



Considerations to Foster Investment in Oil and Gas Exploration and Production in Latin America and the Caribbean



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Considerations to Foster Investment in Oil and Gas Exploration and Production in Latin America and the Caribbean

1. OBJECTIVE

ARPEL is the Regional Association of Oil and Gas Companies in Latin America and the Caribbean. Its members represent more than 90% of the oil and natural gas production activities. As a regional association that brings together public and private oil and gas companies, ARPEL is frequently contacted by representatives of national and provincial governments in order to exchange ideas on all the industry segments, including general terms of licenses, concessions and contracts for new rounds of exploration and production areas.

Within this context, ARPEL offers the following Catalogue of general points on licensing rounds for consideration by interested governments and other stakeholders. In no case ARPEL aims at promoting the granting of licenses by a government or at representing ARPEL member companies. Instead, given the opportunity, it is ARPEL's goal to contribute to a round's success and, thus to the creation of business opportunities for the oil and gas industry and the sustainable development of the sector in Latin America and the Caribbean.

ARPEL offers the following Catalogue of general points on licensing rounds for consideration by interested governments and other stakeholders.

Hydrocarbons will remain as a key and strategic component in the world's energy matrix and for the countries in Latin America and the Caribbean. Areas with easy access to hydrocarbons are already in operation and the exploration and production of new reserves is increasingly more expensive, intensive in long-term capital investments and contingent upon the development of technological innovations. This trend comes along with a constant increase of the exploratory risk.

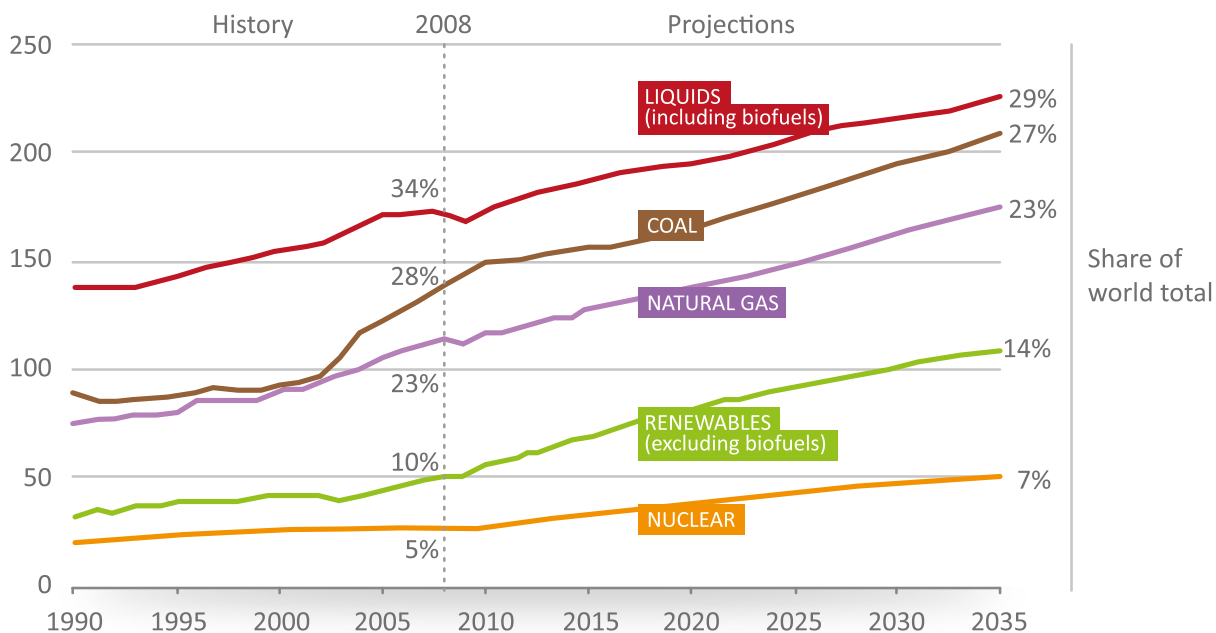


2. DEMAND AND INVESTMENTS

PRIMARY ENERGY DEMAND WORLDWIDE BY FUEL

(in quadrillion BTU)

(SOURCE: IEA, 2011) (1)



The search for and development of new productive basins (onshore and offshore) is a high-risk investment at every stage of the process particularly in frontier areas. The initial evaluation of frontier areas for a bid round is usually by means of interpreting 2D seismic data, incorporated with other geophysical and geological data. This is a cost effective way to quickly evaluate large areas that are offered in bid rounds. The key is having modern 2D seismic data available to complete a competent, effective evaluation. The critical step at this stage is timely access to the bid round areas by seismic acquisition specialists in order to acquire technologically, up-to-date data. The data is used to generate, by the commencement of the bid round, an optimal product for the potential bidders to enable their analysis and study of the areas on offer – this requires access to the acreage, minimally, nine months prior to commencement of the bid round.

