Dear Sirs,

Please find attached the comments and answers to the questions set out by International Valuation Standards Council (IVSC) in "Valuations in Extractive Industries" discussion paper.

These comments and answers were prepared by a workgroup led by "Lukoil" OJSC (chaired by Mikhail Kozodaev, Senior Manager, "Lukoil" OJSC). This workgroup included:

- "Lukoil" OJSC,
- Ernst & Young (CIS),
- KPMG (CIS),
- "Stremlenie" LLC (Russian appraisal company),
- Noncommercial partnership "The Society of Specialists-Appraisers (SMAO)" (Russian self regulated appraisers organization),
- Noncommercial partnership "National Board of Specialists-Appraisers (NKSO)" (Russian self regulated appraisers organization),
- Independent expert in extractive industries appraisal – Dmitry Bodganov.

We were happy to participate in this project, should there be any questions please do not hesitate to contact Mikhail Kozodaev (Mikhail.Kozodaev@lukoil.com), Edgars Ragels (Edgars.Ragels@ru.ey.com) or Alexander Kulemin (Alexander.Kulemin@ru.ey.com).

Attachments:


Question 1.1:

a) Should IVSC produce combined standards and guidance for Extractive Industries or produce separate pronouncements for mining and for oil and gas? If you believe the latter please indicate the reasons why you consider separate guidance is appropriate.

From our point of view, it is expedient to draw up a united standard for Extractive Industries that would incorporate general characteristics and key requirements to business and asset valuation. Mining and oil and gas industries have their own specific characteristics differentiating them from other industries. At the same time all Extractive Industries have common critical characteristics, including those concerned with the methods of extraction of mineral resources.

The fact that extraction techniques typical for the oil and gas industry are sometimes used in the mining industry and vice versa can also be put forward as an extra argument to support this point of view.

For example, oil (in the form of bituminous sands) in Alberta, a province in Canada, is extracted by way of an open-pit mining; there is the Yaregskoye field in Russia developed by way of shaft mining as oil is highly viscous there. At the same time pit and shaft mining are generally typical for the mining industry.

Question 1.2:

a) Should the project focus just on the valuation of reserves and resources or should it extend to other assets employed in the industry and to entire businesses in the sector? Please provide reasons for your answer.

The standard will bring most benefits to the Russian appraisers if it is employed to value business and specialized assets of Extractive Industries (field development items, specialized equipment, geological data, etc.), not reserves and resources. Valuation of business and specialized assets is very specific and varies considerably from that of other industries; that is the reason why these specifics should be included into the standard.

b) How often do you assess or use (if it is readily ascertainable) the value of an extractive business as a starting point for the valuation of reserves and resources?

Within an independent appraisal, the value of an extractive business is always a starting point to assess reserves. In the Russian Federation, a valuation of the mineral rights (effectively resources and reserves) is performed only by state bodies in order to set an initial auction price, which is explained by the exclusive state ownership to the mineral reserves and heavy restrictions of the rights to use them. Since developers cannot sell the rights to use mineral resources on the open market (except for the rare situations when such rights are sold as part of a property complex in case of bankruptcy of a developer), appraisers are not engaged to value reserves and resources (For more info, see Attachment 1 hereto).

Question 1.3:
a) Do you agree with the Board’s preliminary view as to the type of pronouncements that IVSC should be making in relation to valuations in the Extractive Industries? If not please explain what alternative or additional material you believe would be useful.

We do agree with the Board’s preliminary view as to the necessity to develop documents of different levels addressing valuation in Extractive Industries.

Question 2:

a) Are you familiar with the former GN14?

Since the International Valuation Standard (8th edition) was translated and published in Russia in full in 2008, Russian appraisers are very familiar with GN14.

b) Is GN 14 used in the valuations that you provide or receive?

The International Valuation Standards, including GN14, are not a direct statutory document in the Russian Federation; they are used by valuers only for information purposes and can be applied to the extent not violating Russian Law on valuation (For more info, see Attachment 2 hereto). That is why GN14 is used in Russia mainly for the purpose of IFRS valuations.

c) What elements of GN 14 do you find useful in either reporting or interpreting valuations?

We believe that the most useful elements of GN14 are the following:

- A necessity to keep in mind depletion of mineral resources (cl. 1.6)
- The fixed assets <…> may retain relatively little or no value when separated from production at the site (cl. 1.13) (for more info on the valuation in Russia, see Attachment 3 hereto)
- Unique characteristics of each deposit make it hardly possible or even impossible to apply a market approach (cl. 5.3.1)
- DCF method is most commonly used for valuation of extraction assets (cl.5.3.3)
- An appraiser must have competence relevant to the subject asset or interest, or retain the services of (an) appropriate skilled Technical Expert(s) (cl. 5.2.2 and cl. 1.5)

Question 3

a) Which classification code or codes are most commonly used in your industry/sector?

