

Best Practice in License Allocation in the Oil and Gas Industry: A Review of Five Countries

Azzurra Cillari, MapStand, Regis House, 2nd Floor, 45 King William Street, London EC4R 9AN, UK; azzurra.cillari@gmail.com

Sian Stephens, Middlesex University, The Burroughs, Hendon, London NW4 4BT, UK; s.stephens@mdx.ac.uk

Andrea Werner, Middlesex University, The Burroughs, Hendon, London, NW4 4BT; a.werner@mdx.ac.uk

Corresponding author: **Azzurra Cillari, MapStand**, Regis House, 2nd Floor, 45 King William Street, London EC4R 9AN, UK; azzurra.cillari@gmail.com

Abstract

The implementation of good practice in the natural resource management processes is crucial to the economic development of many countries. Well managed resources can bring high financial rewards and benefit the entire country, while poor resource management can lead to severe social and economic consequences. The allocation of licenses for the exploration and development of the natural resources is of particular importance in establishing good management and ensuring the accrual of benefits to the country. In this paper we identify an analytic framework for establishing the most suitable license allocation approach in any context, and apply this to five case studies. From this application we draw conclusions regarding best practice and identify the policy implications of this discussion.

Keywords

Licensing policy, License round, Natural resource, Oil and Gas exploration,

Abbreviations

E&P: Exploration and Production

JV: Joint Venture

NGO: Non-Governmental Organisation

NOC: National Oil Company

O&G: Oil and Gas

PSA: Petroleum Sharing Agreement

UOG: United Oil and Gas

1. Introduction

The successful management of natural resources is crucial to the economic development of many countries. The management of oil and gas reserves is of particular importance because of both the risk and the opportunity posed by these resources; the financial reward of holding such natural resources can be incredibly high, but the damage done to economies and societies by poor resource management can be incredibly severe. The so-called ‘resource curse’, or the ‘paradox of plenty’, where resource-rich countries not only fail to maximise the opportunities of their natural resources but in fact seem to suffer economically, can be attributed to poor governance structures which lead to poor management of the resource and its revenue (Collier, 2010). The management processes of oil and gas (O&G) are usually divided into upstream (getting the resource out of the ground), midstream (transport and storage) and downstream (getting the resource to market), and good management of each step is crucial. However, the licensing decisions made during the upstream process have a significant impact on the revenue and net benefits which can be accrued in the downstream processes and are therefore of particular importance. The lessors, in this instance national governments, may seek to offer licenses to companies (the licensees) to oversee and operate the exploration and/ or extraction of the natural resource, particularly when the country is not sufficiently experienced or resourced to manage these highly technical functions. The strategies employed by governments to identify licensees will influence the nature of the deal as well as the ‘quality’ of the licensee (Collier, 2010). An appropriate licensing strategy leading to a financially advantageous outcome for the lessor is of course important to all countries, but it is particularly important for resource-rich developing and emerging economies, who have the most to gain from the effective management of a lucrative resource, and the most to lose from ineffective management.

Therefore, there is great value in understanding which licensing approaches are most appropriate to which contexts, and in identifying the possible barriers countries may face to applying the most appropriate licensing strategy. In this paper we briefly review the relevant national contextual factors for determining an appropriate licensing strategy, as well as the different options from which the lessor will be choosing. We will then present the case studies from Egypt, Sri Lanka, Tunisia, Jamaica and Mozambique, covering each of the identified licensing strategies. Using data collated from a wide range secondary data, examining the licensing strategies which have been adopted by five developing and emerging economies, we identify the strategies which have been undertaken, and compare these with the strategies that 'best practice' would dictate. The case studies have been selected specifically to exemplify each licensing approach, and reflect variety in a range of factors, including resource availability (or scarcity) as well as social, economic and political dimensions. This variety allows for consideration of the possible contextual facilitators or barriers which have or have not allowed the application of the most appropriate licensing strategy in each instance, and consider the policy implications of this. In collating and analysing secondary data from a diverse range of secondary sources, we provide a valuable insight into the way in which oil and gas licensing is pursued not in theory, but in reality. We are consequently able to consider the way in which policy may be utilised to ensure that resource-rich countries are better able to maximise the benefits offered by their natural resources.

2. Licensing strategies – the options

When granting a license for exploration and/ or production, the government (lessor) give permission to the E&P Company (lessee) to conduct hydrocarbon exploration and/or production in a specific area called an acreage or block. According to the Natural Resource Governance Institute (precept 3

NRGI, 2016a), there are two main strategies for the licensing permits: direct negotiation and licensing round (Figure 01), each of which offer the lessor advantages in different circumstances:

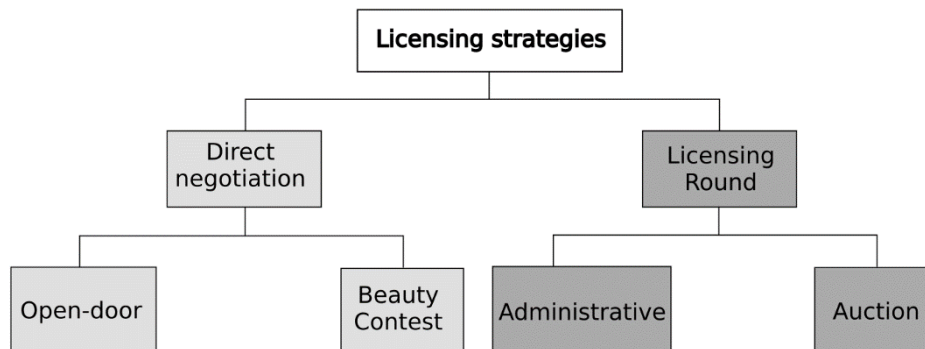


Figure 01. Main strategies for the licensing permits.

2.1 Direct negotiation

In direct negotiation, the government grants the license after the negotiation of contract terms with one or more firms (NRGI, 2016a). There are two distinct approaches which can be categorised as Direct Negotiation; the open-door strategy (sometimes called ‘first come first served’) and the so-called ‘beauty contest’. In the *open-door* strategy there is (usually) no competition and the licenses can be provided for personal or political or economic reasons, and any company interested in a specific block can make a proposal according to eligibility requirements defined by the host government at any time. The *beauty contests* or competitive negotiation (FAO, 2001), by contrast, is a formal process of direct negotiation whereby companies submit their exploration and development plans within specific deadlines and according to a process defined by the government (Cramton, 2007). In these instances, the negotiation and subsequent allocation is based on the technical and economic capacity of the exploration and production (E&P) company, on expenditures, signature bonuses, and on the other terms and conditions (Blázquez and Ferro, 2019; Shapovalova and Stephens, 2019). For instance, the Brazilian Permanent Round process requires a

signature bonus plus a minimum work programme as bidding variables for exploration blocks (ANP, 2021).