Recent international statistics estimate in only 5% the probability of recovering exploration investments. Moreover, the average time for new commercial oil and gas fields to start producing, from the date an area is licensed, is between seven and nine years onshore and offshore, respectively.

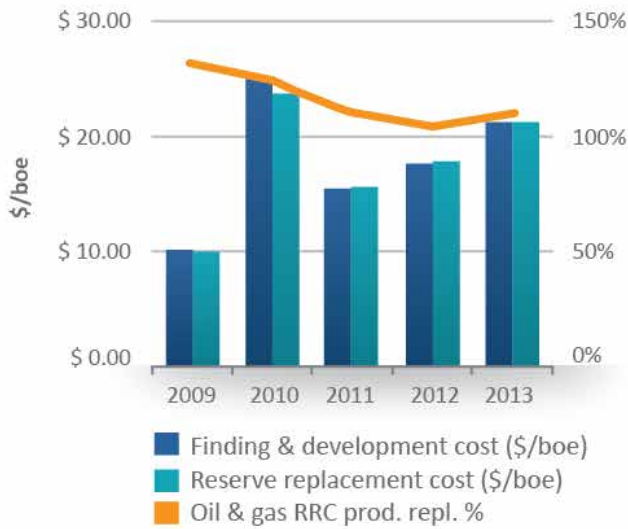
Hydrocarbons will remain as a key and strategic component in the world's energy matrix and for the countries in Latin America and the Caribbean.

(1) International Energy Agency (2011) - World Energy Outlook http://www.iea.org/publications/freepublications/publication/weo2011_web.pdf

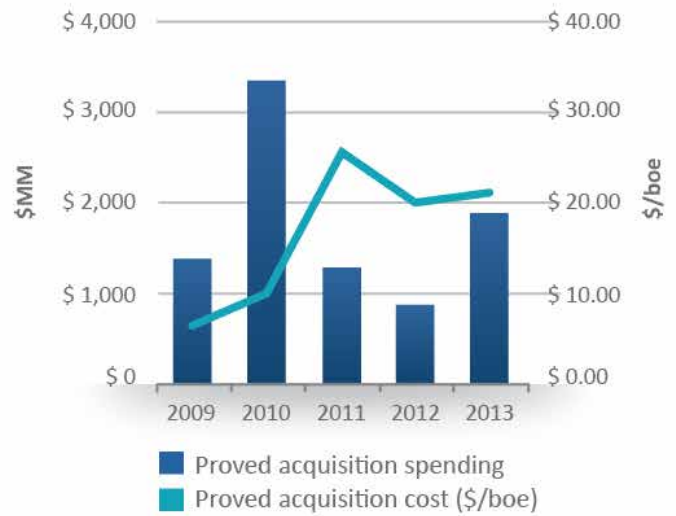
RESERVES REPLACEMENT COSTS

(SOURCE: IHS, 2014) (2)

RESERVE REPLACEMENT COSTS STEADILY INCREASE



PRICES STABLE DESPITE PROVED ACQ. SPENDING GAIN



The annual exploration and production investments required to develop the hydrocarbon resources in Latin American and Caribbean are presently estimated to be around 120-150 billion dollars.

States, owners of hydrocarbon resources, are responsible for the creation of strategies and policies to efficiently raise the value of new potential hydrocarbon reserves, for evaluating their financing alternatives and for deciding on the assumption of inherent risks.

Latin America and the Caribbean is a region with numerous opportunities: heavy oil belts in Venezuela and Mexico, pre-salt Basin in Brazil, the development of the upstream industry in Colombia and Peru, the opening of the hydrocarbon sector in Mexico, gas reservoirs in Bolivia and Venezuela, non-conventional resources in Argentina, Brazil and Mexico and the deep water opportunities in Mexico, Brazil and Uruguay, among others. However, it is also a region in which high costs and risks represent an important factor in investors' decision-making.

Partnerships provide alternative means of sharing risk and raising necessary capital for countries to transform their oil and gas resources into economically feasible and sustainably viable reserves.

In this context of opportunities, that are worth highlighting, are the annual exploration and production investments required to develop the hydrocarbon resources in Latin American and Caribbean which are presently estimated to be around 120-150 billion dollars. This amount normally exceeds the financial capacity and risk-taking appetite of most States and in many cases conflict with resources required for other priorities such as social spending, education and health. It is –thus important to consider the financial –and sometimes technological involvement of other players.

