

2020 GREY ROSE CAPITAL

RENEWABLE ENERGY

Strategy Department



FOREWORD

The Strategy Department of Grey Rose Capital shows special interest in the **renewable energy industry**. Climate change and excessive dependency on energy procurement from OPEC members has triggered the need for governments and corporations to make an energetic transition. **Technology improvements and cost reduction** have allowed for a strong increase in demand for clean energy. The market for renewable energy has been exponentially increasing through the last 5 years. For this reason, this Department believes that the companies that are **first movers** will be enjoying a “blue sea” market for the following years. While it's true that reduction in costs will allow competitors an easier entry, we consider that first movers have a key **competitive advantage in expertise** and the analysis of these will help us greatly improve and diversify our portfolio.

The main aim of this report is to **comprehend the context and the functioning of said sector**, help the reader **spot the main profitability drivers**, define the **future trends** and, to conclude, choose the most suitable companies to invest in, following the criteria developed throughout the analysis. An additional goal is to assist the Finance Department of GRC, providing them with proper quantitative (ratios and industry averages) and qualitative (resources and capabilities) insights of each company.

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1. INTRODUCTION

After the Second Industrial Revolution, electricity became an important player in our daily lives. However, its generation involved the **use of mineral resources** in the past century, and consequently nowadays we are faced with a severe **scarcity** of these and a matter concerning **air pollution** that needs to be urgently tackled. The current situation has raised a question on the ability of our economy to **prosper in the future without mineral resources** and our capacity to **switch to greener energies**.

Corporations, entrepreneurs and governments are working on achieving sustainable economic growth by **investing in renewable energy power plants**, regulating **environmentally-friendly production standards** and **researching new energy sources**.

An energy source is considered to **renewable** when:

1. **Unlimited**. Either by being eternal or by being able to be replenished.
2. **Clean**. Its generation must not involve polluting the environment.



2. DESCRIPTION

PARTICIPANTS

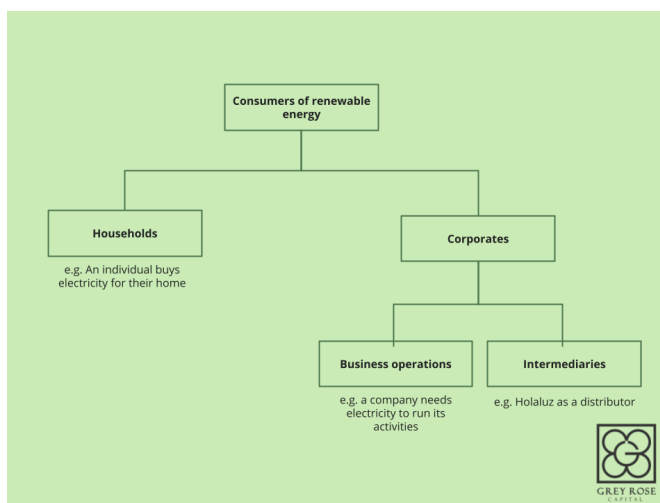
From the **supplier's** side, the following has been concluded.

There are 3 main steps when producing renewable energy: **infrastructure development, energy production and distribution**. There are companies that operate vertically, for instance the Spanish company Acciona or the French Voltalia, some others operate in one or two of the three stages in the value chain. Holaluz, for example, is only an energy distributor. The following image shows in which sector some of the companies analyzed at Grey Rose Capital, just for the sake of illustrating the point above.



Source: GRC analysis (own)

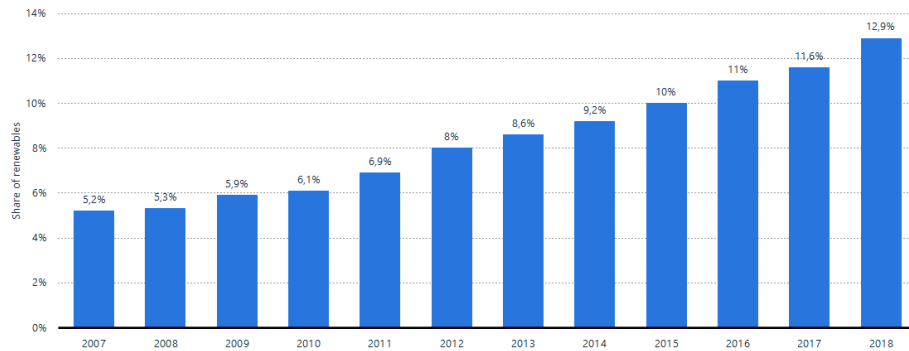
On the consumer side, speaking in general terms, **these can be classified as household consumption and business consumption**. As for business consumption, there are intermediary firms (distributors) and firms consuming energy for their operations. The following chart illustrates the mentioned.



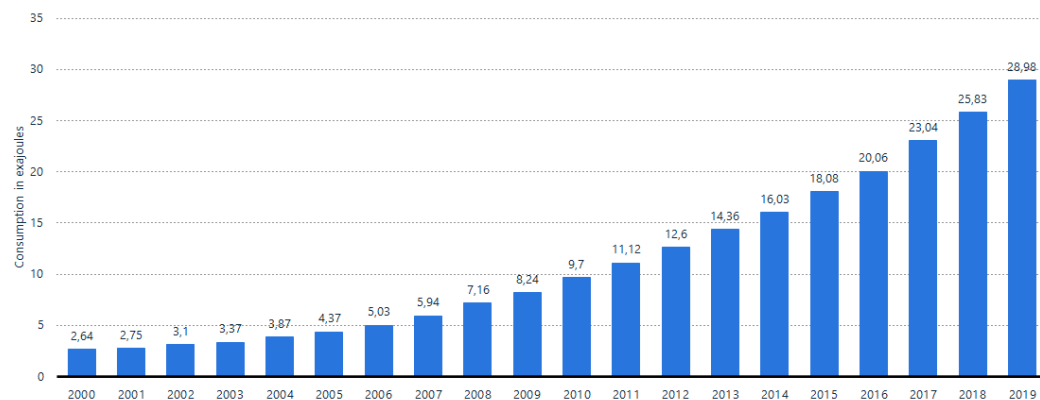
SEGMENTATION

To be able to define and segment the renewable energy industry, we first need to know the world context towards this energy, meaning that we need to know how much energy is produced around the world, the investment made in this market and its evolution.

