U.S. Commercial Service
Global Automotive Team

Electric Vehicles

Europe in Brief

A Reference Guide for U.S. Exporters

2010- 2011 Edition

U.S. Department of Commerce | International Trade Administration | U.S. Commercial Service

The U.S. Commercial Service - Automotive Team

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The U.S. Commercial Service team of domestic and international trade specialists provides targeted export assistance to the U.S. automotive industry. Our team members are located throughout the United States at Export Assistance Centers and in American Embassies and Consulates worldwide. We are the automotive industry's primary export assistance resource and should be your first point of contact if you are looking to sell your auto parts and services overseas.

This publication was created in response to frequent requests we received from our clients looking to find new markets in Europe's rapidly growing clean transportation sector. It is intended to provide a quick reference to U.S. manufactures of electric vehicles and related products in understanding and identifying markets where these products are likely to succeed. The following pages contain the market overviews in 21 countries, including a quick 1-4 rating of the success potential according to the opinion of our automotive commercial specialists. Additional resources and useful contacts are also provided to help increase your international sales.

Certainly, the global demand for American expertise in this sector is not limited to Europe. It is our goal to expand this guide to include reports from other world regions. However, we need your feedback! As a government resource for U.S. companies, our team relies on your comments and needs to hear whether we are serving you well. If this information is useful to you, please share your experience with us and help us identify areas of improvement by emailing eduard.roytberg@trade.gov.

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Why U.S. Automotive companies should work with the CS Automotive Team:

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Austria

Country:	Austria
Capital:	Vienna
Size:	83,858 (sq km)
Population:	8.2 million
GDP per capita:	$329.5 billion (2009)
Population Concentration:	67% urban vs. 33% suburban and rural (2008)
Currency:	EURO (EUR)
Commuter Needs:	Over 2.4 million Austrians commute to work, including Viennese who frequently work in a district of the city that is several miles from their residence; around 23% use public transportation (2009). The average commute distance is 20 kilometers (12.5 miles).
Language:	German

Executive Summary

The global market for electric vehicles is nascent and the Austrian market is no exception. However, Austria is currently home to several ambitious pilot projects, one of which is among the largest in Europe, and there is compelling evidence that electric vehicle technology may find a rapidly expanding market in Austria over the next ten years making it among the leaders in Europe. Austria's economic health is above average within the Euro zone. Internal and external political pressures to reduce greenhouse gas emissions and pursue energy independence are encouraging government officials to embrace the technology. Likewise, a highly urbanized population, a significant domestic auto industry, and a developed transportation infrastructure for long distance travel could make electric vehicles attractive to Austrian's buying a vehicle for commuting and short distance travel. Austria also possesses highly skilled research and design engineers with significant experience in the automotive industry. U.S. manufacturers of electric vehicle technology are strongly encouraged to consider Austria as a potential business partner and export market. Austria's trade ties and linguistic bond to automotive powerhouse Germany, as well as its position as a gateway to Central and Eastern Europe, make it an excellent platform for doing business throughout the region.

Energy Consumption

Dependence on foreign oil

Austria receives 90.5% of its oil from foreign sources (2009)

Status of electrical generation and transmission

Austrian electric power generation and distribution systems are among the most reliable and environmentally friendly in Europe. Austrian producers are upgrading their grids with "smart grid" technology. Hydropower accounts for 59% of total capacity, fossil fuels (primarily natural gas) for 21%, and renewable sources (biomass/biogas, wind, PV, small hydro) account for the rest. Austria does not produce nuclear energy. Austria imports some of its electricity from neighboring countries.

General concern with environmental issues

Austria has a long history of environmental activity, and one that is distinct from the environmentalism of the United States. Whereas U.S. environmentalism has its roots in the Audubon movement, with a focus on preserving the beauty of nature, Austrian environmentalism tends to focus more on the protection of its cultural heritage. This includes large subsidies to preserve farms, significant restrictions on demolition or alterations of existing buildings, and a general glorification of the traditional lifestyle. To a certain extent this view includes a high degree of tolerance for regulation and subsidies, including policies that impact personal freedom. For example, Austrian's have come to accept high fuel taxes and strict recycling laws, as well as road and carbon taxes. In 2007, the latest year for which figures are available, Austria spent $14 billion on environmental measures, of which spending on the environment was heavily weighted towards waste management (31.2%) and surface water preservation (29.8%). In 2007 the Austrian Parliament created a "climate and energy fund" to provide approximately $200 million in grants per year, conduct research, and provide policy recommendations in order to mitigate greenhouse gas emissions. The fund's grants have helped launch several electric vehicle pilot projects across Austria.

Transportation Overview

Motorization (motor vehicles per capita)

There are currently 536 motor vehicles registered per 1000 people resident in Austria, around 4.5 million in total.

Status of mass transit

Austria has among the best public transportation networks in the world, with a combination of street trams, light rail, buses, and commuter trains in operation in most metropolitan areas, as well as an extensive rail network throughout the country. The Vienna region includes an extensive subway system that contributes to the densest public transportation coverage in Austria, with over 8,400 kilometers of mass transit lines. In 2009 the Vienna regional system recorded 882 million paying passengers.