Partnerships between governments and national oil companies working internationally and/or multinational companies provide an alternative means of sharing risk and raising necessary capital. At present, there are many successful formulas used by different countries, which are nowadays producers and in many cases also hydrocarbon exporters. These formulas could be used by States as the starting point for creating new models of their own.

(2) IHS (2014) - "2014 IHS Herold Global Upstream Performance Review"



3. TYPES OF CONTRACTS

Decision-making in the oil and gas industry requires establishing clear rules as it relates to economic, legal, fiscal, commercial and administrative matters. Oil contracts are precisely the tool that allows States to define these rules and enable the analysis of interests by stakeholders. There are four types of generic contracts:

CONCESSIONS

- The State grants the contractor the exclusive rights to explore a certain area.
- The contractor finances the whole exploratory cycle, and in the case that there is a discovery, reserves belong to the contractor, and therefore, the contractor receives the production.
- The contractor pays taxes and royalties to the government.
- In short: the State's incomes derive from taxes and royalties.

PRODUCTION SHARING

- The contractor finances all investments: exploration, development and production.
- The government keeps ownership of the resources.
- The contractor recovers all the expenses (CAPEX + OPEX) with a share of the production, "cost oil". The rest, "sharing oil", is distributed between the contractor and the government, and is called "profit oil". The "profit oil" share of the Contractor/Government varies according to some variables such as daily production, accumulated production, crude oil price, project's profitability, etc.
- In short: the State's incomes come from its share of "profit oil" and from taxes.

PROFIT SHARING

- Also known as Risk Service Contracts, used mainly in Latin America.
- The government keeps ownership of the resources.
- Contractor finances all investments: exploration, development and production.
- Contractor delivers all production to the government.
- Contractor gets paid in (cash) can deduct costs, royalties and other expenses and fees.
- Similar concept as a Production Sharing Contract; main difference is the form of payment.

SERVICES

- The State outsources the required services with a contractor for the development and/or exploration of a hydrocarbon reservoir.
- The government retains the ownership of the resources.
- With the income volumes set in the contract, the contractor recovers its costs and obtains a benefit from the services rendered.
- The deviation of costs is taken on by the contractor, although there can be rate adjustments.
- In short: the State's incomes come from the difference from the production sale and the remuneration to the contractor.

4. THE SOCIAL-ENVIRONMENTAL DIMENSION

In this context, all stakeholders, i.e. governments, society and operating companies, have acknowledged that the protection of the environment and the proper management of the relations with surrounding communities represent a serious and unavoidable responsibility.

Industry has –for a long time- been incorporating environmental protection and effective community relationship management approaches in its exploration and production operations. Industry social-environmental performance has been concurrently evolving together with increasingly stricter environmental regulations and stakeholders' expectations in the Region. A participatory process to enhance mutual understanding with communities is a requirement at the level of governmental regulations and industry management. In the Region, this necessity is further enhanced in areas where indigenous communities dwell.

In order to ensure the sustainability of the operations, governments must develop proper consultation approaches to safeguard the human and socio-economic development of the communities in the context of cooperative, trustworthy and mutual learning relationships, respecting territorial rights and cultural diversity.



5. FACTORS THAT INFLUENCE INVESTMENTS

As in most parts of the world the States own the hydrocarbon resources and have the sovereign right to define their sustainable development objectives and the role that the oil and gas industry will play in that context. Should States decide to develop their hydrocarbon resources in partnership with other investors, it is important to understand what are the most important factors that influence the decision to invest in transforming hydrocarbons resources into commercially viable reserves.

DRIVERS

- Oil prices
- Geological potential
- Investment conditions:
 - Favourable economic and political context
 - Stable and transparent regulatory framework
- Business environment:
 - Possibility to access resources and ability to sell offshore
 - Access to foreign currency and possibility to repatriate profits
- Tax incentives
- Supply/Demand
- Predictability and transparency

FACILITATORS

- Straightforwardness of public-private association
- Local suppliers
- Existence of qualified human talent
- Technology and infrastructure availability
- Host government and its regulator