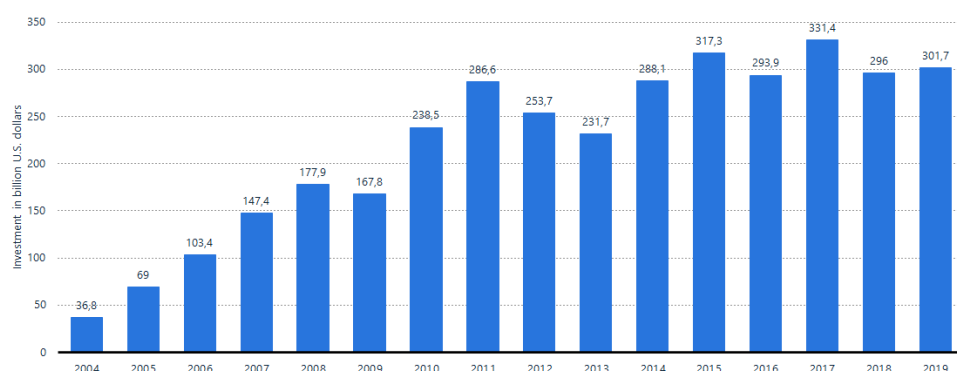
Note that all the graphs belows are from Statista



In this first graph we can see the **evolution of the share of renewable power in energy generation globally from 2007 to 2018**, that represents the percentage of clean energy produced around the world during 11 years and the increase of 7% during this period.



This second graph illustrates the **evolution in the consumption in exajoules** (one quintillion (10^{18}) joules) of this clean energy with an increment similar to an exponential growth during the 20 years shown in the graph, with an increase of almost 1000%.



This final graph shows the **investment evolution in the clean energy market since 2004** and it's upward trend, having increased more than 700% during the studied period.

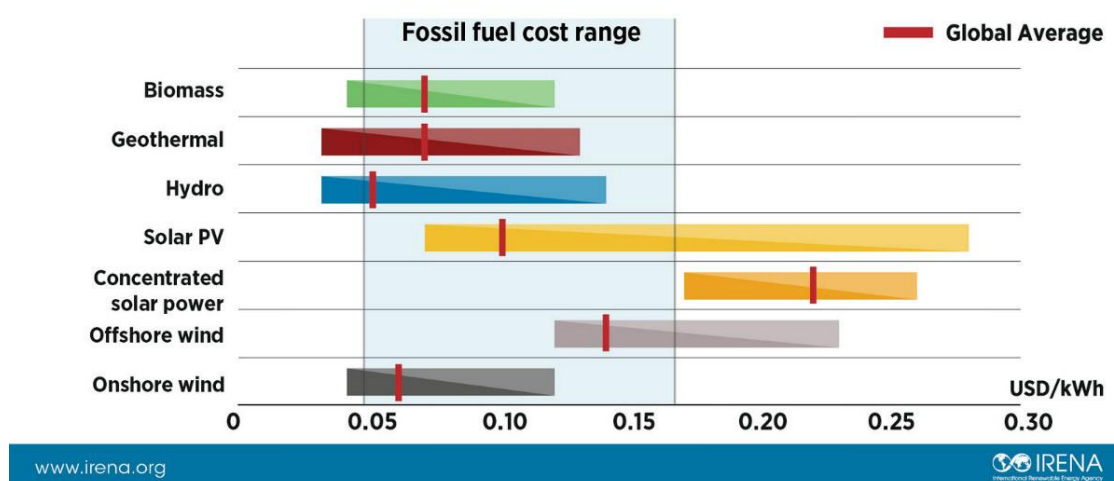


BY TYPE OF ENERGY:

As mentioned previously energy sources can be studied in different ways, and in this case we will **divide between types of energy**. A first important point of these energy sources is that every one of them have increased production year after year and, as explained previously, have been increasing their market share. But even with these similarities we can differentiate among their growth speed and also their cost.

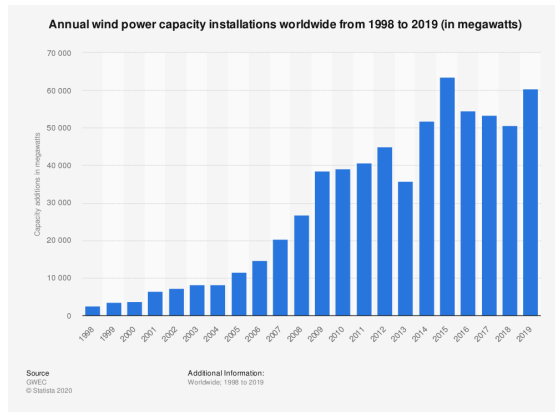
In the following picture **we can see a comparison between the fossil fuel energy cost range and renewable energy**. We can see that the only energy type that surpasses the fossil's price is concentrated solar power, that is a special type of solar power. Besides that all the energies are in a similar range, but with two different sectors, even though the global average of all the energy types are inside the fossil's range: the first one is the one than have range that is upper the fossil's range, that includes both solar, PV and concentrated, and offshore wind; and and the second one that is down the fossil's range, that are biomass, geothermal, hydro and onshore wind.

Average renewable power generation costs in the fossil fuel range in 2017

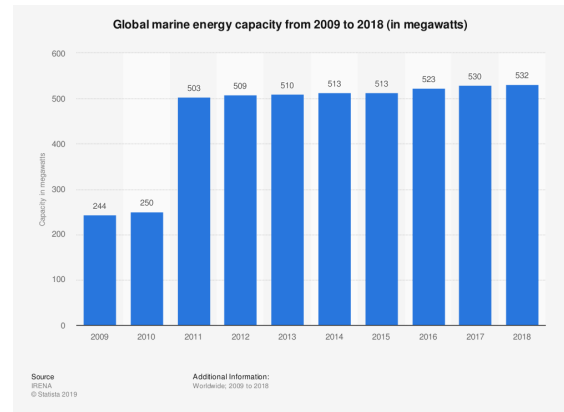


And talking about the speed of growth we can see that **solar (1) and wind (2) are the ones that exceed the other competitors, with a growth similar to an exponential since it's early years**, followed by hydro (3), geothermal (5) and biomass (6) that have a similar linear growth and the last one is tidal(4) which had an increased that doubled the produced amount, but after that there hasn't been any improvement.