The Classification of Resources and Reserves by Each Type of Natural Resources (hydrocarbon materials, solid minerals, underground water, carbons, bitumens, etc.) is mandatory in Russia. Any changes in the reserves identified in the course of geological exploration and evaluation or development must be estimated under the Classification, undergo the State Expertise of Reserves (the State Committee for Reserves - in respect of the amount of reserves, the Central Committee for Development - in respect of development characteristics) and are then approved by a competent body (Federal Agency RosNedra). Oil companies operating with the participation of foreign investors may carry out a regular valuation (once a year, every three years) of their own reserves under the PRMS classification in order to provide investors, creditors, etc. with the relevant information. This classification is not mandatory in Russia and may contradict field development norms established by the Russian law.
b) Which code do you normally use or rely on?

It is a common practice to use the State Russian Classification. Other classification systems such as PRMS and SEC are used only as a source of additional information.

c) Are you aware of differences across your industry/sector on the classification codes used? If so please indicate whether these differences cause problems in undertaking or understanding valuations.

Specific framework of Russian law results in a fact that an application of a code/classification which is different from State Classification may result in an incorrect estimation of reserves and resources, usually overestimation. Mandatory requirements to be met while determining the key geological and technological parameters of development (reserves, extraction volumes, capital investments and operating costs) make it necessary to use the State Classifications. But the State Classifications are based on either simplified economic principles (no inflation tracking, impossibility to change scenario parameters, uniform discount rates) or geological and technological principles (maximum extraction of mineral resources) which results in the need to adjust valuation results (as related to the economic assessment).

Reference information on the Russian law regulating classification of the reserves is provided after the answers to the IVSC questions in the form of a detached reference (see Appendix 1 hereto).

Question 4:

a) Please identify the valuation methods that you most commonly use or encounter for valuing:
   a. Producing reserves
   b. Reserves undergoing development
   c. Reserves or resources subject to exploration

   If you are a valuation provider, please indicate why you prefer these methods. If you are a valuation user, please indicate if you are confident in the result obtained by these methods.

Income approach is the most appropriate approach for the valuation of reserves at any stage. Cost approach is not applicable for the valuation of reserves and resources (reserves and resources are not renewable assets; you cannot replace or renew them). The market approach is applied mostly as a “common sense” check; in this case it is necessary to take into account that the main factor ensuring reasonableness of the result is comparability of analogues and accuracy of adjustments made by differing value factors. The resources and reserves, being objects of the valuation, in the strict sense are unique, and geological, economic, infrastructural and other characteristics of a field are so individual that it is hardly possible to clearly determine adjustment ratios for all comparative factors.

Question 5:

a) If you have experience of using the market approach to value assets, please indicate the sectors and asset types where this is used.

For business valuations, but to a very limited extent. (see Answer 4).
b) Please identify the three most important factors for which you frequently need to adjust price data when applying this approach.

The amount and extent of geological exploration of reserves/resources (exploration maturity); the status of site development (existence of infrastructure) and the current stage of production; valuation date (current prices of the underlying assets and price change projections as of the valuation date). The above adjustments apply only to business valuations, while different factors are used for asset valuations.

Question 6.1:

a) Production forecast – do you use internal production forecasts developed by the entity’s own geological and engineering specialists, external forecasts, or a combination of both?

Russia is characterized by the existence of approved project documents that establish the parameters of the deposit’s technological development plan. Therefore when the approved project exists the model is based on such a project. In the absence of the project, reliance is made on a combination of the two forecasts referred to in the question (provided, of course, that such reliance is possible).

b) Do you adjust the production forecasts for risk by reserve category?

Yes, we normally use the reduction factors to transfer resources (C3, D1, D2 according to Russian classification) and reserves (C2 according to Russian classification) from the lower categories to commercial reserves. Forecast production levels are then adjusted accordingly. Depending on a given category of reserves and/or resources, an adjustment for potential changes in geological and physical properties may also be made.

c) Do you make an explicit cash flow forecast through the term of expected production, even though it might be a very long period of time, or do you use a “remainder period” for long lived reserves? If you use a remainder period, typically over what period is your explicit forecast?

A forecast model covers the entire period of development, regardless of its duration. This is the specifics of production forecasts in Russia. Any project approved by the government must include a production forecast through the term of development and the final value of recoverable reserves.

An economic model may either cover the entire term of expected production or be limited by the validity term of the current license.

d) Do you use an internal management estimate for future pricing, eg the NYMEX, investment bank analysts’ estimates, industry sources, or a combination thereof to estimate future prices? If using the NYMEX strip pricing, what are the typical assumptions you make for prices beyond the NYMEX strip (e.g., flat, inflationary growth, etc.) Do you consider the impact of any hedging of future prices that might be in place in estimating the future revenue stream?

As inputs, the market expectations of future prices for the subject products are used, in particular:

- For medium-term (3-5 years) price forecasts, the following inputs are used:
  - futures prices for a given product;
  - a consensus forecast of investment banks’ medium-term projections;
- medium-term price projections made by state agencies (e.g., the Ministry for Economic Development of the Russian Federation).

- For long-term price forecasts, the following inputs are used:
  - long-term forecasts made by international analytical agencies such as the International Energy Agency; the Energy Information Administration's price statistics of key crude grades (WTI, Brent),
  - a consensus forecast of investment banks' long-term projections,
  - a consensus forecast of long-term price projections made by industry players.

