

# Effective Valuation & Risk Management

## *The Value of a Coordinated Approach and Appropriate Modelling*

**Valuing opportunities for potential acquisition, divestment or investment is a crucial part of portfolio management and the decision process.** Indeva consultants are often brought to provide commercial expertise and integrated valuation modeling, and to facilitate and lead a multi-disciplinary team of technical, legal and financial specialists drawn from clients or their consultants.

A crucial part of Indeva's task is, to quickly identify and focus in on the key value drivers by working with initial inputs from the team. We can then lead the team to effectively analyse the opportunity with the correct focus. By doing so this enables this enables our clients to make informed purchase decisions for corporate acquisitions.

We focus on providing a quantified asset value as well as evaluating how that value interacts with the company's existing portfolio. To do so we take account of key uncertainties and opportunities relating to the asset or assets and where appropriate for complex situations assess the true expected value using probabilistic techniques.

Indeva have been responsible for numerous valuation projects over the past 15 years. We have performed valuations covering over 30 jurisdictions worldwide, and corporate valuations often encompass multiple jurisdictions. The following case studies present three such projects and detail the role we played in helping our clients build appropriate models, focus on the important variables and make better decisions for balanced strategy.

### **CASE 1 - Corporate Acquisition Valuation:**

Indeva was asked by an oil company to perform technical and commercial analyses of all company assets for a corporate acquisition opportunity through to consolidated post-tax cash flow. The assessment was to include importance sampling and sensitivity analysis in accordance with the requirements of the Swedish Stock Exchange. The overall analysis included performing specific local analyses to meet potential lenders' cover-ratio criteria.



#### Requirements

The requirements of this particular project included a balanced approach to the valuation which would satisfy both the buyer and the Swedish Stock Exchange and a syndicate of potential lenders. Indeva needed to perform analyses concurrently and meet strict deadlines in order to be successful.

#### Approach

We had to coordinate expert input in the fields of geoscience and engineering, legal and tax as well as conduct a rigorous due-diligence procedure to review all the material technical data and project cost forecasts. The assets assessed included all stages of maturity – producing fields, assets under development and exploration-stage opportunities. The assets included several mature and complex fields in the North Sea and incorporated complexities such as inter-field and self-to-self tariffing and highly interdependent and complex field infrastructure.

***The process employed was one that included understanding the overall picture first and then highlighting areas where improving forecasts and improving the model would improve our client's position in terms of assessing value and securing financing.***

The process employed by the Indeva team was one that included understanding the overall picture first and then highlighting the key value drivers to focus on – areas where improving forecasts, uncertainty

assessments and improving the model would improve our client's position both in terms of assessing the value of the opportunity and in financing a loan to complete the acquisition. The team then engaged the

assistance of experts in these areas to refine the models, incorporate uncertainty, identify opportunities and complete the picture.

### Deliverables

The final deliverable to the client in this case included:

- Derived field-life production forecasts for each asset along with field-life capital and operating cost estimates
- Appropriate gas price and tariff contract models incorporating contractual escalation formulae
- A complete due diligence review of all technical data
- Consolidated cash flows for each of three companies involved including tax relief relating to historical exploration claimed against current PRT and CT analysis and brought-forward tax positions on each asset to evaluate field-based taxes for royalty and PRT.

The approach we used to complete this valuation enabled us to concurrently analyse the opportunity from several perspectives to give the balanced result required by the buyer (our client) and their financiers. The vendor accepted our valuation in this case and the buyer successfully purchased and financed a loan for in excess of \$100 million based on our work.

## **CASE 2 – Risk Analysis on Petroleum Interests in Mature North Sea Fields**

Mature fields with complex infrastructure introduce huge valuation challenges. Indeva have worked on numerous valuations involving complex infrastructure, particularly in the North Sea. This particular case involved the purchase of interest in an asset group consisting of three interacting assets, each with different levels of downside risk as well as significant growth opportunities.