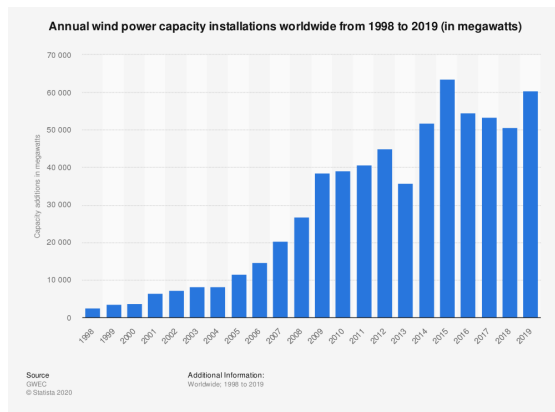
Solar:



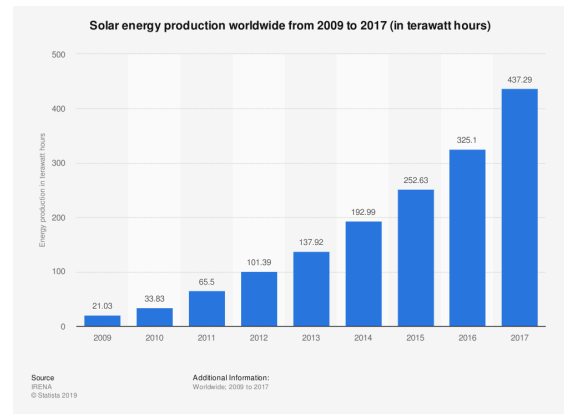
Tidal:



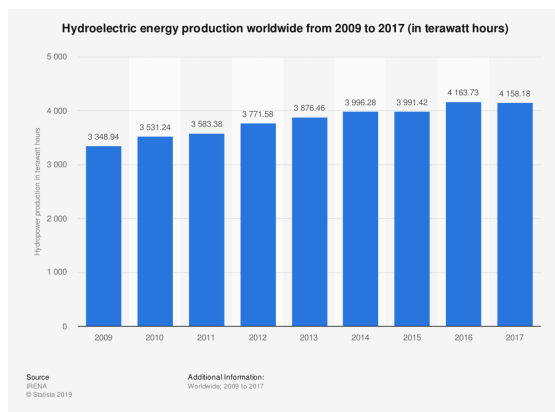
Wind



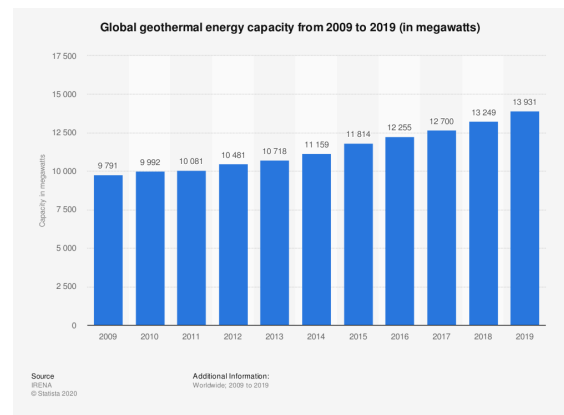
Geotherm:



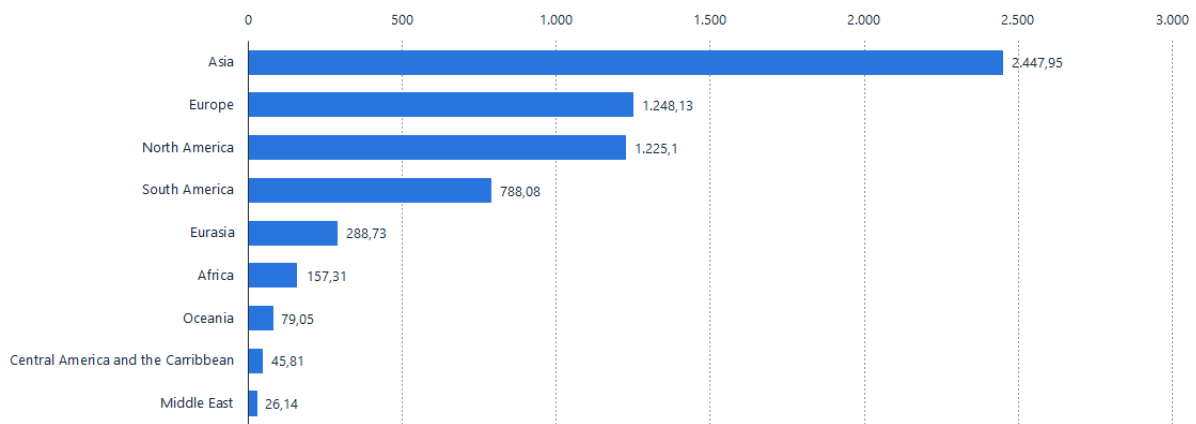
Hydro



Biomass:



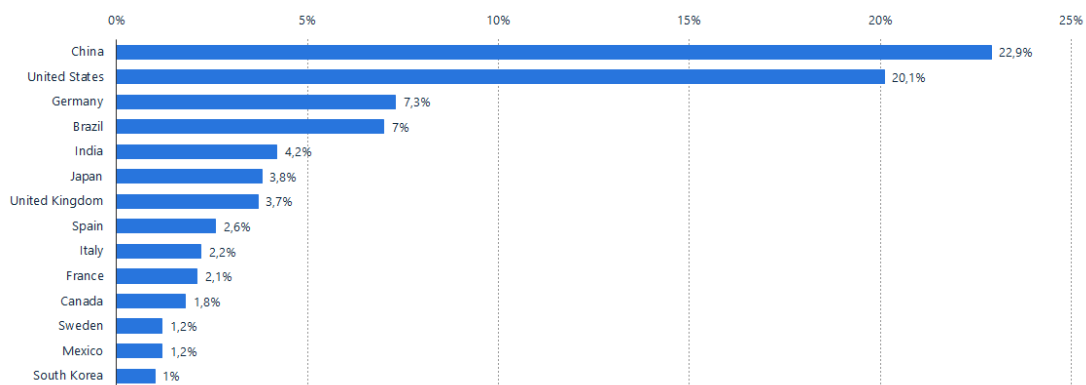
BY GEOGRAPHY:

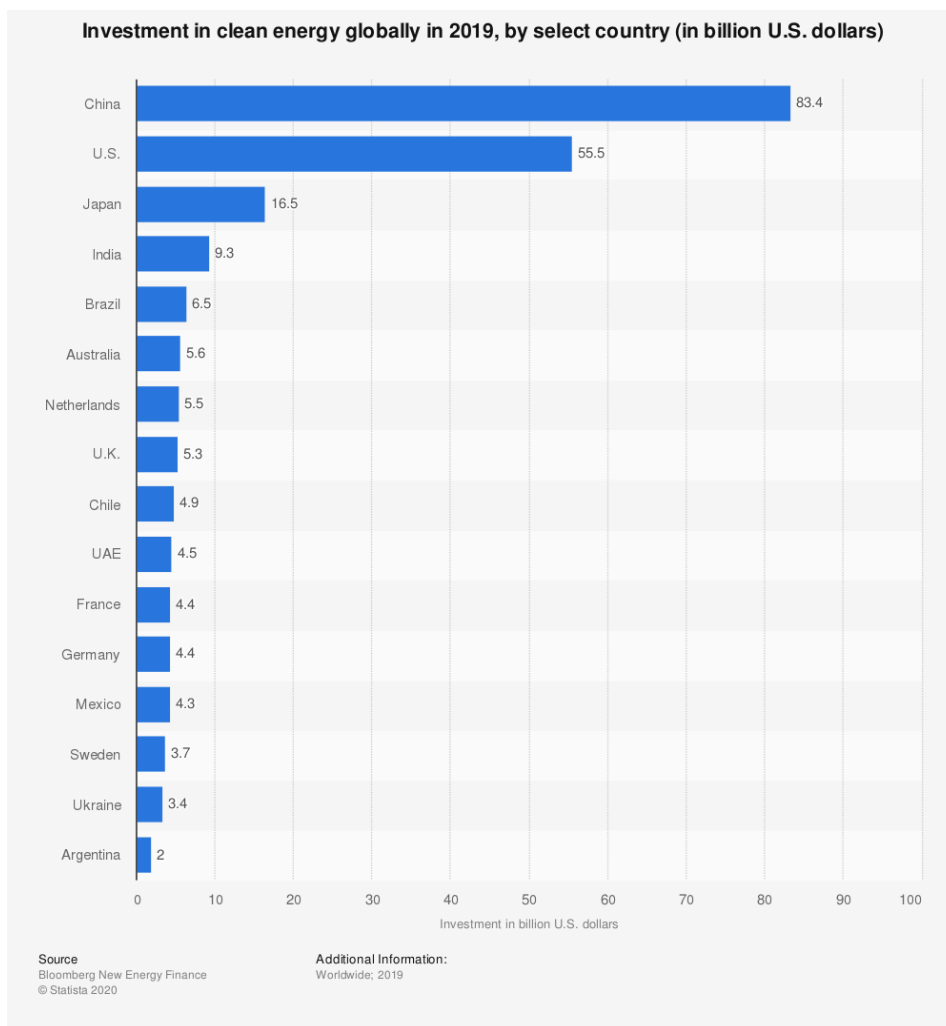


Once we have explained all types of energy sources now we have to see which countries use them more. But before talking about individual countries let's talk about **continents and their joint use of clean energies**, measured by the graph below in exajoules.

In the first place we have Asia with a total energy generated of 2.447,95 exajoules, followed by America with 2.058,99; in third place we have Europe with 1.248,13; in fourth place Eurasia with 288,73 and the rest with a total amount of 262,05.

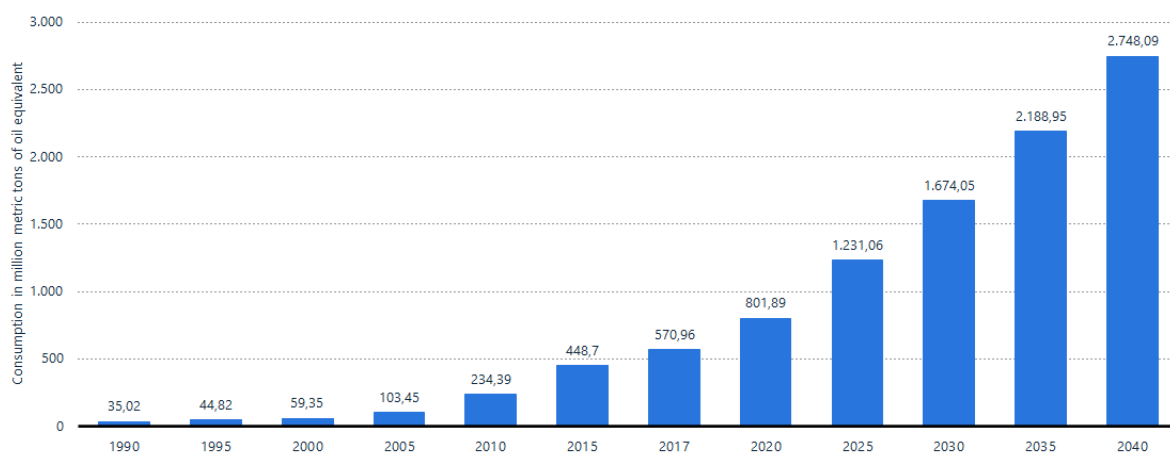
Now, once we have seen how the continents split their clean energy production we have to see which are the countries that are leading this energetic change. In first place we have China with an almost 23% of the overall consumption of clean energy in the world, followed closely by USA, with 20%; but after this two countries the consumption drops till a 7% in Germany and Brazil and for the least countries it doesn't represent even a 5% of their total energy consumption.





As a conclusion of the segmentation, we can say that there is still way for improvement in this market, since **there are energies that surpass fossil's cost, and there are still a lot of countries that their primary energy source is oil and still have to make the transition.**

As seen in the following graph it is expected that by the year 2040 the production of clean energy would arrive to the equivalent of 2,750 million metric tons of oil, and actually the extraction of barrels per year are of 35,442 million, that have an equivalent of 4,835 metric tons of oil per year, so the clean energy production would represent half of the total energy production per year.



BUSINESS MODELS

The business approach from each type of company can be quite different, following the value chain of the industry:

- Energy power plant construction (Infrastructure business)
- Energy generation
- Energy commercialization and distribution

For companies with a historical background on fossil energy supply, the renewable energy business line is part of a survival strategy, in which these companies intend to **diversify their source of revenues**, they benefit from "cash cows" (fossil energy business lines) and use these resources to invest on starting business lines with high fixed costs, such as hydroelectric power plants and finance the energy transition. Also, these companies are engaging in **Smart City Projects, in which they provide their expertise to cooperate with governments** to improve the electronic connections in the cities and invest in environmental sustainability on the energy sources of the great urban areas, favouring the **energy transition**. Their strategy is known for their **vertical integration**.

For renewable energy specialized companies, their strategy focus is on the creation of renewable energy power plants, either **for third parties** or either **for themselves**. If it is for third parties, the revenue comes from **selling the power plant to them**, while if it is for themselves, they will be **producing their own energy**, which will become their source of revenues. Not only energy generation, but also the development and construction of power plants can be part of a successful business strategy.