When forecasting prices for a given product under the Income Approach, prices under existing contracts concluded by the subject company are also considered.

Besides, crude price estimates take into account a price differential between crude grades and a projected transportation distance to the subject site.

e) Do you apply differentials to the future price estimates? If so, what is your source for estimated differentials?

If market price forecasts are available only for certain product types (e.g., Brent crude) and are not available for the entire product range or its part, persistent historical dependencies between prices for various types of homogeneous products (e.g., Urals-Brent price differentials) are used for forecasting purposes.

The estimates of price differentials are made using the following sources:

- price projections for key benchmark grades of a given product (e.g. crude oil) made by analytical agencies;
- historical price differentials between the subject and benchmark grade of a given product;
- the subject company's internal management estimates of price differentials between the subject and benchmark grade of a given product, taking into account differences in quality and geographic location.

f) Do you reflect currency exchange risks to future income and operating cost projections in the cash flow or in the discount rate?

Cash flow projections are usually made in local currency. The discount rate is calculated taking into account the currency of the cash flow. In calculating the discount rate in local currency, the yield to maturity on sovereign Eurobonds denominated in US dollars is used as a risk-free rate, provided that such yield includes the country's sovereign risk. The discount rate, calculated as described above, may then be converted into local currency using the international Fisher effect, whereby differences in interest rates between various currencies are driven by long-term inflation expectations. Below is the formula of the discount rate from US dollars into rubles conversion:

\[ k_{e}(\text{RUB}) + 1 = (k_{e}(\text{USD}) + 1) \cdot \frac{1 + \text{long-term inflation in Russia}}{1 + \text{long-term inflation in US}} \]

To convert the discount rate into local currency, the amount of equity may be increased by the currency premium, which is measured as a spread between yields to maturity on government bonds denominated in local currency and those denominated in US dollars (Eurobonds) with similar duration.

g) Do you include corporate overheads when estimating the value of mining, oil and gas reserves, or just the selling, general and administrative costs associated with operating and producing the reserves?
Corporate overheads are taken into account when estimating the value of reserves (at the average market level and to extent it is obviously necessary).

h) How often do you use the DCF method to value probable or possible reserves?

The Russian classification of mineral reserves does not contain probable and possible reserves. To estimate the amount of geological and recoverable reserves, the deterministic approach must be applied, whereby reserves are grouped together based on the geological exploration maturity/degree. Probable reserves may relate to geological reserves (C2 category), though this relationship is far from exact. The DCF method is commonly applied to value any category of reserves under the Russian classification. Possible reserves may be tentatively related to resources that are associated with a high level of geological confidence (C3, D1i). These are almost always valued using the DCF method and the results of such valuation may be verified by other valuation methods.

Question 6.2:

a) What methods do you use or are familiar with for determining the discount rate used for valuations of reserves and resources?

In Russia, the subject of valuation is a business holding mineral/subsoil rights (mineral users).

For free cash flow to equity (FCFE), the cost of equity is used as a discount rate, such rate may be determined using a number of methods, with CAPM and the Buildup methods being the most common ones.

For free cash flow to the firm (FCFF), the weighted average cost of capital (WACC) is used as a discount rate.

For the sake of consistency, in the valuation process the discount rate is determined by reference to projected cash flows; if projected cash flows are in nominal terms and in local currency, so is the discount rate and so on.

The approach to converting the US dollar rate into local currency is described in paragraph 6.1.f hereof.

Please refer to Appendix 4 hereto for an illustrative calculation of the discount rate.

b) Do you separately consider and evaluate market/systemic risk and asset specific risk?

Market risks are reflected both in the Beta coefficient and the market risk premium, which are either based on estimates of analytical agencies (e.g. Ibbotson Associates) or appraiser's own estimates.

Sovereign risks are taken into account when determining a risk-free rate (e.g., for Russia, a risk-free rate may be taken as the yield to maturity on US dollar-denominated Russian Eurobonds). The company-specific risk premium is included in the estimation of the discount rate to reflect specific (one-off) risks inherent in the subject asset. There is currently no common approach to the company-specific risk premium exercise in the estimation of the discount rate. The estimation of the company-specific risk premium is performed using a number of methods, including an expert judgment.

For example, specific risks are estimated taking into account a wide range of factors that affect risks associated with the development of a given deposit. Such factors, which are also considered when determining the discount rate, are usually divided into the following four major groups:
- geological factors
- technology-related factors
- economic factors
- other factors

The most common geological factors include the following:
- level of geological exploration maturity/degree (classification of reserves)
- level of confidence in key physical and chemical properties

Major technology-related factors include the following:
- extent of commercial development of a given deposit
- applicability of enhanced oil recovery and production intensification methods
- level of confidence in key production parameters

Economic and other factors, along with purely economic parameters, include such factors as availability of and access to infrastructure, existence of environmental risks, etc.

c) Please indicate the factors that you normally consider and reflect in the discount rate and any source you use to determine the appropriate rate adjustment.

For extracting companies, specific factors are all factors referred to in paragraph 6.2 (b) hereof. The sources include industry-specific, research and analytical materials.

d) Do you use multiple discount rates to reflect the changing risk profile as an extractive process moves through its life cycle?

