

A Work Project, presented as part of the requirements for the Award of a Master Degree in Management from the NOVA – School of Business and Economics.

EDP INTERNACIONAL INVESTMENT OPPORTUNITY IN SOUTH AFRICA
- Entry Mode Selection –

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ABSTRACT

EDP – Energias de Portugal, S.A – have the ambition to become “*The Utility*” in the energy landscape. EDP Internacional, a company from the group, is responsible to export EDP's know-how in the form of energy consulting and training services across EDP outside consolidate markets, in both developed and emerging countries. Hence, the purpose of this work project is to assess whether South African energy market is attractive or not, and if yes, defining the Entry Mode strategy that maximizes EDPI returns on the investment. The study concludes that EDPI should enter South African Energy Efficiency market through a moderated-control strategy.

Key Words: Internationalization, Entry Mode Selection, EDP, South Africa, Energy, Energy Efficiency, Soft Services

TABLE OF CONTENTS

INTRODUCTION	1
I PART - SITUATIONAL ANALYSIS	2
1 INTERNAL ANALYSIS.....	2
1.1 EDP Group.....	2
1.2 EDP Internacional (EDPI)	2
1.3 Supply Chain.....	3
1.4 Value Chain	3
1.5 Organizational Resources	5
2 EXTERNAL ANALYSIS	7
2.1 Country Analysis	7
2.1.1 Overview	7
2.1.2 PESTL Analysis	7
2.1.2.1 Political.....	7
2.1.2.2 Economical	8
2.1.2.3 Social and Cultural	9
2.1.2.4 Technological	10
2.1.2.5 Legal	10
2.1.3 International Agreement.....	10
2.1.4 Concluding remarks	11
2.2 Energy Industry.....	12
2.2.1 Overview	12
2.2.2 Market Opportunities & EDP intentions	13
2.2.3 Energy Efficiency Market Potential.....	13
2.2.4 Buyer/Investor Profile	14
2.2.5 Competitive Intelligence	15
2.2.6 Industry Attractiveness - Porter’s Five Forces analysis	17
2.3 Concluding Remarks on Situational Analysis	19
II PART - RECOMMENDATIONS ON ENTRY MODE SELECTION	20
3 Literature Review	20
4 Entry Mode Selection	22
CONCLUSION	24
LIMITATIONS & FURTHER ANALYSIS	24
REFERENCES	25

INTRODUCTION

EDP – Energias de Portugal, S.A is a vertically integrated Portuguese utility company with operations across the entire value chain in both electricity and gas sectors. EDP is a global company with relevant presence in the energy sector across the world. They have the ambition to become the Global Utility, with more influence in the energy landscape. One of the strategies to spread the name “EDP” across the world is through EDP Internacional (EDPI).

This thesis has the purpose to analyze a possible investment by EDPI in South Africa. In order to perform an adequate analysis, first, it is necessary to understand EDP’s motivations to enter South Africa (“**Where** and **Why?**”). The idea of entering the South African market was proposed by Dr. Gonçalo Lacerda – EDPI International Development Director. The main reason for that lays on Pull factors, since the South African energy sector is currently facing an energy crisis, and, for EDP, these energy problems may represent business opportunities. In 2010, South African government had set several projects to be accomplished until 2030. Up to date, many of the scheduled projects were not executed yet, therefore, there is an opportunity for EDP to enter that market as soon as possible (“**When?**”). What is left to understand is “**How?**” EDP will enter the market. Hence, the purpose of this work project is to assess which approach should EDPI pursue to enter the market, in order to maximize the move for the African country, and, in future, prosper for spreading operations across the continent.

It should be noted that the possible FDI in South Africa, is characterized by setting an EDP local office as a company representative and with local employees, focusing on consultancy and training services with no intention to set EDP subsidiary as a utility firm (energy provider). Moreover, Mr. Reed Mkhohliso - first secretary (Political) of the South African embassy in Lisbon - had highlight market opportunities on Renewables Energies and Energy Efficiency market, however, due to management decisions, EDP have no intentions to invest in Renewables, for now.

I PART - SITUATIONAL ANALYSIS

1 | INTERNAL ANALYSIS

1.1 EDP Group

EDP - Energias de Portugal, S.A is the largest generator, distributor and supplier of electricity in Portugal, and one of the largest company in electricity generation and gas distribution in the Iberian Peninsula. The holding company, is a listed company whose ordinary shares are traded in the NYSE Euronext Lisbon since its privatization in 1997. At the end of 2016, EDP's main shareholders were China Three Gorges (23,26%) and Capital Group Companies, Inc. (14,09%) - see **Appendix 1**. As a global company, EDP is present in 14 countries (**Appendix 2**), with nearly 9.8 million electricity customers, 1.5 million gas customers, and almost 12.000 employees. In operational terms, in 2016, EDP had an installed capacity of 25GW and generated 70 TWh (**Appendix 3**). In order to foster new growth vectors, EDP Group, mainly through EDP International, has been promoting the internationalization of their skills and making efforts for the prospection of consulting opportunities in international markets outside EDP's consolidated geographies (Portugal, Spain, Brazil and the USA).

1.2 EDP Internacional (EDPI)

EDP Internacional focuses its activity on the development of diversified projects of consultancy, strategic advisory and training. EDPI transversal value proposition lays essentially in the technical expertise and in its versatility that is necessary for the development of different projects, in both, emerging and developed countries. EDPI thus intends to centralize the knowledge of the different business units of the EDP Group, which translates into a portfolio of competitive and sustainable services along the value chain of the energy sector (Electricity Generation, Transmission & Distribution and Supply & Efficiency Services). See **Appendix 4** for further detail.

1.3 Supply Chain

In order to understand how the company creates value to its customers and, essentially, its position among the group business units, it is important to understand the company's processes and what are the inputs, outputs and management system. As previously mentioned, EDPI's main purpose is to "sell" EDP's know-how, therefore, the identified inputs are all the know-how and products from the group. Besides the constant seeking for (new) customers in both, new and current, geographies, EDPI operates as a link in the relationship between the service provider (one or more companies from EDP Group) and the final Customer (Electric Utilities, Governments and Investors Developers). Ideally, all inputs are internal resources, however, for some projects the EDPI is forced to resort to outsourcing (e.g. for legal requirements; need for external/local know-how; products or; even just to reduce internationalization risks). EDPI can operate with a consortium or just with one partner, depending on the project - see **Figure 1**.

Figure 1: EDPI Supply-Chain



1.4 Value Chain

By understanding the firm's operations and processes, it is possible to understand how it can provide the greatest value for its customers (Porter, 1985). To address this question one must analyze the Service Value Chain Model (Manfred Bruhn & Dominik Georgi, 2006) based on Porter's model.

According to this model, service companies have Primary and Secondary Value processes that influence the value creation and delivery. The Primary value processes are the ones that directly influence the value and require a *service interaction* (**customer integration, service encounter**

and **service recovery**) and *relationship process* (**customer acquisition, retention and recovery**) with the customer. – see **Appendix 5**.

Regarding *service interaction*, EDPI provides specific consultancy, advisory and training services to each customer, involving a close buyer-seller interaction, therefore, **customer integration** is a necessary condition. After starting customer's integration, EDPI can start producing the service (**Service encounter**), initially by doing an energy audit to clients' facilities to assess client's problem and produce an appropriate solution. Then EDP engineers provide recommendations with expected outcomes and risks addressed (e.g. if the level of efficiency demanded by the client is difficult to achieve, EDP engineers advert the client for the possibility of not hitting that level). In what concern to **Service Recovery**, given the premise that service failures are common, EDP reacts to its errors and compensates the client for that, in accordance with the contracted compensation plan and previously warned risks.

Attending to *relationship level*, EDPI has different market approaches, as part of its strategy, to attract new clients (**Customer Acquisition**): **i**) a pro-active posture, by searching clients worldwide and showing them what EDP can do to improve their operations or solve their problems; or **ii**) a reactive posture, by actively applying to projects of investors developers and governments. EDPI strategy for **Customer Retention** must recall their management strategy - "Management by Projects" - given the nature of the market and the limited resources of the firm. The retention level of customers is related to the performance of the company and to the perception of quality of the service by the client. When a project is finished, EDPI tries to maintain the relation and to "find" new projects for that client. Usually, for projects financed by Investor Developers, doesn't make sense to "find" new projects for that client, since it has weak finances (that's the reason for the Investor Developers funding), and EDPI has a policy for not providing services to this type of clients given the high risk of non-payment. For any other customers, with strong financials, EDPI acts more proactively to anticipate or even create

the need for its services. Finally, EDPI regain a customer (**Customer Recovery**) by proactively showing them a solution for a given problem or updating them with the EDP value proposition. Primary processes have a direct impact on value and are influenced by Secondary value processes, which indirectly influence the final value. In order to produce a service, there are specific resources necessary and the most important are: **i) Employees**: carry the knowledge and experience necessary to provide value to the customers. EDP recognizes the importance of its employees, fostering their continuous development and improvement; **ii) Tangibles**: in consulting, it is common for EDP to work directly with its customers in their facilities, although, all the materials EDP engineers use (computers and other important tools) and also installation products (as Solar PV, computers and metering systems) enhances the tangibility of the service; and **iii) Technology**: represents a driver for building a better future for the company and to provide the greatest value to its customers. Firm engineers work with the most recent technology in the market and all the technological equipment used by EDP is outsourced. Moreover, the firm is constantly investing in new technologies, mainly through Start-ups.

1.5 Organizational Resources

Internal resources and capabilities are the primary drivers of firms' profitability and provide the basic direction for firm's strategy (Robert Grant, 1999). To better understand EDP resources and reach an accurate assessment of which should be internally leveraged to enter the South African market, a VRIO analysis was conducted. Key organizational resources were identified and evaluated in terms of Value, Rarity, Inimitability and Organizational embeddedness. A VRIO analysis requires comparing organizational resources against a competitive set to assess competitive advantages – see 2.2.5 Competitive Intelligence. The following **Table 1** shows EDP's Key (strengths) Organizational Resources.

Table 1: EDP's Key Organizational Resources

Organizational Resources	
Experience	EDP has more than 60 years of existence. These represent 60 years of specialized experience across the entire value chain (Electricity and Gas). The company has engineers with more than 30 years of seniority.
Size	EDP has more than 12 000 employees around the world, responsible to serve 9.8 million of electricity customers and 1.5 million gas customers. The company has installed capacity of 25 GW and generate over 70TWh. Also, it is one of the largest producer of wind energy.
Financial Stability	During 2017, the operating result before Depreciation & Amortization amounted to EUR 3.994 million (more EUR 219 million when compare with 2016). Although there was an increase in sales and EBITDA (in absolute terms) in 2017, it should be noted that the EBITDA margin decreased from 26 to 25%, mainly impacted by an increase in COGS. Net profit of the year amounted to EUR 1.441 million (1.200 million in Dec16). The D/E ratio in Dec17 and Dec16 was nearly 2, nonetheless, when considering only financial debt, the scenario of financial stability is not worrisome.
Innovation Appetite	In 2016 EDP spent EUR 14.8 million on R&D and plans to spend EUR 200 million in the 2015-2020 period. EDP seeks to integrate innovation in new technologies (mainly through investments in start-ups), processes and products and in its business models, to increase competitiveness and create value for the business and for stakeholders. Currently, it has innovation initiatives in 5 major areas: Clean Energy; Smart Grids; Customer-focused solutions; Energy Storage and Data Leap.
International Management	EDP is a Global company with presence in 14 countries. Its international presence plus temporary projects (EDPI projects, mainly exist in African and in the Middle East) are a symbol of a structured internationalization strategy. This presence increases EDP's know-how on managing international activities, by learning from previous experiences, allowing them to reduce costs, take advantages from possible synergies and adapt to foreign-markets.
Brand Management and Recognition	EDP has a strong recognition both in Portugal and in international markets. EDP is among the best five energy brands in the world, in the Best Energy Brand category. EDP was recognized as a trusted brand by Readers Digest Selections
Awards	Awards represent a very important asset to EDP. They show (Inter)national recognition about company's performance, and EDP has several and important ones, for instance: EDP Renováveis was voted the best renewable energy company in France by Wealth & Finance International; EDP won the Energy Retail Award (ERA) in Portugal.
Dow Jones Sustainability World Index	It is one of the most important index on electric utilities market and EDP is among the top 5 with a score of 91 (more 2 points than in 2016), 41 points above the average score of electric utilities, thus, maintaining its position in the World Index for the 10 th consecutive year, from a list of 2,086 companies.
Certification	EDP has several certifications on its activities, for instance: ISO 14001:2015 and 18001:2007 for its environmental management system and Occupational Health & Safety Management; and one of the most important on quality management (ISO 9001:2015).

Source: *EDP Annual Report, 2017; EDP's website*

2 | EXTERNAL ANALYSIS

2.1 Country Analysis

2.1.1 Overview

South Africa is one of the most sophisticated, diverse and promising emerging markets globally. (AICEP, 2017). It has a strategic location in the most southern part of the African continent that stretches along the South Atlantic and Indian oceans, representing a key investment location within its borders and it works as a business hub for other countries in the region, especially Botswana, Namibia, Lesotho and Swaziland. South Africa is the 24th most populated nation in the world, having close to 56 million inhabitants growing at 1.6% (World Bank, 2016). It is an open country with different ethnics and 11 official languages where English is the business primary language used for businesses.

According to the Market Potential Index (GlobalEdge, 2018), South Africa is ranked at 95th position, out of 97 countries (Portugal is 25) - see **Appendix 6**. South Africa has a wealth of natural resources (including coal, platinum, gold and others), it has a well-developed legal, transport and communication systems and world-class infrastructures that are essentials for developing businesses and establishing a company in the country (AICEP, 2017).

2.1.2 PESTL Analysis

2.1.2.1 Political

The Republic of South Africa is a parliamentary republic with a three-tier system of government (national, provincial and local levels) and an independent judiciary. The President is both the chief of state and the head of the Government and is elected by the Parliament to serve a five-year term. In the recent past, the country has faced corruption situations and scandals involving members of the state, deteriorating confidence among consumers and investors as a direct consequence of the rising uncertainty of policies, as well as perceptions of weakening governance – see **Appendix 7**. In February 2018, Cyril Ramaphosa assumed South Africa's

Presidency after the scandal-plagued leader Mr. Zuma resigned, and its intentions are to reduce the levels of corruption in the country. The Political instability and corruptions scandals, especially in government *tender system* should take EDP's attention, even with Mr. Ramapohsa promise for decreasing corruption levels.