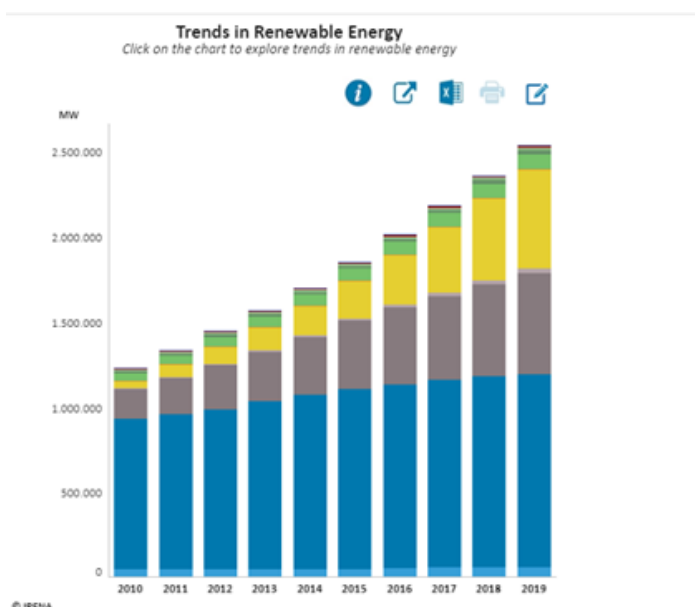
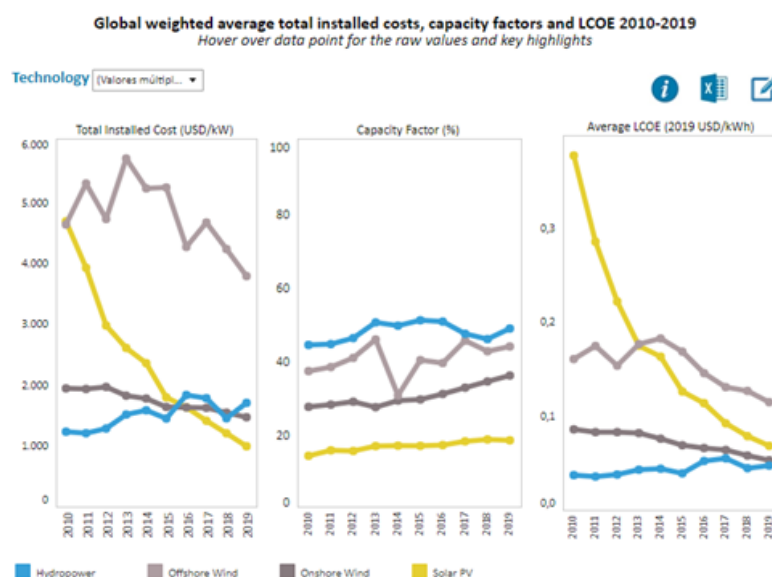
Other startups are only energy distributors which are intermediaries between energy producers and households. Their business strategy lies on the specialization of a part of the value chain, fostering cost efficiency, the simplification of customer offerings and added-value on customer service. This is the case of Holaluz.

Source: GRC analysis, Annual Reports from companies.

TECHNOLOGY

In the last years, the renewable energy sector has tried, successfully, an increase in productivity and a decrease in the costs implied. The following chart shows the evolution of the different main renewable energy sources according to its installation cost, its capacity factor and average LCOE (Levelized Cost Of Energy).

An important thing to point out is the evolution of solar energy according to its decrease in the cost of installation and average LCOE, over the past years and also the increase of its presence on the market.



Source: <https://www.irena.org/costs>

3. EXTERNAL ANALYSIS

PESTEL

POLITICAL

According to political factors, the use of clean energy is well seen by people, so it is also key to take part in renewable energy, since nowadays awareness of climate change, reduction of CO2 emission and taking care of our planet is a very important job. Almost all politicians support the cause and take part, even incentivize, the use of clean and eco-friendly energy.

ECONOMICAL

We can say that renewable energy is an ever growing industry in all over the globe. As our generation is becoming more and more conscious about the climate change. Climate change control is a crucial force on supporting an increasing request for technologies. Besides cutting down carbon and toxin releases, renewable energy technologies can provide advantages concerning air contamination and health in contrast with fossil fuels.

The attractiveness of the producing cost and benefits of the renewable energy is getting better and better.

SOCIAL

Attitudes about renewable energy seem to be very connected to the public attitudes about climate change. When people are skeptical about climate change there's little motivation to change the energy habits and innovate new energy solutions. Informing the public is critical when coming up with new renewable energy innovations.

Another thing that we have to bear in mind, is the creation of new companies and people needed to investigate to develop new tech, so this would have a positive impact in job creation.

TECHNOLOGICAL

When you talk about renewable energy you always connect it to technology. New and innovative technologies are the key to make renewable energies the major energy source of the world. Without technology we can't move forward from our current energy production methods.

The creation and surge of new technologies is reducing the cost and increasing the profitability of this energies year after year. In some way, renewable energies incentivize to develop these new tech in order to be more efficient in the long term.

ECOLOGICAL

Renewable energy is eco-friendly, so thanks to that the energy is clean and don't produce CO2 emissions, which at this stage of the world is a very important factor to stoor minimize climate change.



LEGAL

In this field we have to take into account all the legality procedures of each country, so depending on the zone we are located it is important to know any restriction of production, land occupation and licenses of the country. On the other hand it would be good to also know about the patents of the sector to avoid incurring in problems with other companies.

FIVE FORCES ANALYSIS

RIVALRY AMONG COMPETITORS

The growth that the industry is suffering and faces the following years makes less likely the companies entering highly competitive actions, because they don't need to capture market share from their competitors. Nevertheless,

Since energy is not a differentiated product (and can't be), companies need to lower prices if they want to capture more demand. This price war can be harsh, especially in an industry like this, where companies have very little profit margins.

There is also another war going on: companies need to develop new technologies to make energy exploitation more cost-efficient and to get more energy from their assets.

Also, the existence of big competitors might be difficult for small companies willing to enter the market.

THREAT OF NEW ENTRANTS

The renewable energy industry has quite considerable entry barriers:

§ Capital costs: installing the required machinery to produce green energy (like solar panels and wind turbines) is an expensive procedure. Apart from the installation of the machinery, companies need to make sure they can distribute the energy to their clients, which also requires big capital spending. Given this, energy producers will tend to be more indebted companies, and can be perceived as "riskier" businesses.

§ Land rights: companies producing renewable energy will need land to place their productive assets. For example, a solar producer must have a piece of ground to place its panels. Land is finite and expensive, so any company who wants to enter the industry must have terrain.

§ Unequal playing field: the fossil fuels industry has enjoyed large subsidies coming from governments during decades, arriving at 38 billion in some countries. Renewables don't enjoy these privileges, which means they are at a competitive disadvantage in comparison with fossil fuel producers.



SUPPLIERS' BARGAINING POWER

There are more suppliers than customers, and since the products they supply aren't very specific or differentiated, they have low switching costs. Suppliers are a weak force in this industry.