Direct negotiation is generally a relatively straightforward process; it does not require investment from the national government, the eligibility criteria are not prohibitively strict and the E&P companies have more opportunity to negotiate favourable fiscal terms. Where the beauty contest strategy is employed, prospective licensees tend to be offered relatively little information regarding the potential conditions of the deal up-front, which will reduce the number of possible applicants and therefore the competitiveness of the participants. Further, the application rules for direct – negotiations (open door or beauty contest) are not always transparent which increases the risks of corruption compared to a licensing round (Cramton, 2007; Inkpen and Moffett, 2011). The success of the direct negotiation approach can be ascertained by the allocation of licenses to competent operators, who are able to fulfil an attractive yet realistic offer, which meets the objectives of the lessor.

2.2 Licensing rounds

Licensing rounds, an approach which gained popularity in the late 1980s (Gibbs, 1997), involve a public competition announced by the host government whereby companies are awarded blocks through periodic bid rounds (where the lessor offers up the block(s) for a set price which prospective licensees compete to meet), or auctions (where prospective licensees offer up competitive proposals which are evaluated and then accepted, or not, by the lessor). A licensing round can be administrative or auction based (Tordo, 2010); the administrative adjudication process (sometimes referred to as a discretionary system or competitive bidding) involves the application of a government-defined set of criteria which are used to evaluate the best offer. These criteria include (some or all of the) following:

- The signature bonus offered by the applicant (the fee the company will pay to the government on signing the agreement);
- The minimum expenditures the lessee is committed to invest;
- The program of work promised by the applicant to conduct the exploration (called work commitment or work programme);
- The royalty taxation and/ or profit shares of future production offered by the bid.

For example, in the UK, companies grant licenses based on work programme presented by applicants, which encourages applicants to offer more rapid exploitation (Kretzer, 1993).

In the auction method, where the lessor offers up the block(s) for a set price which prospective licensees compete to meet, the license is usually awarded to the highest bidder. Auctions can be static or dynamic; in a static auction the bidder submits a single sealed offer; in the dynamic auction, the bidder knows the competitors offer and can revise their bid (Cramton, 2007).

Participants must fulfil pre-qualification criteria relating to evidence of the technical and financial capabilities required to meet work programme.

If well planned and advertised, the licensing round encourages transparency and facilitates license allocation to the most strategy under which the license is awarded to the most capable and efficient bidders by eliminating firms which are unable to complete the work programme. This approach allows governments to promote their interest in the resource exploration of their country, but the licensing round approach, particularly the administrative method, also requires that the government have a high level of technical skills for evaluating the quality of proposals and for maintaining control of exploration investment once the licensing has been awarded. Governments must also make substantial investment in the administration of organising the bidding rounds and in the acquisition of the required geological data as if the geological data is poor, the auction will fail due to lack of participation. Licensing rounds typically offer E&P companies (the prospective bidders)

limited time to evaluate the offered blocks which increases the risk of the company's investment, particularly in relatively underexplored areas where little is known of the geology prior to the bid. The risk of making rushed judgements regarding the value of the block is sometimes known as the 'winners' curse (Tordo, 2010). The ideal outcome of the licensing rounds approach is the allocation of all available blocks to competent and efficient operators, and this is most likely to be achieved where there is a competitive bidding round, where there are multiple bidders making attractive yet realistic offers.

2.3 Hybrid Strategy

Some governments choose to employ a 'hybrid strategy' which entails the application of direct negotiation and the licensing rounds approach (NRGI, 2018), depending on various factors such as the geological characteristics of their territory or political considerations. The advantages of the hybrid method are that a government can choose the best option in accordance with the attractiveness of the block i.e., direct negotiation for the less attractive offerings and licensing round for blocks with high competition. A disadvantage of this approach is that the hybrid strategy needs to be sufficiently justified in order to avoid the inappropriate use of government discretion and to prevent opacity which can arise from employing non-competitive approaches (NRGI, 2018). The successful implementation of such an approach would be indicated by the allocation licenses to all offered blocs to competent operators. Where the licensing rounds approach is implemented, the winner would be chosen from a competitive pool of bidders.

3. Best Practice Factors and Analytic Framework

The suitability of the license allocation approach is determined in large part by three contextual factors; the geological knowledge of the area, government aims and experiences and the role and remit of the NOC. These factors are summarised in Table 1, and it is with reference to these factors we shall consider the five case studies presented here. The availability of relevant geological information is the prime factor in identifying the most appropriate licensing strategy, as frontier areas, recent discoveries and mature basins offer different opportunities for both the lessee and the lessor. The aims of the licensing government with regards to long-term involvement in the industry will affect the fiscal terms offered as part of the license, while the experience of the licensing government will determine the most suitable conditions of the license; for example, an inexperienced government should not engage in licensing rounds due to information asymmetry suffered by the government in such instances (Collier, 2010). License allocation in relation to natural resources will often involve a national oil company, but the remit of these institutions varies country to country. The role and remit of the NOC, or the absence of an NOC and the in-country skills they offer, will affect the available license allocation options and the terms of the licenses to be offered.

Geological knowledge, the aims and experience of the government and the role and remit of the NOC are factors which will be present in all resource-rich countries' license allocation decisions and as such present a useful analytic framework for evaluating the suitability of approaches already undertaken by resource-rich as well as offering insight into hypothetical best-practice to be employed in the future. These considerations are particularly important for emerging economies as they are crucial to ensuring that the lessor obtains the best-possible deal and is able to maximise

economic and social opportunities offered by lucrative natural resources, while avoiding the devastating pitfalls of poor management.