Usually not. A unified rate that considers risk factors, both existing and anticipated as of the valuation date is used.

Question 7:

a) Please indicate what methods you use or are familiar with that fall under the Cost Approach and that are used in valuing assets in the Extractive Industries.

In practice, the Cost Approach is used for valuing a business -- the Asset Accumulation Method and the Liquidation Value Method (for depleted deposits). By contrast, to determine the value of reserves and mineral/subsoil rights as well as external depreciation of tangible assets Income Approach methods are commonly used, while in certain cases external depreciation may be determined using indirect methods that include adjustments for depletion parameters, production rates, water cut, etc. A number of other methods falling under the Income, Cost and Market approaches may be used for valuing individual assets as part of wider business valuation. We believe that the Income Approach is most suitable for valuing assets of extracting companies, as it is designed to provide the most complete and explicit assessment of the cumulative effect of various value drivers.

The value of certain tangible assets in the extractive industries may be determined using the replacement or reproduction cost methods under the Cost Approach. Note that the replacement cost method is more preferable, as it results in minimal adjustments to reflect functional obsolescence.

Market Approach methods may be applied to value certain types of assets such as drilling rigs, pumps, special vehicles, i.e. those assets for which there is a market where they may be sold separately, rather than bundled together in a package deal to sell them as part of the existing business).
b) If you use or are familiar with the Cost Approach, please indicate in your experience how the cost of an equivalent asset is determined.

The Cost Approach may be applied in practice for valuing individual tangible assets relating to in-field infrastructure and site facilities such as communication networks, structures, equipment, etc. Replacement cost is the primary basis used to estimate the cost of an equivalent asset. For example, valuation providers in the oil sector have access to most recent information that forms the basis for determining costs to replace the subject asset (price quotes for major production equipment from manufacturers and suppliers, service fees of construction, drilling and OFS companies).

c) If you use or are familiar with the Cost Approach, please indicate the three most common adjustments that are made in your experience to reflect physical, functional or economic obsolescence, and what metrics are used to determine these adjustments.

Main adjustments to reflect physical depreciation in the extracting industries include (i) the value adjustment for the economic life of the subject asset (making this adjustment requires information about the remaining economic life of the subject asset and an estimate of the economic life of an asset that is functionally similar to the subject asset and whose value is used as a benchmark for determining reproduction/replacement costs, (ii) to reflect recoverable physical depreciation, the value of the subject asset may be adjusted for the amount of the relevant costs (e.g., costs to repair defects in a well may be estimated based on workover crew hour costs and the average market cost of one crew hour).

The factors of functional and/or external depreciation are primarily determined by (i) the characteristics of a given license block such as depletion (in the case of oil assets, these include production rates and water cut), (ii) qualitative characteristics of the extracted product (in the case of crude oil, these include viscosity, sulfur content, etc.), (iii) maturity of the region (availability of requisite infrastructure and transportation networks). In very general terms, functional and external depreciation manifests itself (and is therefore determined) either as excess capital or operating expenditures incurred by a mineral rights holder due to factors mentioned above or as an objectively existing limitation on ROI resulting from such depreciation).

However, given that depreciation and obsolescence factors are interdependent and have a non-linear impact on the value, the only way to correctly measure the accumulated depreciation would be by applying the DCF method, both with and without the impact of these factors. In this case an Income Approach method is applied within the framework of the Cost Approach.

Question 8:

a) How should the unit of valuation (unit of account) be determined in the valuation of extractive activities?

Such question is relevant for valuation of assets for IFRS reporting purposes. According to the provisions of IAS 36, a separate unit of account or a cash-generating unit (CGU) is determined on the basis of the separation criterion, i.e. if cash flows generated by one CGU may be separated from cash flows generated by another CGU, such CGUs must be valued separately).

b) How is double counting of the contribution of different assets avoided?

To avoid double counting of the contribution of different assets, it is necessary to separately measure the fair value of individual tangible and identifiable intangible assets after determining the aggregate value of assets of a company engaged in the extractive industry (the "entity").

Note, however, that certain assets may be considered as part of a unit of account (CGU) rather than in isolation.
The remaining part of the aggregate value of assets (after subtraction of the fair value of assets that are considered separately) must be included in goodwill.

c) How should economic obsolescence or impairment, if present, be allocated proportionally to all contributory assets of the mineral asset?

First, each asset contributing to the entity's total value must be tested for impairment, with the respective impairment loss to be allocated to each tangible or identifiable intangible asset.

Then, the entity's value must be compared with the sum of the fair values of its tangible and intangible assets derived as a result of the impairment tests. If the respective difference is less than the carrying amount of goodwill, goodwill is impaired.

Where a certain portion of the entity's current cash flows may not be attributed to a specific contributory asset and the fair value of such asset may therefore not be determined, the economic impairment must be allocated to a cash-generating unit, which may comprise a group of assets.

d) What methods do you use or are familiar with to attribute value to specific contributory assets?

The following method is used to attribute the entity's value to specific contributory assets.