Status of the Austrian auto industry

Many are surprised to learn that the automotive/vehicle industry is one of Austria's leading manufacturing sectors, charting over $12 billion production value in 2009. This figure reflects a 25% fall from 2008, which is attributed to the worldwide automotive industry crisis of 2008/2009. While Austria is home to some contract assembly and small manufactures such as motorcycle maker KTM, Austria does not have a national auto company. However, it does support a large OEM supplier population. Combustion engines and transmissions make up around half of the supplier production value with a 100% export rate. There has been some activity on the part of the Austrian automotive industry toward developing electric vehicles, most notably by Magna E-Car Systems, which is working with Ford and other OEMs to engineer and develop electric vehicle offerings. Magna E-Car Systems opened an 82,000 square foot facility in Michigan to develop and test electric vehicle technology. Another powerhouse of Austria's

automotive sector, AVL, recently opened a hybrid powertrain research and development center in Lake Forest, CA.

Electric vehicles currently on the road

There are currently a negligible number of purely electric vehicles on Austria's roads: 223 registered passenger vehicles in 2009 (from a total of 4.4 million). The number of passenger vehicles that have an "alternative" engine (mostly hybrid) is a modest 1,594. The most recent registration figures show significant growth in the number of electric vehicles being registered, with six additional vehicles registered in the first two months of 2010 (compared to zero in the same time period in 2006-2009).

European Union and Austrian initiatives to promote electric vehicle usage

There are several Austrian initiatives in place with the goal of accelerating the implementation of electric vehicles in Austria. The most important are e-connected and Austrian mobile power. ***E-connected*** is run by an agency of the Austrian federal government as a platform for the exchange of ideas and strategies among all stakeholders. The second local initiative was launched by Verbund, Austria's largest electricity supplier, and is called ***Austrian Mobile Power***. This group includes members from the Austrian automotive industry (AVL, Magna and Siemens) and is working to develop standards, infrastructure, and accounting systems for e-mobility in Austria.

Austrian government policy incentives to encourage purchase/use of zero-emission vehicles

Austrian policymakers are committed to reducing GHG emissions to comply with EU and Kyoto goals. Austrian Mobil Power has forecast 100,000 cars on the road by 2020 under their program alone. Overall the Austrian Government has set a goal to have 250,000 electric vehicles on the road in Austria by 2020, which would be 3-5% of registered vehicles in Austria.

Currently there are three main incentive systems in place to encourage the purchase/use of zero-emission vehicles in Austria:

1. There is a rebate in place worth up to EUR 5,000 for the purchase of an electric vehicle (note: private individuals are not eligible for the rebate);

2. The emissions-based new vehicle tax, which can be as high as 16% of the vehicle value depending on its fuel efficiency, is eliminated;

3. Zero-emissions vehicles pay a lower yearly vehicle tax, as this tax includes an emissions component.

In addition to these incentives, the Austrian government has financed five pilot projects, known as "e-mobility model regions," in part through the Austrian climate and energy fund. Financing to date has been modest at just over $14 million total, as the projects are required to meet economic feasibility. That said, a project in Vorarlberg is among the largest 3 electric vehicle projects in Europe. The Austrian electric vehicle pilot projects announced to date are as follows:

1. Vlotte (Vorarlberg, launched in 2008);
2. ElectroDrive Salzburg (Salzburg, launched in 2009);
3. e-mobility on demand (Vienna, 2010)
4. e-mobility Graz (Styria 2010); and
5. Project to add electric city taxis in Eisenstadt (Burgenland 2010).

Analysis and Conclusions

Most factors considered place Austria high on the list of potential early adopters of electric vehicles. The country is small and wealthy, highly dependent on foreign oil, environmentally aware, and highly motorized. Commute distances are relatively short, electricity is reliable and largely comes from renewable sources, and mass transit systems are excellent. Austria is home to an existing auto industry that supports both foreign and domestic companies working on alternative propulsion systems or whose parts and systems are external to the powertrain. The electricity industry is experimenting with how to approach the opportunity, most visibly by participating in the government-sponsored e-mobility model regions. The Austrian government, both because of EU mandates as well as its political appeal, has launched policies to promote the use of electric vehicles. It is interesting to note that the most recent Vienna city elections (2010) created a first-ever coalition government that includes the Green Party; this could potentially bring new regulations to the city that would favor electric vehicles.

Of course, widespread use of electric vehicles is new, economic feasibility remains unproven, and integration of needed new infrastructure is costly. There are many difficult to predict factors that will have an enormous impact on how quickly electric vehicles are adopted in Austria, several of which impact each other: the future price of fossil fuels; the development trajectory of electric vehicle (battery) technology; advances in competing technologies; the viability of the business case for creating and maintaining a charging infrastructure; the boldness of government regulation; and the willingness of the population to consider purchasing a vehicle that has significant tradeoffs.

Overall, the outlook for Austria to be among the leaders in developing a market for electric vehicles and related technology looks positive. We recommend U.S. developers of electric vehicles and related technology and services to consider Austria as a potential source of both sales and development partnerships. Interested U.S. exporters should contact the U.S. Commercial Service in Vienna for additional information and guidance.

On a scale of 1 to 4 how would you rate your country: 3

1 – Little to no probability of success for U.S. Exporters
2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

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Belgium

Country:	Belgium
Capital:	Brussels
Size:	30,528 (sq km land)
Population:	10, 414,336
GDP per capita:	USD 36,800 (2009 est.)
Population Concentration:	97% Urban (2008), Estimated Growth: 0.094% (2010 est.)
Commuter needs:	Belgium has a highly developed road and rail network system providing various modes of transport for travelers within Belgian national territory and to neighboring European countries. While public transportation is highly popular, 70% of Belgians travel to work by car. Belgians spend on average 57 minutes a day traveling to and from work, with an average distance of 23 miles. Commute times differ in various parts of the country; however, times are more likely to increase in major urban areas.