CHALLENGES

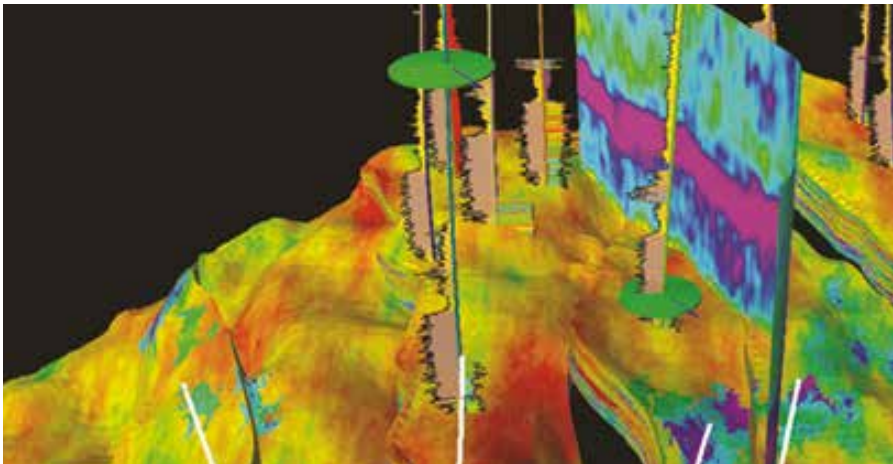
- Access to financing sources
- Energy subsidies and control of prices
- Obstacles and delays in socio-environmental licensing processes
- Large requirements of local content
- Risks associated to security and assets integrity
- Fiscal and regulatory framework
- Legal certainty
- Stability and long term planning governmental continuity



6. ADVANTAGES OF GOVERNMENT-INDUSTRY PARTNERSHIPS

The government promoting a bidding round of exploration and production areas can obtain the following advantages by partnering with other operating companies:

ADVANTAGES IN THE CASE OF UNSUCCESSFUL EXPLORATION



Partnerships would contribute to train local professionals, responsible for leading the technical aspects of the hydrocarbon exploration and production plans of the country.

- Partial or total transfer of the exploratory risk and of the financial cost related to the licensing companies,
- incomes for the country,
- update and improvement of geological information on the productive and unproductive sedimentary basins,
- acquisition of specialized knowledge in geology and exploration/production engineering, through the exchange and training of professionals with their inclusion in the work teams of an international company, and
- promotion of the development or utilization of the existing oil services sector in the country with international or local companies.



ADVANTAGES IN THE CASE THAT COMMERCIAL OIL AND/OR GAS RESERVES ARE FOUND



In the case that commercial oil and/or gas reserves are found, the consolidation of national energy matrix is secured.

- All the advantages shown for the case of unsuccessful exploration, but magnified,
- consolidation of the national energy matrix,
- strengthening of the country's macro and microeconomics as the hydrocarbon production generates new significant tax resources, which the State can also allocate to finance projects for the socio-economic improvement and for the development of specific areas,
- strengthening of the country's commercial relations,
- development of industry-related education areas, at technical as well as at professional level, and
- technological development related to the exploitation of the resources found and application of state-of-the-art technologies with the knowledge generated by this implementation.

7. GENERAL CONCEPTS

The general concepts described in this chapter constitute a catalogue of considerations so that those governments that decide to promote the development of hydrocarbons in their countries consider them as opportunities for increasing their chances of being successful. Each country could analyze these concepts taking into account its own constitutional, political and social reality, as well as its national strategy, its regional environment, the international scenario, and its sustainable development criteria.

STRATEGIC CONSIDERATIONS

The flow of investments for hydrocarbon exploration competes with various project options in the different basins of the world.

The industry's exploration and production sector is globalized and the **exploration investments' flow competes with the various project options in the different basins of the world**. Therefore, it is important that the government of a country, when deciding on the work and investment demands of a bidding round of new exploration and production areas, takes into account its own "political and economic country risk" position, in addition to the exploratory risk.

It is advisable **to take advantage of the industry's favorable international situations** as companies are more receptive to take exploration and production risks in times of global economic stability, steady oil and gas prices and signs of deficient global supply.

There are significant benefits when there is a **previous analysis of the oil companies that are most capable of investing**, working and sharing the economic future of the country. Some of the aspects that can be taken into account for the classification of companies could be: previous experience in the country, investments in the Region, exploratory success record as operator, contracts' fulfillment, application of state-of-the-art technologies, successful protection to the environment, solvency, etc.

Political parties' full agreement on the terms of each bidding round is crucial so as to offer reliable legal and fiscal stability to investors as contracts can easily be for more than 25 years.



INSTITUTIONAL AND SUSTAINABILITY CONSIDERATIONS

It is usually considered to be beneficial to **make use of a specialized governmental institution** with the necessary human and financial resources to offer the bidding rounds and for the later supervision of the contracts' fulfillment. In general, these institutions also gather all the information obtained, they draft and distribute the contractual documentation and they become the supporting organization and contact of license holder companies. It is important that this institution, although dedicated to the hydrocarbons' sector, can effectively help with the necessary information so that the new companies can position themselves as it relates to their commercial existence, tax issues, work legislation and services, among other aspects.

Governments will find relevant to previously analyze the oil companies which are most capable of investing, operating and sharing the economic future of the country.



The importance of the **pre-bidding consultation** by central governments to regional communities to include their interests in the bidding specifications from the beginning has been established. This previous step minimizes extensive re-negotiation focusing the three stakeholders (government, communities and industry) on the aspects related to the socio-environmental impact assessment and to the execution consultation.