2.1.2.2 Economical

South Africa is one of the wealthiest (in terms of GDP) and the most developed economy in Africa. The country has a very rich subsoil and its economy benefits from its natural resources. Currently, South Africa is the world's largest producer and exporter of mineral resources (gold, platinum, chrome and manganese) and it is a world leader in industries as railway rolling stock, synthetic fuels, mining equipment and machinery. However, the services sector has the most significant impact on GDP (68.6% vs 2.4% and 28.9% in Agriculture and Industry, respectively) according with *Santander Trade Portal (2018)* and is continually rising (+1.4%), mainly due to the effect of FIFA World Cup in 2010 and from a sophisticated financial structure (South Africa's stocks exchange is the largest in Africa and one of the top 20 in the world).

The South African economy is struggling to return to pre-crisis growth levels (from 2011 to 2016 the average growth was 1,9% per year, while in pre-crisis around 4%). The country has been penalized by a decline of the Chinese demand (South Africa's biggest exporter) and has faced several domestic challenges – declining infrastructure investment, rising unemployment and a weakening business confidence (less investment and consumption), the end of the 'commodity super-cycle' and a bad harvest as a consequence of the El Nino phenomenon (worst drought the country ever seen in 30 years) – and, even, the depreciation of the domestic currency (Rand). The South Africa National Treasury and the Economist Intelligence Unit estimates for 2018 and 2019 an GDP increase of 1.1% and 1.6%, respectively (0.7% growth in 2017). The positive growth is mainly supported by a recovery in agricultural and mining output (due to favorable weather conditions), a gradual improvement in business and consumer confidence

and investments in new infrastructures (focused in transport and logistics, water and sanitation, energy supply and telecommunications).

The potential attractiveness of South Africa for investors is high, but its performance is relatively weak. Previously mentioned political issues combined with a fragile economy decrease investors' confidence, and hence, investment from external parties. Despite all country issues, South Africa has returned into the 2017 A.T. Kearney FDI Confidence index – see

Appendix 8.

Table 2: Important Macroeconomic Indicators

Main Indicators	2015	2016	2017	2018e	2019e
GDP (billions USD)	317.57	294.90	344.06e	361.16	374.26
GDP (Constant Prices, Annual % Change)	1.3	0.3	0.7e	1.1	1.6
GDP per Capita (USD)	5,800	5,302	6,089e	6,292	6,418
General Government Balance (in % of GDP)	-3.9	-3.6	-3.4e	-3.4	-3.4
General government total expenditure (in % of GDP)	32.913	32.708	32.916e	33.195	33.447
Inflation Rate (%)	4.6	6.3	5.4e	5.3	5.5
Unemployment Rate (% of the Labor Force)	25.4	26.7	27.5	27.9	28.3
Current Account (billions USD)	-13.95	-9.62	-9.81e	-11.76	-13.51
Current Account (in % of GDP)	-4.4	-3.3	-2.9e	-3.3	-3.6
FDI Inflows (billions USD)	1.521	2.25	3.2	-	-
Exchange rate (ZAR to EUR, in January)	14.04	16.9	14.49	14.95	-

Source: IMF – World Economic Outlook Database, 2017; The World Bank, 2016; Santander trade portal, 2018 | *e – estimative

2.1.2.3 Social and Cultural

South Africa has been facing a lot of social challenges, namely a high unemployment rate (27,5% in 2017) and high level of poverty and inequality - over half of the South Africans, 30.4 million people, live in poverty (Stats SA - Poverty Trends, 2015). In 2015, South Africa was ranked as one of the countries with the biggest inequality in income (Statista, 2015), and has the worst Gini coefficient in the world, despite the decrease from 0.69 to 0.6 (Rawson, 2017). In order to reduce inequality and distribute wealth the South African Government implemented an economic empowerment policy named Broad-Black Based Economic Empowerment (BBBEE) which promotes the presence of disadvantage groups on companies. This policy serves as a “license” to do business in South Africa and the level of BBBEE contributor is determinant for procurement recognition (EY, 2016) – see **Appendix 9** for further detail.

2.1.2.4 Technological

Nearly 86.11% of the population have access to electricity (7 million people have no access to electricity). The Government through the Integrated National Electrification Program wants to provide universal access to electricity by the electrification of about 90% of households through grid connections and the remainder with solar home systems, or other cost-effective (green) technologies, in order to address current and future backlogs – see **Appendix 10**. Alongside with the electrification plan, Green Energy and Energy efficiency are being considered by the South African government. The current energy crisis implies a need to reform the energy sector focusing on green energy and increasing energy efficiency. The Government is forced to outsource to external companies, given the lack of know-how and technology of South African companies. The need for Technology and know-how represents an opportunity for the EDP.

2.1.2.5 Legal

A new business could be made 100% from foreign investment, as long as the South African Reserve Bank is provided with proper information. When creating a company, one must have special attention to labor force law, in particular, Broad-Based Black Economic Empowerment (B-BBEE) – a policy to increase the number of black people that own, manage, control and gain employment in the country. Additionally, regarding business contracts, South Africa is not a signatory of the Vienna Convention on International Contracts, in which external investors must have special attention to terms of contracts and methods of conflicts resolution. Even so, there is some legal protection to investors. Regarding The Rule of Law Index (World Justice Project, 2017– 2018) South Africa scored 0.59 and Portugal 0.72 (0 to 1, with 1 indicating the strongest adherence to the rule of law) – see **Appendix 11**.

2.1.3 International Agreement

Institutional relations, both internationally and regionally, are very important to countries' development and especially relevant for EDP to facilitate the

internationalization process and, in the future, to enter other African countries. At international and regional level, the most important relations are with: African Development Bank (AfDB); Bank for International Settlements (SIS); German Development Agency (GIZ); United Nations (UN) including World Bank Group and World Trade Organization (WTO); Organization for Economic Co-operation and Development (OECD); African Union (AU); Southern African Development Community (SADC); Southern African Customs Union (SACU) and Common Monetary Area (CMA)/Multilateral Area (MMA). Since 2012, South Africa and the European Union (EU) have a free trade zone agreement (Trade Development and Co-operation Agreement - TDCA) and in 2016 was signed an Economic Partnership Agreement between the EU and the SADC EPA States.

2.1.4 Concluding remarks

Concluding on country attractiveness, South Africa presents some political and economic instability, which requires some prudence from EDP, and especial attention to the labor law. However, the country has all other favorable conditions for investment: it is an open country for FDI with strategic location and influence within the African continent; has a well-developed legal system, world-class transport and communications infrastructure; has institutional relations with EU, Africa continent and Investor Developers.

Additionally, the country risk associated is 4 (from 0 to 7; OCDE, 2017), which is a medium/low risk, considering the African Sub-Saharan region – see **Appendix 12** for detailed risk analysis. Moreover, in 2017 rating agencies had become more pessimist on country's future, downgrading to *non-investment grade / speculative* (Junk) (Financial Times, 2018). However, due to new governance, some positive expectations recently prompted. Assessing the *Business Environment Rank* (The Economist, 2017) and the ease of *Doing Business Rank* (World Bank, 2018), South Africa has a more difficult and complicated environment than Portugal – see

Appendix 13. Still, is one of the best countries to invest in Africa, given the business-friendly environment (AICEP, 2017), FDI favorable conditions and importance in the African continent.

2.2 Energy Industry

2.2.1 Overview

Energy is a key strategic sector for economies, because it supports growth and is the vital force that powers businesses and the development of societies and countries. Currently, South Africa is in the midst of an energy crisis that is causing several problems: energy tariffs increase; rolling blackouts (due to load shedding) that are prejudicing industries and society; high emission of carbon dioxide levels (CO₂) and consequently regulatory instability. The following factors are in the roots of the energy crisis: energy generation is over-dependent on a single (fossil) energy source (91% of energy generation is Coal-based – **see Appendix 14**), resulting in environmental sustainability problems; low performance in energy efficiency; difficulties on managing energy generation and demand over-stressing the system (load shedding – intentionally provoked black-out to refresh the system); only one utility (State-own company – Eskom) with management problems due to low tariffs, that are not cost-reflective of supplying (increase public debt); lack of transparency from the Government and National regulator (last report/data is from 2012); Electricity theft and vandalism of energy infrastructures is becoming an increasing problem – **see Appendix 15**. Alongside, the Government is struggling to provide “world-wide” access to electricity to its population - current electrification rate is 86.11%; Portugal rate is 100% (EDP, 2017); Sub-Sahara African average rate is 57% (IEA, 2017).

The shifting in energy and electricity landscape is a global phenomenon and origins new opportunities in the energy services value chain. Given the South African energy crisis, Green Cape (2017) has identified several market opportunities which can be interesting for EDP: Energy Efficiency (EE) services and products; Solar PV systems and components; Private energy generation and Renewable energy generation.

2.2.2 Market Opportunities & EDP intentions

Given previously mentioned market opportunities and EDP's management decision on not to invest in Renewable Energy, the most adequate opportunity is in Energy Efficiency market.

South Africa has to invest in energy efficiency at the same time it invests in Green Energy generation in order to maximize the final outcome. Demand management assumes a greater responsibility for the Government to guarantee electricity access, reduce stress levels in the systems, create energy reservations and, even, allow them to export energy. Deloitte's Insight (2017) suggest that Energy demand tends to increase as result of several drivers - **see Appendix 16**. Therefore, the Government needs to take actions, otherwise, problems will remain or be even worse. Increasing energy generation (green energy or fossil energy) is very costly and takes time (currently there are two power stations under construction – Kusile & Medupi Power Stations), instead, energy efficiency solutions require a lower investment and take less time.

Additionally, in the South African Energy Service market there are four main groups of service providers: Consultancy Service Providers; Technology Suppliers, Energy Service Companies (ESCOs) and Engineering Procurement Contractors (EPCs) – **see Appendix 17**. These service providers, although important, could not be in the market on their own. Several stakeholders perform an important role in influencing investments and promoting country's energy services market growth and development, which are: Department of Energy (DoE); Department of Public Enterprises (DPE); Eskom (state-own Utility); South African National Energy Development Institute (SANEDI); National Energy Regulator of South Africa (NERSA) and Local Government (municipalities) – **see Appendix 18**.

2.2.3 Energy Efficiency Market Potential

The market size for energy services in South Africa is expanding rapidly, due to general market forces including the fear of rolling blackouts, the upward trend in electricity tariffs, energy savings incentives (tax incentives, carbon tax requirements, commercial and residential building energy saving initiatives). In 2017, was estimated over 17 360 GWh of lifetime energy

savings that could be achieved by businesses – 11 000 GWh were identified by the report and Eskom identified long-term savings target of 5 500 GWh by 2020 (Green Cape, 2017).

Table 3: Shows the potential of energy savings opportunities from sampled small and large businesses that had energy audits conducted (Gaegane 2015)

Type	Identified	Implemented	Remaining opportunity
Number of Opportunities	5609	264	94%
Annual Energy Savings	1 593 GWh	124.4 GWh	92%
Lifetime Energy Savings	17 360 GWh *	617 GWh	96%
Lifetime Carbon Savings	13.6 MtCO ₂ e	424 748 tCO ₂ e	97%

Source: *Green Cape Report, 2017*; * does not represent the whole market, unfortunately its not possible to have the exact number of market size, although it is big number in terms of energy savings, it represents ¼ of what was produce by EDP in 2017.

Green Cape (2017) identified several opportunities within the energy services market, in which the most relevant for EDPI, attending to its management decisions, activities and type of clients, is related with the growing need from the Government to increase energy efficiency on its own facilities and activities – they set an energy savings target of 15% for the government’s portfolio (nearly 100 000 public buildings).

2.2.4 Buyer/Investor Profile

EDPI only provides its energy services to Utilities, Governments and Investor Developers. Special attention to Governments and Investors Developers (in general) is given, due to their peculiar way of doing business – *tender system*. This system refers to the process whereby Governments and Investor Developers invite bids for projects. The selection process is based on competitive assessment where bidders (e.g consultants such as EDPI) are submitted for evaluation and comparison in accordance with a selection method. There are different selection methods and they depend on the type of project (e.g. the cost of the project, durability) and Investor. The most common are Quality & Cost Based Selection (QCBS) and Least Cost Selection (LCS), according to World Bank (2016) – see **Appendix 19**. Usually, the Government selection method follows the LCS method (choosing the lower bid), in accordance with a fair, equitable, transparent and competitive system. Moreover, Government favors local companies, without dismissing overseas firms, and allows foreign bids through a local agent. Regarding

Investor Developers, the most common method is QCBS, in accordance with the same principles as Governments. This method makes a weighted evaluation on Technical & Financial aspects (the common weighting is 80% for Technical and 20% for Financial aspects). On the Technical competencies, aspects such as company experience, organization size, employees' competencies (CVs) are assessed. It should be highlighted that the BBBEE certification is starting to be a pre-requisite for bidding.

2.2.5 Competitive Intelligence

A list of 64 companies were compiled by assessing on Local energy efficiency service providers, Companies that once applied for Investor Developers' projects in the country and analyzing the activity of habitual EDP competitors in South Africa – see **Appendix 20**. The following criteria for assessing competition were withdrawn from Investors Developers criteria's and EDP experience on the field: Experience (based on year of existence); Size (number of employees); Financials (EBITDA margin); Projects; Local Presence and BBBEE certification. From the list of 64 companies, 10 were considered strong competitors of EDP.

