TeslaGREEN Inc.

Market Research Report 2017

scaale advisory

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Contents

1. Introduction

1.1 Company Profile[1]

The company products are:

a) The BlackHOLE™
b) LaTierraENERGY™
c) BosonENERGY™
d) The GBox™
e) The ZBox
f) GoldBound Cement™

TeslaGREEN Inc. is a GreenTech company based out of Pennsylvania, USA providing low – cost self – sustaining Waste management and energy solutions. Reducing landfills and providing for disposal in an environment friendly manner is the focus of TeslaGREEN. The crux of the technologies at TeslaGREEN Inc. is derivation of energy from The Baryonic matter and converting it into self – sustaining (no external input source of energy required) heat energy with TRUE – ZERO EMISSION. True – because Dioxins and Difurans are dissociated within the controlled chamber and never ever gets into the environment. This Energy is then transformed for various applications including waste management and energy generation.

TeslaENERGY Pvt. Ltd. is an India-based subsidiary which supplies the USA holding company's Technological Equipment & Expertise; especially on solid waste management, water treatment and environmental products.

TeslaGREEN is currently operating in the markets of USA, India and Malaysia.

TeslaGREEN offers a variety of products in its portfolio.

Product Portfolio:

a) **The BlackHOLE™:** The BlackHOLE™ is a waste management service product which helps in the production of energy from sustainable resources. It focuses on providing solutions for waste management, waste disposal and waste recycling. It helps in reducing waste to landfill in an environment friendly manner.

b) Other products: The Company is currently developing several other products for the market in the upcoming months.

- LaTierraENERGY™
- BosonENERGY™: BosonENERGY™ generator is a unique product, which generates power by tapping the baryonic matter energy. The process involves using a field of permanent magnets which have a life of 150 years.
- The GBox™
- The ZBox
- GoldBound Cement™

[1] TeslaGREEN; Client Provided Information

Company Mission statement:

To continuously strive for perfecting self – sustaining, low – cost, truly green solutions for waste management and energy conversions across all sectors of the society including municipalities, heavy and light automobiles, supersonic aircrafts and mobile cell phone units.

Company Goals & Vision:

a. Harness the ever – available Baryonic Matter Energy for various applications.
b. Eliminate all Carbon Footprints
c. Eliminate the need for energy transportation.

1.2 Business Focus[2]

TeslaGREEN has a business focused towards providing globally accepted solutions for waste disposal, recycling, waste management and reduction of landfills in an environment friendly manner. Considering the impact on the environment and developing environment friendly means to achieve its objectives is of prime importance to TeslaGREEN and hence it offers solutions accepted commercially even at municipal levels.

The BlackHOLE™ is a waste management product which reduces the volume of garbage in the ratio of 1/300 – 1/400. It does not require any electricity, oil or fuel and removes toxins completely at a low temperature of 350°C to 380°C.

The BlackHOLE™ is a waste management product that uses Plasma Heat Technology which makes sure the machine does not use any electricity, oil or fuel. It is also extremely mobile and avoids land filling. Furthermore, it does not require any segregation and has an extremely low cost and a low maintenance cost as well. The machine has been patented in 151 countries with 10 trademarks. Technologies trademarked also include Programmed Oxygenated Plasma State™ (POPS™), Ionized Oxygen Plasma™ (IO2P™) and Tesla Flux Vortex™ (TFV™).

Exhibit 1.1: The BlackHOLE™

[2] TeslaGREEN

2. Market Analysis: Global

2.1 Solid waste market[3]

In 2016, the global waste volume generation was recorded at 22,072.1 million tons which is 5.33% higher than it was in 2015.

According to a report by the World Bank, the growing global urban population will be producing three times as much waste as it does today. It is on pace to exceed 11 million tonnes per day by 2100.[4]

In 2010, more than 3.5 million tonnes of solid waste was generated per day. This amounted to over 1.2 billion tonnes of solid waste over the year. By 2025, this number is on pace to increase by 70% to approximately 6 million tonnes per day or 2.2 billion tonnes of solid waste per year.

The global cost of dealing with this solid waste is rising from $205 billion a year in 2010 to $375 billion by 2025, with the sharpest cost increases in developing countries.

Exhibit 2.1: Municipal Solid Waste Quantities

TeslaGREEN's key partners and clients would participate from the environment and utility based companies in the waste resource management industries. TeslaGREEN can look to leverage on the growth in the global Waste Management Market.

[3]World Bank Report – 'What a Waste: A Global Review of Solid Waste Management; Talk Business; Springer – Waste Quantities and Characteristics; Globe News Wire; Waste-to-Energy Research and Technology Council

The average capital cost per annual ton of capacity is estimated at about $650/annual ton (500 Euro)

The major sources of Municipal Solid Waste (MSW) are the residential and commercial sectors. The quantities of food wastes, garden wastes, paper, plastic and glass generated from both sectors contribute most to solid waste overall. Then the waste quantities vary among the remaining sectors, with construction and demolition having the highest contribution percentage after the residential and commercial sectors. This is due to the generation of concrete, metal, wood, asphalt, wallboard and dirt-predominant waste.

Exhibit 2.2: Municipal Solid Waste Resource

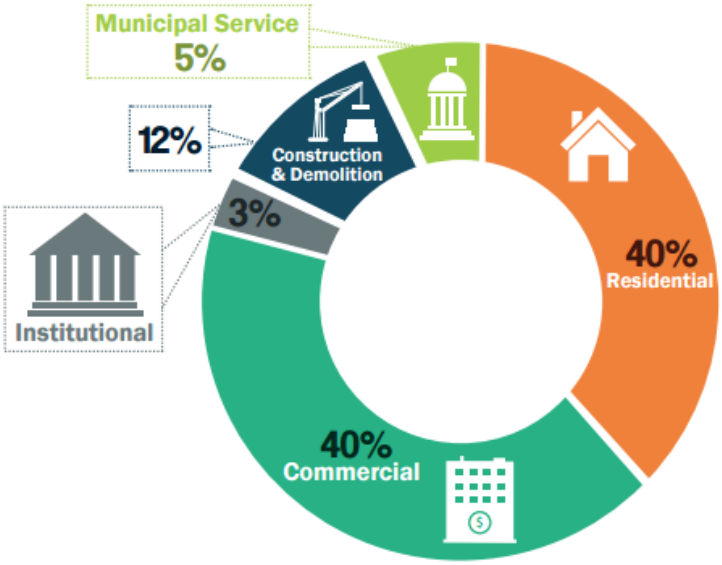
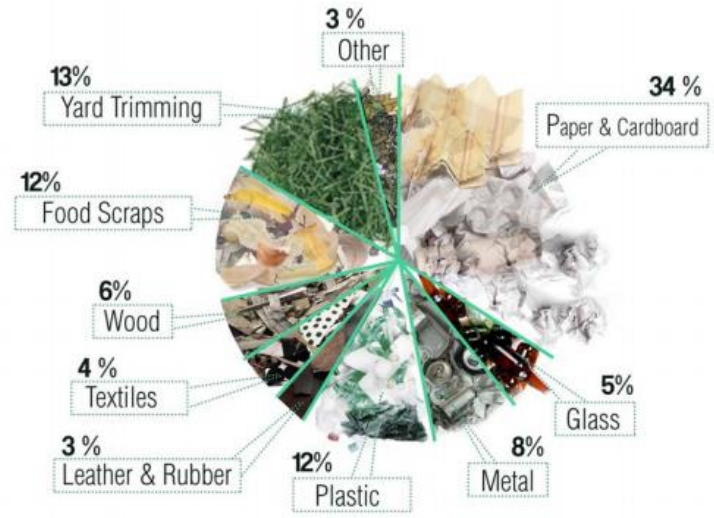


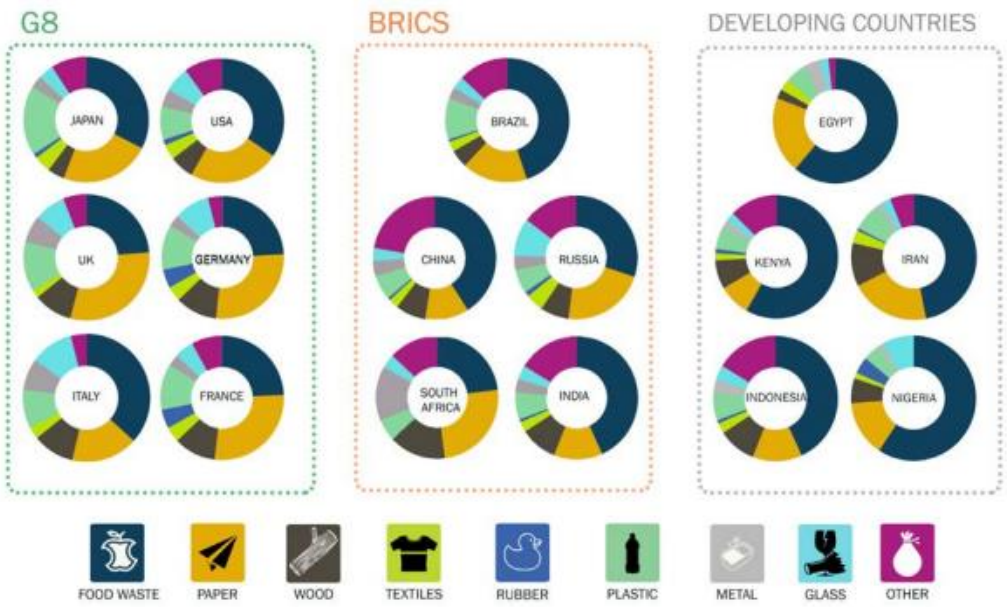
Exhibit 2.3: Percentage of Various Materials that Compose MSW on a Mass Basis



Due to higher levels of consumption, developed countries produce more waste per capita. There are higher proportions of plastics, metals, and paper in the municipal solid waste stream and there are higher labor costs.