Energy Consumption

Dependence on foreign oil:	79.3%
Net Import:	568,500 bbl/day (2008 est.)

Fossil fuel consumption has not only become a critical issue for the European Union, but is also a major issue in Belgium, a country that imports all of its petroleum, coal, and natural gas needs. Rising fuel costs and environmental problems have been met by an intense move towards renewable and clean energy solutions. Belgium's current gross energy dependence is 77.9% (42,000 kilo-ton oil equivalent), with a 79.3% reliance on foreign oil. It is estimated that Belgians consume 716,800 bbl/day of oil, bringing net imports of oil to 568,500 bbl/day. Furthermore, in 2008, Belgium consumed 7.2 million tons of coal and 612 billion cubic feet of natural gas.

Belgium is currently meeting its 2012 Kyoto carbon emissions target (of 135.9 Mt $C0_2$-eq) by 3.38% (at 131.3 Mt $C0^2$-eq). This is attributed to Belgium's progressive movement towards renewable and clean energy products. Belgium's renewable energy sources (RES) consist of photovoltaic, wind energy, and hydropower, among many others, contributing 49.6 MWh, 105 MWh, and 57 MWh, respectively to its gross power production. Of the national electricity production, 54% comes from nuclear energy, 39% from fossil fuel power plants, 5.4% from renewable energy sources and 1.5% from hydraulic pumping stations. In 2007, the country generated 82.2 billion KWh of electricity while consuming 84.9 billion KWh, resulting in a net generation of 92.8 billion KWh. Although progressive, its renewable energy solutions account for a small proportion of its energy production capabilities. At right is a list of Belgium's renewable energy goals:

Targeted Renewable Energy Sources, 2020		
	Net Power Capacity (MW) 2020	Net Electricity Generation (GWh) 2020
Hydro	108	362
Wind	2,228	5,334
Biomass and Waste	1,547	7,403
Solar and PV	93	71

Transportation Overview

Motorization (vehicles per capita): 0.448

Status of Mass Transit

SNCB/NMBS (Société Nationale des Chemins de fer Belges) is Belgium's premier transportation, with a 206 million annual ridership. It services 108 Belgian stations, 39 of which are international. In addition, STIB/MVIB (Société des Transports Intercommunaux de Bruxelles), the regional transportation network, provides metro, tram, and bus service to travelers in the city of Brussels. It services the 19 municipalities of Brussels in addition to 11 other regions (241.5 km surface area).

Status of local auto industry

Historically, the automotive industry has played a major role in the Belgian economy. It is a major player in the industrial sector, encompassing various sub-sectors including: motor vehicle manufacturing and assembly, suppliers, cycles, parts, and support services. In 2009, new vehicle revenues amounted to USD13.3 billion dollars, while used vehicle revenues reached USD 5.5 billion. Belgium is home to four major automotive manufacturing plants: Opel in Antwerp, Ford in Genk, Volkswagen/Audi in Brussels, and Volvo in Ghent, with a 90% export rate. Furthermore, Belgium has over 300 companies supplying metal, chemical products, plastics, rubber, glass, electronics, ICT, and logistics directly or indirectly to the automotive industry.

Number of Registered Motor Vehicles, Buses, and Trucks	
Passenger car, motor energy (all petroleum/diesel)	5,049,000
Motor coaches, buses, trolley buses (all petroleum/diesel)	15,479
Motor coaches, buses, trolley buses, alternative motor energy (LPG, natural gas, electric, liquefied petroleum gas)	128
Trucks (all petroleum/diesel)	642,687

The market for hybrid and electric vehicles in Belgium is still developing. Hybrid and electric vehicle sales represent roughly 1% of the overall Belgian automotive market. Toyota's Hybrid (parallel hybrid electric vehicle) being the most popular. Other HEVs in Belgium are: Lexus, REVA, Honda, and BMW. Hybrid and electric vehicle sales are expected to gradually increase from a few hundred to a few thousand over the next five years, reaching 10,000 units by 2015.

Government incentives to encourage purchase/use of no-emission vehicles

In an effort to boost sales of hybrid and electric vehicles, the federal and regional governments have created several incentives, including a 30% federal tax credit (max EUR 9,000) when purchasing a hybrid or electric vehicle. In the Flemish region, the government gives a 30% subsidy for the purchase of an electric car and a 50% subsidy for the purchase of electric motorcycles. In the Walloon region, the government was offering a 75% subsidy (up to EUR 25,000) for electric vehicles before July 1, 2010. Automotive trade associations have created awareness of hybrid and electric cars. Currently, ASBE, the Belgian representation of the European Association for Battery, Hybrid, and Fuel Cell Electric Vehicles, is marketing the WATT Roadshow Initiative, which aims to promote the use of alternative engine vehicles in Belgium.

Companies active in the electric automobile area

Volvo (C30), Peugeot (3008 Hybrid4), Mitsubishi (i-Miev), and Ford (Focus) have announced plans to market hybrid and electric vehicles in Belgium within the next three years.