Factor	Issues for Consideration	Impact on Licensing Strategy
Geological Knowledge	Frontier areas: little to no previous exploration activities and uncertain geology).	The risk for E&P companies' investment is quite high, and direct negotiation of appropriate fiscal terms will attract more potential investors.
	Recent discovery: moderate exploration activities and some geological studies	A bid round strategy will increase competition among applicant thus driving up the quality of the bid
	Mature basin: areas with intense exploration and production of hydrocarbons	Direct negotiation, licensing round and hybrid strategy may be appropriate. Competition may be low as well-explored areas are less likely to yield new discoveries.
The Government (aims and experience)	Inexperienced government: Information asymmetry between government and licensee due to differences in expertise and experience.	Information asymmetry can be overcome through either competitive bidding or negotiation, but competitive bidding may be more appropriate where the information asymmetry is significant.
	Long term intentions: Government intends long term involvement in resource extraction and management	PSAs are more appropriate where the government intends to be more involved in the industry.
The National Oil Company (Role and Remit)	NOC's remit	NOC with limited remit may not be involved in the allocation of licenses at all and instead act only as regulatory body
	NOC knowledge and competency	If NOC is lacking of knowledge and competencies, partnership or JV with other companies are appropriate.
	Resource nationalism	Where there is resource nationalism the activity of the licensee will be limited as state control of the industry will limit the scope for private sector activity.

[Table 01 Summary of factors affecting appropriate licensing strategy]

3.1 Geological Knowledge

3.1.1. Frontier Area

A frontier area is a region where geological information is relatively scarce; where there have been only a few wells drilled (or none), and the available subsurface information is incomplete. In a frontier area the probability of an immediate discovery is low and therefore a substantial up-front investment will be required for data-gathering and research before drilling can begin. Where the relevant government is unwilling or unable to invest in this data gathering themselves the best licensing strategy is direct negotiation, where the government can stipulate that the required research costs and associated risks be borne by the E&P company.

3.1.2 Recent Discovery

A ‘recent discovery’ region is an area where some geographical studies have been conducted and resulted in a hydrocarbon discovery. In such cases, licensing round approach will be advantageous to the government as the recent discovery will make the licenses more attractive, increasing competition among bidders. Therefore, it will often be best practice to switch to a licensing round approach upon a significant hydrocarbon discovery.

3.1.3 Mature Basins

A mature basin is an area which has already been explored and the extent of discovered and exploited resources is such that future discoveries are likely to be relatively small.

Where the license relates to mature basins, both licensing round and direct negotiation strategies might be advantageous to the government. Participating in a licensing round for access to geologically-known areas present a stable, transparent and attractive investment for E&P companies who are seeking to diversify their assets. However, a direct negotiation approach may be more appropriate in instances where a previous licensee completes their work program before the end of their licensing period, and choose to relinquish their license on low prospectivity or unproductive areas. In cases such as these companies who are license holders for other blocs in the area may seek

to obtain the relinquished license via direct negotiation with the government, and in this way the license can be re-awarded without holding another bid round.

The direct negotiation approach may also work well in circumstances where the geology is problematic or environmental conditions may pose operational challenges, such as ultra-deep water, high currents or a harsh climate. In cases such as these the E&P companies may seek to negotiate favourable terms to balance the risk of a difficult or uncertain exploration. Where there are variety of opportunities (e.g. mature basins and frontier areas) or peculiar environmental conditions, it may be appropriate to apply a hybrid strategy in order to facilitate greater government discretion while also offering the risk management sought by prospective licensees.

3.2 The Government – Aims and Experience

Natural resource exploration and extraction is usually managed by the national government of the host country via specific institutions such as the Ministry of Energy or Ministry of Oil and Gas, by independent regulatory agencies, such as a National Petroleum Agency or via a National Oil Company (NOC). Through these institutions, the government maintains authority to identify which areas should be considered for exploration and which should be reserved for possible future exploration (Sunnevåg, 1998).

Companies that seeking to explore hydrocarbon resources must enter into agreements with the relevant State, obtaining a license and following the specific rules, laws and fiscal terms which regulate these licenses. The Petroleum Law, specific to each country, includes all legislation which relates to the hydrocarbon exploration and extraction in the relevant territory, and the fiscal terms identify the taxes and bonuses the company must pay to the government in exchange for the licensing rights. The aims of the host government may affect the fiscal terms of the licences offered; where a government seeks long-term state involvement in the management of a country's

hydrocarbon resources it is likely that a production sharing agreement (PSA) will be sought (Pongsiri, 2004), where the licensee is able to recoup costs from the production profits but profits over and above this are shared according to the agreement with the host country government. Another option is the ‘tax and royalty’ approach, where the licensee holds the title to the resource which is produced, but pays a royalty to the host country government and is taxed on all profits (Tordo, 2010) (NRGI, 2018). This approach is best suited to projects which are in the early stages and there is little information available about the likelihood of a discovery, as this licensing strategy incentivises investment. There are risks posed by both production sharing and the tax and royalty strategies, and these risks can be minimised with negotiation or competitive bidding, but the efficacy of a negotiation process in minimising these risks will be undermined by an inexperienced government which may lack the technical knowledge and expertise of their counterpart. Governments which are facing the risks and rewards of oil and gas exploration and production for the first time are likely to be under significant pressure to deliver profits quickly while also lacking the knowledge and experience of the E&P companies. This will affect the terms a government is able to offer while increasing the risks of inadvertently getting less-than optimal deal for the country in the medium to long term. Therefore, a government must choose the right licensing strategy and apply appropriate petroleum law to encourage companies to invest in their country by avoiding uncertain and instable regulatory policies (Sharma & Sud, 2019).

3.3 The NOC – Role and Remit

Many resource-rich countries have one or more National Oil Companies that own and/or operate all or part of the hydrocarbon resources and infrastructure in their country, and the presence of an NOC usually indicates at least some degree of government-controlled in-country skills which can be used to promote the government’s interests. NOCs have a significant role in the industry and NOCs

control around 90% of the world's oil reserves and 75% of production (Tordo, Tracy, & Arfaa, 2011). NOCs are usually 100% government owned, although some have been privatised in full (e.g. the French company TOTAL), or partially (e.g. the Italian company ENI), and capital is raised as with any publicly traded company while still being owned by the government. There is much diversity in the operational and institutional roles of a NOC; in some instances, the NOC has a relatively limited remit and may not be involved in the allocation of licences, acting only as regulatory body collecting taxes. If the NOC is considered competent in terms of knowledge and skills, but lacking in economic resources, it may become involved only after a hydrocarbon discovery in order to avoid the financial risks associated with of exploration, which will be borne by the exploration licensee. Finally, if the NOC is a large international company with both skills and resources it may be in a position to operate both the exploration and the extraction without an external licensee as a partner. Where the NOC is involved, as in Egypt and Tunisia, a relatively broad remit would include direct involvement in the allocation of licenses, but it can also be the case that license allocation is managed by a regulatory agency, as in the case of Jamaica, which does not have an NOC.