Developing nations produce lower levels of waste per capita, with a higher proportion of organic material in the municipal solid waste stream. If measured by weight, organic (biodegradable) residue constitutes at least 50% of waste in developing countries. Labor costs are relatively low but waste management is generally a higher proportion of municipal expenditure. As urbanization continues, municipal solid waste grows faster than urban populations because of increasing consumption and shortening product life spans.

Exhibit 2.4: Municipal Waste Composition by Region and Country



2.2 Global Waste Management Market[4]

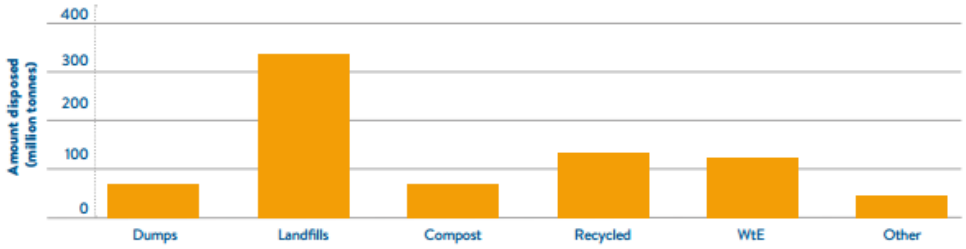
The global solid waste management market size is estimated to be valued at above $300 billion by 2023 and would grow at a CAGR of 8.5% from its current value at $180 billion in 2015.

The Global recycling industry is estimated to employ the largest amount of people in the world post the agricultural sector.

The global Waste-to-Energy ("WtE") market was valued at $25.32 billion in 2013, and is estimated to be worth $40 billion in 2023. Furthermore, the market is expected to generate $33.46 billion and would grow at 6.1% CAGR by 2023. However, since WtE is an expensive option, countries around the world are looking for cheaper alternatives.

Other alternatives such as Landfilling, which is the most preferred disposal method or incineration, have environmental consequences which make it a redundant alternative.

Exhibit 2.5: Amount of waste disposed by technique



Most developing countries, such as Indonesia, do not have a formal waste disposal system in place, but in many places there is a strong informal recycling sector. Waste pickers retrieve reusable materials from landfills and resell them to make a living, which benefits the environment and provides the poor with a source of income.

Europe solid waste management market share is expected to witness high demand. Europe recycled 42% and landfilled or incinerated 58% of its waste. There is a major scope of improvement in these countries.

Latin America, led by Mexico and Brazil, is estimated to have above average growth rates due to measures adopted by regional government for WtE plant commissioning for MSW management. The waste management market is expected to grow over 6.3% CAGR up to 2023.

Exhibit 2.6: Waste Generation Per Capita to Gross National Income

[4]GM Insights; World Bank; Women in Informal Employment: Globalizing and Organizing; Global Newswire; World Energy

The US Environmental Protection Agency (EPA) has stated that Americans generate over 250 million tons of trash, and has a recycling rate of about 34%. Rapid urbanization and increasing consumption level of resources such as paper, plastic, edibles and textiles are expected to double the MSW over the forecast period.

North America, led by the U.S. waste to energy market share, may witness moderate gains at over 5.5% CAGR up to 2023. North American MSW collection industry is well developed with most of the MSW collected and sent for disposal, recycling or treatment.

Countries such as China and India are anticipated to witness significant demand due to increase in population and government initiatives to ensure healthy environment in the region. Huge initial investment cost is likely to restrain growth in the Middle East & Africa solid waste management market.

Reduction in disposal volume up to 20 to 30 coupled with decreasing stress on landfilling is likely to boost demand for this application. Countries such as Japan where landfill space is hardly available are likely to adopt this method. With an increase in adoption of these practices across the globe organizations like TeslaGREEN are sure to benefit having the early mover advantages.

Recycling is an effective and efficient solid waste management market technique, increasing environmental concerns coupled with lack of resource availability is likely to propel demand for this practice. Organic material was the leading contributor in this segment followed by newspaper or mechanical paper.

Increasing environmental concerns coupled with growing energy conservation trend is anticipated to drive the demand for this new waste reduction method. Biological treatment can be segmented into composting, bio – drying and anaerobic digestion. Possible products from this technique include biogas, fertilizers, renewable fuel, and recyclable materials recovery such as paper, metals, glass and plastics

The solid waste management industry is characterized by stringent government regulations pertaining to MSW management and efficient implementation including reuse, recycling, reduce and recovery methods.

Proper sorting and collection from direct source is likely to be the key strategy in order to overcome these challenges. Customized solutions are likely to be a cost efficient practice over the coming few years.

3. Target Markets

The following markets have been identified as potential target markets for TeslaGREEN. These countries are some of the top solid waste producing countries in the world. With a high percentage of waste being deposited into landfills or open dumps, these markets are attractive for TeslaGREEN to enter. Furthermore, with government programmes, the waste management market in these countries is set to grow at a fast pace in the coming few years.

3.1 Brazil[5]

Brazil produces roughly 240,000 tons of waste every day. MSW is one of the biggest issues for the Brazilian Government. The Government is running various programs to promote the MSW Management Industry. Brazil offers major opportunities for international companies looking to participate in the domestic market.

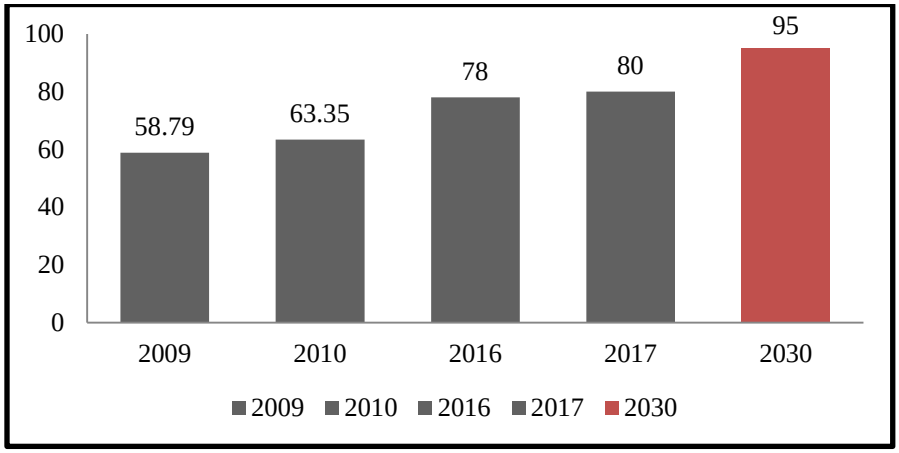
Growth Drivers:

- ***Demand for waste management technologies***
- ***New initiatives by the Government to invest in solid waste treatement technologies***
- ***Municipal Waste Management is a $10 billion market***

Solid Waste

With a population of 228.8 million, Brazil has generating approximately 79 million tonne of waste per year which is expected to increase up to 95 million tonne by 2030. The Government is spending more than $12 billion per year on MSW market and public cleaning.