### Requirements

The client's requirements for this project included modelling the complex interactions between the variables to define risk/reward scenarios and ensure the complete picture had been considered before proceeding with the acquisition. The model needed to incorporate uncertainty and be fully probabilistic and dynamic as well as being capable of consolidating results from the complete asset group so the total asset package could be assessed together.

### Approach

As with the first case Indeva's approach to this project was to start with a high level analysis and top level model of the asset group. We used our proprietary FOCUS oil industry software to perform high level probabilistic analysis of the assets to start. This allowed us to identify particularly important variables and interactions which had significant impact to the downside risks and the growth opportunities. We were then able to coordinate and facilitate expert knowledge capture in the model focused on these areas.

Having focussed on the key technical and commercial variables and refined the probabilistic estimates we then performed full post-tax economic valuation on the asset package. We were also able from this to perform a risked consolidation analysis to determine the expected values and key risks for the total asset package. Based on this model, we were able to compare the expected value of a number of different future development strategies. Strategies ranged from making no investment in the fields with early abandonment through to investing heavily in new technology to extend field life.

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### Deliverables

We delivered to our client a complete probabilistic valuation of the opportunity for different development strategies, and in particular we were able to identify and focus efforts on the most important aspects of the acquisition – in this particular case, it was modelling the problems of fields approaching abandonment, including political risk. Because we have modelling and simulation technology specifically designed for the oil and gas industry we were able to model complex interactions between the important variables in the assessment and accurately value this complex combination of mature assets. We were also able to

assist the client in using the model during the decision process, ensuring any adjustments were rigorously, dynamically and consistently captured.

Based on this analysis, our client was able to take an informed strategic decision to purchase the assets and is still operating them successfully today.

### **CASE 3 – Corporate Valuation for Takeover Defence**

A complex global portfolio including operated and non-operated assets and assets at various different life cycle stages (production, development and exploration prospects) requires a balanced approach for effective and timely valuation. It is important in such cases to use appropriate modelling techniques for the situation – that is, employing fully probabilistic techniques where appropriate to model highly interacting variables and using deterministic techniques where this provides an adequate model for purpose. This case presents the work Indeva did for an independent oil and gas company to determine the intrinsic value of their portfolio in preparation for defence of a takeover bid. The project required full valuation of all of the company's worldwide assets including their exploration portfolio.

***An accurate valuation of these required an examination of the reservoir but also, and more importantly in this case, the local market potential and export prospects. We used a fully probabilistic model because of the level of complexity and interaction.***

The assets in this case included operated, producing developments onshore and offshore in India, producing assets and an exploration portfolio in Bangladesh and non-operated assets in the UK, Norway, the Netherlands and Papua New Guinea.

#### Approach

The approach required a complete review of the assets initially to determine appropriate modelling techniques and coordinate knowledge input from experts as required. The initial assessment identified that the most complex aspect of the portfolio was the Indian and Bangladeshi assets. An accurate valuation of these required an examination of the reservoir but also, and more importantly in this case, the local market potential and export prospects.

For the exploration prospects in Bangladesh, it was important to define market capacity within the local market but also the probability the prospects could meet the reserve threshold required to facilitate export to India.

For the smaller, non-operated assets in the UK, Norway, the Netherlands and Papua New Guinea it was determined early on that a deterministic approach would be suitable and therefore more effort could be focused on improving the model for the Indian and Bangladeshi assets. The Indian and Bangladeshi assets were highly interacting and had significant uncertainty around the market and the reservoir and the valuation model also needed to incorporate capital constraints and complexities introduced by progressive fiscal regimes. It would have been inappropriate to use deterministic techniques in this case, the only effective way to model these assets was to use a fully probabilistic approach.

#### Deliverables

The deliverable to our client in this case was a total corporate valuation presented on a risked basis. The model we produced treated each asset appropriately based on the complexity, level of interaction with other assets and the external market environment. As a result, the company was able to illustrate the current share price was significantly undervaluing the company and successfully defended against the takeover.

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*For more information on our consulting services and to discuss how we can help your company make better decisions, contact us at [decisions@indeva.com](mailto:decisions@indeva.com)*