- the value of individual tangible assets is measured using the Cost Approach
- valuation of individual identifiable intangible assets is performed
- tangible assets are tested for impairment:
  - the entity's total value is determined;
  - if such value exceeds the value of tangible assets that was determined earlier, the latter is considered to be equal to the previously determined value;
- identifiable intangible assets are tested for impairment:
  - if the difference between the entity's total value and the value of its tangible assets exceeds that of its identifiable intangible assets, the latter is considered to be equal to the previously determined value;
  - a positive difference, if any, between the entity's total value and the aggregate value of its tangible and identifiable intangible assets is included in goodwill.

e) Are entity specific inputs appropriate when valuing contributory assets in extractive activities? What checks can be made on the reasonableness of entity specific inputs?

Entity-specific inputs are appropriate provided that they reflect the specifics of the entity's operating and other activities in contrast to peers.

However, to check the reasonableness of certain entity-specific operating inputs it is possible to use the results of analysis of peers' operating metrics.

This will help to identify the allowable value range for certain metrics and to gain understanding of the existing industry norms.

f) Should components of goodwill other than value of assembled workforce be recognised?

Recognition of assets is a matter which is relevant to IFRS rather than to valuation standards. These components are not considered separately when valuing assets in the extractive industries. Assembled workforce is only considered when determining the value of intangible assets under the multi-period earnings excess method (MEEM).
Question 9:

a) How do you estimate the cost of future reinstatement or environmental protection obligations?

The current cost of an asset liquidation obligation is estimated as the present amount of costs for the asset’s liquidation in the year in which the asset is to be retired.

The cost of future asset liquidation is taken to be equal to the costs that the company would incur if an asset was liquidated at the current time, adjusted for inflation accrued in the period remaining until the asset’s liquidation.

The industry standards for decommission costs can be used: 10% of the cost of key production assets for all groups of site facilities (with the exception of wells). Overall costs for well liquidation are estimated depending on the number of wells and the average level of costs for the liquidation of one well.

In the Income Approach (DCF method): explicitly as outflows of money in the relevant period; in the Cost Approach: as deferred liabilities, taking into account the discount factor.

b) Do you discount the future cost of reinstatement obligations using a risk free rate or another rate? If another rate please identify and provide rationale for this approach.

Various rates are used as the discount rate: e.g., WACC and a risk-free rate for the Russian Federation (yield to maturity of long-term state debt securities).

In this case, however, risks that could alter the current value of asset liquidation costs must be taken into account in forecasting future asset liquidation costs. Liquidation costs must thus be adjusted for the probability of such risks. For example, the level of asset liquidation costs can be forecast as the average value, weighted by probability, between cost levels relating to the relevant risks.

In practice, such an estimate is needed only in the case of the Cost Approach, when infrastructure-liquidation and land-reclamation costs are estimated separately as a concealed off-balance liability. (for example, a risk-free rate).

Question 10:

a) If you provide valuations of mineral assets, what investigations do you undertake to established the reasonableness or otherwise of estimates of the extent of reserves or resources provided by geologists?

In a number of cases (availability of resources, complex construction, lack of technological solutions), specialists are engaged to provide valuations of potential changes in reserves.

b) If you provide valuations of mineral assets, are you routinely provided with estimates from engineers of the cost and feasibility of extraction? What enquiries do you make to satisfy yourself as to the reasonableness of these estimates?

Same as the preceding answer. Engineers provide initial input on geology, development and costs in connection with the use of assets.

c) If you are a recipient or other user of valuations of assets in the Extractive Industries, are you satisfied that the valuations properly reflect any uncertainties in the current estimates of either the extent of the reserves or the costs of recovery? What information would you expect to see in
a valuation report that would improve your understanding of the sensitivity of the reported value to uncertainties in the identified reserve or the costs of recovery?

In the extractive industries, not all uncertainties can be taken into account. But they can and should be minimized.

Question 11

a) Please identify any intangible assets that are normally separately identified and valued;

   i. In transactions between entities in the Extractive Industries and

   ii. When accounting for the acquisition of a business in the Extractive Industries.

Based on our experience, the following types of identifiable intangible assets are most common in the case of transactions involving the acquisition of assets and transactions between companies in the extractive industries:

   – Exploration and extraction licenses;
   – Agreements with consumers for the supply of products as well as relations with consumers in general;
   – Technologies, licenses and patents.

b) In your experience what, if any, value is attributed to components of goodwill, eg an assembled skilled workforce, in corporate transactions in the Extractive Industries. Please briefly indicate any valuation techniques used to establish the value of goodwill in such circumstances.

Since it is difficult in practice to identify a number of intangible assets and determine their value as individual assets within the company's value, due to the need to apportion aggregate cash flows among individual identifiable assets, it is advisable to determine goodwill as the residual between the company's aggregate fair value and the fair values of its individual tangible and identifiable assets. In this case, individual components of goodwill are not singled out, and goodwill is not apportioned among these components.

c) When considering the valuation of previously uneconomic reserves that can now be recovered using advanced technology, eg shale gas, deep water drilling, do you attribute an element of the overall value to the intellectual property involved? If so please explain briefly the method used to estimate this.

If the company gains a competitive advantage or additional income as a result of using new technologies, part of the value is attributed to an intangible asset.