Table 4: Competitive Landscape (shorted list of strong competitors)

Company	Origin	Experience	Type	Size (n° employees)	Financials	Local Presence	BBBEE Certification
EDP	PT	60 years	Utility	Medium/Big (12,000)	25%	No	No
EOH	SA	20 years (listed in 1998)	Consulting	Medium/Big (12,500)	14,7%	Yes	Yes (level 2)
WSP	US	130 years	Consulting	Big (42,000)	10%	Yes	Yes
Danish Energy Management & Esbensen	DK	130 years	Consulting	Small/Medium (500)	-	Yes	-
*Iberdrola	SP	170 years	Utility	Big (34,255)	23%	No (projects)	-
*ESB International	IR	90 years	Consulting	Medium/Big (7,700)	(3%) exceptional cost	Yes	-
*EDF	FR	72 years	Utility	Big (154,845)	20%	Yes	-
*Lahmayer International (Tractebel Engie company)	DE	138 years	Consulting	Big	-	No, Tractebel Engie Company have local subsidiaries	-
DNV GL	NED	144 years	Consulting	Medium/Big (13,550)	4,7%	Yes	-
WYG	UK	59 years	Consulting	Small/Medium (1,600)	1%	Yes	Yes

Source: Companies' websites / * Are habitual EDP competitors on international markets | Note: is not possible to access previous projects and could not be compared with EDP.

With exception of Iberdrola, EDP habitual competitors (*) already have a local presence in South Africa, although, EDF has been focusing on Renewables market. Only EOH is a local company with BBEE certification, which can benefit from some advantage.

The question is to understand whether EDP organizational resources can sustain competitive advantage in South Africa within this competitive set. A VRIO analysis was conducted on EDP's key organizational resources comparing with this competitive set:

Organizational Resources		VRIO	
Experience	EDP has relevant experience in this industry. However, competition has same/more years of experience	V	Competitive Parity
Size	Gives credibility on investors' eyes. But there are several big players in the market.	V	Competitive Parity
Financial Stability	EDP has the best financial performance (in terms of EBITDA margin). Shows stability and sustainability to investors.	VR	Competitive Parity
Innovation Appetite	EDP seeks to integrate innovation into its activities, to increase competitiveness and create value for the business and for stakeholders. In this fast pace industry, innovation is a driver for success and EDP invests a lot on it.	VRI+O	Sustainable Competitive Advantage
International Management	International experience represents knowledge and increases performance on entering new markets. Most of the close competitors are foreign companies.	V	Competitive Parity
Brand Management & Recognition	EDP is one of the top five companies on the energy industry and it is recognized as a trusted brand by important institutions. It's the only company on the top five ranks.	VR+O	Temporary Competitive Advantage
Awards	Are an (inter)national recognition and EDP have been collecting several awards relevant on the energy industry.	V	Competitive Parity
Dow Jones Sustainability World Index	One of the most important index on energy landscape for utilities. EDP got a great score on last years. EDF scored 81/100; Iberdrola 91/100 and EDP scored 91/100	VR+O	Temporary Competitive Advantage
Certification	Certification is an international stamp on the company's activity. For some Investors are a pre-requisite.	V	Competitive Parity

International recognition has relevant weight on Investors' decision, and EDP has an impair recognition on the worldwide Energy landscape, being among top 5 best energy brands (Charge, 2017) – the only company within this competitive set - and top 3 on the Dow Jones

Sustainability Index with Iberdrola. These awards and international recognition, aligned with a good brand management can only give a temporary competitive advantage, given yearly rankings. If EDP does not maintain the good performance over other utilities, it will lose its ranking position.

The Energy Industry is a Technology driven industry, where innovation creates value for customers and enhances companies' position. By protecting innovation (e.g. property rights) EDP can have sustainable competitive advantage in Energy landscape, including the South African market.

It should be noted, that what has the most impact on investors/Government' selection decision is the company proposed solution for a specific project (on the Technical Proposal).

2.2.6 Industry Attractiveness - Porter's Five Forces analysis

Understanding the competitive forces and their underlying causes reveals the roots of an industry profitability. Being aware of those forces can help a company to stake out a position that is more profitable and less vulnerable to attacks (M. Porter, 1979).

The South African economy relies on the free-market principles, encouraging foreign investments in both public and private sectors. Yet, certain sectors require government approval including energy, mining, banking, insurance, and defense. The levels of investment on the energy consultancy services industry are low, given that it is not required to have local offices or infrastructures. The service is delivered in the costumers' facilities, so one only needs to mobilize the resources, meaning that any company in the world, like EDP, can enter the market. The only constraint is related to the BBBEE labor law, although foreign firms can partner with a local firm with BBBEE certification. Overall, the **Threat of entry** force is High/Medium.

Regarding the **Bargaining Power of Suppliers** over EE Service providers are low. This industry is Service based, in which companies delivery specialized know-how to its customers. However, alongside with the service provided is a product, that in most of the cases is supplied.

The product is an important factor for the service outcome, yet the best value comes from the quality of service. The energy industry is technology driven and is getting a lot of attention in last years, with the emergence of many start-ups across the world with the support of big players. Therefore, it is an industry with a relevant number of suppliers (low concentration of suppliers). For instance, EDP Group has 18 647 suppliers around the globe. Usually, these start-ups become loyal suppliers of big players (give them support) or are bought by them.

Moving on to the **Bargaining Power of Buyers**, one must have in consideration the type of buyers and how they make business (*tender system*) - see Investor/Buyer Profile section. In this system, the service provider knows the evaluation criteria, knows exactly the percentage attributed to each criterion and the budget of the project. Usually, there is no space for negotiation and the service provider has to manage its proposal in accordance with the investor's criteria (have its power restricted). As such, in this industry, the Bargaining Power of buyers over service providers is Medium/High because the service providers have to search for the buyer (project) and convince him that they are the best choice.

In the EE Industry, there are no direct substitutes, it only exists different service providers with different approaches and products. When it comes to meet demand, there are always two options: increase energy efficiency or increase energy generation. However, at some point, it will be needed to manage energy usage, although energy generation does not represent a direct substitute. Doing so, the **Threat of Substitutes** is Low.

Finally, regarding the **Rivalry among existing competitors**, it can be classified as Medium/High. In the Competitive Intelligence section at least 63 EE service providers were identified. It was concluded that South Africa faces a massive shortage when it comes to experienced, competent and technically energy consultants (pure national companies) where the strong competitors are foreign international companies.

Concluding on the Industry attractiveness, several market aspects that squeeze profitability were identified, as the easiness of entering the market and the high industry rivalry that cannot guarantee long-term returns and market share. Still, the industry is attractive for EDP, since most of the competitors are weak compared with EDP and the threat of substitutes is low.

2.3 Concluding Remarks on Situational Analysis

To summarize the Situation Analysis and understand whether EDP has the resources to sustain competitive advantage in South Africa, a SWOT analysis was performed, which is depicted in the following **Table 3**.

Table 3: SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> - International presence & Management skills. - Brand Management & Recognition. - Experience. - Experience on Investor Developers and Governments market. - Financial Stability and Investment capacity. - Awards & Certification (both national and International). - Innovation Driven. 	<ul style="list-style-type: none"> - No local Presence in South Africa. - No BBBEE certificate. - High Rivalry. - Can't benefit from first-mover advantages, most of its "close" competitors already have activities in the country. - Impossibility of benefiting from synergies.
Opportunities	Threats
<ul style="list-style-type: none"> - RAND depreciation over EUR (takes less investment) - Government incentives to partner with local companies. - Energy Industry is in reform (more investment from Government and Investor Developers). - Huge market potential. - Low entry and existing barriers (easy to enter and easy exit) - Increasing energy efficiency services demand. - South Africa strategic location as "the Capital of Africa" may represent a way to enter other African markets. - International and national pressure to reduce CO2 emissions. - Big market with many opportunities. - Low threat of Substitutes on EE services 	<ul style="list-style-type: none"> - Political Instability & high levels of corruption. Corruption scandals on government investments. - Decreasing on business environment levels. - Low growth in GDP (in last years) could reduce governments will for investments, even more to foreign companies. - Medium/high rivalry levels, with the presence of strong competitors of EDP.

Considering the previous analysis on the South African EE market, it can be concluded that this is a good investment opportunity for EDP, not only because of the country's attractive characteristics, but also due to market characteristics. It is evident that, the country is facing

several problems (political instability, low/none economic growth, corruption scandals and others) and that the industry is complicated (strong competition, lack of transparency, weak entry barriers, lack of information from Government, etc), nonetheless, it represents a market with high potential and with space for EDP. There are some potential threats that go beyond company's control that could place EDP at risk. However, with a properly planned strategy that enhances the company competitive advantage, EDP is likely to uphold against these adverse forces and collect the maximum return on investment.

It must be highlighted that, even with previous experience in the African market, unfortunately, EDP cannot benefit from any type of synergies. Yet, establishing a subsidiary in South Africa will help the Portuguese firm to enter surrounding countries and new industries (e.g. Renewables), benefiting from synergies.

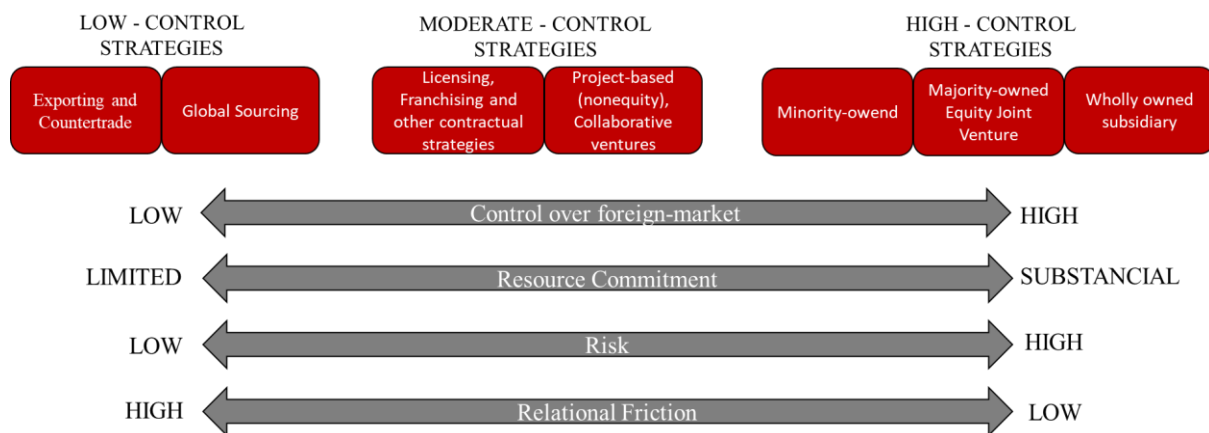
II PART - RECOMMENDATIONS ON ENTRY MODE SELECTION

3 | Literature Review

A firm seeking to enter a foreign market faces an important and crucial strategic decision on entry mode selection. Entry mode represents a critical element in achieving superior performance in foreign markets (Rhoades & Rechner, 2001). Literature on entry modes for service firms have some adaptations from manufacturing firms (Bell, 1995; Erramilli & Rao, 1993; Sampson & Snape, 1985; Sharma & Johanson, 1987). When entering a foreign market, Service firms can use a variety of entry modes. Usually, the most common are exporting, licensing, joint ventures or establishing a subsidiary abroad. According to normative theory, entry mode selection should be based on a trade-off between risk and return, choosing the one that offers the highest risk-adjusted return on investment (Agarwal & Ramaswami, 1992). Additionally, for service firms control over foreign market is crucial, not only because it allows them to supply timely and good quality services to international clients (which protects reputation), but also because is a determinant factor on the amount of relational friction between

buyers and sellers and on driving performance of the investment abroad (Barkema et al., 1996; Barkema & Vermelun, 1998; Khoury, 1979). Literature suggests that each entry mode is consistent with a different level of control and resource commitment (Agarwal & Ramaswami, 1992; Anderson & Gatignon, 1986; Kim & Hwang, 1992). The higher/lower control entry mode, the higher/lower the risk and resource commitment, which complicates/facilitates the firm's ability to withdraw the investment and exit the market. The following appendix summarizes the High-Low control entry mode.

Figure 2: Market Entry Modes based on degree of Control



Source: Anderson and Gatignon (1986); Erramilli and Rao (1990, 1993).

Theory on Service firms make a distinction between hard and soft services: **i) Hard Service (separable)**: those where production and consumption can be decoupled. They often can be standardized; **ii) Soft Services (non-separable)**: production and consumption occur simultaneously. The service provider must be present because it is an integral part of the service (Erramilli, 1991; Erramilli & Rao, 1990; Ekeledo & Sivakumar, 1998; Hellman, 1996; Majkgard & Sharma, 1998; A. Blomstermo, D. Sharma & James Sallis 2006).

Based on EDP Value chain (see section 1.4), EDP is a Soft Service firm, because decoupling production and consumption is not viable: EDP Engineers must be present in clients' facilities in order to study the problem and the best solution for that client and assess the risks.

The paper of Anders Blomstermo, D. Deo Sharma and James Sallis, (2006) suggest that Soft service firms are more likely to choose high control entry modes than Hard Services (supporting

Erramilli, 1991; Erramilli & Rao, 1993). Soft Service firms require more buyer-seller interaction, and these firms believe that high control organizational arrangements abroad facilitate that interaction and the collection and interpretation of information, in order to build unique competence and thereby affect perceived service quality. Foreign direct presence allows service firms to better adapt to the market mechanisms and manage the buyer-seller interaction (Blomstermo, D.Sharma and Sallis, 2006). Moreover, companies with previous internationalization experience have developed experiential knowledge (skills, processes, network of relations and routines over foreign operations), allowing choices without resorting to high control entry modes and better set entry strategies by selecting the right business and partners abroad. Developing a network of relations based on trust and dependence (reduce relational friction levels) allow companies to choose lower control strategies.

Entry strategies can be replaced by a completely different one (Petersen et al. 2006). The internationalization processes is a learning and adapting process on which entry modes decision may not persist. The decision comes down on to the change on the level of market commitment (increase or decrease). Traditionally goes from exports to contractual agreements, to joint ventures and, eventually, to wholly owned subsidiaries (Johanson & Vahlne, 1977; Luostarinen, 1979; Welch & Luostarinen, 1988). However, firms can jump over stages or follow a different sequence of international activity (Malhotra & Hinings, 2010). Research evidence that mode changes are triggered by performance, internal and external environment and by managerial attitudes (Calof & Beamish, 1995). Initially, firms may opt for low-risk strategies, and as soon as firms began to familiarize with the industry and country environment, those triggers start to manifest and require an increase the resource commitment.