In countries where the government has exclusive control of natural resources (resource nationalism), it can be required that the exploration and production of hydrocarbons be done exclusively by the NOC or through a joint venture (JV) between the NOC and foreign companies, as happens in Russia and Venezuela (Domjan and Stone, 2009; Braga and Campos, 2012). In the case of JV, partnerships tend to be favoured the NOC, which usually own at least 51% of the license (Shapovalova and Stephens, 2019). This approach is not without risks as the fiscal terms discourage the investment of the small and medium foreign companies which reduces the pool of

potential JV partners and reduces the competition among bidders.

4. Method, Sample and Data Sources

In order to examine the conditions under which licensing best-practice is followed and consider potential barriers to best practice, in contexts where resource discovery and extraction pose great opportunities and great risks, we have investigated the licensing approach of five developing or emerging economy countries. We have identified cases studies which represent the range of licensing approaches, and our case study selection also includes only countries which are either relatively new to the allocation of licences for O&G exploration, or because they are in the process of modernising their O&G policies (meaning that their license allocation processes are relatively current). In order to ensure a meaningful comparison of our case studies our selection also reflects those countries for which a reasonable amount of relevant information is available. Our sample countries and a brief description of their licensing allocation approach can be seen in Table 02. The case study selection allows for the consideration of the five identified licensing approaches within a range of geological and governance contexts, but it should be noted that the selection is exemplary rather than exhaustive.

Licensing Allocation Strategies		Case Study Country
Licensing Round	Auction	Egypt
	Administrative	Sri Lanka
Direct Negotiation	Beauty Contest	Tunisia
	First-Come First-Served	Jamaica
Hybrid Strategy		Mozambique

Table 02.

Comprehensive literature regarding the detail of specific licensing strategies is limited, although much of the relevant information is in the public domain. Therefore, extensive secondary research was conducted for this paper and data was drawn from a wide range of sources including government websites and documents, NGO publications, journals and magazines, news agency press releases and consultancy companies' report. A map of our data sources is shown in Figure 02.



Figure 02. Map of sources for country comparison.

5. Findings

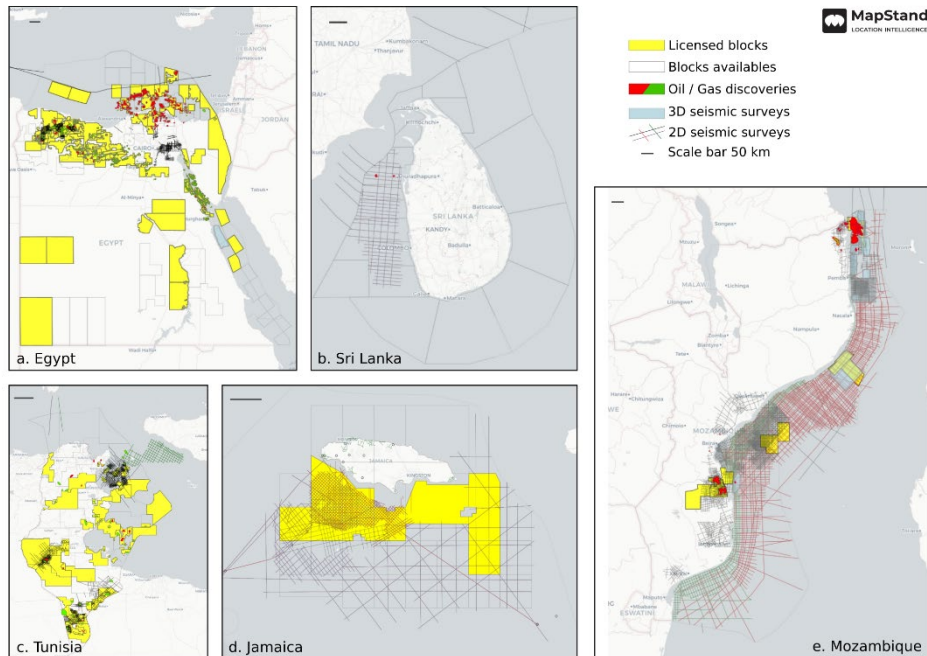


Figure 03. Exploration and production activities in the case countries: a. Egypt, b. Sri Lanka, c. Tunisia, d. Jamaica, e. Mozambique (Map Created using MapStand Hub, Copyright © MapStand 2021).

5.1 Licensing Strategies in Egypt

Egypt is a country with a long history of petroleum exploration and production, and one which offers a range of exploration opportunities and investments for companies. Geologically, the country offers both mature basins (Western Desert, Gulf of Suez), moderately explored basins with recent discoveries (Nile Delta) and frontier areas (Red Sea, Herodotus Basin, Levant Basin) (see Figure 03).

Egypt has stable petroleum law and attractive fiscal terms which encourage hydrocarbon exploration, as is demonstrated by the countries' strong partnerships with foreign companies such as Shell, BP, Total, and ENI, as well as with smaller companies. There are currently more than 60 operating companies involved in the exploration and development of hydrocarbons in Egypt, with 161 valid agreements in place. (Egyptian Ministry of Petroleum and Mineral Resources, 2020). The country employs a PSA contract approach, with defined essential work requirements including the minimum number of wells to be drilled and stipulations regarding grants, bonuses and taxes, dispute, discoveries, cost recovery (up to 40%) and local content provisions. Natural resources are managed by the Ministry of Petroleum but the licensing activities are managed by three different national oil companies; the Egyptian General Petroleum Corporation (EGPC) which is responsible for all the E&P activities, downstream and petrochemical activities; the Egyptian Natural Gas Holding Company, which regulates gas exploration, production and downstream oil production; and the Ganoub El Wadi Petroleum Holding Company (GANOPE) which is responsible for E&P activities in the South of the country.