Exhibit 3.1: Solid Waste Generation in Brazil (Million tonne per year)

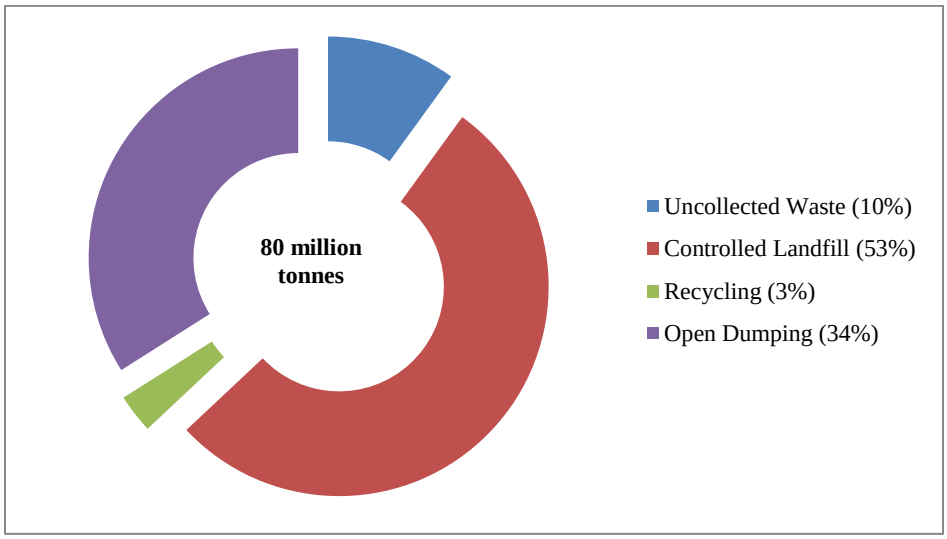


Only 90.4% of all domestic solid waste material is collected. 59% of total generated waste goes to controlled landfill and 3% for recycling and rest for open dumping and not collected waste.

Brazilian government has developed a plan of waste management after considering the CO2 emission and GHG emission due to landfills and open dumping. They have prepared two scenarios (Waste Law and Recycling+) for waste management. The plan consists of reduction, reuse, recycling, energy recovery, and final disposal of waste. They classify the current landfilling practice as the last option. In addition, the Law commands the closure of all open dumps which means that waste can only be disposed in sanitary landfills. There is a demand for waste management services and technologies and the Brazilian Government is looking to invest in such technologies in the coming years.

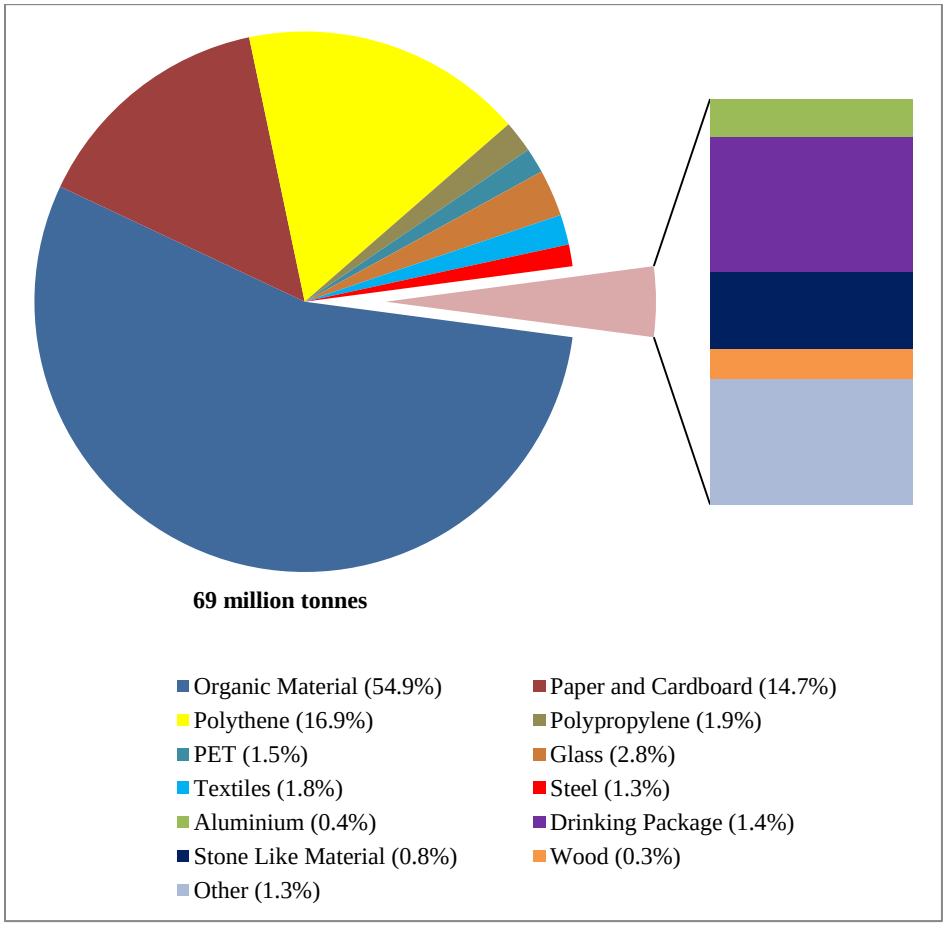
[5] Report by Universiteit Utrecht on The potential for Waste Management in Brazil to Minimize GHG emissions and Maximize Re-use of Materials; Waste Expo Brazil; Solid waste Expo report Brazil 2017; Solid waste management in Brazil by E. RANIERI; Investment opportunity in Brazilian Market; The Brazil Business

Exhibit 3.2: Solid Waste Treatment in Brazil in 2017



In Brazil, Organic material, Paper and cardboard and polyethylene constitute 85.72% of all solid waste as per 2010 stats.

Exhibit 3.3: Composition of generated MSW in Brazil in 2012



3.2 Russia[6]

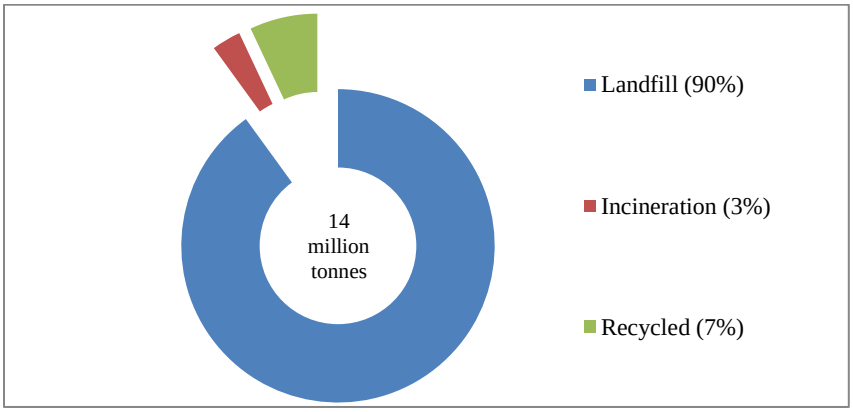
Inefficient MSW treatment in Russia today causing both negative environmental impact and results in suboptimal use of raw materials and energy. With MSW generating various issues for the Russian federation; to eliminate these issues, the Russian government is promoting various programs for waste management. Russia is offering various opportunities for international companies looking to participate in the domestic market.

Solid waste

Russia had generated approximately 40 million tons of solid waste 2010 and it is expected to generate 43.827 million tons per year in 2025. The solid waste generation per person was approximately 0.93 kg per person per day in 2010 and is expected to reach approximately 1.25 kg per person per day in 2025. It is expected that the Russian Government needs to invest approximately €44 billion to achieve the recycling level of 38-40%.

In 2016, from the collected solid waste, around 90% of waste goes to landfill, 3% goes to incineration and 7 % to recycling. The high landfill rate and the low recycling rate presents an opportunity for TeslaGREEN to enter the the Russian market.

Exhibit 3.4 Solid Waste Treatment in Russia in 2017

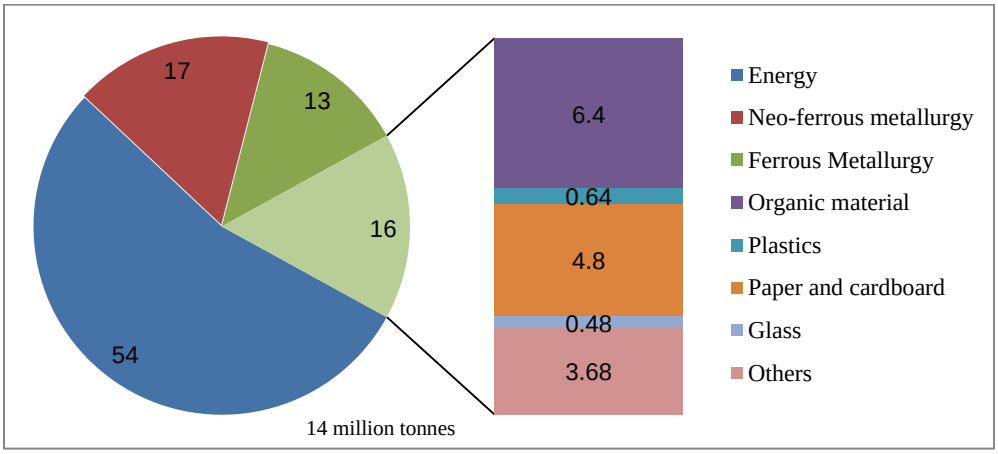


Growth Drivers:

- ***Lack of competition***
- ***Changes in waste legislation laws***

In Russia, Solid waste only constitute the 16% of total waste while major contribution is given by Energy sector; while Organic material and cardboard constitute approximately of 70 % of total Solid waste.