Analysis and Conclusions

The Belgian government strongly supports the development of the hybrid and electric vehicle market. In order to strengthen demand for such vehicles, a number of challenges will need to be addressed:

- **Research and Development:** The University of Brussels (Vrije Universiteit Brussel) is a leader in electric engine vehicle research. The Electric Engineering and Energy Technology department has conducted various research projects in engine technologies and vehicle development; however, one of the major issues facing the market is the lack of investment in R/D. Industry leaders believe once industry standards, rules, and regulations are in place investment will increase.
- **Infrastructure:** Belgium currently does not have the infrastructure to support plug-in electric vehicles. There are 19 charging stations throughout Belgium, many of which are located in the Flanders region. ElectraSun N.V., Elecktrobay, and Krautli are the major developers of recharging stations in Belgium. In addition to developing charging stations, Belgium must address the issue of integrating the recharging stations into the electricity grid.
- **Automotive Manufacturers and Suppliers:** Manufacturers may face difficulties in restructuring operations to mass-produce electric vehicles, in addition to securing efficient supply chains. Many Belgian automotive supply companies do not carry the parts and system components to support automotive manufacturers' production lines, forcing manufacturers to imports these items from other countries. Bosch Group-Belgium, Triphase, and Punch Powertrain currently plan to supply engine systems, components, and parts to Belgian automotive manufacturers.

There appear to be more opportunities than challenges for hybrid electric vehicles, parts, and systems in Belgium. Experts believe that HEVs will first be sold for urban short trips and as light commercial trucks. The urban market will target short distance and frequent drivers, especially in the Brussels-Capital region. Because of their small size, HEVs have the potential to be attractive for the average commuter. In the light commercial truck market, companies such as Coca-Cola Belgium-Luxembourg have a fleet of 39 hybrid delivery trucks in its fleet. The company has plans to add 70 more hybrid delivery trucks

by 2011, working with Iveco, Renault and an Australian truck company. One out of five vehicles on the road are company vehicles. As companies seek to reduce costs, they will likely add hybrid or electric vehicles to their fleet of company vehicles.

Belgium's development of its renewable energy program in support of EU climate policy illustrates its strong commitment to a HEV market. Experts expect that within the next five years, the Belgian automotive market will experience an increase in the number of vehicles being manufactured and sold in Belgium. In addition, investment will likely increase once the general public perception of HEVs changes.

On a scale of 1 to 4 how would you rate your country: 3
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2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

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Bulgaria

Country:	Bulgaria
Capital:	Sofia
Size:	108, 489 (sq km land)
Population:	5,470,306
GDP per capita:	USD 12,600 (2009 est.)
Population Concentration:	71% Urban (2008), Estimated Growth: -0.8% (2010 est.)
Commuter needs:	In 2009, the average commute time in Bulgaria was 39.5 minutes, close to the European average. Commute time, with a standard deviation of 33.6 minutes, varied significantly by location. Commute times are longer in cities, largely as a result of high traffic and a lack of sufficient infrastructure. Bulgaria suffers from significant road system deterioration and underdevelopment, contributing both to the difficulty and length of transport, as well as to the high number of fatal motor vehicle accidents.

Energy Consumption

Dependence on foreign oil:	91%
Net import:	112,430 bbl/day (2007 est.),
Consumption:	125,000 bbl/day (2009 est.)

Status of electrical generation and transmission

In 2008, the country generated 44.83 billion kWH, and consumed 29.9 billion kWh. Electrical generation capacity for the country was 12.67 million kW.

Amount of alternative energy produced in country

Nuclear energy and hydropower are currently the main sources of alternative energy in Bulgaria. 14.6 billion kWh were generated from nuclear power in 2007, making up 34% of total electricity production. The government is planning to build two new nuclear power plants with a combined production of 2000MWe, and is looking for European investors. As of 2009, 3.6 billion kWh were generated from hydroelectric power, roughly 10% of total power. Bulgaria has begun to expand into other areas of renewable energy, especially wind energy. The country is considered one of the fastest growing markets for wind energy in the world. Production in 2009 was 330 MW, and estimates for future production are as high as 3 GW by 2020. A number of biomass projects are also planned, and, by 2015, are expected to generate a maximum of 60 MW. Current solar power production is minimal, despite significant potential, and will likely continue to take a back seat to the development of energy from wind and biomass. Similarly, despite significant potential for geothermal energy, there are no activities in this sector.

Concern with environmental issues

Aggressive industrial growth during the socialist period left Bulgaria a legacy of serious environmental problems. Air pollution, deforestation, soil pollution and water pollution

are major threats for the environment. There is some concern about negative environmental effects from the growth of the wind energy sector because installations have sometimes been built in protected areas and on arable land. Bulgaria's membership in the EU forced a number of environmental requirements and targets on the country, but also provided access to new partnerships and funds. Yet, its progress has remained somewhat limited.

Transportation Overview

Motorization: 0.295

Status of mass transit

Sofia faces significant problems with city congestion and mass transit despite a metro and fairly well developed bus and tram system. This is due in large part to the city planning under the socialist government in which businesses and residential areas were located in the city's periphery, greatly complicating public transportation. In an effort to improve public transportation the city is currently building two additional metro lines, the first of which is expected to open in 2012.

Status of local auto industry

Bulgaria lacks a local auto manufacturing industry. However, there are plans for the construction of two auto plants. The first is a joint venture between Bulgarian company Litex motors and Chinese firm Great Wall Motors to build an SUV manufacturing plant. This plant is expected to begin production by the end of 2010, and will focus on the domestic market and exports to Greece and Romania. The second is an electric car plant, under negotiation, to be built by American company Quorus Construction Ventures with British financial backing. (The last high profile attempt to manufacture cars in Bulgaria was in 1995 by British investment company Rover motors. The venture fell apart after producing just a few thousand cars.) The relatively small company Belchev motors is also planning to begin production of a two-seat, 900-pound electric car.