Nevertheless, a point is necessary: companies who buy infrastructure from other firm builders. In this case suppliers might have more bargaining power, since there aren't many suppliers who can build infrastructure, which is a very specific asset.

CUSTOMERS' BARGAINING POWER

Since the product of the industry (energy) is not differentiable, customers can switch suppliers, meaning that they have quite high bargaining power. Also, there are many different buyers and tend to be small-sized, meaning that they don't represent a big threat to the companies producing energy. And, since the product is undifferentiated, customers will mainly base their decision in price, forcing a price war among companies. This is the only way customers affect renewable energy production.

THREAT OF SUBSTITUTES

The only substitutes for green energy are the other energy sources, the ones that have existed for years: coal, fossil fuels, natural gas and nuclear. The old giants of the energy industry are present in these markets and nowadays they are the biggest threat to the consumption of renewable energies. Furthermore, in the following years we could see these giants entering the clean energy market. They would be an enormous threat due to their big amounts of capital and land. So, they are a substitute nowadays and they will possibly become competitors in the future.

INDUSTRY LIFE CYCLE

Because energy procurement and its associated services are a basic need, as countries become richer, demand for energy has a lasting positive trend, and it is difficult to define when this good will have a declining phase on its life cycle. However, because technologies become obsolete and constant innovation needs to be introduced, it is not so difficult to define the life cycle of the different energy sources: solar, wind, hydropowered, sea tides. The life cycle of energy sources also depends on their substitutability: if a new source of energy is found, the previous main energy source moves to its declining phase, as its usage decreases (main example: coal).

SOLAR ENERGY

After production of a solar panel finishes, the solar panel begins to convert sunlight into energy. The introduction phase consists on the fact that the energy generated by the solar panel has to offset the energy needed to produce the solar panel, before delivering the renewable energy to the grid. Usually, the time needed for this is between 6 months and two years. In total, solar panels have a lifespan range of 25 to 30 years. After this, there exist severe issues on how to decommission the old solar panels, in order to respect the environment. During the declining phase, the solar panels may be replaced by new ones, or also be either repaired and reused, or be refurbished, or be recycled, or (the worst way) be landfilled.



WIND ENERGY



Wind power is a renewable alternative to fossil fuel powered electricity. Wind turbines are the mechanical devices used to convert wind power into electricity. The Vestas wind turbine consists of the tower, the rotor blades, and the nacelle.

Wind Turbines: The Life Cycle

1 Construction: Material Gathering, Material Processing, & Manufacturing

The Vestas wind turbine **towers** are made in Pueblo, USA. The tower is made up of mostly steel. The steel is not produced at the factory, but rather shipped to Pueblo for manufacturing in a raw plate form. Latest data shows that the production of towers produces 1000 tons of waste per quarter, 87% of which can be recycled.

Vestas **rotor blades** are produced in seven locations worldwide. The general makeup of the blades include polymers and ceramic fibers. Latest data demonstrates that energy consumption is roughly 57,000 MWh/quarter and 4000 - 5000 tons of waste is produced by these factories.

The **nacelle** assembled in 6 locations worldwide, but gathers its components from nearby factories that manufacture the gearbox, generator, and other electronics. The total energy consumption is 5500 MWh/quarter and produces 1250 tons of waste per quarter.



2 Transportation:

Locations of factories worldwide:

Argentina, Australia, Canada, China, Denmark, France, Germany, Greece, India, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Turkey, UK, USA

Carbon Emissions (g) from 1 ton of cargo over 1 km

Ship	10
Diesel Rail	21
Truck	59
Air Freight	470

3 Installation & Maintenance:

In general, the installation and maintenance phase consumes and produces little energy and waste respectively. Cranes and other operational equipment are used to assemble the various parts of the turbine.

4 Operation:

Wind - Electricity Conversion Loss: 40-60%

Energy Payback Period: 3 - 7 months

What affects the power output of wind turbines? Blade size, wind speed, tower height, placement of turbines in relation to one another, air density, and geographical location

5 Disassembly & End of Life:

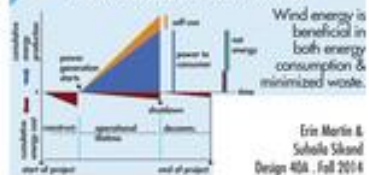
Decommission includes disassembling turbines by using cranes and other tools to transport parts to recycling, waste, or combustion facilities.

Roughly 80% of each wind turbine has the potential to be recycled.

Atmospheric emissions during decommission include carbon dioxide, sulfur dioxide, sulfuric hexafluoride, nitric oxides, and methane.

Liquid waste from decommission, these are products from inside the turbines, include fuels, oils, and lubricants

6 Wind Turbine Conclusions:



SWOT

STRENGTHS

- Technology used in renewable energy is becoming more cost efficient
- Diversified business model: build to sell, build to own, sole distribution, different energy sources
- Illimitate energy source procurement

WEAKNESSES

- Still expensive energy sources
- High upfront fixed costs



OPPORTUNITIES

- Increasing concern on climate change
- Hybrid cars and electric cars are becoming fashionable, and therefore these will be potential renewable energy consumers
- Market in growth and scope for an increase in customers for all companies ("blue sea")

THREATS

- Due to Covid crisis, oil fuels have become cheaper
- Oil fuels have much more power than renewable energy, and therefore will be used on powerful machines



4. KEY SUCCESS FACTORS

- Cost minimization: the companies who can deploy a cheap cost structure in order to widen its margins and/or offer lower prices for energy, will acquire a competitive advantage in the industry. It is important to look at companies with improving operating margins.
 - Technology development capacity
 - Strategic innovation (sources of cost efficiency)
 - Financial control
- Power purchase agreements (PPA): this KSF is fundamental for the companies who sell energy (the vast majority of the industry does it). PPAs are contracts with customers who agree to buy a given amount of energy at a given time and price. This allows companies to protect themselves from swings in energy price, being less affected by external factors. In the whole sector, it is necessary that future commercial operations, either for infrastructure developers or for energy distributors, are ensured: contracts and futures are crucial so that the revenues from the following five years are planned and ensured, as all the chain value involves huge upfront and fixed costs and there is a need for security for market players.
 - Risk management capability
- Customer diversification: companies with a wide client portfolio will be in a better strategic position in comparison with firms with one (or a few) customers (in line with Porter analysis of bargaining power). Especially nowadays, when the Covid crisis is increasing uncertainty levels, it is fundamental that companies have different business lines which bring revenues.
 - Multi-energy pipeline

GREENERGY

Key data:

Foundation: 2007

Ownership: Public (since 2018)

HQ: Madrid

Background: Greenergy is a Spanish startup which was specialized in Solar Projects in the beginning. Their current core business consists of Development and Construction of Solar and Wind Power Plants, Energy Production and Sale, and Maintenance Services to third parties while external power plants are already operating.