In the Income Approach, the method used for the valuation of technological intangible assets is the method of discounted cash flows (surplus profit): the value is the current amount of surplus revenue obtained from the use of a specific intangible asset; cash flows are forecast throughout the asset's useful life.

If a company uses a technology it owns to extract reserves that were previously economically unjustified, part of the business's total value may be treated as intellectual property by using:

- the relief from royalty method;
- the profit split method;
- the cost saving method.
The relief from royalty method is distinguished by the way in which the amount of license payments that may be paid to the owner for technology used is determined. The terms of licensing agreements for comparable technologies are analyzed to determine the amount of license payments.

The profit split method is distinguished by the way in which the share of operating profit that may be paid to the owner for technology used is determined. For purposes of determining the required share of profit, market data on the yield of guideline companies are analyzed, the required return on equity for the licensee is determined, and industry rules of thumb are applied).

Question 12:

a) Please provide any examples of which you are aware of significant differences between the value of otherwise similar resources arising solely from different Governmental policies.

Example: there is a dramatic difference between the cost of one ton of reserves in transactions in Russia and Kazakhstan. This is because of the difference in tax systems. The valuation of reserves in the Russian Federation differs from the PRMS valuation for virtually all oil and gas deposits. This has to do with the State Classification of Reserves, strict site-development requirements and the terms of License Agreements. Uncertainty in regard to tax rates (e.g. on oil and gas) may also be regarded as a factor strongly influencing the valuation of assets. Tax-system uncertainty is also reflected in the discount rate.

b) Please indicate how “country risk” factors are reflected in the way in which you price or value extractive assets.

Payments (taxes, duties, transportation, ecology, etc.) explicitly entailed by current law are explicitly incorporated in the Income Approach. This is the most direct and correct method. All other adjustments are approximate. Payments (taxes, duties, transportation, ecology, etc.) explicitly entailed by current law are explicitly incorporated in the income approach. This is the most direct and correct method. All other adjustments are reflected in the discount rate.
Appendix 1

General provisions on the classification of reserves and resources currently employed in Russia and their applicability for valuation purposes

Legal base

The classification of reserves in the Russian Federation is governed by law. Thus, Article 3 of the Federal Law "On the natural resources" (dated 21.02.92 No. 2395-I amended on 30.11.2011) states:

"The authority of the federal state bodies in the field of managing mineral resources include:

(Federal Law No, 122-FZ as amended on 22.08.2004)

1 development and improvement of the law of the Russian Federation on the natural resources;
2 setting-up and implementation of the federal policy on the use of natural resources, elaboration of the strategy of use, renewal rates, further development and qualitative improvement of the natural reserve base by way of developing and implementing federal programs;
3 establishment of a general procedure to use and conserve the natural resources, development of appropriate standards (norms, rules), including classifications of the natural reserves and resources;
4 setting-up and introduction of a unified system of the federal and territorial funds of geological data on the natural resources, use and management of the data obtained at the expense of the state investments;
5 state expertise of the data on the proved reserves of natural resources, other parameters of the natural resources critical for their value or hazard, except for the data on the sites of widespread natural resources, sites of natural resources of a local significance used for construction and operation of underground facilities not related to mining;
7 making of a state inventory of reserves of the natural resources; public accounting of the sites of natural resources used for mining and construction of underground facilities not related to mining; keeping of the state cadaster and evidence of natural resources; state registration of operations associated with geological survey of the natural resources;
9 introduction of restrictions to use the natural resources on the separate sites to ensure national safety and environmental protection;
10) managing of the state fund of natural resources together with a constituent of the Russian Federation, except for the sites managed exclusively by the Russian Federation;
16) state control over the geological surveying, sound use and conservation of the natural resources, as well as establishment of a relevant implementation procedure”.

Thus, only the classification of resources and forecast reserves established by a competent federal body is mandatory on the Russian territory.

Pursuant to Article 31:

“For the purpose of tracking the status of the natural reserve base, a state inventory of reserves of the natural resources shall be maintained. It shall include data on the quantity, quality and exploration maturity of each type of the natural resources of high economic value, depositing data, level of industrial exploration, mining, losses and industrial supply of the proven reserves of natural resources based on the classification of reserves of the natural resources approved under the procedure set by the Government of the Russian Federation. Introduction of reserves of the natural resources to the state inventory and their withdrawal are carried out under the procedure set by the federal body managing the state fund of natural resources after consultations with state bodies in charge of mining supervision”.

Thus, any operations with the natural resources are possible provided only when they are registered in the State Inventory of the RF. Tracking of the natural resources introduced to the State Inventory is effected as provided for by the applicable classification of the Russian Federation.

Pursuant to articles 37 and 38:

“The task of the state control over geological surveying, sound use and conservation of the natural resources is to ensure adherence to the established procedure of use of the natural resources, statutory acts, approved standards (norms, rules) in the field of geological surveying, use and conservation of the natural resources, rules of the state accounting and accounts by all users of the natural resources.
The task of the state supervision of operational safety related to the use of the natural resources is to ensure adherence to the statutory acts, approved standards (norms, rules) on the operational safety, prevention and elimination of impact to the population, environment, buildings and facilities, and to the conservation of the natural resources by all users of the natural resources”.