Government incentives to encourage purchase/use of no-emission vehicles

None. It is unlikely that there will be any government incentives or subsidies in the near future.

Companies active in the electric automobile area

There are no companies directly active in the electric automobile industry. However, companies are working in related areas and have expressed interest in the electric automobile market:

- Quorus Ventures: British investment fund that plans to open a plant for electric vehicles in Sofia
- Electric Vehicles Industrial Cluster (EVIC): NGO composed of eight Bulgarian companies aiming to develop electric cars in Bulgaria (www.emic-bg.org/).
- Belchev Motors: Bulgarian automobile company that is planning to mass produce a small, two-seat electric car with a maximum speed of 45mph, both for the domestic market and for export
- Litex Motors: Recently established Bulgarian company that in conjunction with Great Wall Motors plans to build an SUV manufacturing plant (not electric)

Analysis and Conclusions

American companies are unlikely to be successful exporting passenger electric vehicles (PEV) to Bulgaria in the short to medium term for a number of reasons. The first is the high cost of American models relative to average Bulgarian incomes. The CEO of the Bulgarian automotive company Belchev motors estimated that PEV should not cost more than EUR 10,000 for successful investing in Bulgaria.

Experts believe that government incentives and the establishment of an appropriate infrastructure, such as electric filling stations, would be necessary to support marketability of EVs.

At present there are no financial incentives either for existing gas stations to install charge stations or for consumers to purchase electric cars. Additionally, imports of used vehicles have created low-priced competition that will make it difficult to successfully import electric cars.

Unlike Bulgaria, virtually all other European countries have adopted legislation to encourage the sale of new cars and ban import of secondhand cars, regardless of their age.

***On a scale of 1 to 4 how would you rate your country*: 2**
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3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

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Croatia

Country:	Croatia
Capital:	Zagreb
Size:	56,594 (sq miles land)
Population:	4.48 million
GDP per capita:	USD 17,703
Population Concentration:	57% Urban
Commuter needs:	There are no data describing commute distances or the number of citizens that commute to work in Croatia; however, 1,000 public transportation buses in Croatia transport around 190 million passengers annually. Zagreb (population of 800,000) and Osijek (114,000) operate tram transportation systems.

Energy Consumption

Dependence on foreign oil:	80%
Net import:	122,100 bbl/day
Consumption:	106,000 bbl/day

Status of electrical generation and transmission

In 2008, Croatia generated 11.35 GWh of electricity and consumed 18.9 GWh. Electrical generation capacity for the country was 3.74 GW.

Amount of alternative energy produced in country

In 2007, Croatia adopted regulations to support the development of renewable energy projects required to meet the goal of a minimum 5.8% share of renewable energy (excluding hydro-power plants above 10 MW) in the total electric energy supply by 2010 (now postponed to 2012). In its 2009 progress report, the European Commission stated that Croatia achieved significant progress in the area of climate change control and air quality, especially in terms of developing plans for the reduction of SO_2 and NO_x emissions.

Transportation Overview

Motorization:	0.34

Status of mass transit

Transportation systems within city limits are often subsidized by the respective cities. The European Bank for Reconstruction and Development (EBRD) recently provided lending to two smaller cities in Croatia for the renewal of their public transportation bus fleet.

Status of local auto industry

While there are no car manufacturers in Croatia, several companies manufacture plastic parts for major car companies (AD Plastik Ltd. supplies Opel, Renault BMW, Citroen, Peugeot). In the past, electric automobiles were reserved for few enthusiasts converting used cars into electric vehicles, but in 2009 the company Dok-Ing Ltd. developed its own electric vehicle concept "XD" (www.xdconcept.com) and presented it at the Geneva Car

Show in 2010. The engine and the accompanying parts are imported from U.S. companies Schlenker Enterprises (Illinois) and Agroresources (Oregon).

Besides Dok-Ing Ltd. (www.dok-ing.hr), several companies plan to import electric vehicles from China and adjust them in accordance with the local standards. One of them is Nobis Ltd. from Rijeka (www.nobis-ri.hr/en/index.html).

As an infrastructure for electric cars does not exist and as there are no major incentives for choosing an EV over a conventional personal vehicle, there are currently more challenges than opportunities for U.S. exporters.

Analysis and Conclusions

Notwithstanding the media attention, the use of electric vehicles in Croatia did not spread beyond a few individual enthusiasts and there are very few businesses involved in related production. Toyota Prius was the first widely recognized and well-accepted hybrid, but its sales in Croatia are very low. Individual electric vehicle drag races take place from time to time, but Croatia is very far from having a feasible plan to support the introduction of everyday-use electric vehicles. All of this could change abruptly should Croatia's first electric vehicle concept succeed in the international market.