Egypt employs an auction bid round licensing strategy, with about one licensing round per year per NOC. The exploration phase is conducted entirely by the licenses (i.e., not in partnership with the NOC). The stated aim is to promote investment in Mediterranean Sea deep water, Western/Eastern Desert, Nile Delta and Gulf of Suez and the Red Sea (EGPC, 2017). Towards the end of 2019, the Ministry of Petroleum announced a comprehensive modernisation project, with the intention to redesign Egypt's oil and gas sector, making it more modern and efficient, in response to recent discoveries (Ministry of Petroleum and Mineral Resource, 2020). According to information provided by an Egyptian NOC, the state is committed to exploiting the country's natural resources, increasing the benefits they provide to the country and improving corporate social responsibility in the country's industry (EGPC 2017). Overall, the Egyptian strategy is well established and the

outcomes have been positive, particularly in the mature and developing areas, such as the Mediterranean Sea, where numerous drilling activities have been undertaken and new discoveries have been made (ENI, 2020). However, the recent licensing round in 2019 for the Red Sea frontier area had only a moderate success and only 3 blocks of the 10 offered have been awarded (EnergyEgypt, 2019).

5.2 Licensing Strategies in Sri Lanka

Oil and gas exploration in Sri Lanka dates back to the 1960s, but progress has been limited to the drilling of four offshore wells with disappointing results (PRDS, 2013). Exploration activities were halted in the 1980s, and resumed 25 years later in 2001 with the acquisition of modern seismic data and a licensing round in held in 2007, which resulted in two gas discoveries by the Indian oil and gas exploration and production company Cairn India (Sorkhabi, 2013). The country is still to be considered a frontier area, with very limited exploration which is reflected by the small number of wells which have been drilled (see Figure 03).

The ministry of Petroleum Resource Development (PRDS) is the authority which manages the licenses, and the country's NOC, the Ceylon Petroleum Corporation, is active only in the midstream and downstream processes (Ceypetco. 2017). The NOC is not involved in the exploration phase and a joint venture is not required during production, according to the terms of current PSAs (PRDS, 2013). Despite the absence of extensive geological knowledge, the government employed the administrative bid approach, imposing criteria based on work commitment and fiscal provisions, and the bids were evaluated by a technical committee who selected the winning bid (PRDS, 2013).

The government is committed to attracting investors and for this reason is continuously seeking support and consultancy where its knowledge is missing. For example, the Petroleum Law and the draft of the PSA was written by the University of New South Wales (PRDS, 2013) and seismic data

acquisition and geological studies have been done by TGS. There has been only one licensing round, in 2007 (the Mannar Basin Licensing Round), which was extensively marketed in road shows. Bids were received for all three of the blocks offered, but only one block received the three-or-more offers required to validate the bid (PRDS, 2013). Therefore, the outcome of this bidding round was the allocation of a single block which was awarded to a medium-sized international company's subsidiary, Cairn India, which subsequently made two discoveries. However, despite these discoveries, the company relinquished the block and a new tender was announced for the M2 Block (IHS Markit, 2018) but no new licenses were awarded.

5.3 Licensing Strategies in Tunisia

Tunisia is a country with a well-established petroleum industry which dates back to the 1960's when the country's first oil field, El Borma, was discovered in the Southern region. However, the country is a net importer of oil as domestic production is not sufficient to meet the country's needs (Mbendi, 2018).

Geologically, the country's reserves are generally well known both onshore and offshore, with the exception of the Tellian Basin in the North of the country which has proven to be geologically challenging in terms of data collection and where only few wells have been drilled (Grant, 1996) (see Figure 03).

The State has a NOC, called Entreprise Tunisienne d'Activites Petrolieres (ETAP) which was founded in March 1972. ETAP manages the licenses on behalf of the Government and participates in all operations (ETAP, 2012a). In accordance with the country's Hydrocarbon code (ETAP, 2012 b), the Tunisian government grants licenses using either a PSA or a joint venture contract. Where there is the JV, ETAP will join the operator during exploration as a partner at a discretionary

investment rate (usually 5-10%) without investing capital and ETAP becomes an investing partner only during production phase (NRGI, 2016b).

Tunisia has only ever employed the beauty contest strategy. With this approach the interested party must submit an offer in a sealed envelope to ETAP by a certain date. Over the course of the year there are four fixed closing dates for offers, January 31st, April 30th, July 31st, October 31st. Offers received by each deadline are processed and evaluated before the next bid closing date at the discretionary preference of the granting authority (Hydrocarbons Code, article 15.1). Each offer must contain information about the proposed program of work, the preferred type of contract (i.e. JV or Production Sharing Contract with ETAP), a financial statement, information about the company's technical experience and the company's profile.

Tunisia is a stable country with moderate natural resources, but it has seen a reduction in investment over the past few years, which is reflected in the reduced number of wells being drilled in country as well as, divestment by companies like OMV (OMV, 2018) and a reduction in the number of new oil discoveries in the country (the most recent being in 2018 by Panoro Energy (Energypedia, 2018)). It has been reported that this reduction in investments may be due to reasons such as unfavourable taxation especially which is especially discouraging for small-medium companies (EY, 2019) and the low potential of discovery due to geological maturity. In an endeavour to increase investments, the government is in the process of developing more favourable conditions for investment, supported by the Natural Resource Council (NRGI, 2016b).

5.4 Licensing Strategies in Jamaica

Jamaica is a frontier basin for oil and gas exploration, and apart from very limited activity in the 1970s there have been no discoveries (see Figure 03). In order to encourage investment, the government created the Petroleum Corporation of Jamaica (PCJ) agency to manage and develop the

country's energy resource. In seeking companies for exploration, the government applied a direct negotiation strategy with first-come first-served approach. Any company interested in exploration licenses was required to send a letter of interest including details regarding the specific geographic area of interest, a proposed exploration programme and information about the applicants' legal, financial, technical and operational qualifications (PCJ, 2015). Following negotiation, it was proposed that the successful applicant be granted a license with a PSA contract and a work commitment which includes five years of exploration and drilling, followed by 20 years of production rights in case of discovery.

PCJ was engaged in an aggressive marketing campaign to promote Jamaica's investment potential, but in 2014 Tullow Oil were the only licensees, having been awarded 11 offshore blocks under a single license called "Walton-Morant license", which is a less-than optimum outcome as it means that the future of the country's oil and gas exploration and production was dependent on a single company. According to some industry news reports oil shows were found in 10 of the 11 blocks, although the source of this information could not be found. In 2017 Tullow Oil was joined by United Oil and Gas (UOG) as a partner investor, with a 20% stake in the Walton-Morant license, and the partnership made significant investments in collecting seismic data, including a 3D Seismic survey (the first to be conducted in Jamaica). In 2020 the block was farmed out to UOG who now own a 100% stake in the license (United Oil and Gas, 2020). The strategy applied by the Jamaican government may well have been appropriate if supported by petroleum law which imposed a maximum limit on the number of blocks which could be owned by the same company. The current situation, where one small company is awarded the entirety of the country's offered offshore blocks, risks an uncertain future for oil and gas production in Jamaica.