4 | Entry Mode Selection

Literature on internationalization of Service firms suggests that EDP, as a **Soft Service** firm, should opt for higher-control strategies (as having minority, majority or wholly owned firm in

South Africa), given the required proximity and interaction on buyer-seller relationship. Doing so, theoretically, EDP should go for high-control strategy by constituting a local office or acquiring part or a whole company in South Africa.

In order to maximize profitability, the decision on entry mode must be supported by the combination of all the information on theory and situational analysis, and leverage EDP's organizational resources that grant competitive advantages in the country.

Regarding the Situational Analysis, and especially the Country and Industry sections, there are several aspects that directly influence the EDP activity and, consequently, the entry mode decision, which are the following: foreign firms only can bid through a local partner; the BBBEE labor law force and high levels of rivalry. Government privileges local players with BBBEE certification, so collaborating with a local company (partnerships or to act on the foreign-company behalf), not only, can give foreign-firms a chance to benefit from those privileges, but it is also the least resource commitment option to access the market. Additionally, strong players already have local facilities and are one step ahead from EDP.

Attending to the analysis expressed in this report (theory and Situational analysis), the most appropriate entry mode that maximizes EDP returns on the South African market is a **Moderate-control Strategy**. This means that EDP should go for a partnership with a local player with BBBEE certification. A moderate-control strategy has less risk addressed and, still, gives to EDP a plausible level of control over operations. The partnership could be done with a company to act on EDP's behalf (having almost 100% control over its operations) or could be a strategic collaboration by leveraging both companies competencies for a specific project. Given that strong competitors already have a local presence (and possibly BBBEE certification), a partnership with them it is possible and could result in a strong alliance. A Moderate-control strategy is a slower mode of entering a market, but it allows EDP to increase market knowledge, assess the profitability of constituting an office or subsidiary and slowly

spread EDP's brand in the market. The question that may emerge, is why would locals partnership with EDP? As it was concluded on the Competitive intelligence section, South Africa lacks on technical knowledge and experience, so collaborating with a big foreign-player with all the essential resources would increase market chances and benefit the country.

It should be noted that this entry strategy has intentions to set up a local office. This strategy, allows EDP to start analyzing cross-selling possibilities (for instance renewables market, consultancy in other areas) and study ways to foster other countries in Africa. By having a local office, in the future, would be possible to take advantage of synergies on South African operations to entering other countries.

CONCLUSION

In order to start this work project, I was challenged to make a market intelligence analysis and understand whether EDP should or should not enter the South African market, and if yes how should they enter the market. To address these challenges, this report was divided into two main parts: situational analysis and recommendations provided. In the first part was concluded, that the market had potential and could represent a good opportunity for EDP, even with several risks that should be taken into consideration by the Portuguese company. In fact, with the proper strategy supported by EDP's organizational resources, it should be able to prosper in the South African market. In the second part, with the support of literature and analysis, EDP should opt for a moderate-control strategy, by partnering with one or more local companies with BBBEE certification. After studying the viability of South Africa, in the evidence of positive triggers, the company can change the entry mode for a higher-control mode, by acquiring a participation or full firm or even set an EDP subsidiary (office).

LIMITATIONS & FURTHER ANALYSIS

The purpose of this study was to accurately analyze whether EDP should enter the South African Energy Efficiency market. Although, during the analysis several limitations were

identified, mainly on competition analysis, which were: comparing prices and experience (previous projects). Since prices always depend on the type of problem and solution provided by engineers. And, previous projects only bring value to the study when it is possible to compare the degree of technical exigency with similar projects. As mentioned before, the solution proposed for a given project, is what have the most impact on the Investor/Government's selection decision, however, it is not possible to assess and compared with EDP solution for the same project; it was not possible to assess the market size in monetary terms, neither if it will be the government or Investor Developers to finance the identified project.

For a complete analysis on the EDP move to South Africa, one should study the perfect partner for EDP, that combines both the company organizational resources and who leverages the company's competitive advantage, without forgetting the BBBEE certification. Also, the elaboration of a complete Internationalization plan with the detailed Marketing Strategy Plan and Financials associated should be also conducted.

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EDP Internacional

A Work Project, presented as part of the requirements for the Award of a Master Degree in
Management from the NOVA – School of Business and Economics.

EDP INTERNACIONAL INVESTMENT OPPORTUNITY IN SOUTH AFRICA

- Entry Mode Selection -

APPENDICES

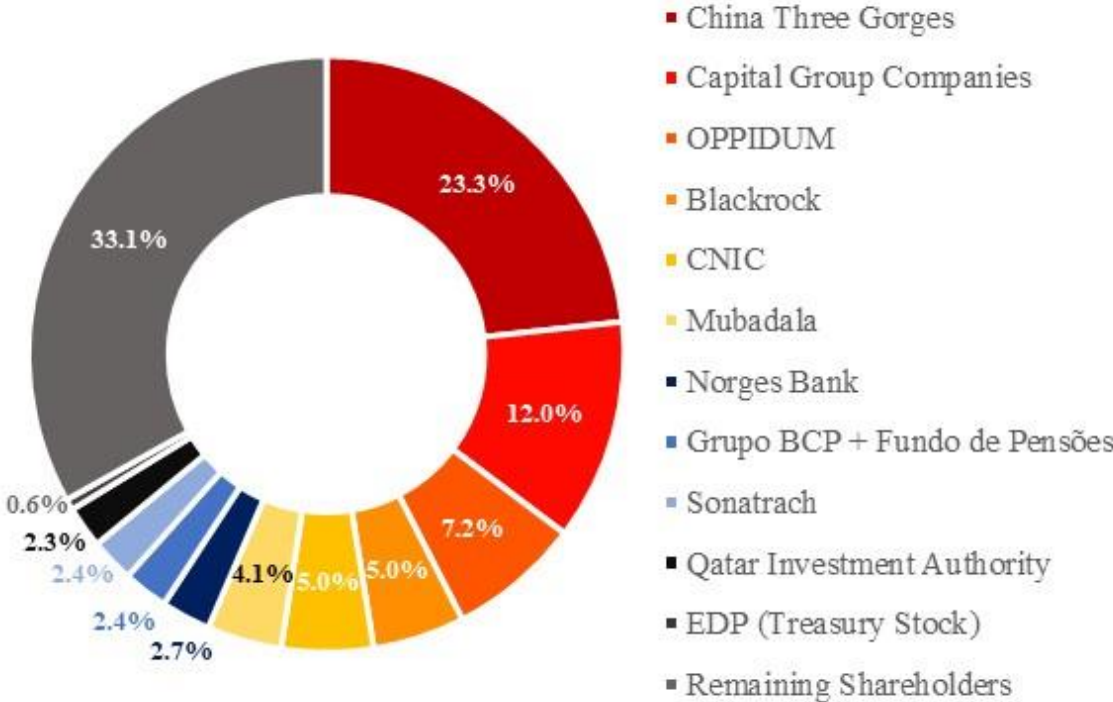
DANIEL DA SILVA ANSELMO, 3502

A Project carried out on the Master in Management Program, under the supervision of:

Carlos Marques

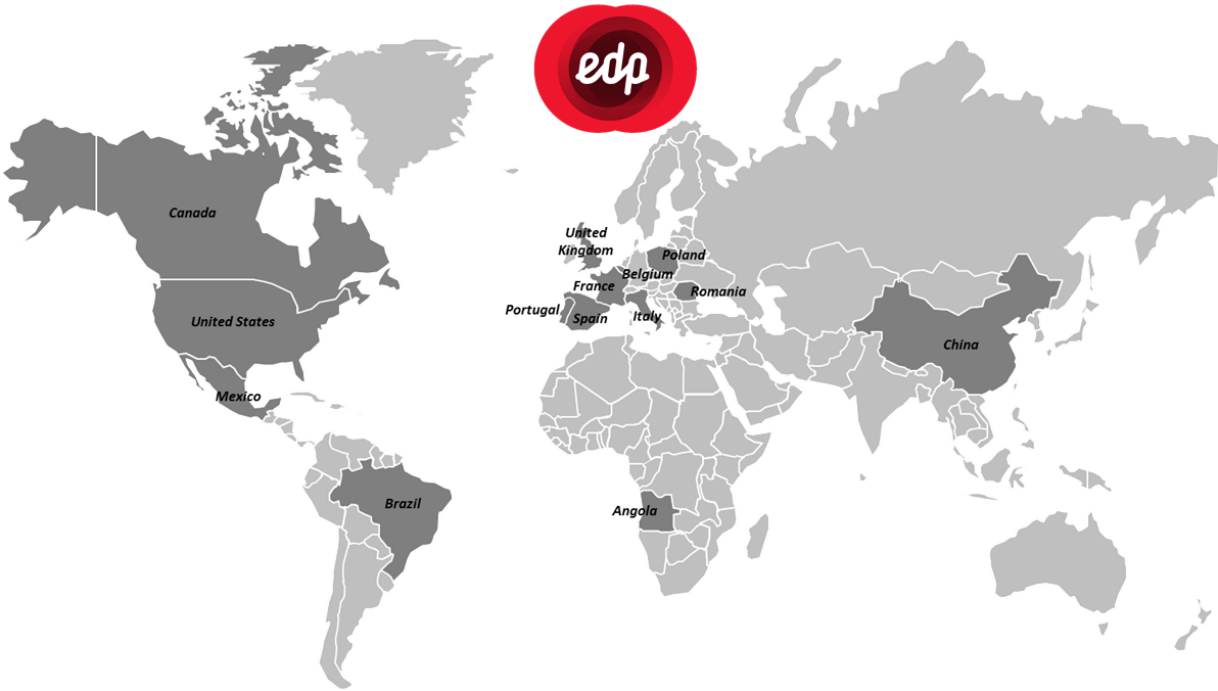
May 23rd, 2018

Appendix 1 | EDP Shareholders



Source: EDP Annual Report 2017

Appendix 2 | EDP Presence Worldwide



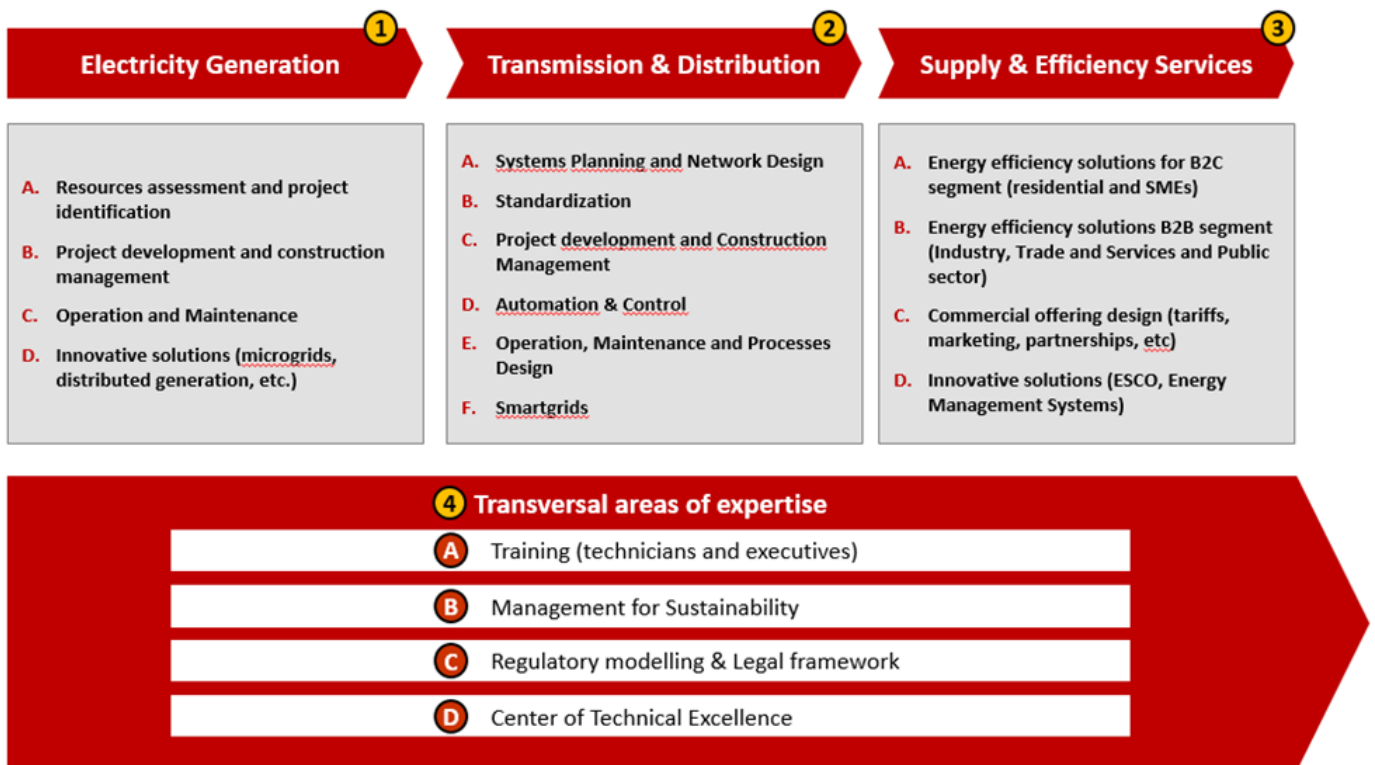
Source: EDPI Company Presentation

Appendix 3 | EDP Operational results



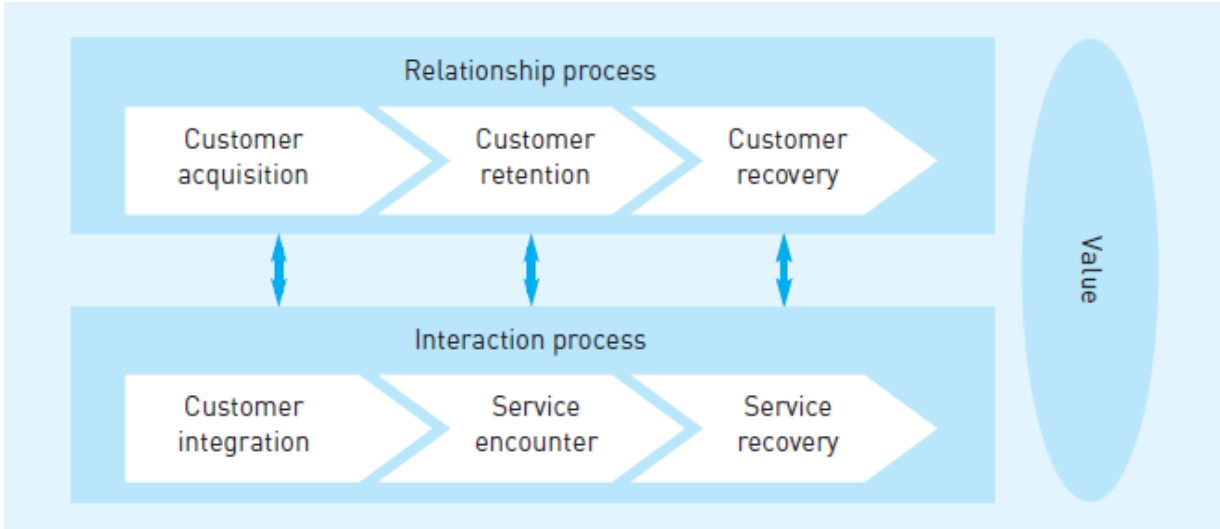
Source: EDP website, 2017

Appendix 4 | EDPI Value Proposition



Source: EDP website, 2017

Appendix 5 | Primary Value Processes



Source: Manfred Bruhn & Dominik Georgi (2006) on “Managing The Service Value Chain”