On a scale of 1 to 4 how would you rate your country*: *2
1 – Little to no probability of success for U.S. Exporters
2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

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Czech Republic

Country:	Czech Republic
Capital:	Prague
Size:	47,893 (sq miles land)
Population:	10.5 million
GDP per capita:	USD 25,157
Population Concentration:	73% Urban
Commuter needs:	Except in large urban areas, commuting is not very frequent; public transportation prevails over individual transportation

Energy Consumption

Dependence on foreign oil:	89.9%
Net import:	191,340 bbl/day
Consumption:	218,800 bbl/day

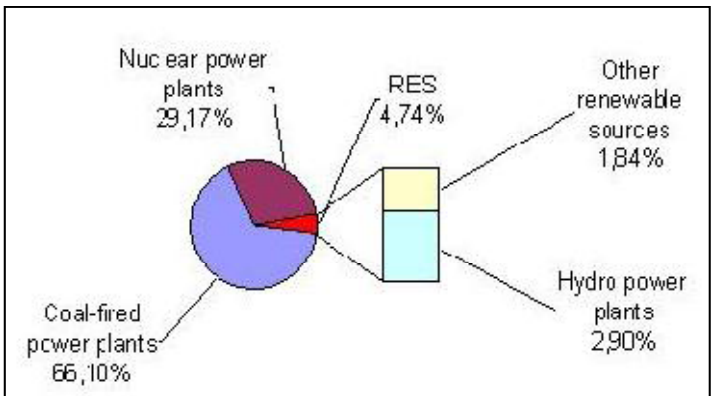
Status of electrical generation and transmission

The Czech Republic generates 82.72 billion kWh of electricity and consumes 61.65 billion kWh. Domestic electrical generation capacity for the country was 88,000 GWh in 2007. 28% of the energy demand is satisfied via imports.

Amount of alternative energy produced in country

In 2006, renewable energy consumption was 6.5%; the target for 2020 is 13%. According to the Association of Czech Regulated Electro-Energy Companies, renewable energy production capacity was 8,063 MW by the beginning of 2010. According to the Czech Statistical Office, in 2007, the Czech Republic's energy production distribution is as follows:

- 66.1% of electricity was produced by coal-driven steam, combined, and combustion power plants
- 29.17% by nuclear plants
- 4.74% comes from renewable sources, including hydropower



Electricity production in the Czech Republic by source in 2007 (Source:MIT)

Natural gas is mainly obtained from Russia and Norway. In 2009, the Czech Republic introduced a feed-in tariff for a variety of different renewable sources.

The feed-in tariffs currently are:

- Windpower 'on shore': 0.108 (EUR/kWh)
- Windpower 'off shore': 0.108 (EUR/kWh)
- Solar PV: 0.455 (EUR/kWh)
- Biomass: 0.077-0.103(EUR/kWh)
- Hydro: 0.081 (EUR/kWh)

Because of the very favorable legislation and decreased cost, solar power is booming. Investments are projected to pay off in 8-10 years, while the feed-in tariff is guaranteed for 20 years. Photovoltaic power capacity increased from 2008 to 2009 by 400 MW. Predictions for the end of 2010 are in the thousands of MW. There are concerns about this boom because not only is solar power less stable than other traditional energy producers such as hydro-power, but the prices rely on government legislation and not on the free market. The expansion of the renewable energy industry will thus be largely dependent on political interest.

Concern with environmental issues:
After becoming a member of the European Union, the Czech Republic has undertaken measures to reduce its greenhouse gas emissions and increase its use of renewable energy sources. It has begun to reduce its dependence on low-grade brown coal to fulfill EU requirements. In alignment with the EU target of 20% energy consumption from renewable sources, the Czech Republic's individual target is 13%.

Transportation Overview

Because of massive foreign direct investments in the last two decades, the Czech Republic has become one of the major car manufacturers in Europe. Production of new passenger cars rose to an all-time-record high of 979,085 units in 2009, which represents around 93 cars per 1,000 people, the second highest car production per capita in Europe. The leading Czech automotive companies are SKODA AUTO/Volkswagen, Toyota-Peugeot-Citroen (TPCA), Hyundai, Tatra and Avia Ashok Leyland (trucks), Iveco and SOR (buses), and Zetor (tractors). There are also 270 car-part suppliers represented in the Czech market (50% of the top 100 European automotive component suppliers and 40% of the top 100 world automotive component suppliers).

***Motorization (vehicles per capita)**:* 0.42
***Status of mass transit**:* Advanced
***Status of local auto industry**:* Supportive

Government incentives to encourage purchase/use of non*-emission *vehicles
N/A

Best Opportunities for Electric Vehicles, Parts, and Systems
CEZ Group, a Czech energy company, has earmarked CZK 500 million (USD 25 million) to buy electric vehicles for non-profit organizations and to build the needed infrastructure, i.e. battery recharging points (www.cez.cz/en/cez-group/media/press-releases/2496.html). In order to promote electric cars in the country, the company has announced plans to buy dozens of electric cars by 2012 (www.futuremotion.cz). In October 2009, CEZ signed the Standardization of Plug-In Vehicle Charging Infrastructure. CEZ has also purchased a sample charging point from American Coulomb Technologies (www.coulombtech.com). In 2010, CEZ opened a tender for the first four charging points for the city of Prague. The German company Rittal (www.rittal.cz) won the tender, in

which five companies participated. The next tenders for more than 100 charging points throughout the country are expected soon.

While CEZ seems to be making the most progress, it was the German company E-ON (www.eon.cz) that unveiled the first professional charging station for battery-driven cars in the Czech Republic. The delivery of the charging station was ensured by Molaris (www.molaris.cz) in cooperation with the ZPA Smart Energy/El Sewedy Electrometer Company. Refuelling at this station will be free of charge (www.eon.cz/en/media/pr/112.shtml). E-ON seems to favor Compressed Natural Gas (CNG) at present.

Prazska Energetika (www.pre.cz) participates in eMobility development in the Czech Republic. For example, Prazska Energetika sponsored the Prague Electric Car Exhibition in May 2010 (www.energetickyporadce.cz).