5.5 Licensing Strategies in Mozambique

The first gas fields in Mozambique were discovered onshore in the 1960s in the southern part of the country and these are currently the only reserves in production. Production is managed by the South African company Sasol, who exports most of the gas to South Africa via pipeline, with the remainder being used for domestic consumption (EIA, 2018). The Mozambican energy industry has received a more recent boost, with the 2009- 2012 discoveries of large offshore gas reserves in the Rovuma Delta by the Italian oil company ENI and the US oil company Anadarko which, when developed, will transform Mozambique in a net gas exporter (ENI, 2019).

Geologically, the country is moderately explored, with exploration having mainly focussed on the areas around the existing fields. However, there are some regions which are being considered for frontier exploration, such as the Zambezi Delta and the Lacerda basin (Intawong et al., 2019) (see Figure 03).

The national petroleum agency (Instituto Nacional de Petróleo (INP)), created in 2004, regulates the country's O&G activities on behalf of the Ministry of Mineral Resources (MIREM) as well as being responsible for promoting the industry internationally (INP, 2014). Mozambique's NOC is the Empresa Nacional de Hidrocarbonetos (ENH), founded in 1981. The company reserves the right to participate in any field development with variable percentage (currently not more than 30%) but does not act as regulatory body (Levy, 2014; ENH, 2019).

Mozambique applies a hybrid licensing strategy; the primary strategy is auction licensing rounds which are open only to technically and economically capable companies but the country has also applied a direct negotiation approach in between bidding rounds for areas not awarded in public tender or for which there has been termination, relinquishment or abandonment of license execution, or if there is a need to join a new bloc to an existing concession.

Mozambique's licencing strategies have met with moderate success. Resource governance in the country is in a process of development and improvement due to the recent discoveries and the new large-scale investment in offshore liquid natural gas projects which are still under construction by Anadarko and ENI with a reported production date of 2022 (ENI, 2019). The government has made the development of the country's facilities a priority, but after the big gas discoveries in 2010, the exploration activities decrease. All the licensing rounds, except one round in 2005, had a very low success rate (1/9 awarded in 2007, 0/7 in 2009 and 6/15 in 2015) (INP, 2019). Following the failure to allocate any blocks in the 4th licensing round of 2009, the government sought help from ERCL, a consulting company specialising in the collection and management of geological data, promotion and licensing. New seismic data were acquired from the foreign geophysical data companies TGS and Western Geco and was used to improve the geological knowledge of the area being offered in the 5th licensing round. As a result, 6 of 15 blocks were awarded to medium and large E&P companies (INP, 2015) which was a marked improvement on the previous licensing round. Overall, the generally low level of license allocation may be attributable to geological factors, as frontier areas can be less attractive to more mature blocks. However, a lack of clarity and transparency in the policies should also be considered as a possible disincentive for potential licensees.

6. Discussion and Policy Implications

The varied approaches exemplified by the five case studies confirm that where best practice is applied the outcomes are positive, as in Egypt, and that in many instances the application of best practice is not possible with outcomes that are mixed at best, as in Mozambique, Tunisia, Sri Lanka and Jamaica.

Egypt's approach of licensing through auction is consistent with best practice for a country with a range of geologies and an experienced government. The combination of mature basins with

sizeable new discoveries offers an attractive investment opportunity, in a country where there is sound geological knowledge coupled with the potential for significant new discoveries, and these opportunities are well leveraged with frequent bid rounds.

Mozambique's application of the hybrid strategy has yielded mixed outcomes, with a low success rate for the licensing rounds which has led to the application of direct negotiation where blocks were not awarded through bidding rounds or where awarded licenses have been relinquished.

Government inexperience in managing bidding rounds has led to delays in the process, unclear licensing policies and the significant revision of the petroleum law in-between rounds (Centre for Public Integrity, 2015); all of which act to discourage investment. Given the mixed geology of the country and the government's relative inexperience, the hybrid strategy could be an appropriate policy choice if better managed. The only successful bid round was that run for the Rovuma Delta block, and the success of this round was due to the reduced risk indicated by recent discoveries in the region. Mozambique should therefore differentiate their offers, applying the licensing round approach in regions where there have been recent discoveries, and the direct negotiation approach in the other regions. A well-structured beauty contest would help to minimise risk such as corruption, which are particularly when the government lacks industry experience and well-established institutions.

Tunisia's beauty contest strategy has historically yielded positive results, although investment is currently in decline. Tunisia's increasingly mature basin geology is an inherent disincentive for potential licensees as the opportunity for new discoveries is relatively low and this disincentive is being exacerbated with less favourable fiscal policies. However, the country's simple strategy and economic and political stability offer attractive condition for investors who seek to differentiate investments. Attempts to develop a licensing round strategy are currently under review by the government, supported by the Natural Resource Governance Institute (NRGI), and if successful this

policy approach may increase the transparency – and therefore the attractiveness - of the offering, thereby increasing competition.

The Sri Lankan licensing round approach has led to relatively poor outcomes for the country. The government initially took the sensible steps to seek expert advice in order to develop their knowledge and attract more investors. However, in a country where the government experience is still limited, geological knowledge offshore is poor and where only a few wells have been drilled the risk of exploration is high, and the most suitable licensing approach would have been direct negotiation, which generally requires a lower level of government expertise and where applicants tend to require a less geological data.

The licensing round approach of Jamaica has not allowed the country to maximise the potential of their natural resources. All eleven blocks were awarded, but to a single company, Tullow Oil, which carried on the working program in a JV with UOG. Tullow Oil recently announcement that it would be writing-off of the Walton-Morant license and farming the license out in its entirety to UOG (United Oil and Gas, 2020). This decision significantly raises the risk that the license will ultimately be dropped as UOG are a small company who may not be able to bear the risks of the investment and honour the work plan. This outcome was predicated by the failure to implement petroleum law imposing a maximum number of blocks which can be awarded to any one company, as other countries have done, in order to increase competition and avoid a large area licensed to a single company (Tordo, 2010). The Jamaican case study highlights the challenge posed where there is a combination of minimal geological data - which lends itself to an open-door policy - and an inexperienced government, which increases the risks of such an approach. These risks can only be mitigated when governments seek expert advice.