It is essential that the work specifications include **adequate environmental management measures** and the obligation to repair potential harm to the natural environment. A preventive approach is preferable to a corrective one, guaranteeing together – governments with companies- a suitable environmental management.

It is essential that the bidding process addresses community concerns and takes a preventive approach to environmental management.



LOCAL CONTENT

In their efforts to support their sustainable development, Latin American and Caribbean nations are -understandably and increasingly- introducing 'local content' requirements into the regulatory frameworks governing natural resource developments. Their aim is to create jobs, promote enterprise development and acquire new skills and technologies.

These local content regimes pose both risks and opportunities for the host country. Local content requirements have to be a driver to lower costs and transform resources in reserves. This is a process in which governments must evolve following a learning curve associated to education, qualifications, infrastructure and logistics required to deliver local production and services. This evolution must be balanced with the need of competitive growth of the oil and gas sector in the country, i.e., balancing educational, industrial and fiscal policies to obtain the levels of production required and the level of profit that governments themselves set as objective.

A strategic approach to local content should have realistic targets that contribute to lasting benefits in the long term. Targets that are beyond the existing capacity of local industry or the absorptive capacity of particular assets may create inefficiencies. These result in higher costs, lower government revenues and less competition.

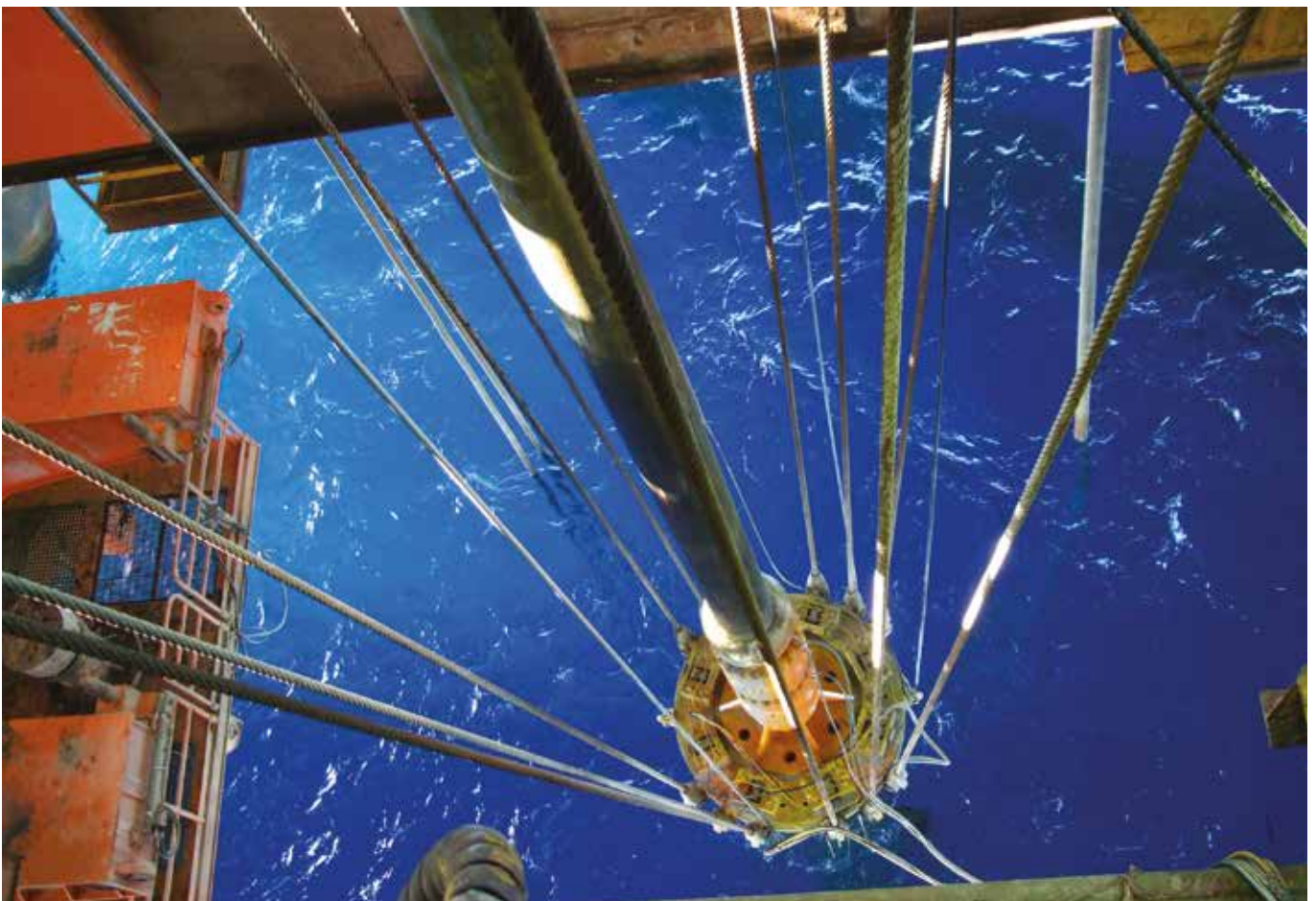
ECONOMIC - CONTRACTUAL CONSIDERATIONS

When, for example, the execution deadlines, the level of royalties, the special taxes and the export authorization are set, **the type of resources should be taken into account**: oil or gas, onshore (for example, pre-Andean, forest, desert) or offshore (shallow, deep, ultra deep), frontier, mature, reverted, with/without wells, among others, as each of them requires different work deadlines and has its own economic models.

It is of high importance to define the **type of exploration and production contract** that is going to be implemented (e.g., traditional concessions, services with risk, shared production, etc.). Concerning contract models, there are varied international experiences that a country may utilize, adding its own ingredients aligned with the State's sustainable development strategy.

It is vital that the State's objectives are made compatible with those of the industry. A wide participation of companies in the bidding rounds is a key factor to make progress in raising the value of the country's hydrocarbon resources. This can be achieved by guaranteeing **legal certainty, transparency, predictability and stability**, fully respecting the commitments undertaken.