And, finally, pursuant to Article 49:

“Transactions related to use of the natural resources closed in violation of this Law are void.

Persons guilty of closing the said transactions, as well as guilty of:

- issuing licenses to use the natural resources on the grounds not provided by this Law;
- violating the procedure of using the natural resources established by law;
- unauthorized use of the natural resources;
- selective (off-project) exploration of fields leading to inappropriate loss of reserves of the natural resources and other violations of a sound use of the natural resources resulting in degradation of the field;
- violating this Law, violating approved standards (norms, rules) on the operational safety related to the use of the natural resources, conservation of the natural resources and environmental protection, including violations leading to pollution of the natural resources and making them unsuitable for exploitation;
- infringing the title to geological and other data on the natural resources of confidentiality of such data;
- unauthorized development of the deposit sites;
- failure to ensure integrity of buildings, facilities as well as areas of special protection and environmental objects in the course of use of the natural resources;
- destructing or damaging wells drilled to monitor the regime of underground waters, surveying and geodetic signs;
- systematic violation of payment obligations while using the natural resources;
- failure to meet requirements to bring liquidated or conserved mining pits and wells in the state ensuring safety of the population, and well as requirements to ensure safety of the natural deposits, mining pits and wells for the period of conservation;
- failure to bring the land plots and other environmental objects damaged in the course of use of the natural resources in the state suitable for their further exploration;

shall subject to criminal prosecution under the laws of the Russian Federation, and administrative prosecution under the laws of the Russian Federation and laws of the constituents of the Russian Federation”.

Thus, any transactions closed in contravention of the applicable classification of natural reserves, rules and regulations on the development of exploration projects and rules of exploration of fields of natural resources may be put in issue.

You should pay special attention to the ban for a selective (off-project) exploration of fields. Some classifications of natural reserves, PRMS for example, presume development of the fields in such a way that makes it possible to maximise investor’s wealth. In this case optimization may result in the recommendation to use designs and methods different from the project documentation, since the principles used in this documentation are based on a more complex extraction of natural resources. Auditing and valuation of the natural resources in this case result in withdrawal of the license to use the field (and extract the natural resources) and criminal prosecution of the user of natural resources.
Applicable classification

At present, the Russian classification offers a broad variety of classifications of the reserves applied to different types of natural resources, in particular:

- Classification of reserves and forecast reserves of oil and combustion gases
- Classification of reserves and forecast reserves of solid minerals
- Classification of reserves and forecast reserves of carbons and slates
- Classification of reserves and forecast reserves of underground water

The applicable classifications of different natural resources are based on different principles (geological, technological economic) and cannot be consolidated into a unified classification. Irrespective of the applied classification, valuation of the reserves is always effected on the data of geological surveys. Consequently, most foreign classifications based on the economic principles of valuation mismatch classifications of the Russian Federation (for example, oil-and-gas classification).
Appendix 2:
Regulatory environment for valuations in the Russian Federation

Russian regulatory system for valuation has a rigid 3-level structure:

- Federal Law No. 135-FZ dated 29.07.1998 “On the valuation activities in the Russian Federation” (hereinafter – the Law);
- federal valuation standards;
- standards and rules of self-regulating organizations of valuers/appraisers.

The Law prescribes to adhere federal valuation standards and standards and rules of self-regulating organizations of valuators.

Russian appraisers are not obliged to meet international valuation standards and do not have the right to meet them, since they do not match Russian federal valuation standards.

For example, pursuant to the federal valuation standard “Valuation objectives and types of value (FVS No. 2)” Russian appraisers are permitted to assess the following four types of value:

- market value;
- salvage value;
- investment value;
- cadaster value.

Under the Law, appraisers are not permitted to assess the fair value. In other words, from the point of view of the Russian law, determination of the fair value for IFRS purposes is not considered as valuation.

Besides, pursuant to the Law, only objects of civil rights with a market turnover can become objects of valuation. That is to say that natural resources which in the Russian Federation can not be objects of purchases/sales on their own, cannot be valuation objects.
Appendix 3

The definition of "market value" given in the federal valuation standard "The Purpose of Valuation and Types of Value" (FVS No. 2), approved by Order No. 255 of the Russian Ministry for Economic Development of 20 July 2007, differs substantially from the definition in International Valuation Standards. According to clause 6 of FVS No. 2:

In determining the market value of a subject asset, the most probable price is determined at which this asset can be alienated as of the valuation date on an open, competitive market, if the parties to the transaction act prudently and knowledgeably and the transaction price is not affected by any extraordinary circumstances, i.e. when:

- one of the parties to the transaction is not obliged to alienate the subject asset, whereas the other party is not obliged to accept execution;
- the parties to the transaction are well informed about the object of the transaction and act in their own interests;
- the subject asset is offered on the open market by means of a public offer typical for similar subject assets;
- the transaction price is reasonable consideration for the subject asset, and the parties were not forced to carry out the transaction;
- payment for the subject asset is in monetary form.