Type of company: Small Cap, Power plant developer and energy producer.

Resources:

Tangible resources:

- Financial resources: high leverage policy (projects are financed by 70% debt, 30% equity), strong liquidity, low solvency.
 - Equity ratio = **23%**
 - Liquidity ratio = 1,4
 - Cash/Current Liability = 30%
 - Net Profit Margin = 13,5%
- Physical resources: the company has facilities valued on €94M (fixed assets). If we take into account the whole Pipeline (early stage, advanced development, backlog and under construction), the company has already 250MW power plants that are connected or under construction.
 - Solar = 3855MW Pipeline
 - Wind = 602MW Pipeline
 - Energy storage

Intangible resources:

- Power Purchase Agreement (PPA): agreement to sell energy before the construction of the power plant (in backlog stage).
 - Galp: 300 – 360 GWh electricity per year for 12 years
- Reputation of sustainability and strong technology adaptability: from only solar technology to adding wind technology and energy storage.
- Reputation among investors (good performance since their IPO in IBEX).
- Acquiring reputation on Corporate Social Responsibility: mask donations and solidarity with civil society

Capabilities:

Primary activities

Inbound logistics:

- Highly dependent on slow bureaucracies, such as Spanish and some other Hispanic Public Administrations

Operations

- Pipeline management: they have enough backlog and under construction projects to ensure short-term and mid-term cash flow, but also an important amount of projects for long-term perspective (early stage and advanced development)
- Costly efficient operational management: the installation cost is decreasing yearly
- Energy production diversification: its pipeline is placed around both hemispheres of the globe, giving them an advantage on solar energy capture.

Outbound logistics:

- Deal relationships (threshold)
- PPA – High risk management capability

Marketing and Sales:

- Strong diversification: not only when producing but also in their business (they use two technologies to produce energy: solar and wind, and their range of customers is wide: energy producers that need facilities, energy distributors, facility maintenance and energy storage.

Service:

- Strong after-project service: as projects need reliability beforehand, it is important to leave a guarantee to the customer. After-project services give not only reliability but strengthen the relationship with the customer.

Support activities

Firm infrastructure:

- Organization aligned with business lines and core business functions: M&A, Construction business line, Energy business line and Services business line.

Technological development:

- Technology adaptability: from solar panels to a wide variety of technologies (wind and energy storage)

Resources and capabilities	Type	Importance (1-10)	Relative strength
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Financial resources	Resource	10	8
PPE	Resource	8	8
Human Resources	Resource	4	6
Technology	Resource	10	8
Reputation	Resource	8	6
Energy resource diversification	Capability	10	8
Technology adaptation	Capability	6	10
Supply chain management	Capability	8	8
Costly efficient architecture	Capability	6	8
Political relations	Capability	8	6
Sales risk management (PPA)	Capability	6	9
Customer retention	Capability	6	6
Construction portfolio management	Capability	10	10

Conclusion:

The Spanish start-up has a great potential of energy production, in our opinion. His potential wide presence in both hemispheres of the globe put them in a great position of atmospheric risk management, at least for the solar energy production business line. This company has shown a great capability to adapt to new technologies and expand their diversification strategy: from being a solar energy company to producing and also storing energy through eolic facilities. Furthermore, the amount of planned projects for the future and their construction portfolio give a good sign of long-term perspective. Future revenues are not assured, but widening their portfolio is an important step to become an important player. However, because it is a new participant in the market comparing it to the competition, they still have scope for gathering reputation in the following years. Their future projects and their expectations also show that they may become an important player in the renewables industry and we believe that this company should be taken into account by potential investors.

HOLALUZ

Founded: 2010

Ownership:

Public

Global

Headquarters: Barcelona,

España

Background:

Holaluz is a trademark of the company Clidom Energy SL, a technology company dedicated to the commercialization of electrical energy of 100% renewable origin and gas

Type of

company: Consolidated,

Large cap, clean energy producer and distributor.

RESOURCES

Tangible resources

- **Financial resources:**
 - Cash/Assets:
 - Gross Margin: 7,79% (0,33% OM en 2018)
 - Equity ratio:
- **Physical resources:**
 - EPI : **30%**
 - Instalations: **6%**
 - Equipment, furniture: **5%**
 - Tangible in progress: **58%**

Intangible resources

1) Industrial property

It is initially measured at acquisition or production cost, including registration and processing costs. It is amortized on a straight-line basis over its useful life (10 years).

2) Development costs

Technical innovation expenses incurred during the year are recorded in the income statement. However, the Group capitalizes these expenses as an intangible asset provided that the following conditions are met: The related assets are specifically itemized by project and costs are clearly established so that they can be distributed over time.

It is possible to demonstrate the technical feasibility and financial profitability of the project. They are amortized on a straight-line basis over their useful lives (5 years).



3) Software

This caption includes the amounts paid for the ownership or use of software programs.

Software programs that meet the recognition criteria are capitalized at their acquisition or production cost. They are amortized on a straight-line basis over a period of five and six years from the date each application is put to use.

Work performed by the Group and capitalized as intangible assets is recorded following the same criteria as for determining the production cost of inventories. Production cost is capitalized with a credit to the costs attributable to the asset in the 'Work performed by the Company and capitalized' caption in the income statement.

Software maintenance costs are recognized in the income statement for the year in which they are incurred.

4) Customer acquisition costs

The Group recognizes as an asset all costs incurred for obtaining a new contract with a customer only if the Group estimates that these costs will be recovered in the future.

These acquisition costs are those that the Group would not have incurred had the contract not been concluded.

These costs are amortized over a period of 8 years in accordance with the average life of the contracts that the Parent Company signs with its customers.

Human resources

Holaluz represents renewable producers to bring green energy to the market. Because they believe in and bet on clean energy.

Their team focus on the synergy between marketing and production.

CAPABILITIES

Primary activities

Logistics: They are focused on both directions, producers of green energy and customers, so their work is done as intermediate. Offering facilities to both parties and easing the contract process.

For producers they don't have to worry about commercializing the energy they produce, Holaluz does that for them.

For customers, they don't have to worry about looking for the best green energy company. Holaluz does it for them.



They also provide the chance to build your own green energy consumption (only solar). In which include installation of panels, maintenance and purchase of the energy you don't use at the best market price.

Marketing and Sales: Holaluz has great presence on the media and news, and has the reputation of one of the best green energy providers according to its Price and quality of service. They also have digital media accounts which nowadays is the biggest Marketplace a company can be on

Service: for own consumption of green energy: maintenance and revision of the facilities.