Trams and Trolley Buses, Hybrid and Electric Buses

- Proton Motor and Skoda Electric/Czech Republic introduced the world's first public service bus that uses triple hybrid system fuel cells in Prague in August 2009 (www.proton-motor.de/)
- SOR Libchavy, a bus manufacturer, introduced a prototype of an electric bus and an articulated hybrid bus using the Allison company system in May 2010. Besides these two prototypes, SOR Libchavy also offers a wide range of buses powered by natural gas (www.sor.cz/site/buses-powered-by-gas).
- Irisbus Iveco will produce its hybrid bus line, CIELIS, in the city of Vysoke Myto. They will be available by the end of 2010.
- Trams and trolley buses can be found in almost every Czech city. Major opportunities exist for part suppliers to local manufacturers.

Czech tram manufacturers:

Company	Web	# of Trams Produced
PRAGOIMEX, Krnovská Repair & Engineering, VHF	www.pragoimex.cz	192 (2002-2009)
Skoda Holding / Pars nova	www.skoda.cz	170 (1997-2009)
Inekon Group	www.inekon.cz	21 (2002-2009)

Czech trolley-bus manufacturers:

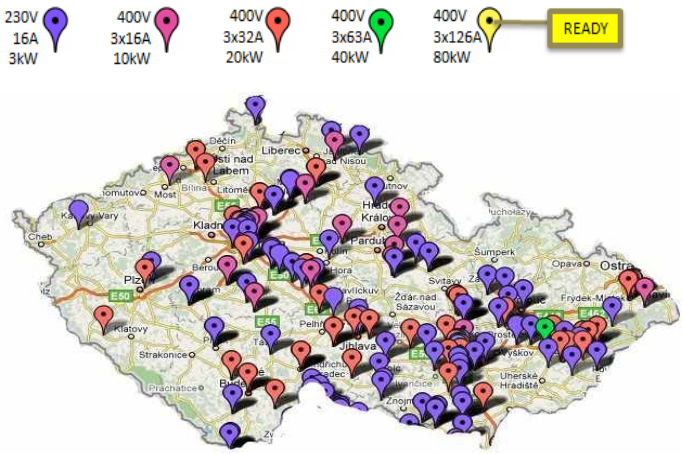
Company	Web	# of Trolley Busses Produced
Skoda Electric	www.skoda.cz	330 (2003-2009)
Solaris (plant in Ostrava)	www.solarisbus.pl	322 (2001-2009)
SOR Libchavy	www.sor.cz	Prototypes

Electric Bikes, Electric Cars, Electric Trucks

- Ceska Posta (Czech Post, www.cpost.cz/en/), a state mail delivery enterprise with more than 30,000 employees, has tested electric bikes for mail delivery. More than 400 electric bikes are to be purchased through a public tender by the end of 2010. The expected price for each electric bike is to be between USD 1,000 and USD 1,500.

- The company EVC Group (*www.evcgroup.cz*) created an electric version of the Skoda Roomster and the Skoda Superb in June 2010. The company is also importing electric vehicles produced by other manufacturers.
- The first six electric trucks of the American company Smith Electric Vehicles, with cabs and chassis built by the Czech brand AVIA (www.avia.cz), were introduced in the United States in July 2009. Avia Ashok Leyland has collaborated for almost five years with the British Tanfield Group. Their electric trucks are supplied to Great Britain, Ireland, France and the Netherlands, which are important export markets for AVIA.

Network of Non-Professional Charging Points: www.elektromobily.org/wiki/PluginMap.eu



Analysis and Conclusions

The Czech Republic is not supporting alternative vehicles with government incentives, and such incentives are currently not under consideration. This is a clear message from government authorities to all alternative propulsion developers. Nevertheless, Czechs tend to purchase more electric cars than Germans and Japanese, according to a study made by Volkswagen / Skoda Auto in 2010 (www.autofox.cz/index.php?cat=40).

Private businesses, universities and professional associations have taken the lead in the development of alternative propulsion. There has been a significant promotion of electric cars by the major regional power companies CEZ, E-ON and Prazska Energetika, and 20 small- and medium-size companies formed a group to promote eMobility in June 2010 (technologies for electric vehicles, charging points and related services). A list of its founding members can be found at www.asep.cz.

***On a scale of 1 to 4 how would you rate your country*: 3**
1 – Little to no probability of success for U.S. Exporters
2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

ElektroMobily
All about electric vehicles in the Czech Republic:
www.elektromobily.org

Association of Electromobility
www.asep.cz

Obcanske Sdruzeni Elektromobily
A non-governmental, non-profit organization for electric vehicle promotion
www.elektromobily-os.cz

Portál ELECTRIC MOTION
www.electricmotion.cz

Web magazine HYBRID.CZ
www.hybrid.cz

Web ELECTROAUTO
www.electroauto.cz/

Projekt SUPERBEL
All about electric Skoda Superb modification
www.superbel.cz

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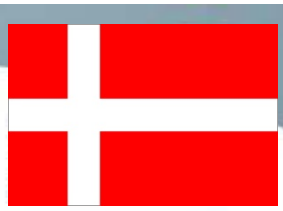

Denmark

Country:	Denmark
Capital:	Copenhagen
Size:	42,434 (sq km land)
Population:	5,515,575 (July 2010 est.)
GDP per capita:	USD 36,200 (2009 est.)
Population Concentration:	87% Urban (2008), Growth: 0.5% (2005-2010 est.)
Commuter Needs:	In 2008, the total number of commuters was 2,857,565 commuters: 900,641 people commuted up to 5 km; 516,490 between 5-10 km; and 534,814 commuted between 10 and 20 km.