7. Conclusions

The findings presented here add evidence and insight to the vital role of good governance in the endeavours of emerging economies seeking to maximise the benefits offered by their natural resources. Decisions made during the earlier stages of exploration and development have a significant impact on the quantity and quality of the discoveries made, and on the ability of the government to capture the national benefits of these discoveries, and as we can see from the case studies reviewed best-practice in these stages is elusive. Failure to apply best-practice is often due to inexperience (as in Mozambique, Sri Lanka and Jamaica) which can be offset by seeking the advice of appropriate consultants and by the application of a competitive bidding approach which will reduce the risks posed by information asymmetry between lessor and bidder. Tunisia, the government of which is more experienced in resource management, fails to maximise the full benefits offered by their oil reserves in the application of a ‘beauty contest’, whereby bids are made in secret. This is an unusual approach and can act as a competitive disincentive which is a particular problem in countries like Tunisia where the resources well-explored and exploited and the likelihood of discoveries is low. Lessons can perhaps be learned from Egypt, where the experienced government effectively manages a geology which also includes mature basins, but where investment and new discoveries continue, incentivised by competitive bidding at well-organised auctions. The three factors identified for consideration; geological knowledge, government aims and experience and role and remit of the NOC are relevant to all countries’ decisions regarding appropriate license allocation approach. While we have focused on the experiences of five countries, applying five different approaches, the insights offered here may be of value where any country seeks to maximise the benefits posed by their natural resources and to avoid the opportunity cost of sub-optimal strategies.

Annex: Findings Summary Table

Country	Geology	Government (aims and experience)	NOC (role and remit)	Licensing Approach	Outcome
Egypt	Mature basin, significant recent discoveries, some frontier areas.	Extensive in-country experience. Government aims to improve petroleum management through a general update of the policies.	NOCs manage the licenses but are not involved in operations.	Licensing through auction.	High attendance at bid rounds, from small local to super major companies. Positive exploration results (i.e. new discoveries and an increase in production).
Sri Lanka	Frontier area.	Relatively inexperienced, seeks advice from external consultants	NOC not involved in E&P but participates in the refinery processes.	Administrative auction.	Low attendance to bidding grounds, minimal exploration activities and discovery rate, with only one block awarded.
Tunisia	Mature basin.	An experienced government supported by NGOs.	NOC manages the licenses and participates in the operations of developing the oil fields.	Beauty contest.	Medium attendance to bidding rounds, low exploration activity and low discovery rate (typical of the mature basin geology).
Jamaica	Frontier area.	Inexperienced government.	The country does not have an NOC.	First-come First-served Direct Negotiation	All blocks were awarded under one license to a single company. The JV partner has now taken over this license over. Low levels of exploration.
Mozambique	Significant recent discoveries.	Relatively inexperienced, seeks advice from external consultants.	The NOC is not a regulatory body but is involved in operating oil fields.	Hybrid (with preference for licensing round through auction).	Low attendance to bidding rounds, moderately low exploration activities.

References

References

ANP, 2021. Edital e Modelos dos Contratos de Concessão. <http://rodadas.anp.gov.br/pt/oferta-permanente/edital-e-modelos-dos-contratos-de-concessao> (accessed 08 June 2021).

BP, 2020. Statistical Review of World Energy 2020. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2020-full-report.pdf> (accessed 07 July 2020).

Blánquez, N. and Ferro, S. 2019. Open Uruguay Round: strategy to overcome the challenges of frontier exploration. *Journal of World Energy Law and Business*, 12, pp 430-439.

Braga, L.P. and Campos, T.N., 2012. A comparative study of bidding models adopted by Brazil, Peru, Colombia and Uruguay for granting petroleum exploration and production rights. *Journal of World Energy Law and Business*, 5 (2).

Ceypetco, 2017. About us. <http://ceyptco.gov.lk/about-us/> (accessed 22 April 2020).

Centre for Public Integrity, 2015. Problems with Mozambique's 5th Petroleum Licensing Round. Edition No 03/2015. <https://silo.tips/download/problems-with-mozambique-s-5th-petroleum-licensing-round> (accessed 08 October 2020).

Cramton, P. 2007. How Best to Auction Oil Rights.

<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwinye7f3tvlAhWTTxUIHdkyBhkQFjAAegQIBRAC&url=ftp%3A%2F%2Fwww.cramton.umd.edu%2Fpapers2005-2009%2Fcramton-auctioning-oil-rights.pdf&usg=AOvVaw2UfYnwx6ZUI5UdOSjDcrb>

(accessed 10 September 2019).

Collier, P. 2010. *The Plundered Planet*. Penguin Books, London

Domjan, P. and Stone, M. 2009. A Comparative Study of Resource Nationalism in Russia and Kazakhstan 2004–2008. *Europe-Asia Studies*. 62(1), 35-62.

EIA, 2018. Mozambique. <https://www.eia.gov/beta/international/analysis.php?iso=MOZ> (accessed 24 August 2019).

EGPC, 2017. Main features of the regulatory framework for petroleum exploitation in Egypt. <http://cforavenna.com/archivio/58/egpc-presentation-updated-semi-final-2.pdf> (accessed 27 august 2019).

EnergyEgypt, 2019. Egypt announces Red Sea Offshore Bid Round result, awards 3 blocks. <https://energyegypt.net/egypt-announces-red-sea-offshore-bid-round-result-awards-3-blocks/> (accessed 04 July 2020).

Energypedia. 2018. Tunisia: Panoro Energy provides update on Tunisian oil and gas assets. <https://www.energy-pedia.com/news/tunisia/panoro-energy-provides-update-on-tunisian-oil-and-gas-assets-175790> (accessed 04 July 2020).

ENH, 2019. Sobre. <https://www.enh.co.mz/sobre-enh/> (accessed 07 December 2019).

ENI, 2019. Le attività di Eni in Mozambico. https://www.eni.com/enipedia/it_IT/presenza-internazionale/africa/le-attivit%C3%A0-di-eni-in-mozambico.page (accessed 09 November 2019).