Exhibit 3.5 Waste and Solid Waste Composition in Russia in 2017



[6] WASTE TECH 2017; Report by Maria Berezyu at Municipal solid waste management in a new legislation: comprehensive approach; Forbes India report; IFC

3.3 Turkey[7]

Turkey as a developing country has potential in Solid Waste Management Industry. This country is ranked 10th in Most Solid Waste Generation country. MSW is generating various issues for Turkey government; to eliminate these issues Turkey government is promoting various programs for Solid Waste Management. Turkey is offering various opportunities for international companies looking to participate in the domestic market.

Solid waste

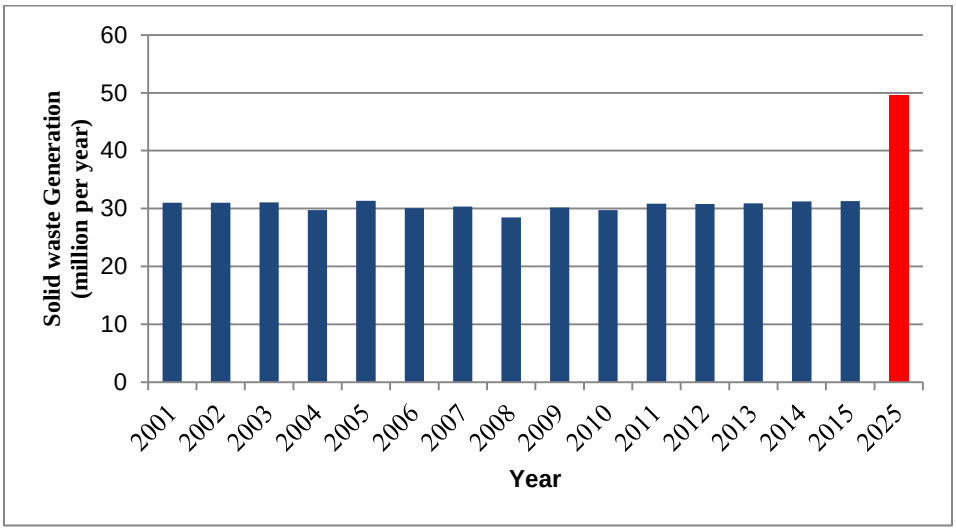
The cost of composting in Turkey ranges from €80 - €300 per tonne

Turkey with a population of 78.665 million in 2015 is generating approximately 31.283 million tonne per year of solid waste material which is expected to grow up to 49.62 million tonne per year of solid waste in 2025. It is expected that Turkey will generate 2 kg per capita per day of solid waste in 2025. It is estimated that €2.1 billion of investment is required between 2014 and 2023 under waste management action plan. €1.9 billion had been allocated towards landfill creation by the government.

Exhibit 3.6 Solid Waste Generation in Turkey

Growth Drivers:

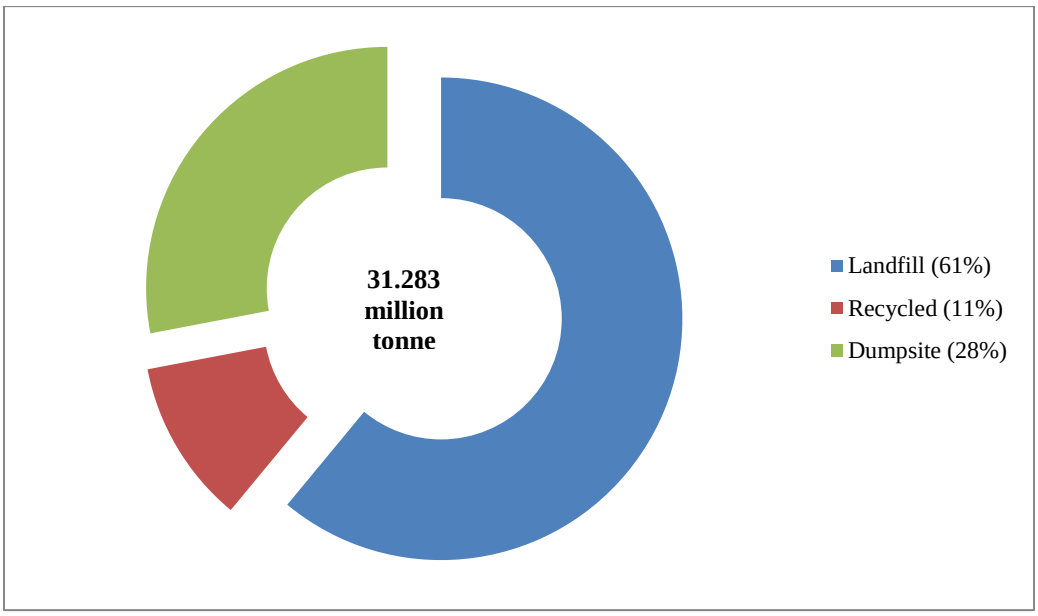
- *Demand for waste management technologies*
- *Lack of waste management equipment*



According to the National Waste Management Plan and Action Plan, in 2014, 28 million tons or 90% was collected of which 99.1% was landfilled either in sanitary landfills (61.07%) or dumpsites (28.25%). Only the remaining 11% was recycled.

[7] Report municipal wastemanagement in turkey; Report by MDPI Municipal Solid Waste Characterization; Report - Solid Waste Generation in Turkey; Turkey Composts

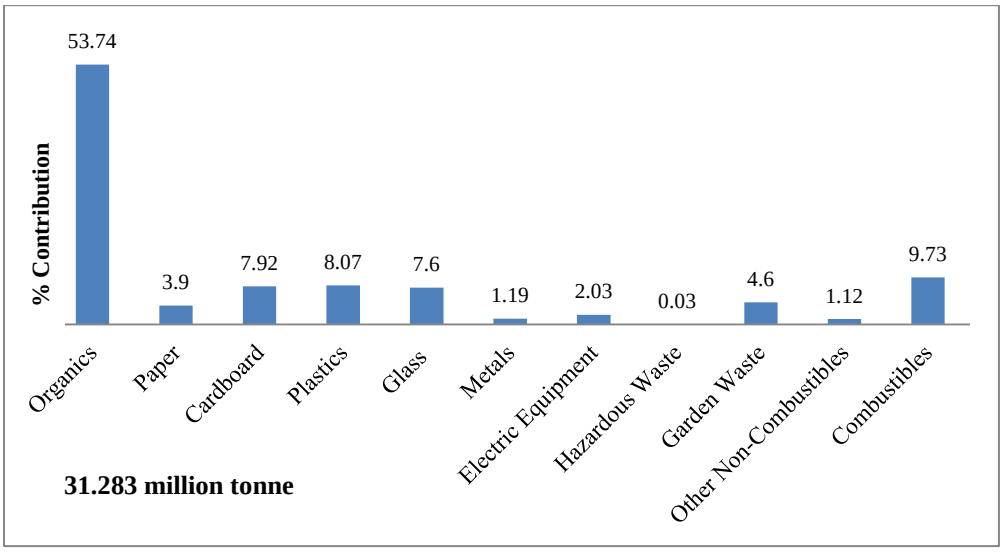
Exhibit 3.7 Solid Waste Treatment in in Turkey



In 2014, Organic products contributed to the 53.74% of total solid waste and 11.82% by the paper and cardboard and rest by others.

In recycling, Paper and cardboard constituted 41% while 32% by plastics, 23% Glass and 4% by metals.