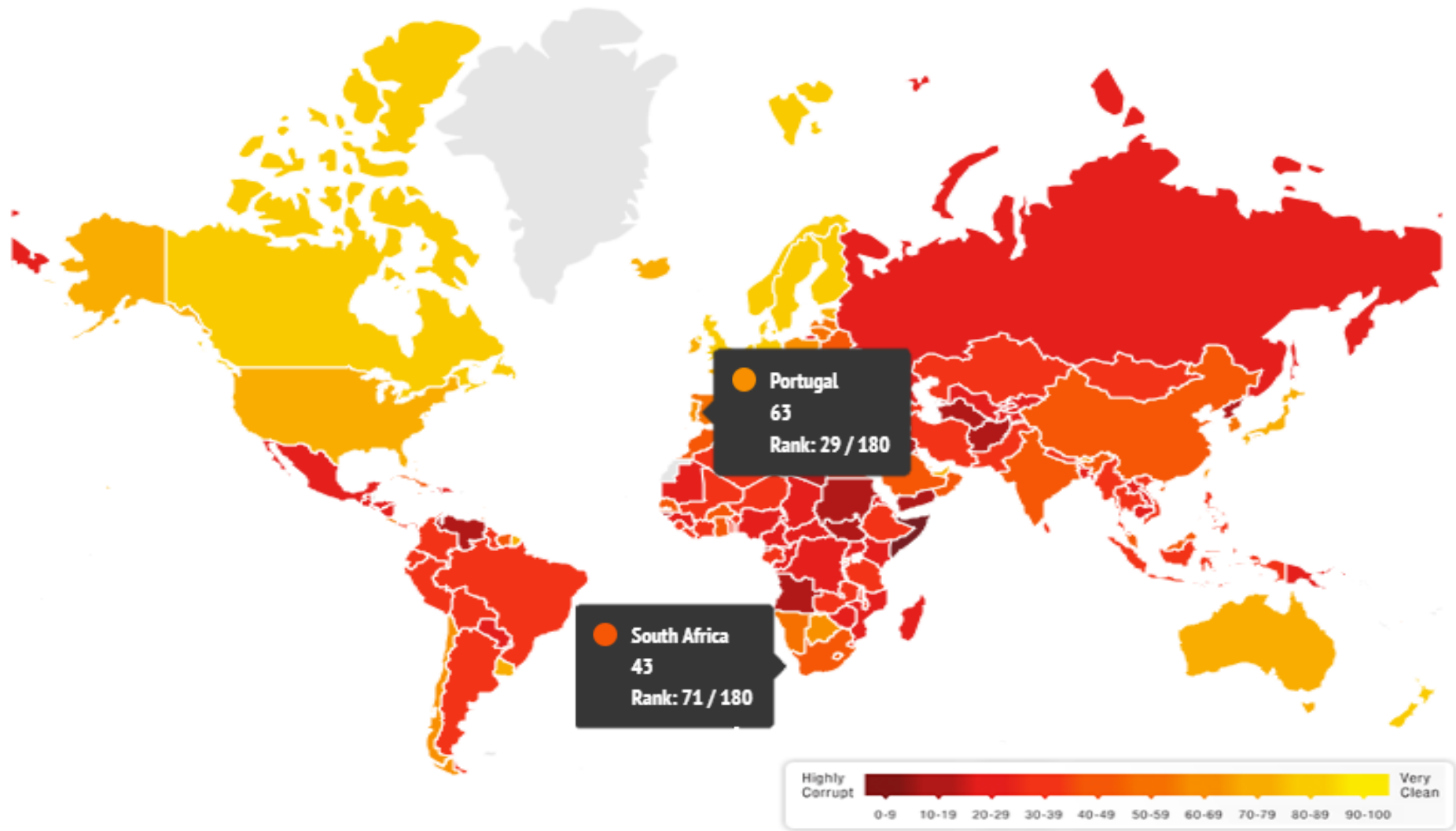
Appendix 6 | Dimensions and Measures of Market Potential for 2018

Rank ▲	Country 🇵🇹	Market Size 🇵🇹	Market Growth Rate 🇵🇹	Market Intensity 🇵🇹	Market Consumption Capacity 🇵🇹	Commercial Infrastructure 🇵🇹	Market Receptivity 🇵🇹	Economic Freedom 🇵🇹	Country Risk 🇵🇹	Overall Score 🇵🇹
1	China	100	68	1	100	65	4	33	66	100
2	Hong Kong	2	35	100	44	100	100	91	85	52
3	India	38	63	33	70	44	4	55	62	51
4	Singapore	2	54	73	49	77	90	86	92	49
5	Canada	8	40	71	75	50	69	92	86	48
6	Japan	17	29	62	96	66	7	86	92	47
7	Germany	10	33	65	88	63	16	88	97	43
47	Romania	2	37	54	67	41	11	76	65	26
48	Portugal	2	25	67	57	47	11	75	92	25
49	Bulgaria	2	44	49	58	41	18	75	65	25
94	Ukraine	4	1	46	70	39	15	49	17	13
95	South Africa	5	31	41	1	48	8	68	47	11
96	Venezuela	3	33	74	57	28	6	1	1	11
97	Cuba	2	46	NA	NA	14	3	3	1	1

Dimension	Weight	Measures Used
Market Size	25/100	<ul style="list-style-type: none"> Electricity Consumption (2015)¹ Urban Population (2016)¹
Market Intensity	15/100	<ul style="list-style-type: none"> GNI per Capita Estimates Using PPP (2016)¹ Private Consumption as a percentage of GDP (2016)¹
Market Growth Rate	12.5/100	<ul style="list-style-type: none"> Compound Annual Growth Rate (CAGR) of Primary Energy Use (2010-2015)² Compound Annual Growth Rate (CAGR) of GDP (constant 2005 US\$) (2011-2016)¹
Market Consumption Capacity	12.5/100	<ul style="list-style-type: none"> Consumer Expenditure (2017)⁴ Income Share of Middle-Class (2015)¹ Household Annual Disposable Income of Middle-Class (2017)⁴
Commercial Infrastructure	10/100	<ul style="list-style-type: none"> Available Airline Seats (2017)¹¹ Cellular Mobile Subscribers (2016)³ Households with Internet Access (2016)^{3,4} International Internet Bandwidth (2016)¹ Logistics Performance Index (LPI) (2016)¹² Paved Road Density (2017)⁴ Population per Retail Outlet (2017)⁴
Market Receptivity	10/100	<ul style="list-style-type: none"> Per Capita Imports from US (2017)⁷ Trade as a Percentage of GDP (2016)¹
Economic Freedom	7.5/100	<ul style="list-style-type: none"> Economic Freedom Index (2018)⁵ Political Freedom Index (2018)⁶
Country Risk	7.5/100	<ul style="list-style-type: none"> Business Risk Rating (2017)⁸ Country Risk Rating (2018)⁹ Political Risk Rating (2018)¹⁰

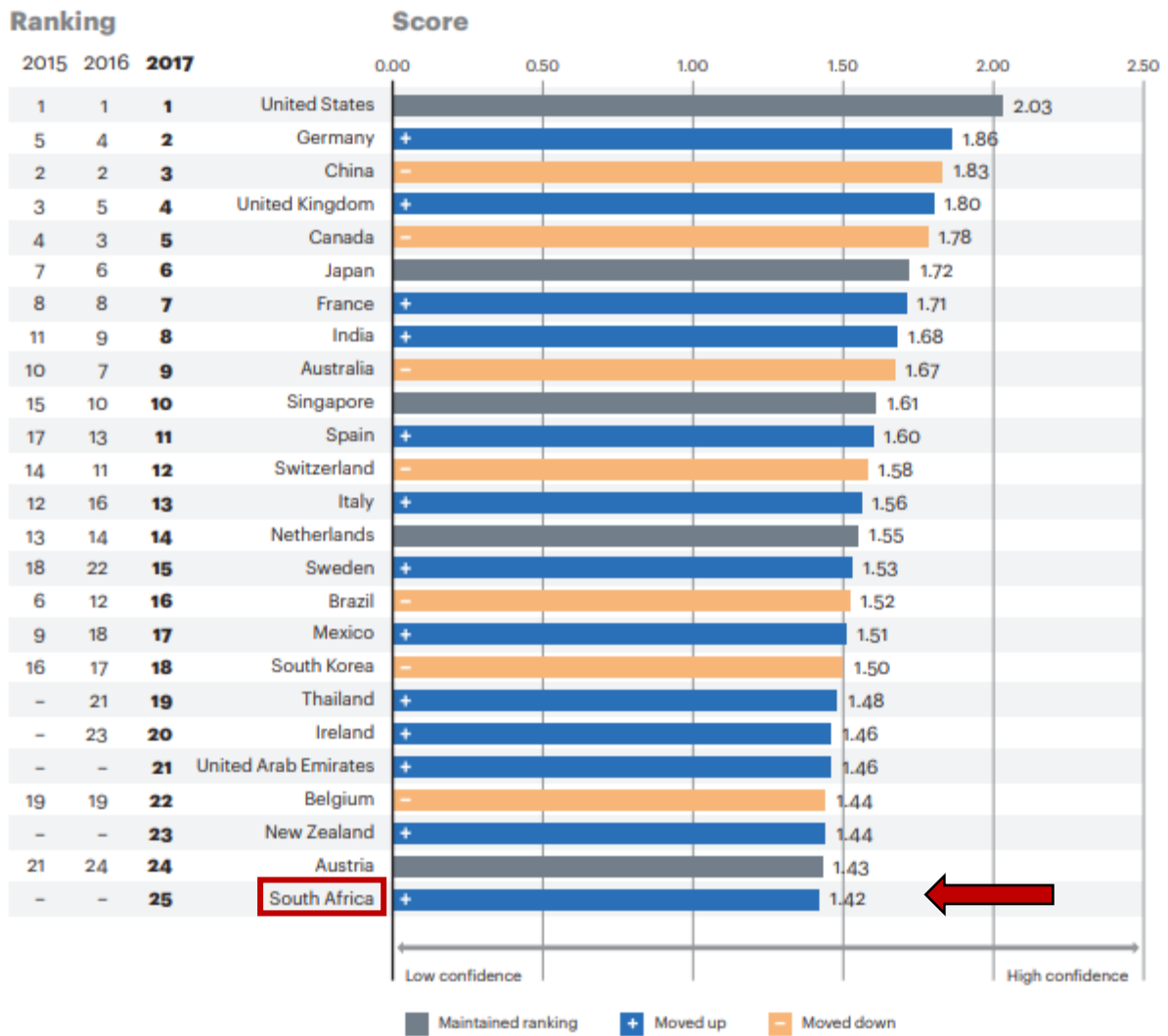
Source: *globalEDGE website, 2018*

Appendix 7 | Corruption Perceptions Index 2017



Source: *Transparency International, 2018*

Appendix 8 | 2017 A.T Kearny FDI Confidence Index



Source: A.T. Kearney Website

Appendix 9 | Broad-Black Based Economic Empowerment (BBBEE): contributor level and score sheet

→ Contributor level sheet

B-BBEE Status	Previous Qualification	Amended Qualification	Recognition Levels
Level 1 Contributor	≥ 100 points	≥ 100 points	135%
Level 2 Contributor	≥ 85 but < 100 points	≥ 95 but < 100 points	125%
Level 3 Contributor	≥ 75 but < 85 points	≥ 90 but < 95 points	110%
Level 4 Contributor	≥ 65 but < 75 points	≥ 80 but < 90 points	100%
Level 5 Contributor	≥ 55 but < 65 points	≥ 75 but < 80 points	80%
Level 6 Contributor	≥ 45 but < 55 points	≥ 70 but < 75 points	60%
Level 7 Contributor	≥ 40 but < 45 points	≥ 55 but < 70 points	50%
Level 8 Contributor	≥ 30 but < 40 points	≥ 40 but < 55 points	10%
Non-compliant contributor	< 30 points	< 40 points	

→ Score sheet:

2013 Revised Codes	
Pillars	Score
Ownership	25
Management control	19
Skills development	20 (5)
Enterprise & supplier development	40 (4)
SED	5
Total points	109 (9)

Source: *EY, 2016*

Appendix 10 | Electrification and National Development Plan

The South African government realizes the need of a profound reform in country's energy system. In the National Development Plan (NDP), a plan that aims to eliminate poverty and inequality by 2030, the government set several objectives to be accomplished, and part of them rely on infrastructures, especially in the electricity sector, and the objectives set by the government are (NDP's Chapter 4):