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States will find it advantageous for their energy objectives to set technically achievable deadlines for the execution of the exploration phase.

To obtain attractive offers by qualified companies, it is important to include **competitive elements for the exploration phase (materiality)** in the specifications, in financial terms or mandatory work plans, to lay the foundations for the commercialization statements and to define the principles for the development and production models. However, it is necessary to be careful not to define bidding variables that may encourage companies to speculate and make irrational offers just to obtain the block(s).

States will find it advantageous for their energy objectives to set **reasonable deadlines for the execution of the exploration phase**, the relinquishment of sub-areas and the declaration of fulfillment of this phase in the contracts. It is important that there is a clear flexibility of deadlines for cases of force majeure such as the approval of environmental licenses or resources' management. Likewise, in the case of commercial discoveries, it is important to define the beginning of the development, of the production, the years with the right to produce, their extension and the obligations for the decommissioning stage.

As long as it is economically and politically advantageous for the country, it is critical that it is defined in the specifications if the **government and/or the national company** will have the right to acquire **stakes in the development and production** of a commercial reservoir. If the state-owned company participates, it is important to have clear decision-making rules with deadlines that are appropriate for the project.

A relevant aspect of contracts is the explicit acknowledgement of the right of license holder companies to have a fair – not necessarily excessive – **profit for the risk taken**, the capital invested and the work carried out, as well as the definition of the formula of recovery of the invested capital.

It is important that the licensing terms include mechanisms that: grant companies the right to freely have the use of a **percentage of the production**, facilitate the formation of consortia and provide the winning bidders the right to sell their stakes partially or totally as long as they have completely fulfilled all their contractual obligations.

It is of high importance that the fiscal regime for development and production can be adaptable to different scenarios and situations.

It is of high importance that the **tax system** for development and production can be **adaptable** to different scenarios and situations. The tax system should take into account, for example, that large fields can support a greater taxation in percentage terms than small ones, onshore more than those offshore, oil fields more than gas fields, light crude fields more than heavy crude oil fields and mature basins more than frontier areas.