Exhibit 3.8 Solid Waste Composition in Turkey (%)



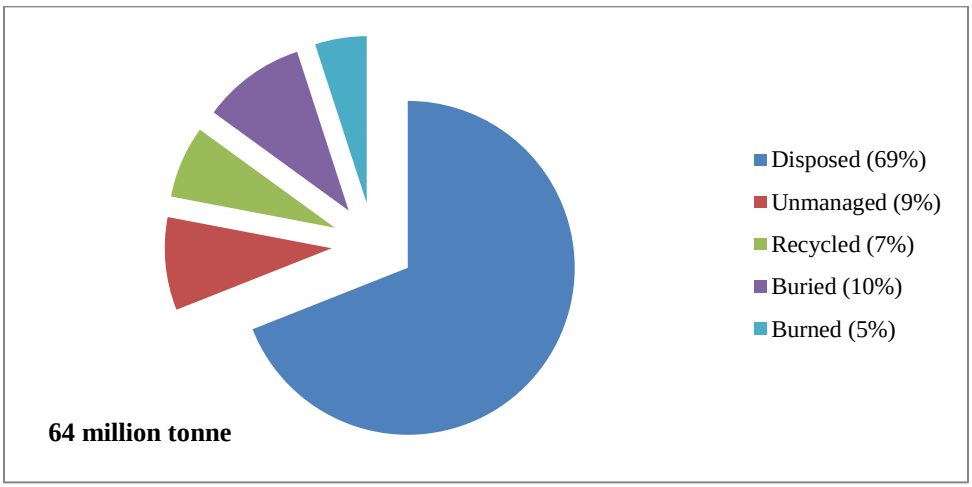
3.4 Indonesia[8]

Indonesia is a sub-developed country with a population of approximately 260.58 million people and is growing at a rate of 1.28% CAGR. According to The Jakarta Post, Indonesia is in the state of waste emergency. In 2015, Indonesia was generating 0.7 kg of waste per day per capita i.e. 64 million tons per year.

69% of the Solid Waste is dumped into landfills while the recycling rate of is only about 7.5%. 10% of the waste is buried while 5% is burnt and 9% of waste goes untreated.

In 2011, the government introduced a municipal "garbage bank" (bank sampah) program to encourage source separation. Under the program, households weigh and record their non-organic solid waste, which is then dropped off at local collection points in exchange for funds deposited into household accounts

Exhibit 3.9 Solid Waste Composition in Indonesia (%) in 2016



The country is divided into 4 parts:

- Metropolitan city
- Big city
- Small city
- Medium city.

Growth Drivers:

- ***Introduction of policies to accelerate WtE applications***
- ***Government looking to replace Incinerators***

88% of disposed waste goes to open dumping in small city, 86% in big city, 70% in medium city and 53% in metropolitan city. The Indonesian Government is also looking for the various opportunities to match the country stats to international standards.

In 2015, 69% of the 64 million tons of the solid waste generated in Indonesia each year was sent to largely unsanitary landfills. The national recycling rate hovers around 2%, with a slightly higher rate (7.5%) in urban areas. There are few technology which are in strong demand are Waste collection technologies and Environmental monitoring and analytical equipment.

Due to higher open dumping, TeslaGREEN has a huge opportunity in the Indonesian market for solid waste management. Indonesian government is looking to generate clean energy from the solid waste material. Hence, the Government is running various programs like waste to energy. Indonesia is also ranked higher in polythene pollution in the ocean.

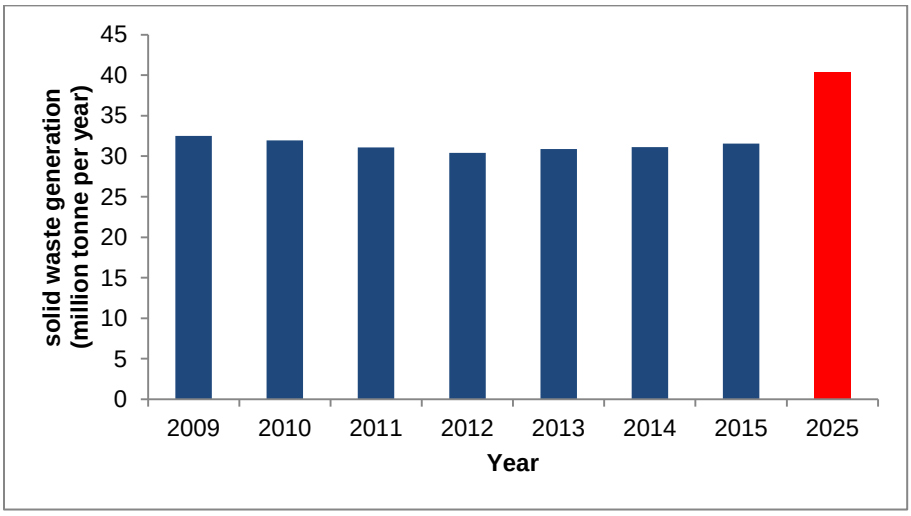
[8] Indonesia in state of Waste emergency; Report by Lukas hutagalung on waste to energy development in indonesia; Report on environmental technologies; UK Government

3.5 United Kingdom[9]

The UK Government will introduce new landfill rates into its system. The Landfull rate will be £84.40/tonne from from 1 April 2016; £86.10/tonne effective fom 1 April 2017 and £88.95/tonne effective from 1 April 2018.

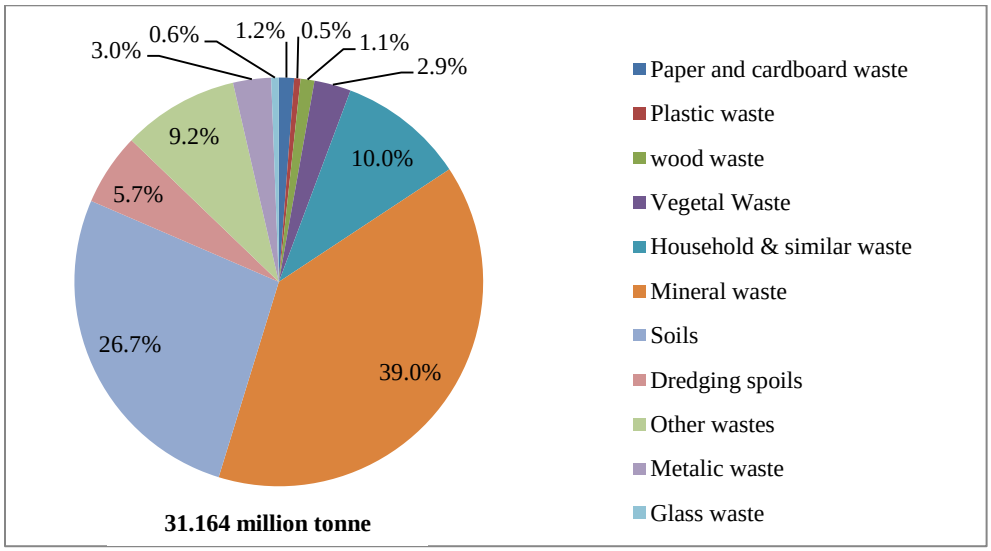
United Kingdom is a developed country with a population of approximately 65.11 million. It is generating 31.567 million tonne per year of solid waste. It is expected to grow at the rate of CAGR 2.48%. Till 2025 it is expected to reach at 40.337 million tonne per year. Major contributor in solid waste generation is England (around 83.31%). In 2015, approximately 84.51% of solid waste came from household waste.

Exhibit 3.10 Solid Waste Generation in the United Kingdom (million tonne per year)



In 2014, soils and minerals contributed the major chunk of the solid waste i.e. 26.7% and 39% respectively. From the collected waste, 23.1% of waste dumped in landfills, 43.6% was recycled while 3.6% was incinerated.

Exhibit 3.11 Solid Waste Generation in the United Kingdom (million tonne per year) in 2014

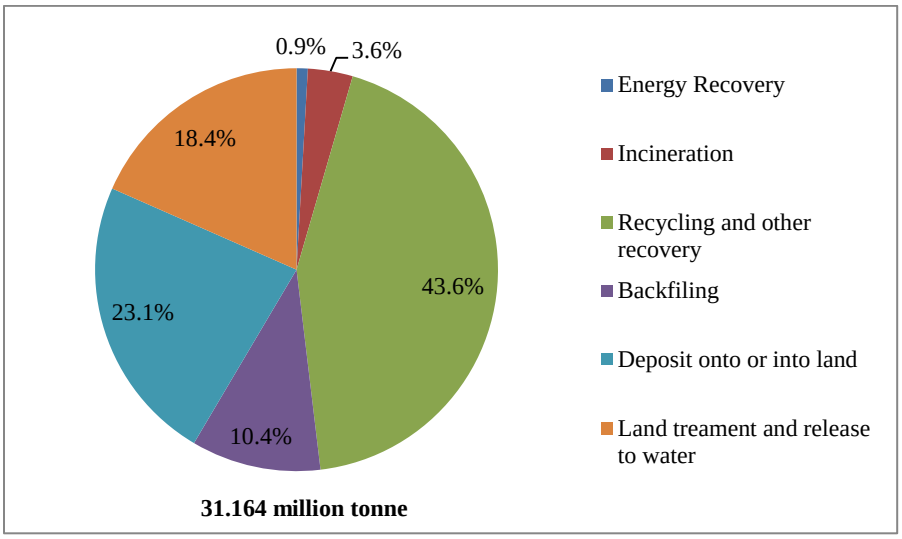


[9] UK Government; EU Commission report; EIC recommendation; UK stats on waste

Growth Drivers:

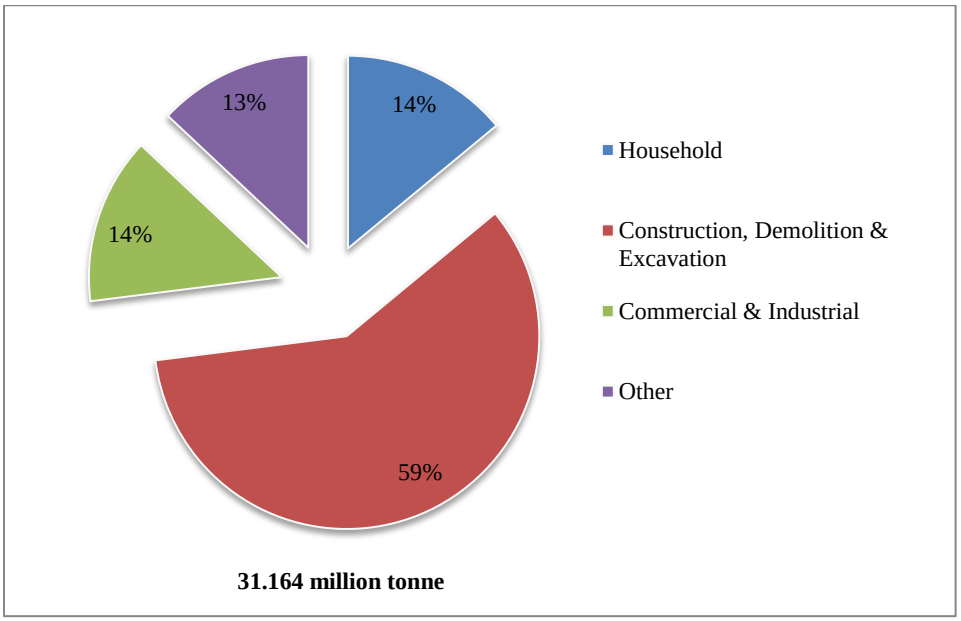
- *UK Government looking to ban landfills by 2025*
- *High Solid waste generation in the next few years.*

Exhibit 3.12 Solid Waste Composition in the United Kingdom (%) in 2014



In 2014, Construction, Demolition & Excavation contributed the most in waste generation (59%), followed by Commercial & Industrial sector (14%) and households (14%).

Exhibit 3.13 Waste Generated via different sectors in 2014



4. Competitor Analysis[10]

Table 4.1: Competitor Analysis of The BlackHOLE™

Sr. No.	Company/ Product	Markets	Technology Used	Price	Maintenance	Capacity
1	**TeslaGREEN (BlackHOLE™)**	**USA**	**Plasma Heat Technology**	**$50 per tonne**	**Low Maintenance**	**4-4.5 tons per day**
2	Enersol Technologies	USA	Plasma Technology and Plasma Gasification	NA	NA	10-100 tons per day
3	Keppel Seghers	Poland	Waste-to-Energy	NA	NA	120,000 tons per year
4	GGI Energy	USA	Waste-to-Energy	NA	Low Maintenance	20-500 tons per day
5	Green Light Energy Solutions	Russia	Pyrolysis	$50 per 1 disposed tonne	Scheduled maintenance work is required	300 tons per day
6	SMARTFERM® by Marathon Equipment	USA	Anaerobic digestion	NA	Low Maintenance	4000-3000 tons per year
7	Beston	China	Pyrolysis	NA	NA	6 - 50 tons per day
8	Technokomplex LLC	Russia	Pyrolysis	From € 40,000 - €1,000,000	NA	From 2 tons – 28 tons
9	Alter NRG	Canada	Plasma Gasification	NA	NA	up to 24 tons per day up to 1000 tons per day in continuous feeding

*NA – Not Available

[10] Respective Company Websites

5. Challenges & Risks in the Market

5.1 Business specific Challenges & Risks[11]

Business specific challenges and risks to be faced by TeslaGREEN:

- ***a) Competition***
- ***b) Act on the Promotion of Saving and Recycling of Resources***
- ***c) Policy Change***
- ***d) Financial Barriers***
- ***e) Technology Risk***
- ***f) Not In My Backyard ("NIMBY")***
- ***g) Changes in Global Policy***
- ***h) Government Regulations***

a) Competition: With the introduction of various governmental programmes and schemes for solid waste management, the barrier to entry in these markets is low. New competition may enter the market as a result of these government policies. Recycling plans possess the biggest threats with countries moving towards generating less waste by recycling products.

b) Act on the Promotion of Saving and Recycling of Resources: In the current scenario, various governments are more emphasizing on the recycling and reusing of waste product than disposal (landfill, incineration etc.). Companies are adopting paperless methods of communication. Furthermore, governments are introducing programmes to pay its customers for recycling waste.

c) Policy change: Waste Management is a capital-intensive industry. In this continuously changing environment, global policies are changing rapidly, which is creating another challenge for waste industry.

d) Financial Barriers: Financing issues due to uncertainty in policies and solid waste management being a capital intensive practice, investors are still reluctant to invest their money to implement projects. As a result to this, the whole/ partial (in PPP) burden is borne by government, especially in developing and non-developed countries. Increasing government regulations accompanied by rising sustainable development trend is expected to fuel growth. However, huge processing and recycling plants costs and low priced substitute such as inexpensive landfilling is likely to be a restraint.

e) Technology Risk: Innovation in the industry and with new technologies, TeslaGREEN's technology may become obsolete or less cost effective.

f) Not in my backyard ("NIMBY"): Due to high urbanization rate, land availability for waste disposal is reducing year-on-year (YOY) and society is more aware about the harmful effect of waste deposition. The habit of NIMBY is developing in the society which creating the issue for waste depositing. Due to NIMBY, operational cost (variable cost) of this industry is increasing YOY.

g) Change in Global Policies: Many multinational firms are adopting zero waste policy. Companies are reducing waste by using recyclable materials which can be composted rather than be landfilled or incinerated. This might reduce the application of TeslaGREEN's products.

h) Government Regulations: Government regulations in target markets might require the waste management industry to follow certain policies. These policies can be in or out of favor of TeslaGREEN. These policies changes must be tracked and individually analyzed by TeslaGREEN before making business decisions.

[11] Global News Wire; Franklin Templeton - Challenges and Opportunities Facing Brazilian Companies; Report – Future of Waste Management in Russian Megacities; Waste Management in Turkey – Sustainable Resource report; Carbon Trust –Waste to Energy in Indonesia; PWC Report – 'UK Waste Management – Challenging Times'

5.2 Country Specific Challenges & Risks[12]

Country specific challenges and risks to be faced by TeslaGREEN:

a) Brazil: High tax rate
b) Russia: Language Barriers
c) Turkey: Regulatory and legal problems
d) Indonesia: Technology Risk
e) UK: High costs and decline in waste generation

a) **Brazil's** high tax rate along with government intervention and fear of policy change proves to be a big stumbling block for companies wanting to set shop. Also, business owners fear policy changes may turn out to be unsuitable towards their businesses and foreign investment.

b) **Russia**, along with its language barrier, has an extremely low quality of services and standards as well as a lack of professionalism. Non-selective waste collection as well as illegal disposal of waste may not be suitable for The BlackHOLE™ as time and cost will have to be spent to segregate products. Furthermore, a lack of environmental education among population leads to a slow adoption of waste sorting and separation.

c) **Turkey** possesses regulatory and legal problems. There are financial issues with the municipal corporation due to lack of tax and fees. The country has a strong legal framework in terms of laying down common provisions for waste management, however, the implementation process has been considered slow. Furthermore, special licenses are required for special waste such as batteries and accumulators.

d) **Indonesia** bears technology risk as most waste management technologies have not be tested in the Indonesian market.

i) Risk of policy change, where project developers may not have confidence in the longevity of the FIT (feed in tariff) level since it is a relatively new instrument in the Indonesian waste management policy landscape
ii) Risk of local government solvency, where there is concern that local government budgets may be overcommitted at some point over the lifetime of a contract and recourse to compensation would be difficult or costly.
iii) Although significant anti-corruption measures have been undertaken by the Indonesian government, corruption remains a concern for many businesses looking to operate within Indonesia.
iv) Risk of contractual default from PT PLN (state owned company), which some interviewees highlighted as a major concern based on historical events
v) Risk of currency fluctuations, which could affect the maintenance cost of a loan if money was lent or borrowed in a foreign currency
vi) Risk of public opposition to waste management facilities, which could influence the decisions of local politicians whose mandate is to represent its citizens' interests and who also have the final say in waste management commissioning
vii) Risks of non-transparent local government processes, which may disadvantage project proponents even if they have the most competitive business case

[12] Franklin Templeton - Challenges and Opportunities Facing Brazilian Companies; Report – Future of Waste Management in Russian Megacities; Waste Management in Turkey – Sustainable Resource report; Carbon Trust –Waste to Energy in Indonesia; PWC Report – 'UK Waste Management – Challenging Times'

e) Waste produced in the **United Kingdom** is at a decline due to the recessionary climate and increasing green agenda. Overcapacity leads to intense price competition in the short term, particularly at the SME level. Furthermore, structural changes by the government to promote a move from Landfill may require frequent investment. UK poses high competition. UK is also a region with high cost of living and operating, for individuals and for businesses.

