphi integrated power market modelling framework which includes the dispatch and capacity market models, and the renewable capacity investment decision model.

**The Delphi power market model is developed in Plexos modelling software which develops analyses to a significant degree of accuracy, flexibility and detail.**
Arup’s economic impact analysis varies depending on the project, ranging from cost assessments to cost benefit analysis and business case review and development. The scope of our experience includes work for clients in the UK and overseas, for banks, developers, utility infrastructure operators and regulators.

**GB Electricity Generation Costs and Technical Parameters**

Arup has been appointed by DECC to review and update its generation cost and technical data for five renewable technology “families”: onshore/offshore wind; waste; hydro/marine; and geothermal.

The objective of is so that a levelised cost of generation (‘LCOE’) calculation can be carried out and each technology assessed on a consistent cost basis.

**Analysis of zero-subsidy Contracts for Difference (CfDs)**

Arup is currently undertaking work on behalf of a confidential client investigating the possible approaches to providing zero-subsidy CfDs for onshore wind in Great Britain.

We are focused on two methodologies; one based on the market revenues available to a CGGT and the other on the long run marginal cost of a new-build CCGT. Arup utilised its integrated day ahead, balancing mechanism and capacity market modelling suite, DELPHI, in order to derive the inputs for each of the methodologies proposed.
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