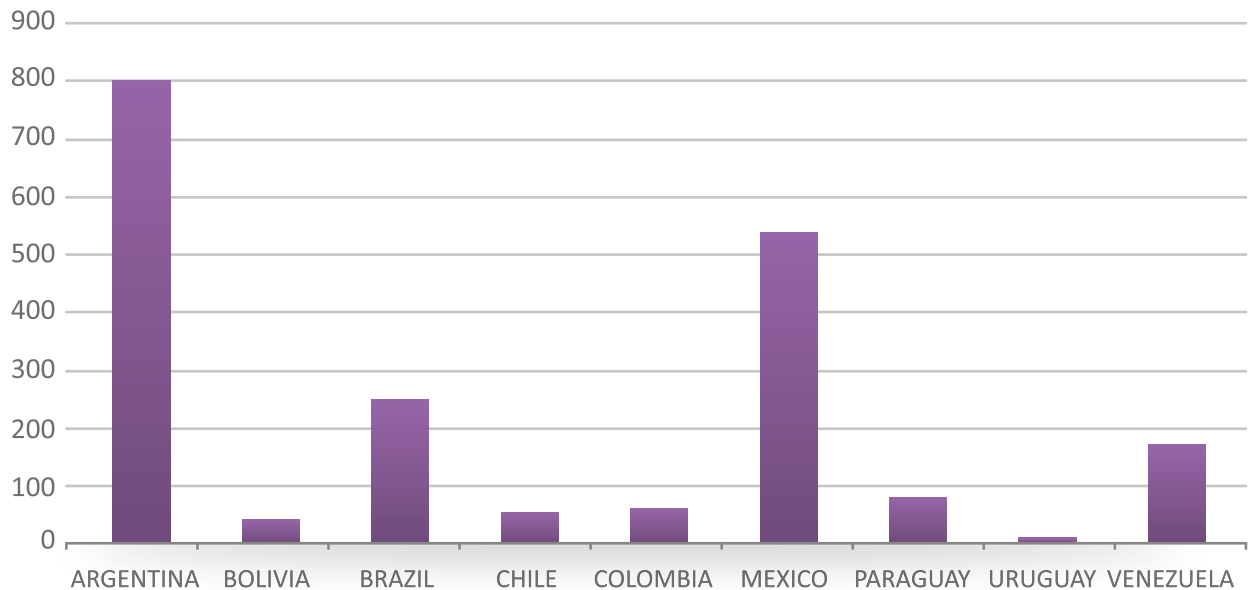
When a development plan for an oil and/or gas field is approved, it is economically advantageous that States prioritize the **maximization of reserves recovery** in the long term and not the production acceleration in time.

8. UNCONVENTIONAL RESOURCES

Successful exploration of oil and gas from shale could potentially provide Latin America and the Caribbean with an additional source of secure and competitive energy.

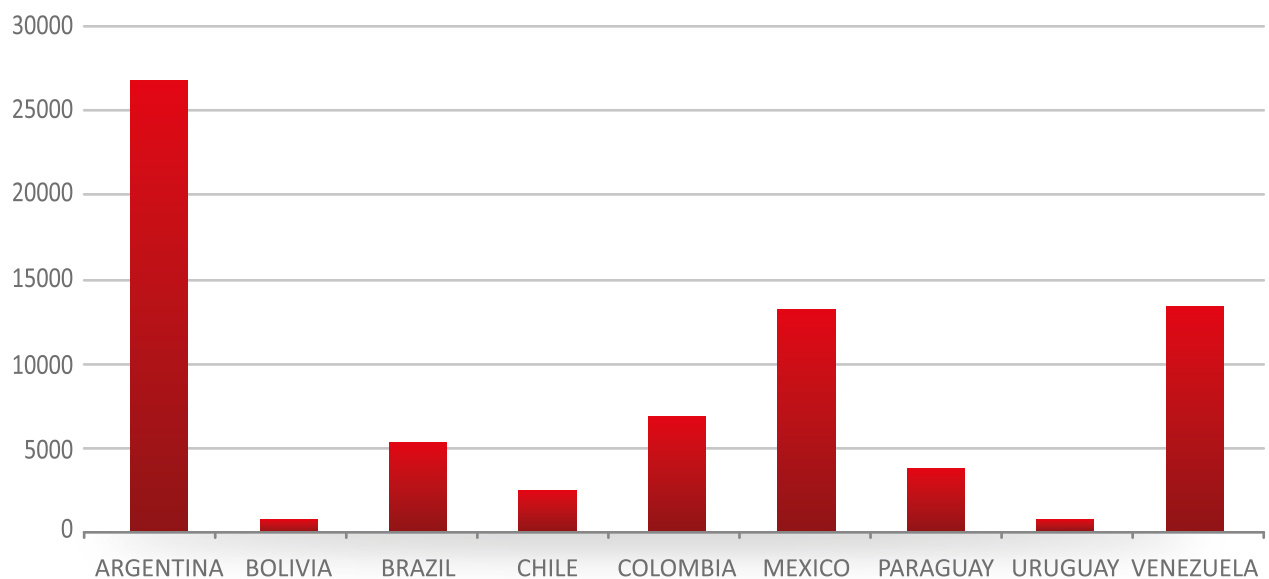
SHALE GAS TECHNICALLY RECOVERABLE RESOURCES (tcf) – LATIN AMERICAN COUNTRIES

(Source: EIA, 2013) (3)



SHALE OIL TECHNICALLY RECOVERABLE RESOURCES (million bbl) – LATIN AMERICAN COUNTRIES

(Source: EIA, 2013) (3)



(3) U.S. Energy Information Administration (2013) - Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States <http://www.eia.gov/analysis/studies/worldshalegas/>

In order to develop these unconventional resources into commercially available reserves, Latin American and Caribbean countries must develop specific, coherent and foreseeable policies, compatible with the environmental, transportation and industrial policies.