ENI, 2020. Eni: New gas discovery in the Mediterranean Sea offshore Egypt. <https://www.eni.com/en-IT/media/press-release/2020/07/eni-new-gas-discovery-in-the-mediterranean-sea-offshore-egypt.html> (accessed 04 July 2020).

ETAP, 2012a. Governance. <http://www.etap.com.tn/index.php?id=1539&lg=3> (accessed 09 August 2019).

ETAP, 2012b. Hydrocarbons Code. <http://www.etap.com.tn/index.php?id=1181&lg=3> (accessed 09 November 2019).

EY, 2019. Global oil and gas tax guide. [https://www.ey.com/Publication/vwLUAssets/ey-global-oil-and-gas-tax-guide-2019/\\$FILE/ey-global-oil-and-gas-tax-guide-2019.pdf](https://www.ey.com/Publication/vwLUAssets/ey-global-oil-and-gas-tax-guide-2019/$FILE/ey-global-oil-and-gas-tax-guide-2019.pdf) (accessed 20 November 2019).

FAO (2001) “Governance Principles for Concessions and Contracts in Public Forests” FAO Forestry Paper, n. 139.

Gibbs, J.A. 1997. Acquiring producing properties via Oil and Gas Auction. SPE, 37944.

Grant, G. 1996. Geoscience Exploring the Atlas Trend offshore Northern Tunisia.

<https://www.offshore-mag.com/home/article/16759339/geosciences-exploring-the-atlas-trend-offshore-northern-tunisia> (accessed 16 July 2020).

IHS Markit, 2018. Sri Lanka Tender Update. <https://cdn.ihs.com/www/pdf/SriLankaDataupdate.pdf> (accessed 04 July 2020).

Inkpen, A. and Moffett, M. H. 2011. The Global Oil & Gas Industry. PennWell, Tulsa.

INP, 2014. Eventos. <http://www.inp.gov.mz/pt/Eventos2/2013-2016> (accessed 09 November 2019).

INP, 2015. Fifth Mozambique Licensing Round. <http://www.inp-mz.com/core/uploads/Mz5Rnd-PR-28Oct2015-ENG.pdf> (accessed 04 July 2020).

INP, 2019. PressReleases. <http://www.inp-mz.com/press-releases> (accessed 23 August 2019).

Intawong, A., Hargreaves, P., Hodgson, N., Rodriguez, K. 2019. Exploration returning offshore Mozambique with prospect of oil in emerging plays. <https://www.offshore-mag.com/drilling-completion/article/16764039/exploration-returning-offshore-mozambique-with-prospect-of-oil-in-emerging-plays> (accessed 16 July 2020).

Kretzer, U. M. H., 1993. Allocating oil leases: Overcapitalization in licensing systems based on size of work programme. *Resources Policy*. 19(4), 299-311.

Levy, S. 2014. Oil and gas regulation in Mozambique: overview.

[https://uk.practicallaw.thomsonreuters.com/0-570-2665?transitionType=Default&contextData=\(sc.Default\)&firstPage=true&bhcp=1](https://uk.practicallaw.thomsonreuters.com/0-570-2665?transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1) (accessed 22 August 2019).

Mbendi, 2018. Tunisia: Oil And Gas Industry. <https://mbendi.co.za/cytuoi.htm> (accessed 09 November 2019).

Egyptian Ministry of Petroleum and Mineral Resources, 2020. Oil and Gas.

<https://www.petroleum.gov.eg/en/gas-and-petrol/discovery-search-production/Pages/agreements.aspxk> (accessed 15 April 2020).

MapStand, 2021. Global platform database. <https://app.mapstand.com> (accessed 21 October, 2020).

NRGI, 2016a. Precept 3: Exploration, Licensing and Monitoring Operations.

https://resourcegovernance.org/sites/default/files/documents/precept_3.pdf (accessed 8 November 2019).

NRGI, 2016b. Parliamentary guide for approval of Natural Resource contracts in Tunisia.

<https://resourcegovernance.org/analysis-tools/publications/parliamentary-guide-approval-natural-resource-contracts-tunisia> (accessed 8 November 2019).

NRGI, 2018. Open Contracting for Oil, Gas and Mineral Rights: Shining a Light on good practices.

<https://resourcegovernance.org/analysis-tools/publications/open-contracting-oil-gas-and-mineral-rights> (accessed 22 June 2019).

OMV, 2018. OMV agrees to divest parts of its Upstream business in Tunisia.

<https://www.omv.com/en/news/181106-omv-agrees-to-divest-parts-of-its-upstream-business-in-tunisia> (accessed 04th July, 2020).

PCJ, 2015. Oil and Gas. <https://www.pcj.com/oil-and-gas/> (accessed 7 May 2020).

Pongsiri, N. 2004. Partnerships in Oil and Gas Production-Sharing Contracts. *International Journal of Public Sector Management*. 17(5), 431-442.

PRDS, 2013. Exploration. <http://www.prds-srilanka.com/exploration/origins.faces> (accessed 22 April 2020).

Shapovalova, D., and Stephen, K. 2019. No race for the Arctic? Examination of interconnections between legal regimes for offshore petroleum licensing and level of industry activity?. *Energy Policy*. 129, 907-917.

Sharma, S. and Sud, M. 2019. Impact of regulatory framework on bidding behaviour of firms: Policy implications for the oil & gas sector. *Energy Policy*. 131, 33–42.

Sorkhabi, R. 2013. Cairn Discovers Gas Offshore Sri Lanka. *GeoExpro*, 9 (4).

Sunnevåg, K. 1998. An option pricing approach to exploration licensing strategy. *Resources Policy*. 24(1), 25-38.

Tordo, S. 2010. Petroleum Exploration and Production Rights. World Bank Working Paper 179.

<http://documents.worldbank.org/curated/en/785881468336848695/pdf/518400PUB0REPL101Official0use0Only1.pdf> (accessed 1 June 2019).

Tordo, S., Tracy, B.S., and Arfaa, N. 2011. National Oil Companies and Value Creation. World Bank Publications, 13 Jul 2011 - 144 pp.

<https://openknowledge.worldbank.org/handle/10986/16651> (accessed 10 July 2020).

United Oil and Gas, 2020. Walton-Morant Licence.

<https://www.uogplc.com/assets/jamaica-walton-morant-licence-colibri-prospect/> (accessed 5th July 2020).