Objectives by 2030	Planned Actions
<ul style="list-style-type: none"> - The access to electricity should rise to at least 90 percent by 2030, with non-grid options available for the rest including Solar Home Systems (SHS); - The country would need an additional 29 000MW of electricity by 2030. <ul style="list-style-type: none"> • About 10 900MW of existing capacity is to be retired, implying new build of more than 40 000MW; • At least 20 000MW of this capacity should come from renewable sources 	<ul style="list-style-type: none"> - Increased hydro-imports from the region; - Increased demand-side measures; - Move Eskom's system operator, planning, power procurement, power purchasing and power contracting functions to the independent system and market operator and accelerated procurement of Independent Power Producers (IPPs); - Ring-fence the electricity distribution businesses of the 12 largest municipalities (which account for 80 percent of supply), resolve maintenance and refurbishment backlogs and develop a financing plan, alongside investment in human capital;

Source: *National Development Plan (NDP) - updated version of 2012*

Appendix 11 | The Rule of Law Index: South Africa & Portugal (2017-2018)

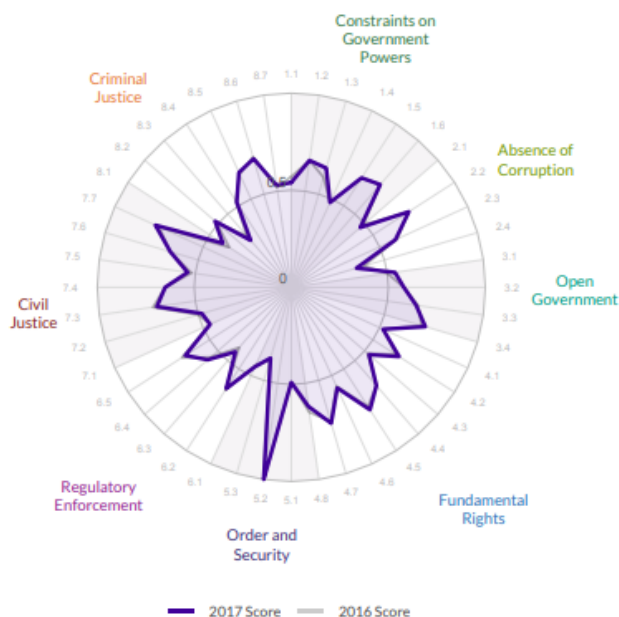
South Africa

Region: Sub-Saharan Africa
Income Group: Upper Middle

Overall Score	Regional Rank	Income Rank	Global Rank
0.59	2/18	8/36	44/113
Score Change	Rank Change		
0.00	-1 ▼		

	Factor Trend	Factor Score	Regional Rank	Income Rank	Global Rank
Constraints on Government Powers	—	0.61	2/18	7/36	41/113
Absence of Corruption	—	0.53	2/18	14/36	49/113
Open Government	—	0.62	1/18	6/36	34/113
Fundamental Rights	—	0.63	2/18	11/36	44/113
Order and Security	—	0.62	12/18	28/36	89/113
Regulatory Enforcement	—	0.55	4/18	6/36	40/113
Civil Justice	—	0.61	2/18	4/36	35/113
Criminal Justice	—	0.52	2/18	9/36	43/113

▲ Trending up ▼ Trending down ■ Low ■ Medium □ High



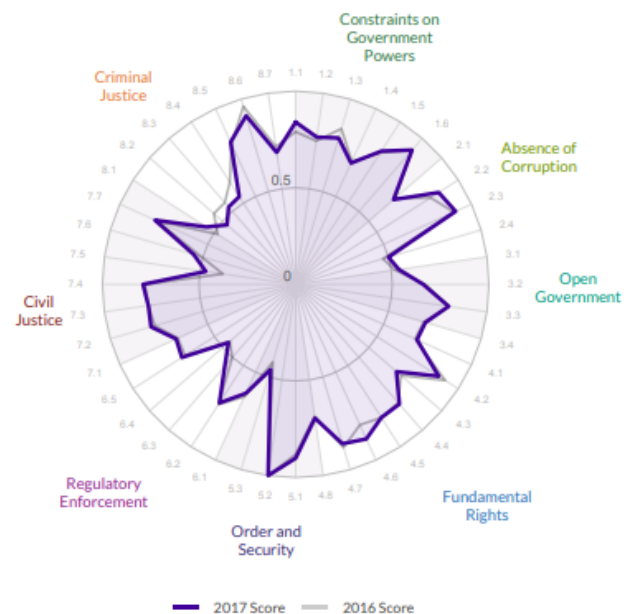
Portugal

Region: EU & EFTA & North America
Income Group: High

Overall Score	Regional Rank	Income Rank	Global Rank
0.72	15/24	21/35	21/113
Score Change	Rank Change		
0.01▲	2▲		

	Factor Trend	Factor Score	Regional Rank	Income Rank	Global Rank
Constraints on Government Powers	—	0.80	12/24	14/35	14/113
Absence of Corruption	—	0.74	14/24	21/35	21/113
Open Government	—	0.68	15/24	22/35	23/113
Fundamental Rights	—	0.79	13/24	15/35	15/113
Order and Security	—	0.79	18/24	24/35	32/113
Regulatory Enforcement	—	0.61	17/24	27/35	28/113
Civil Justice	—	0.69	14/24	23/35	23/113
Criminal Justice	—	0.64	16/24	23/35	23/113

▲ Trending up ▼ Trending down ■ Low ■ Medium □ High



Source: *The World Justice Project Rule of Law 2017 – 2018*

Appendix 12 | South Africa Risk Report

The Institute of Risk Management South Africa's (IRMSA) *South Africa Risk Report 2018* provides a detailed risk assessment on several concerns. Political, economic and societal risks again dominate the South Africa risk landscape.

The Top 10 South Africa risks are:

1. Structurally high unemployment/underemployment
2. Unmanageable fraud and corruption
3. Government policy, legislative and regulatory changes and uncertainty
4. Failure of governance (public and private)
5. Lack of leadership
6. Growing income disparity
7. Macro-economic developments-exchange rate volatility, credit rating fluctuations, global economic slowdown, commodity price volatility, BREXIT
8. Profound political instability
9. Cyber-attacks and cyber-attack non-disclosures
10. Skills shortage including the ability to attract and retain top talent

Source: IRMSA, 2018

See more on http://www.irmsa.org.za/page/2018_Risk_Report

Appendix 13 | South Africa vs Portugal - Business Environment Rank & Doing Business rank

→ Doing Business Rank (World Bank, 2018)

SOUTH AFRICA		Sub-Saharan Africa		GNI per capita (US\$)	
Ease of doing business rank (1–190)	82	Overall distance to frontier (DTF) score (0–100)	64.89	Population	55,908,865
Starting a business (rank)	136	Getting credit (rank)	68	Trading across borders (rank)	147
DTF score for starting a business (0–100)	79.97	DTF score for getting credit (0–100)	60.00	DTF score for trading across borders (0–100)	58.01
Procedures (number)	7	Strength of legal rights index (0–12)	5	<i>Time to export</i>	
Time (days)	45	Depth of credit information index (0–8)	7	Documentary compliance (hours)	68
Cost (% of income per capita)	0.2	Credit bureau coverage (% of adults)	64.4	Border compliance (hours)	100
Minimum capital (% of income per capita)	0.0	Credit registry coverage (% of adults)	0.0	<i>Cost to export</i>	
				Documentary compliance (US\$)	170
Dealing with construction permits (rank)	94	Protecting minority investors (rank)	24	Border compliance (US\$)	428
DTF score for dealing with construction permits (0–100)	67.53	DTF score for protecting minority investors (0–100)	70.00	<i>Time to import</i>	
Procedures (number)	20	Extent of disclosure index (0–10)	8	Documentary compliance (hours)	36
Time (days)	149	Extent of director liability index (0–10)	8	Border compliance (hours)	144
Cost (% of warehouse value)	1.6	Ease of shareholder suits index (0–10)	8	<i>Cost to import</i>	
Building quality control index (0–15)	11.0	Extent of shareholder rights index (0–10)	8	Documentary compliance (US\$)	213
		Extent of ownership and control index (0–10)	6	Border compliance (US\$)	657
		Extent of corporate transparency index (0–10)	4		
Getting electricity (rank)	112	Paying taxes (rank)	46	Enforcing contracts (rank)	115
DTF score for getting electricity (0–100)	63.21	DTF score for paying taxes (0–100)	80.02	DTF score for enforcing contracts (0–100)	54.10
Procedures (number)	4	Payments (number per year)	7	Time (days)	600
Time (days)	84	Time (hours per year)	210	Cost (% of claim)	33.2
Cost (% of income per capita)	146.6	Total tax and contribution rate (% of profit)	28.9	Quality of judicial processes index (0–18)	7.0
Reliability of supply and transparency of tariffs index (0–8)	0	Postfiling index (0–100)	55.45		
Registering property (rank)	107			Resolving insolvency (rank)	55
DTF score for registering property (0–100)	58.43			DTF score for resolving insolvency (0–100)	57.59
Procedures (number)	7			Time (years)	2.0
Time (days)	23			Cost (% of estate)	18.0
Cost (% of property value)	7.6			Recovery rate (cents on the dollar)	34.4
Quality of land administration index (0–30)	13.5			Strength of insolvency framework index (0–16)	12.5

PORTUGAL	OECD high income	GNI per capita (US\$)	19,850
Ease of doing business rank (1–190)	29	Overall distance to frontier (DTF) score (0–100)	76.84
Starting a business (rank)	48	Getting credit (rank)	105
DTF score for starting a business (0–100)	91.26	DTF score for getting credit (0–100)	45.00
Procedures (number)	6	Strength of legal rights index (0–12)	2
Time (days)	5	Depth of credit information index (0–8)	7
Cost (% of income per capita)	2.1	Credit bureau coverage (% of adults)	7.8
Minimum capital (% of income per capita)	0.0	Credit registry coverage (% of adults)	100.0
Dealing with construction permits (rank)	32	Protecting minority investors (rank)	57
DTF score for dealing with construction permits (0–100)	76.52	DTF score for protecting minority investors (0–100)	60.00
Procedures (number)	14	Extent of disclosure index (0–10)	6
Time (days)	113	Extent of director liability index (0–10)	5
Cost (% of warehouse value)	1.2	Ease of shareholder suits index (0–10)	7
Building quality control index (0–15)	11.0	Extent of shareholder rights index (0–10)	4
Getting electricity (rank)	58	Extent of ownership and control index (0–10)	6
DTF score for getting electricity (0–100)	80.18	Extent of corporate transparency index (0–10)	8
Procedures (number)	7	Paying taxes (rank)	38
Time (days)	46	DTF score for paying taxes (0–100)	83.75
Cost (% of income per capita)	36.0	Payments (number per year)	8
Reliability of supply and transparency of tariffs index (0–8)	8	Time (hours per year)	243
Registering property (rank)	28	Total tax and contribution rate (% of profit)	39.8
DTF score for registering property (0–100)	80.26	Postfiling index (0–100)	92.71
Procedures (number)	1	Trading across borders (rank)	1
Time (days)	1	DTF score for trading across borders (0–100)	100.00
Cost (% of property value)	7.3	Time to export	
Quality of land administration index (0–30)	21.0	Documentary compliance (hours)	1
		Border compliance (hours)	0
		Cost to export	
		Documentary compliance (US\$)	0
		Border compliance (US\$)	0
		Time to import	
		Documentary compliance (hours)	1
		Border compliance (hours)	0
		Cost to import	
		Documentary compliance (US\$)	0
		Border compliance (US\$)	0
		Enforcing contracts (rank)	19
		DTF score for enforcing contracts (0–100)	71.74
		Time (days)	547
		Cost (% of claim)	17.2
		Quality of judicial processes index (0–18)	12.5
		Resolving insolvency (rank)	15
		DTF score for resolving insolvency (0–100)	79.67
		Time (years)	3.0
		Cost (% of estate)	9.0
		Recovery rate (cents on the dollar)	63.8
		Strength of insolvency framework index (0–16)	14.5

























Source: World Bank, 2018

More info: <http://espanol.doingbusiness.org/~media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB2018-Full-Report.pdf>

<http://www.doingbusiness.org/data/exploreeconomies/south-africa>

➔ Business Environment Rank

BER rankings

		Score 2009-13 ^a	Global ranking 2009-13	Score 2014-18 ^b	Global ranking 2014-18
	Slovakia	6.94	30	7.20	31
	Mexico	6.83	32	6.91	32
	Slovenia	6.62	36	6.84	33
	Thailand	6.43	38	6.78	34
	Bahrain	6.80	33	6.76	35
	Cyprus	6.65	34	6.73	36
	Portugal	6.61	37	6.62	38
	Costa Rica	6.26	43	6.59	40
	Saudi Arabia	6.14	45	6.58	41
	Lithuania	6.33	40	6.58	42
	Brazil	6.33	41	6.57	43
	Turkey	6.05	48	6.55	44
	Kuwait	6.35	39	6.55	45
	Bulgaria	6.05	47	6.48	46
	Romania	5.80	55	6.47	47
	Italy	6.28	42	6.44	48
	Peru	6.09	46	6.40	49
	China	6.00	49	6.39	50
	Colombia	5.93	50	6.35	51
	Croatia	5.86	54	6.33	52
	Philippines	5.88	51	6.28	53
	South Africa	5.87	52	6.23	54
	Jordan	5.88	53	6.15	55
	Indonesia	5.52	58	6.00	56

Source: The Economist

More info: http://www.iberglobal.com/files/business_climate_eiu.pdf

Appendix 14 | Energy Mix

The South Africa Department of Energy (DoE) acknowledges the unsustainability installed in their primary energy supply. South Africa's generation capacity is dominated by coal-fired generation stations, which produces over **91% of total country's energy, 6% result from nuclear power (only one station) and the remaining is produced from renewables**. It is no surprise that the energy generation is coal-based because coal is an abundant natural resource in the country and so it's easier and cheaper to mine. As a consequence, it turns the energy supply industry to be over-dependent on a fossil fuel that generates high emissions of dioxide carbon (CO₂), in which leads to non-ecofriendly and unsustainable generation system. The government acknowledges the unsustainability of having this energy system and through the DoE (Department of Energy) developed various policies and programs to increase diversification of primary energy sources (opt for greener sources) and reduce over-reliance on fossil fuels.