A subject asset is alienated on the open market if it is offered on the open market by means of a public offer typical for similar subject assets, and the asset's selling time must be adequate to attract the attention of a sufficient number of potential buyers.

The parties' actions are reasonable if the transaction price is the highest reasonable price available to the seller and the lowest reasonable price available to the buyer.

Available information is full if the parties to a transaction have been properly informed on the subject of the transaction and seek to obtain terms that best serve their interests in accordance with full information available at the valuation date on market conditions and the subject asset.

There are no extraordinary circumstances if each party has reasons for carrying out the transaction, and the parties were not forced to carry it out.

Market value thus presupposes a competitive market. There is clearly no open market for the great majority of subject assets in the extractive industries due either to legislative restrictions (as in the case of mineral rights) or to the fact that there is demand for such assets on the part of only one entity – the mineral user licensed to utilize a deposit that may be developed using such an asset (as in the case of geological information and immovable property located on a deposit).

Thus, for example, a production well may yield income for a mineral user with the appropriate license, but no other entity may earn income from the well other than by renting it to that mineral user if such entity deems it beneficial. Such assets have no market value, but they do have an investment value.

Such assets as an in-field oil pipeline do have a market value, since an owner can dismantle it and sell it as scrap metal, but the value will be substantially lower than its investment value for the mineral user, who can use it to transport hydrocarbons.

We share the position, approved in European Valuation Application 5 of the European Valuation Standards EVS-2009, that only income-approach methods (first and foremost, the cash flow discount method) are to be used to determine investment value.

The difficulty of determining the investment value of such assets as oil wells lies in the fact that they do not yield income independently, in isolation from other property of an extractive enterprise – above all, mineral rights – and the question arises as to how a cash flow can be formed for a well.

The proposed solution is to assume the investor's point of view and form cash flows in two cases:
• when a mineral user has a subject asset and can use it to derive income;
• when a mineral user does not have a subject asset.

The difference between these two approaches, discounted as of the valuation date, will reflect the investment value of such asset.
Appendix 4

Description of the methodology used to calculate the discount rate applied.

Weighted average cost of capital (WACC)
The arithmetic formula for calculating the WACC is as follows:

\[ \text{WACC} = k_d \cdot \frac{E}{D+E} + k_e \cdot \frac{D}{D+E} (1 - T) \]

where

- \( k_d \) – cost of debt financing
- \( D \) – debt
- \( E \) – equity
- \( T \) – effective income tax rate
- \( k_e \) – cost of equity financing
- \( WACC \) – weighted average cost of capital

The CAPM and Buildup methods are used to calculate the cost of equity. The CAPM method is the most common.

The analysis is based on the following assumptions:
- the average industry level of the debt burden is used to calculate the discount rate;
- the beta coefficient is calculated based on the average industry value of unlevered beta, taking into account the average industry level of the debt burden.

Example of using the CAPM method to calculate the discount rate (WACC) for Russia:
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk-free rate</td>
<td>Yield to maturity of Russia-2042 Eurobonds, denominated in USD, as of the Valuation Date.</td>
</tr>
<tr>
<td>Unlevered beta</td>
<td>Median value based on selected guideline companies, Reuters/Bloomberg</td>
</tr>
<tr>
<td>Equity beta</td>
<td>Beta is calculated using the formula for calculating equity beta, adjusted for the median value of D/E and the rate of profits tax in Russia.</td>
</tr>
<tr>
<td>Market risk premium</td>
<td>Ibbotson Yearbook 2012</td>
</tr>
<tr>
<td>Size premium</td>
<td>Premium for the risk of investing in companies with a market capitalization from USD XXX million to XXX million (Ibbotson SBBI Valuation Yearbook 2012)</td>
</tr>
<tr>
<td>Company-specific risk premium</td>
<td>Appraiser's analysis</td>
</tr>
<tr>
<td>Cost of equity, USD</td>
<td></td>
</tr>
<tr>
<td>Long-term inflation rate in Russia / constant bond rate</td>
<td>Global Insight's long-term forecast of CPI dynamics in Russia / Russian bond yield in rubles</td>
</tr>
<tr>
<td>Long-term inflation rate in the US / constant bond rate</td>
<td>Global Insight's long-term forecast of CPI dynamics in the US / Russian bond yield in USD</td>
</tr>
<tr>
<td>Cost of equity, RUB</td>
<td>The dollar rate was translated into rubles using the interest rate parity formula based on projections of long-term inflation rates / constant bond rates in Russia and the US.</td>
</tr>
<tr>
<td>Cost of debt</td>
<td>Weighted average rate for the Company's loan portfolio as of the Valuation Date, expressed as the ruble equivalent, or other sources of financing</td>
</tr>
<tr>
<td>Income tax rate</td>
<td>Corporate income tax rate in accordance with the Russian Tax Code</td>
</tr>
<tr>
<td>Financial leverage</td>
<td>Average industry value calculated for guideline companies (Reuters/Bloomberg)</td>
</tr>
<tr>
<td>Weighted average cost of capital (WACC) (RUB) (rounded off)</td>
<td></td>
</tr>
</tbody>
</table>

An additional premium is taken into account in the valuation of resources (company-specific risks).