6. Opportunities in the Market[13]

With the ever expanding increase in solid waste around the globe over the coming years, TeslaGREEN can use its advantage by establishing a market presence in countries with high waste growth.

Governments across these countries have introuced various waste management policies and programmes which results in low barrier to entry for TeslaGREEN to enter.

Here below are opportunities identified as per geography:

a) **Brazil:** The Brazilian Government is planning to invest $870 million in treatment projects, replacement of landfills, introduction of selective waste collection services, and financing cooperatives of waste collectors. In the wake of Brazil's National Solid Waste Policy, investment in solid waste treatment technologies and waste-to-energy projects in sanitary is required. Municipal waste management services, in 2015, were valued at $10 billion annually. The Brazilian government estimated that the income from recycling activities could increase from $1.1 billion to $4.7 billion annually.

b) **Russia:** With a waste market waste up to $3.5 billion per year, Russia is an attractive market for TeslaGREEN to set shop in. The change in waste legislation was due to its shortage of contemporary technologies and equipment for waste recycling as well as lack of full-cycle recycling plants. Russia has only about 250 recycling plants, 50 waste sorting complexes and 11 incinerating plants.

The Government has adopted the list of wastes that cannot be landfilled and must be recycled. The following waste is prohibited to landfill:

i. since January 1, 2017: ferrous and non-ferrous scrap and mercury containing equipment and products;
ii. From January 1, 2018: paper and cardboard waste, tires, thermoplastic, glass and glass product.
iii. From January 1, 2020: computers, electronic, optical and electrical equipment.

The Russian Government has obliged the regional authorities to develop, approve and implement the special territorial scheme of waste management. It will also establish solid fares for collection and transportation of wastes. Furthermore, sorting of waste is hardly done in Russia mainly due to inaccessibility. Household trash tends to go straight into landfills. Since the BlackHOLETM does not require waste to be sorted, it saves a lot of cost.

Also, the Russian Government, through different programs, will support the projects in the waste management field together with investors from the private sectors, while the equipment and technologies is owned by foreign companies.

[13] Report by Universiteit Utrecht on The potential for Waste Management in Brazil to Minimize GHG emissions and Maximize Re-use of Materials; Waste Expo Brazil; Solid waste Expo report Brazil 2017; Solid waste management in Brazil by E. RANIERI; Investment opportunity in Brazilian Market; WASTE TECH 2017; Report by Maria Berezyu at Municipal solid waste management in a new legislation: comprehensive approach; Forbes India report; UK Government; EU Commission report; EIC recommendation; UK stats on waste; Indonesia in state of Waste emergency; Report by Lukas hutagalung on waste to energy development in indonesia; Report on environmental technologies; UK Government; Report municipal waste management in turkey; Report by MDPI Municipal Solid Waste Characterization; Report - Solid Waste Generation in Turkey; Turkey Composts; Jakarta Post; Prospekt Mag; Waste Tech Russia

c) **Turkey:** Most of the Turkey's waste is dumped into landfills. Turkey has huge potential in technological development in waste collection and waste recycling. Apart from this, Turkey is also lacking in various technical equipment like Sorting Machine, Environmental monitoring and analytical machines, crushing and grinding machines and material handling machines. Turkey is also looking for waste incineration systems.

d) **Indonesia:** Recently, the Indonesian government introduced many policies from the president and ministries to accelerate the application of WTE in seven cities (Jakarta, Tangerang, Bandung, Surabaya, Surakarta, Makassar and Semarang). The executive order was made on the acceleration of the development of waste-based power plants or incineration. However, this regulation was annulled by the Supreme Court, stating that incinerators were dangerous for health and the environment. Since The BlackHOLE™ does not have any environmental concerns, Indonesia can be a good market for TeslaGREEN.

e) **United Kingdom:** The UK government is looking to meet EU-2020 recycling target of 50% and 70% by 2030. Furthermore, the UK government is looking to ban landfill by 2025. With the increasing levels of solid waste in the UK, it is an attractive market for TeslaGREEN.

7. Marketing Strategy

7.1 Go to Market Strategy

For entering new markets, a company generally opts for the following two routes depending on factors such as local market know-how, budget for entering, market demographics, etc.:

For entering new markets, the company can opt for Direct Sales or Channel Partner route depending on factors such as local market know-how, budget for entering, market demographics, etc.

- **Direct Sales:**

  The most evident route to enter a market is through a local subsidiary or branch office with a separate team having the know-how and expertise to acquire local customers and build sales channels. Although margins and profitability could be higher due to organic growth, this route will also require TeslaGREEN to invest more in setting up local teams for each country.

  For direct sales to corporate customers, the company can target few customers initially, and depending on the interest received, look to expand further in those countries.

  The comprehensive list of possible target customers and their brief information is provided in the Annexure 1.

  Please refer to Annexure 4 to find out details to open a company in the target countries.

- **Channel Partners/Distributors:**

  The benefits of local partnerships can mitigate significant operational and financial risks for TeslaGREEN due to the local partner's know-how and brand in that country. Based on the partner's reach and size, higher sales volumes can be achieved, although margins may be lower due to value sharing with the partner.

  Essentially, a combination of direct sales and channel partnerships appears to be a strong strategy to expand. TeslaGREEN can enter specific countries directly, for example, UK and Brazil, which will act as hubs for the remaining countries. Local execution in the remaining countries can be facilitated through partners/distributors in those countries.

  The comprehensive list of possible partners and is provided in the Annexure 2.

7.2 Possible Partners, Distributers and Channel Partners

TeslaGREEN can enter in one or more of the targeted markets through partners from industries that serve the same target audience. Benefits of entering through partners include:

- Minimal focus on marketing of TeslaGREEN's products/services, as the partner opens its channels and networks for the company.
- The costs for marketing and other overhead costs can be reduced.
- Once local know-how is attained, the company can choose to grow organically in those countries.

Potential Partners:

- ***Waste Management Service Companies***
- ***Renewable Energy Groups***

In countries where TeslaGREEN may choose to enter through partners/distributors, partnerships with companies in the following industries can be targeted:

1. Waste Management Services Companies:

TeslaGREEN can partner with companies in the waste management services industry which may not have access to technologies or products similar to TeslaGREEN's. Companies providing waste management services or waste-to-energy products may be interested in TeslaGREEN's products, and the combined offering may have more value to a customer looking for overall waste management. At the same time, these companies may want to access TeslaGREEN's products and clientele.

2. Renewable Energy Groups:

TeslaGREEN can partner with Renewable Energy Group companies which customers spread across countries which are currently facing waste management service challenges. It can work hand-in-hand with these groups as it can help burn the waste already present, while the groups simultaneously work on setting up alternate ways to treat trash. Hence, the licensing model will work here, where TeslaGREEN can ship its products to countries and charge them per tonne.

Further Growth Potential:

With traction generated through partners or direct market access, TeslaGREEN can look to raise funds through private investors or a strategic investor for product development, marketing campaigns and further expansion. In some cases, the local partner could also be an investor at the holding company level or a local joint venture. Such inorganic opportunities could result in exponential growth and risk mitigation across different markets.

7.3 Pricing Benchmarks*[14]

While direct prices for waste management services are not available due to the flexibility in offering and different pricing models involved, the following pricing has been derived through analysis of available public information which can be used as an approximate benchmark.