Appendix 15 | South Africa Energy Crisis

Besides the energy mix heavily depends on fossil source (coal) having a negative impact on environment and the existence of only one electric utility (Eskom owns 100% of the transmission systems), South Africa have other major problems in the energy system.

One of the major problems and source of unsustainability in the electricity market is the pricing policy. Eskom's **tariffs are not cost-reflective** – for several decades Eskom has maintained tariffs that are well below the true cost (long-run marginal cost) of supplying power. By maintaining artificially low tariffs, the South Africans had created resistance to rising tariffs and pushed a lot of pressure in the government. The “solution” the government set was by providing subsidies (increase Government Debt) to the company, but, for Eskom, in case of

absence of subsidy need to cover that cost, the traditional way is by increase debt or even cut in operational costs (maintenance and repairs).

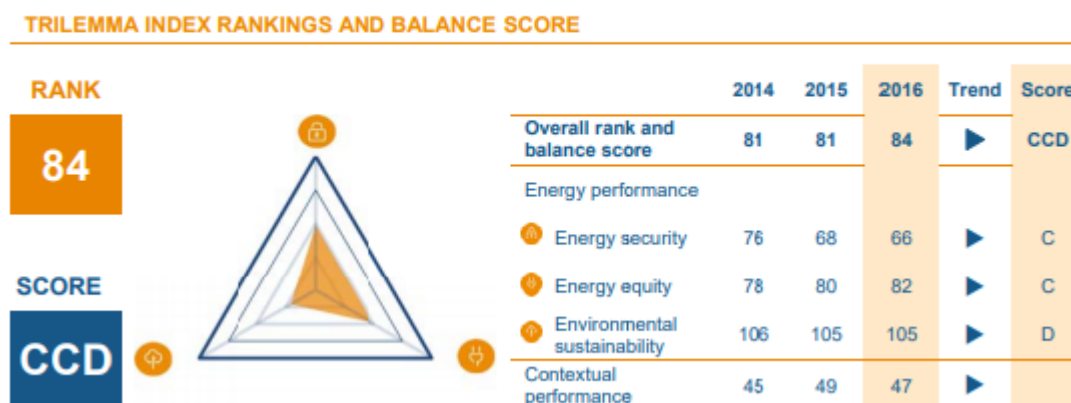
Demand is increasing and tend to be increasing for the next years. Eskom is in urgency to either increase generation capacity (=investments) or increase energy efficiency, because South Africa is in energy crisis (electricity generate by its own generation is less than the total demand including energy losses)– **inefficiency energy systems** – and in peak periods the system do no support resulting in **blackouts** (its frequent). Meanwhile to meet demand and guarantee, at a certain level, energy supply it is necessary do to a **rotational Load Shedding** (local intentionally electrical power shutdown, and even if is previously schedule it have costs, mainly to industries that need to stop proudction) to prevent a nation-wide blackout. In the end the is the question: *How can a company make investments if their operations revenues are negative (cost of electricity is higher than price of electricity) or if they do not have the capital required to invest? The solution is DEBT. Or if their font of revenues (tariffs) are suggest to third party decisions? National Regulator (NERSA), can deny or accept the increase. If allow, South Africans will not (easily accept the tariffs increase and will show resistance (strike actions) and refuse to pay –* **Public Resistance**.

International and national identities criticize the market by existing a **lack of transparency in regulatory decisions**, mainly in what concerns to tariff changes authorization. The National regulator make its decision to disallow Eskom to increase prices with the concern about the impact that have on the national economy, but it cannot justify what portion of that increase truly impact economy, leaving the impression of making decisions in a completely arbitrary manner (Eskom perspective). DoE do not publish energy information since 2012, the updated information is mainly from Eskom.

Reforms to the industry and market structure are a necessary condition to the national development, however Eskom is in conflict of interests and have been delaying signing contracts with IPPs due to an apparent preference to produce nuclear power and “no need” IPPs energy capacity to deal with existence and future demand. The renewable energy industry could displace Eskom by 2050, so the company have been creating artificial obstacles to not make the grid connection available to IPPs – that’s the major reason why less than 5% of country’s electricity is provided by IPPs and why South Africa does not get higher score in World Energy Council Trilemma Index.

According to the **2016 Energy Trilemma Index**, developed by the World Energy Council, South Africa ranked 84th (score CCD, down from 81st place in 2015) on the Energy Sustainability Index out of 125 countries. The score CCD means that in Energy Security and in Energy equity it was attributed C, and lastly D to Environmental Sustainability. Regarding the trends and expectations for near future, the World Energy Council placed South Africa in *Negative Watch list*, mainly due to the difficulty country is dealing to diversify its energy sources, with the majority of its electricity still being supplied by Eskom through fossil fuels, and the power of the main utility to constrain the entrance of Renewable Energy Independent Power Producers in the market. Unless these residual issues are addressed, South Africa’s sustainability score is unlikely to improve.

SOUTH AFRICA



See more on: https://www.worldenergy.org/wp-content/uploads/2016/10/Full-report_Energy-Trilemma-Index-2016.pdf

Appendix 16 | Electricity Demand drivers

According to 2017 Deloitte’s Insight (“An overview of electricity consumption and pricing in South Africa”) the key demand drivers are: the price and income elasticity; growth in the level of economic production or output; population growth; weather patterns; and technological change.

As is the case for most commodities, two of the fundamental drivers of the demand for electricity at a macroeconomic level are income and price. Rising levels of economic activity or national income are usually associated with increased demand for electricity (and energy more generally), while rising electricity prices tend to reduce consumption (by incentivising firms and households to use it more sparingly and/or more efficiently and/or to substitute electricity for cheaper alternative energy sources).

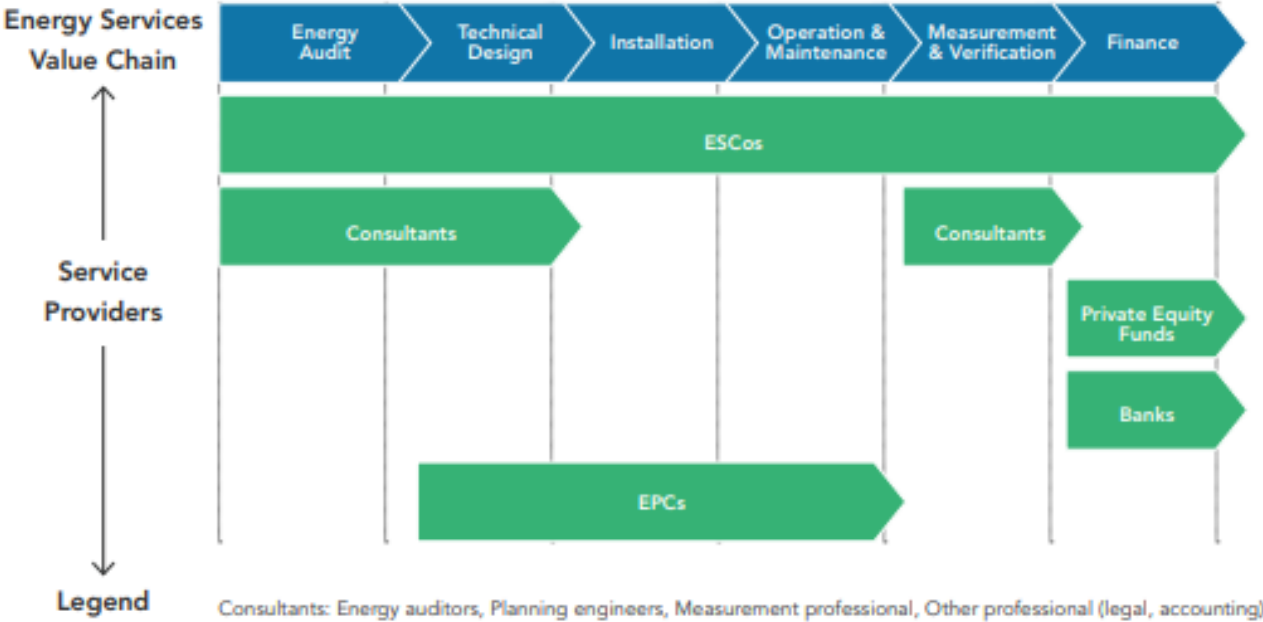
Its difficult to affect influences to each driver in the way that most of the times are directly related, in a brief explanation: Rising levels of economic activity or national income are usually associated with increased demand for electricity, while rising electricity prices tend to reduce consumption; energy intensity of economic growth (definition: The electricity intensity of a sector can be defined as the amount of electricity consumed (e.g. in kWh) to produce a given unit of output (e.g. GDP in R)), because sectors have different energy efficiencies and “*changes in the structure of an economy can have a significant bearing on the longer-term trend in electricity demand. The energy intensity and more specifically electricity intensity of an economy typically increases as a country industrializes and the contribution of relatively electricity-intensive manufacturing activities grows*”; Technology change is relative, because if

the innovation is more electricity-efficient than the traditional, the demand will be less, and in contrary.

Supported by Deloitte’s Insight and the Eskom’s integrated report, the South African electricity demand is expected to have a slow growth (nearly 1.2%) in 2018 and further years. Therefore, its expected a demand growth of 1.6% till 2021, its lower than what was predicted by DoE in the published IRP 2010 (expected 3% growth). The continuing slowdown in the economy and emerging of alternative energy sources are driving the stagnation of electricity demand. Besides the growth been slower that what was expected the problem still need be solved.

See more on: <http://www.eskom.co.za/Documents/EcoOverviewElectricitySA-2017.pdf>

Appendix 17 | Energy Service Providers



Consultancy Service Providers	Include energy auditors, planning engineers, certified Measurement & Verification Personnel (CMVPs), accountants, lawyers and others who provide advice.
Technology Suppliers	Provide hardware (such as lighting, combined heat and power and solar components, or systems), software (such as energy accounting or management packages) and related operation and maintenance services (such as servicing burners, technology maintenance services or software updates).
Energy Service Companies (ESCOs)	Provide performance-based energy contracting, also referred to as ESCO, is a combination of energy supply and energy efficient technology that leads to energy efficiency improvement or energy savings. The two basic business models are: <ul style="list-style-type: none"> • Energy Supply Contracting (ESC) which delivers units of used energy measured in Megawatt hours (MWh) • Energy Performance Contracting (EPC) which provides energy savings measured in comparison with a previous energy cost baseline
Engineering Procurement Contractors (EPCs)	Provide the detailed engineering design of the project, procure all the equipment and materials necessary, and then construct to deliver a functioning facility or asset to their clients”.

Source: Green Cape, 2017

Appendix 18 | Energy Service Market Stakeholders

Department of Energy (DoE);	Is in the foundations of all energy market, is the “custodian of all energy policies and energy security”
Department of Public Enterprises (DPE)	Is responsible for the country’s energy infrastructure
Eskom	It’s the only utility in the country and its a state-owned company. Its responsible for 92,8% of South Africa electricity generation
South African National Energy Development Institute (SANEDI)	Responsible for achieving the objectives of the NEES
National Energy Regulator of South Africa (NERSA)	The national regulator of the energy industry in accordance with government laws and policies, standards and international best practices in support of sustainable development.
Local Government (municipalities)	Is the third sphere of government, and are responsible for a large portion of electricity distribution in the country within their areas of jurisdiction

Source: Green Cape, 2017

Appendix 19 | Tender System Methods

Method of Selection	
Quality & Cost Based Selection (QCBS)	Both quality & cost aspects taken into account,
Least Cost Selection (LCS)	The least cost bidder with technical score > min. technical score required
Selection Based on Consultants' Qualifications (CQS)	Cost is not a factor of selection
Quality Based Selection (QBS)	Award to the firm with the highest technical score
Selection under a Fixed Budget (FBS)	Similar to QCBS, but under a fixed budget
Single Source Selection (SSS)	Directly choose the firm, there is no competition.

Source: World Bank, 2016

Appendix 20 | Competition

➔ Research on Energy Efficiency Services providers in the country

Company	type	Size	Origin	Local Presence	ESCo	Foundation	Description	Strong Competitor?
National Power Contractors	Consulting	Small	SA	Yes	X	1995	Capabilities include control-networking techniques, energy metering techniques, condition monitoring expertise and software development methodologies. Its target is to reduce specific energy consumption.	
Black Jills Engineers	Consulting	Small	SA	Yes	.	2007	Extensive experience in infrastructure design and supervision, project management and facilities management. The team members' experiences range from 4 to 22 years.	
EOH - Powertech System Integrators	Consulting	Medium	SA	Yes	.	1980	Its engineering solutions include secondary plant for substation automation, network planning and control software, mobile workforce and asset management systems, and systems for advanced and smart metering infrastructure. Offer efficient devices and solutions. Acquired by EOH in 2017	
EOH - Dihlase consulting engineers	Consulting	.	SA	Yes	X	.	Specializing in electrical, mechanical and electronic engineering. Offer Energy Management services. Its a EOH company	X
EHL Consulting Engineers	Consulting	Medium	SA	Yes	.	1980	Areas of expertise: Electrical Engineers; Project Management Professionals; Certified Technicians; Design Technicians and Computer-aided designers (2D and 3D capability); Site Supervisors and Project Support Staff. Energy specific expertise lies in energy provision and generation, energy related negotiations and interfacing, energy management and project management as well as studies and project execution for brown and green field projects.	
Pendo Energy Solutions	Consulting	Smal	SA	yes	.	.	Specialised in the design and project management of the following disciplines: Renewable energy; Substations; Power lines; Cable networks; Building services & Housing projects. Offer this services in Energy Efficiency & Demand Side Management.	
AECOM	Consulting	Big	America	yes (subsidiary)	x	1990 (more than 100y existence)	In South Africa provides sustainable energy solutions, through hydropower, wind and solar power, geothermal power; and transmission and distribution. In other places, the team have the ability to strategically plan, develop, design and construct projects to enhance system infrastructure, reduce energy and water consumption, and generate on-site energy from traditional or renewable sources	X
RWP Consulting Engineers	Consulting	Small	SA	Yes	.	1987	Experience in all aspects of Electrical Engineering Consultancy Services. Building management and automation are control systems designed to monitor and control the mechanical and electrical systems in a building, with the aim to reduce energy consumption and maintenance costs, as compared to non-controlled buildings.	
Shepstone & Krause cc	-	Small		yes	-	-	No Website	
Gertenbach & Partners	-	Small		yes	-	-	No Website	
De Villiers & Moore	-	Small		yes	-	-	No Website	