Technology is in place for shale oil/gas drilling sites to be well-designed and safely managed and with no long-term environmental impact. However, for unconventional resources to become a sustainable reality, both governments and industry will have to address social concerns, mostly focused on water consumption, land use and the potential for air and water pollution.

Some principles that can allow governments, industry and other stakeholders to frame the development of unconventional resources while addressing these environmental and social impacts, include:

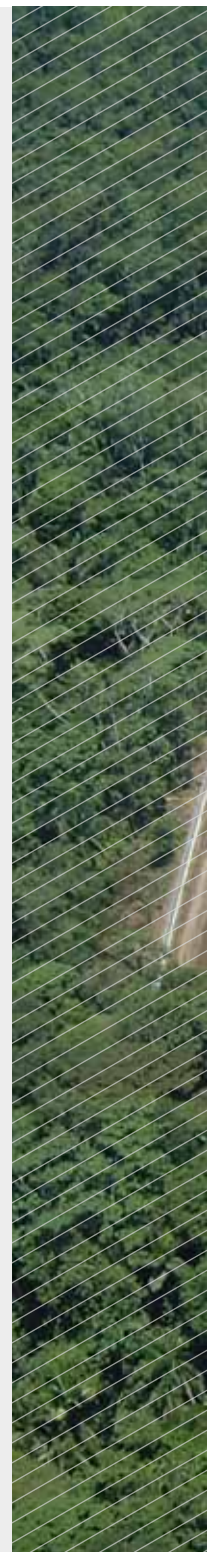
- Measure, disclose and engage. In order to address public concerns with hydraulic fracturing (also known as fracking) governments can request companies to openly share information through publicly available web sites such as NGS Facts (<http://www.ngsfacts.org/>).
- Isolate well and prevent leaks. If the well is sealed properly, there is negligible risk of water contamination in relation to chemical use. Hydraulic fracturing has been used in over 2 million wells world-wide since the 1940's and comprehensive peer-reviewed studies have found no historical cases in which hydraulic fracturing has contaminated drinking water
- Treat water responsibly. On average, drilling a shale gas well and completing a multi-stage hydraulic fracturing operation consumes the ANNUAL water use of between four and seven people and represents less than 1% of total water usage in the areas where the deposits are being developed.
- Eliminate venting and minimize flaring and other emissions. Properly designed and built wells also help ensure there are no "blow outs" that can lead to atmospheric releases of gas.
- Ensure a consistently high level of environmental performance through regular audits of operations.

Despite technical and technological environmentally-sound solutions be addressed by governments and companies, society concerns will remain that production might involve unacceptable environmental and social damage:

- Major implications for local communities, land use and water resources
- Serious hazards include the potential for air and water pollution

Improperly addressed, these concerns threaten to hold back and perhaps halt the development of countries' unconventional resources. This requires a joint government/industry effort to communicate with key stakeholders.

Socio -environmental concerns, improperly addressed, threaten to hold back and perhaps halt the development of countries' unconventional resources. This requires a joint government/industry effort to communicate with key stakeholders.





ABOUT ARPEL

ARPEL is a non-profit association gathering oil, gas and biofuels sector companies and institutions in Latin America and the Caribbean. Founded in 1965 as a vehicle of cooperation and reciprocal assistance among sector companies, its main purpose is to actively contribute to industry integration and competitive growth, and to sustainable energy development in the region.

Its membership currently represents over 90% of the upstream and downstream activities in the region and includes national, international and independent operating companies, providers of technology, goods and services for the value chain, and national and international sector institutions.

VISION

To be an institution of reference in the consolidation of the oil and gas industry, furthering the provision of reliable and safe energy that meets the growing energy demand in a sustainable manner.

MISSION

To promote the integration, growth, operational excellence and effective socio-environmental performance of the industry in the region, facilitating the dialogue, cooperation, development of synergies among players as well as the shared creation of value among members through the exchange and expansion of collective knowledge.

ARPEL'S MEMBERS

| | | | | |
|-----------|-----------------|------------------|--------------|-------------|
| ACCENTURE | EP PETROECUADOR | PDVSA | PETROTRIN | STAATSOLIE |
| ANCAP | EQUION | PEMEX | PLUSPETROL | TECPETROL |
| CENIT | HUNT OIL | PETROAMAZONAS EP | RECOPE | TEMA |
| CHEVRON | IHS | PETROBRAS | REPSOL | WEATHERFORD |
| ECOPETROL | OCENSA | PETROPAR | SCHLUMBERGER | YPF |
| ENAP | PCJ | PETROPERU | SPECTRUM | YPFB |



Regional Headquarters:
Javier de Viana 1018
CP 11200, Montevideo, Uruguay
Ph.: +(598) 2410 6993 | info@arpel.org.uy

www.arpel.org