Support activities

Infrastructure: Their main activity is selling green energy from different producers, as well as installing and maintaining facilities for those customers who want to produce and consume their own green energy.

Human resources management: Specialized personel on green energy and well connected with their producers

Technology: As they are intermediates in this sector, they do not do research on tech to develop better efficient ways to produce green energy, mainly solar

KEY Data of Solaria



Founded: 2002

Ownership: Publica, 44,94% owned by DTL Coorporation

Global Headquarters: Madrid

Background: Solaria started producing solar cells but evolved to the generation and selling of energy produced in their landfills. This strategic shift was done in 2014 due to the .

Type of company: Consolidated, Mid-Cap, energy producer via greenfields or brownfields

Tangible resources:

Financial

cash/assets: 19,7% (decreasing)

Op.Margin: 46.9%

Equity ratio: 32.2%

Physical resources

Land and buildings (contract term for using the land 25-30y, linear depreciation)

Equipment (biggest share) very important as its the main source of income

Intangible resources:

Technology →

Trademarks licenced every 5 or 10 years little cost to renew

Software: informatic application developed by the group

Long-Term agreements: Nov 2018, long-term contract with Repsol for 100MW, 7 years length.

Capabilities

VOLTALIA

KEY DATA

Founded: 2005

Ownership: Public

Global Headquarters: Paris, France

Background: Voltalia is an international player in renewable energies, and a multi-source electricity producer (wind, solar, hydropower and biomass) and provides services to third party customers.

Type of company: Consolidated, Large cap, clean energy producer and distributor.

RESOURCES

Tangible resources

- **Financial resources:**
 - Cash/Assets: 17.35%
 - Operating Margin: 37.1%
 - Equity ratio: 48.89%
- **Physical resources:**
 - Computers, equipment and software: **1,046.458 thousand €**
 - Buildings: **699,942 thousand €**
 - Equipment, furniture and fixtures, and other: **62,791 thousand €**
 - Land: **4,815 thousand €**
 - Construction in progress: **246,101 thousand €**

Intangible resources

- **Technology:**
 - Production plants for solar, wind, biomass and hydro energy.
- **Goodwill from Helexia's acquisition.**
- **Long term relations:** Talking about the energy production facilities we have to take into account the long term relations the company needs to have with both, their suppliers and their customers, since the production of a single energy plant could take between two to eight years.
 - Long term customers:
 - BRF: for a period of 10 years starting in 2019.
 - 19-year contract for a facility that finishes its construction in 2022.
 - Egyptian Electricity Transmission Company (EETC): 25 years starting at the end of 2019.
 - Kenya Power and Lighting Company Limited (KPLC): 20 years starting from 2018.
 - Boulanger, SNCF and Crédit Mutuel: 25 years starting from 2019.
 - Long term suppliers: In this case Voltalia calls for tenders involving most of the leading suppliers and reviews the offers received from them with the utmost attention using qualitative and quantitative criteria.

Human resources

- **Partner talent:**
 - Laboratory of Innovative Land and Territorial Initiatives (LIFTI) specialists in land rehabilitation.



- **In-house talent**
 - Helexia: Pioneer in rooftop solar panels and energy efficiency that has continued to grow rapidly.

CAPABILITIES

Primary activities

- Plant development: In this first phase of the value chain process we can see that Voltalia is able to perform its tasks creating a facility with a long term value and also long term relations with all the environment around the construction.
 - **Blueprints development**: In this phase we include all the steps before starting the construction of the plant: Initial design of the plant, PPA negotiations, regulatory measures and permits and the financing. All of these tasks are performed entirely by Voltalia's inside team, without third parties being involved.
 - **Construction**: In this phase we find the engineering, equipment supply and construction management. Among these tasks Voltalia's team is only in charge of selecting the best suppliers among the offers, and so all the other tasks are performed by contractors.
- Outbound logistics:
 - **Low adaptation capability**: Since we are talking about an energy production facility one of the most important cons are the large investments in order to construct the specific type of plant(solar, hydro, biomass...), that if this resource is reduced or is not possible to obtain a certain amount of energy using the facility, it's very expensive and difficult the transformation of the plant into another one.
- Marketing and sales: wide deal relationship
 - **Long term PPA**:
 - **Brazil: Relation that will last a minimum of 20 years.**
 - Reserve Energy Contracts (CER):
 - Carcara I (Areia Branca);
 - 4 sites located between São Miguel do Gostoso and Touros: Reduto, Carnauba, Santo Cristo and São João (SMG); and
 - Vila Acre I.
 - Electricity Purchase Contracts in a Regulated Environment (CCEAR):
 - Carcara II and Terral (Areia Branca);
 - The following sites, located at Serra do Mel: Caiçara I, Caiçara II, Junco I, Junco II (Vamcruz), Vila Para I, Vila Para II, Vila Para III, Vila Amazonas V (Vila Para), VSM 1& 2 and SSM 1&2
 - Cabui
 - **France**: Voltalia is committed to selling to EDF all of the production of the facility at an inflation-indexed sales price from a period from 15 to 20 years depending on the source of energy involved.
 - **Egypt**:
 - Egyptian Electricity Transmission Company (EETC): 25 years starting at the end of 2019.
 - **Kenya**:



- Kenya Power and Lighting Company Limited (KPLC): 20 years starting from 2018.
- Service:
 - **Maintenance and revision of the equipment and the facilities.**

Support activities

- **Infrastructure:** In this case the support activity also works as a primary, since their main activity is the creation of those infrastructures that can produce energy with natural resources.
- **Human resources management:** **strong specialised talent availability and possible synergies between institutions**
 - Talent recruited: Recruitment events, young talent recruited from the Forum Ingénieur Avenir, Ingénieurs responsables and Trium, and Tag-a-talent program, which allows current employees to recommend qualified workers for the job positions offered.
 - Talent retention: Equality in the workplace among gender, age and disabilities and employee training.
- **Technology development:** Voltalia does not invest in R&D, which means that it has no interests in technology development, only in the construction of energy plants and distribution of the produced energy.

CONCLUSION

Voltalia's biggest problem is the infrastructure itself, since being such a large investment in terms of time and also capital, the company has to make sure before the investment that the relation and the agreements are profitable before the construction. They make sure of it by preparing the project with lots of previous studies and prepared contracts that gain validity once the plant starts its production. The company has been growing and they have the intention of increasing their facilities in France with 6 more plants under construction, and the new acquisition of Helexia, providing more places for talented new employees to join and so increase their teams.

Regardless of their planification they have a huge problem coming from research and development, since they do not invest in this business brand they are at the mercy of the other developers, making them more likely to lose market share if a new technology is invented or improved and they cannot access it.