Research on Energy Efficiency Services providers in the country

Company	type	Size	Origin	Local Presence	ESCO	Foundation	Description	Strong Competitor?
Lebone	Consulting	Small	SA	yes	X	1995	technical fields of power distribution, building services, transportation and energy management. across all spheres of engineering namely electrical, electronic, civil, structural and mechanical engineering services.	
Tsebo - Tsebo energy solutions		Big/Medium	African	Yes (Subsidiary)		1970	Experts in reducing the production costs of our clients through simple energy solutions. Offers consumption intelligence to reduce energy consumption and CO2 emissions.	X
Kgwanype Energy Solutions	Consulting	small	SA	yes	.			
Energy Partners	Consulting	Medium	SA	Yes	.	2009	EP is organized across a number of key verticals: Energy Intelligence Consulting, enterprise level Solar Solutions, Home Solar Solutions, HVAC & Refrigeration, Water Heating and Steam & Combustion Solutions.	
Disele Green Energy	Consulting	Small	SA	yes	.		Energy solutions including energy audits & designs and implementation of energy saving projects, energy conservation, energy infrastructure outsourcing, power generation and energy supply. Our high level consulting services include but are not limited to: project management, risk management and client advisory services.	
Cambridge Energy Efficiency Solutions	Consulting	Small	SA	yes	X	2007	Audits, advises, implement and ensures that its client base receives (a) a reduction in the overall use of fossil based energy resources and; (b) the implementation of creative, fast and low-cost renewable energy solutions throughout South Africa.	
Ecolution Consulting	Consulting	Small	SA	yes		2011	Focused on sustainability. Our services assist clients who are striving to be an environmentally, responsible business, as well as being recognized as such. Our solutions not only focus on sustainability, but the holistic benefits it provides.	
Du Pont	Market-driven/Consulting services in EE	Big		Yes(subsidiary)	.	more than 200y	We are a science company with an extraordinary range of materials science, chemistry, biological science and engineering capabilities, and a corresponding breadth of products. Our experienced consultants approach energy efficiency improvement from a low or no-capital investment perspective, and work in close collaboration with clients to identify, and prioritize energy savings opportunities as well as develop managing processes that will enable sustainability of gains.	
Iems Energy Management	Consulting		SA	yes		1991	Holistic Sustainability solution and Energy Management partner to Business. Helping companies Measure, Manage and positively reduce their carbon footprint as well as energy costs. Partnership with Envizi.	
GEM - Global Energy Management	Consulting	Medium/small	SA	Yes	.	1992	Energy management, reduce wastes and electricity bills.	
Zero Point Energy	Consulting	Small	SA	yes	.	2015 (22y exp)	To make sustainability simpler and cheaper for our clients and to empower their journey towards net-zero energy consumption and environmental impact.	
SDE - Single Destination Engineering	Consulting	Small	SA	yes	.	-	Offers a wide range of consulting services in the disciplines of electrical, mechanical, process and civil / structural engineering.	
Shared energy management	Consulting	Small	SA	yes	X	1997	Is a utilities management and optimisation company that implements effective energy and water saving solutions in the commercial, industrial and residential development sectors.	
ImpactChoice	Consulting	Medium/Small		Yes	.	2009	We leverage our collective deep industry expertise in environmental sustainability, technology, IT, engineering, and logistics to create innovative sustainability solutions that impact your bottom line.	
Ruach	Consulting	Small	SA	yes	.		As a green design, energy efficiency and renewable energy consultancy, we craft individualised, product-agnostic business solutions to optimise efficiency and reduce clients' carbon footprints.	
Molta	Consulting	Medium	SA	yes	.	1997	Our purpose is to offer the quality and professional consulting engineering services that can create such sustainable infrastructure projects. Motla has implemented ±40MW energy efficiency, demand side management and renewable energy projects.	

Research on Energy Efficiency Services providers in the country

Company	type	Size	Origin	Local Presence	ESCo	Foundation	Description	Strong Competitor?
Grey Green	Consulting	Small	SA	yes	.	2010	Renewable energy and energy efficiency solutions as well as on-going maintenance and support.	
Solek - Renewable Energy Engineers	Consulting	Small	SA	Yes	X	1988	As industrial engineers we offer you renewable energy solutions in solar technology, waste-to-energy development, energy efficiency, and customised grid designs.	
Emergent Energy	Consulting	Small	SA	Yes	.	2010	Has extensive local and international experience in the renewable energy and broader energy sectors, offering expertise in grid-tied and off-grid renewable energy systems, sustainable building design, industrial and commercial energy efficiency, and	
DFR Engineers	Consulting	Small	SA	Yes	.	1998	Offer a broad spectrum of advisory, design and project management services in electronic, electrical and mechanical engineering, including statutory compliance and site management.	
VWG	Consulting	Small	SA	yes	.	2005	Provides consulting services, customised programmes, training and technology to a diverse client base across the manufacturing sector. By focusing on operational excellence, resource efficiency and process engineering.	
Livewire Engineering and Consulting	Consulting	Small	SA	Yes	.	2006	Consulting requirements in the fields of Energy Management, Tariff Analysis, Energy Metering and Demand Side Management.	
Urban earth	Consulting	Small	SA	Yes	.	2010	Main focus areas are sustainability, energy efficiency, renewable energy, climate change, and non-motorised transport.	
M-Tech Industrial	Consulting	Medium	SA	Yes	.	2000	Specialises in heat transfer, fluid mechanics, thermodynamics, computational fluid dynamics (CFD), integrated system analyses and optimization applied to the design, construction and commissioning of energy systems. M-Tech has designed, supplied and installed heat pump and other water heating and pump scheduling technology solutions.	
WSP	Consulting	Big	US	Yes	.	1885	Unlock opportunities to meet the rising demand for power, maintain secure and reliable energy supplies, reduce greenhouse gas emissions, and deliver future energy schemes.	X
Carbon Advisory	Consulting	Medium	UK	Yes	.	2001	Independent experts on carbon reduction and resource efficiency.	
Cova Advisory	Consulting	Small	SA	yes	.	2012	Its services range from sustainability, carbon and energy strategy services through to green tax and government grant services. Assisting various companies that are looking to obtain fiscal incentives.	
GFA Consulting	Consulting	Medium/big	DE	No	X	1982	Providing effective solutions to the challenges in the global consulting market.	
DCFI	Consulting	Small	IN	No (NGO Projects)	X	2003	Specialized in the fields of energy management and international markets with all the necessary corresponding concepts and actions.	
TÜV SÜD South Africa	Consulting	Big	DE	Yes	.	2010 (in the country)	As a global technical services provider with a tradition of 150 years, more than 17,000 employees in over 50 countries at more than 800 locations. The range of services covers consulting, testing, certification and training. ISO 50001 Management System Certification: offer a systematic approach to monitor and reduce the energy consumption in all kinds of organisations.	X

Research on Energy Efficiency Services providers in the country

Company	type	Size	Origin	Local Presence	ESCo	Foundation	Description	Strong Competitor?
Danish Energy Management & Esbensen	Consulting	Medium/Big	DK	Yes	(NOT YET IN AFRICA)	2015 (100y of experience)	focuses on energy policy projects, monitoring & evaluation (OECD-DAC criteria), physical projects on urban development plans, new construction and energy renovation of buildings.	X
SEW-EURODRIVE	Consulting & Pr	Big	DE	Yes	.	1931	Gearmotors, gear units, motors, components for decentralized installation, electronically controlled drives, mechanical variable-speed gearmotors, as well as drive solutions that involve a lot of engineering. Find and take advantage of energy savings potential in drive technology.	
Surya Power	Consulting & Pr	Small	SA	yes	.	2012	Reduce the carbon footprint nationally by implementing and integrating energy efficient processes. Enables its clients to consume, generate, transmit and distribute electrical power at the highest levels of efficiency by offering various energy efficient products and services.	
Anani Consulting	Consulting				.	2007	Provides services in various fields of works that includes Electrical Engineering and other services in the line of Project Management, Logistics and general supply of various products. Demand side management audits and recommendations.	
RBI Energy Solutions	Consulting	Small	SA	yes	.	.	RBI Energy Solutions is a EPCM Contracting Business that specialises in the renewable energy and energy efficiency fields.	
Converge Consulting	Consulting	Small	SA	yes	.	2014	Building Services Consultancy specialising in Electrical Engineering. committed to a sustainable future and actively researches and encourages the implementation of energy efficient technology. We provide sustainable and energy saving concepts and designs from the initial feasibility stages of a project through to final completion.	
Jika-Jika Consulting	Consulting	Small	SA	Yes	.	.	Is a renewable energy solution specialist and brings more than 30 combined years of renewable energy, consulting and project management experience. provides the following energy efficiency consulting services: Process efficiency, (e.g. water heating, pumping, etc);Solar PV system design;General electrical system design. Partnering with energy practitioners in different countries such as Germany, France and the UK.	
OST Energy / RINA Consulting	Consulting	Big	UK	yes	X	2008 (SA in 2013)	Provides a wide range of traditional and innovative services to critical industry sectors, including renewables, power, oil & gas, space & defence, and transport & infrastructure. provide energy & carbon assessment and compliance services in respect of all building types and for mixed use development covering new build, conversions, and extensions to existing buildings.	X

Research on Energy Efficiency Services providers in the country

➔ Close Competitors of EDPI on regular basis (from companies benchmark on Integrated Utilities)

Company	type	Size	Origin	Local Presence	ESCo	Foundation	Description	Strong Competitor?
Tractebel	Consulting	Big	BE	yes (subsidiary)	.	1986	Provides a full range of services throughout the life cycle of its clients' projects. As one of the world's largest engineering consultancy companies and with more than 150 years of experience, we are able to offer our customers multidisciplinary solutions in energy, water and infrastructure.	
Iberdrola	Utility	Big	ES	No (Projects)	.	170y of existence	As the largest renewable energy producer among the European utilities, global leader in terms of installed onshore wind power and the cleanest electricity in the United States, with nearly zero emissions.	X
CESI (ENEL Group)	Consulting (Utilit	Medium/Big	IT	No (Projects)	.	1956	Independent center of expertise and a global provider of technical and engineering services to customers throughout the energy value chain, including business and technical consultancy, engineering and operational support. We also act as owner's engineer and provide qualified third-party opinions to power utilities worldwide.	
AETS Consultants	Consulting	Medium/Small	FR	No (Projects)	X	1997	International consulting company that works alongside governments and the private and public sectors to offer sustainable solutions. Climate change mitigation / Energy efficiency services: GHG emission reduction strategies; Financing of EE programmes and promotion of ESCOs; Energy audits; CHP and Waste-to-Energy.	
ESB International (Electricity Supply Board)	Consulting (Utilit	Big	IRL	Yes (since 2013)	.	1975	As a strong, diversified, vertically integrated utility, ESB operates right across the electricity market: from generation, through transmission and distribution to supply.	X
EDF	Utility	Big	FR	yes	.	1940	As a global leader in low-carbon energy, the EDF Group covers every sector of expertise, from generation to trading and transmission grids. In South Africa developed projects on Access to electricity and Renewables energy generation. EDF GROUP'S NET RENEWABLE CAPACITY: 54 MWe and NET RENEWABLE GENERATION: 330 GWhe (wind). Doesn't had developed projects on energy	X
Lahmeyer International (tractebel engie company)	Consulting	Medium/Big	DE	No	.	1890	Provides consulting services for governments, utilities, development institutions and donors in the fields of strategic energy planning, energy policy development, privatization and restructuring programmes, as well as the development of a range of measures designed to promote the use of renewable energies and energy efficiency. In SA only did one project and it was study of wind farm for ESKOM.	X
Aurecon	Consulting	big	SA	Yes	.	2009	Its na engineering and infrastructure advisory company.	

Close Competitors of EDPI on regular basis (from companies benchmark on Integrated Utilities)

→ References in South Africa (by Developmentaid)

Company	type	Size	Origin	Local Presence	ESCo	Foundation	Description	Strong Competitor?
PEM Consulting	Consulting	Small	DE	No	.	1977	Is an independent private consulting firm providing advisory services and technical assistance to public institutions, private sector organisations and individual enterprises in developing countries and economies in transition.	
Gesto Energy	Consulting	Small	PT	No	.	2008	Has know-how and experience in renewable resource assessment, legislation and energy policies, electrification master plans (both on-grid and off-grid), rural electrification design/engineering studies, feasibility and grid studies, energy efficiency and losses reduction, asset and grid management, financing and procurement, owners engineering and construction supervision and supporting all phases of energy project development. Had solar PV Installation in South Africa .	
DNV GL	Consulting	Big	NL (energy headquarters)	Yes	.	1864	Provide classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas, power and renewables industries .Helps utilities develop, implement and track energy efficiency programmes for commercial, industrial, and residential customers.	X
Sofreco	Consulting	Medium	FR	No	.	1976	Is a leading company in consultancy and technical assistance for sustainable economic and social development. Expertise in energy efficiency field.	
Ramboll	Consulting	Big	DK	Yes	.	1945	Is a leading company in consultancy and technical assistance for sustainable economic and social development and works across the following markets: Buildings, Transport, Planning & Urban Design, Water, Environment & Health, Energy and Management Consulting.	
WYG	Consulting	Big	UK	Yes	.	1959	Is a leading socio-economic and technical consultancy, catalyzing change in societies to improve the quality of life of people throughout the world .experienced low carbon and building services consultants will work with you to develop innovative energy reduction, metering, and utility procurement strategies resulting in significant reductions to your business costs	X
NIRAS	Consulting	Big	PL	No	.	1956	work with everything from processing plants and construction over energy, environment, and infrastructure to third world aid and urban planning .vast experience in optimising energy consumption in industrial businesses. We provide consultancy on internal heat recovery, energy efficient lighting, pumps, boiler systems and much	

References in South Africa (by Developmentaid)