Country	Price Per Tonne**	Reference Year
Brazil	$250	2015
Russia	$250	2017
Turkey	$150 - $300	2016
Indonesia	$450	2015
United Kingdom	$586	2017

*For detailed information, please check Annexure 3
**Price mentioned in approximate $ terms

While the benchmark prices for most of these markets seem to be higher than TeslaGREEN's pricing model of $50 per tonne, TeslaGREEN has an opportunity to increase its prices due to its low cost of $2.5 per tonne and high margins. Furthermore, TeslaGREEN can offer its products at attractive prices as compared to its competitiors.

Furthermore, The BlackHOLE™ does not use any source of power such as electricity or fuel which saves additional cost for companies.

Cost per tonne for The BlackHOLE™ can be calculated as the following:

Life of The BlackHOLE™ : 25 years

Cost of 100 tonne machine: $ 2.25 million

Total tonne of waste reduced: 100 x 365 days x 25 years = 912,500 tonnes of waste

Cost per tonne: 2.25 million / 912,500 tonnes = $2.5 per tonne

[14] Brazil Business; Commercial Recycling; Indonesia Expat Biz; Turkey Compost; Solid Waste Management in Latin America and the Caribbean; Waste Tech Russia

8. Conclusion

Mentioned below is a summary of the Market Research report which highlights important information about the markets TeslaGREEN can enter and also different entry points into such markets.

Table 8.1: Key Findings of the Market Research for TeslaGREEN Inc.

Particulars	Particulars	Rationale
Target Markets	Brazil, Russia, Turkey, Indonesia, United Kingdom	As of 2016, these 5 countries are some of the top solid waste producing countries, apart from US and India where TeslaGREEN already has installations. The recycling rate of waste in most of these countries is in single digits. Majority of the waste in these countries ends up in landfills or incinerators.
Target Companies	Waste Management Service companies and Renewable Energy Groups	Waste Management Service companies can partner with TeslaGREEN and use its product to help reduce waste. TeslaGREEN, on the other hand, can access the clients of such companies. Renewable Energy Groups generate a lot of solid waste. Partnering with TeslaGREEN will help in waste reduction for these companies while TeslaGREEN can install its machines across the sites.
Competitors	**The BlackHOLE™:** Energy Pyrolysis Ltd Green Light Energy Solutions Technokomplex LLC	The BlackHOLE™ is a solid waste management product. Competitors include companies using alternate solid waste technologies without any harmful side-effects. A number of competitors are present in the UK while the competition in the other markets is low.
Go to Market Strategy	Organic Expansion – Direct Sales Sales Partnership/Distribution Channels with Waste Management Service companies and Renewable Energy Groups	TeslaGREEN can manage their operations organically in various markets by replacing landfills and incinerators. It can target landfill sites and install its machines there and replace incinerators. TeslaGREEN can also partner with Waste Management service companies and Renewable energy groups to expand its market presence. The local partners in potential target markets would facilitate seamless set up and operations by providing local know-how and access to customers.

9. Annexure

Annexure 1 : Comprehensive list of possible Target Customers

Annexure 2: Comprehensive list of possible Channel Partners

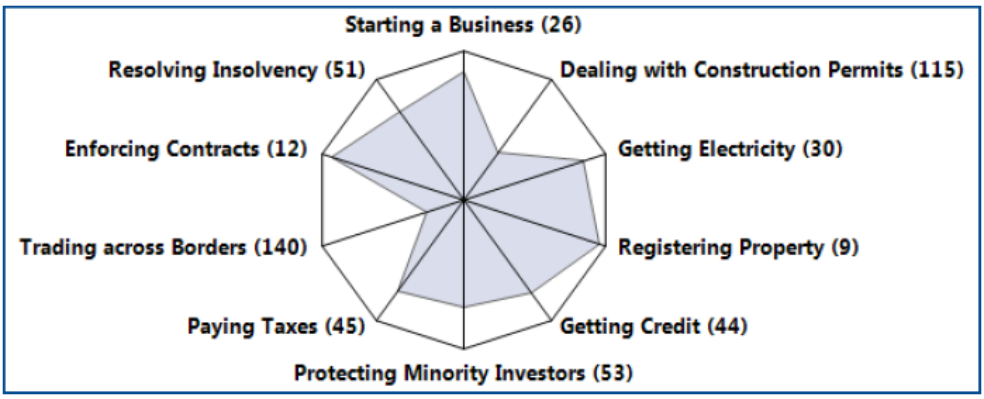
Annexure 3: Detailed Pricing option

Annexure 4: Doing Business Reports by World Bank 2017.

Below mentioned are the ranks to conduct business in each country

Brazil[15]

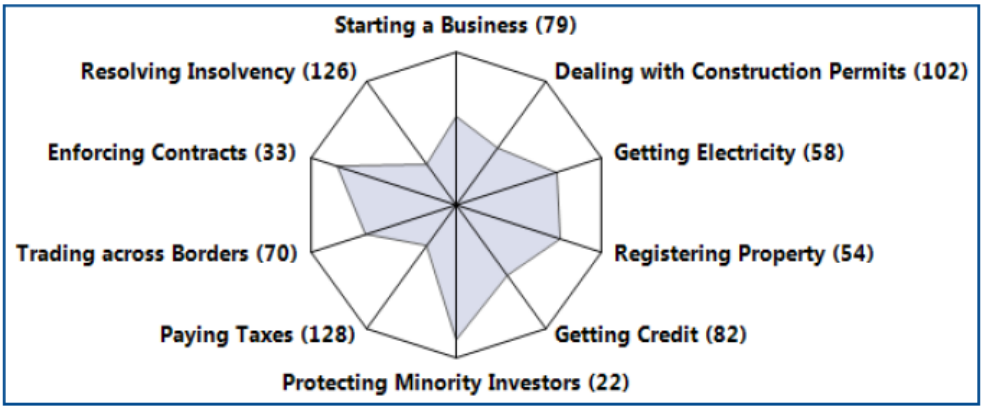
Russia[16]



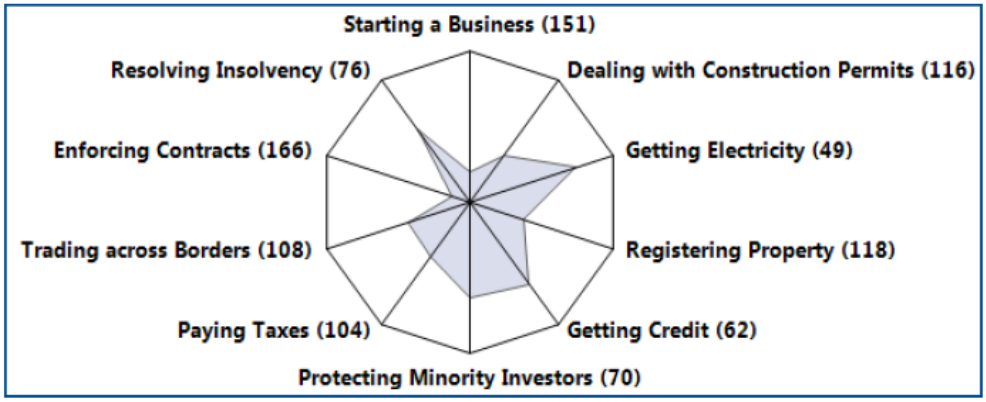
[15] Doing Business - Brazil

[16] Doing Business - Russia

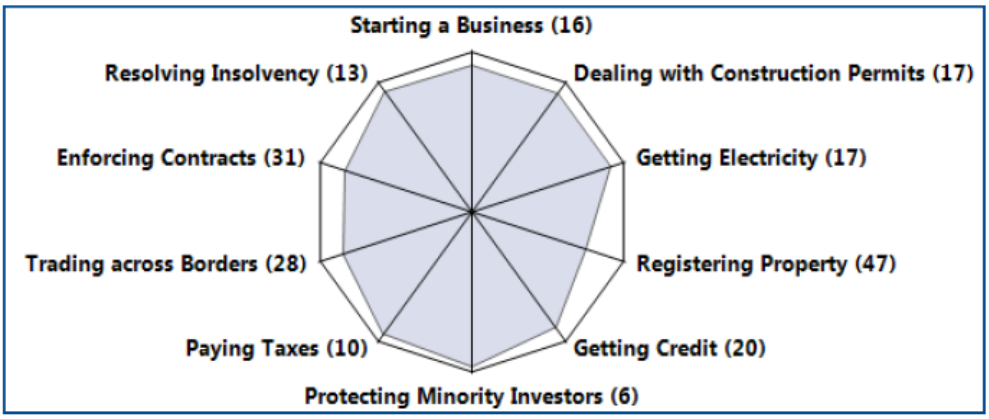
Turkey[17]



Indonesia[18]



UK[19]



[17] Doing Business - Turkey
[18] Doing Business - Indonesia
[19] Doing Business - UK

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