Energy Consumption

Dependence on foreign oil:	0.0%
Net import:	130,600 bbl/day (2008),
Consumption:	189,000 bbl/day (2008)

Status of electrical generation and transmission

In 2007, the country generated 36.9 billion kWh of electricity and consumed 35.8 billion kWh. Electrical generation capacity was 12.6 million kW.

Amount of alternative energy produced in country

Alternative Energy produced in TWh/year includes the following: Wind-6.9, Biogas-1.09, Biodisel-1.03, Geothermal-.24, Solar-.14 Hydropower-.025 (2008). Total 2050 potential in TWh/y includes: Wind-55.0, Bio-6.6, PV-1.3 and Wave/Tide-2.2. Total future electric demand by 2050 is expected to be around 51.1 TWh/y and total electric renewable potential by 2050 is expected to be 65 TWh/y.

Concern with environmental issues

Current environment concerns in Denmark include air pollution, mostly from vehicle and power plant emissions, and nitrogen and phosphorus pollution of the North Sea.

Transportation Overview

Motorization (vehicles per capita): 0.446

Status of mass transit

Denmark has an efficient mass transit system consisting of airports, roadways, rail, ferries and bike paths.

Status of local auto industry

Denmark does not have its own car manufacturer, but the local auto industry would be a facilitator because of numerous government incentives.

Government incentives to encourage purchase/use of no-emission vehicles

Government support for EVs is strong, but many logistical problems regarding recharging stations have to be resolved. There has been a recent push by Dong Energy and Project Better Place to set up an extensive network of recharging and battery changing stations as well as connect the country's renewable energy sources to a smart grid, allowing their use of excess renewable energy at night to recharge EVs. These two solutions are at the beginning stages, but seem to be future resolutions for the logistical problems of EVs.

Analysis and Conclusions

EV technology is an exciting and growing industry in Denmark. The advancement of EVs is important for the Danish renewable energy sector. In 2009, 112,452 cars were imported into the country, 41 of those vehicles being EVs imported by THINK (Norway) and Tesla Motors (USA). On July 1, 2010, Tesla Motors opened a flagship showroom in central Copenhagen to underline its confidence in this new market. Also, the recent extension of the tax exemption until 2015 indicates both the strong government support for this technology and an attractive Danish market. After the extension expires, the government plans a long-term taxation model that promotes EV technology. These substantial tax incentives will encourage the growth of this industry as well as help the local government meet its goal of being among the top 3 energy efficient countries in the world. In addition, the Danish Transport and Energy Ministry has commented that it would like to solve the logistical problems of EVs and hopes to encourage an infrastructure supporting this industry by helping create approximately half a million charging stations throughout Denmark. With government support as well as the agreement with Project Better Place and Dong Energy, the vision of EVs is becoming more of a reality. Denmark is a small country with a small population meaning the number of EVs sold will not be huge, however, it will be a great showcase to the world, displaying the potential and car ability of EV technology.

***On a scale of 1 to 4 how would you rate your country*: 3-4**
1 – Little to no probability of success for U.S. Exporters
2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

DEA - Danish Energy Agency
Ministry for Climate and Energy
www.ens.dk
ens@ens.dk

The Danish Energy Regulator
www.energitilsynet.dk

Reports on Europe
http://ec.europa.eu/energy/electricity/benchmarking/index_en.htm

Further fact sheets on Denmark and other Member States can be found on:
http://ec.europa.eu/energy/energy_policy/facts_en.htm

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Finland

Country:	Finland
Capital:	Helsinki
Size:	338,144 (sq km land)
Population:	5.3 million
GDP per capita:	USD 44,756
Population Concentration:	63% Urban (2008). About 1.25 million people live in the Helsinki metropolitan area.
Commuter Needs:	Finland, with a population of 5.3 million, had a total of about 2.8 million passenger cars in 2009. The country has a very effective public transportation system. Cities and towns have been designed to support public transportation and walking.

Energy Consumption

Dependence on foreign oil:	100%
Net import:	148,600 bbl/day (2008 est.)

Status of electrical generation and transmission

There are about 120 companies engaged in electricity generation operating approximately 550 power plants. Major players are Fortum (www.fortum.com), which accounts for 40%, and Pohjolan Voima (www.pohjolanvoima.fi/en/), which produces for one fifth of Finland's electricity generation. In addition, electricity retailers and energy-intensive industry are significant electricity generators.

Fingrid Oyj, established in 1997, is the national grid operator in Finland. The company is responsible for ensuring the technical reliability of the electricity transmission system and sells services to all grid users. Fingrid is responsible for planning and supervising the operation of the main electricity transmission grid and national power balance management (see www.fingrid.fi).

Amount of alternative energy produced in country

Finland is one of the world's leading users of renewable energy, especially bio energy. As the world's northern most industrialized nation, Finland's energy consumption per capita is high. Because of its energy-intensive industry, cold climate, and long distance commutes Finland's energy needs are high. Finland does not have indigenous fossil fuels, such as coal, oil or natural gas, but it does have bio fuels, rich reserves of peat, and extensive wood resources.

At present, Finland produces about 30% of energy used. Finland's own energy production is based on wood fuels, wind and hydro-power, peat and a small amount of other energy sources, such as geothermal. Since the renewable energy production is mainly domestic, the government of Finland has estimated that it brings Finland's rate of energy self-sufficiency close to 40%.

Concern with environmental issues

The Finnish environmental administration places importance on international cooperation to contribute to solving global and regional environmental problems. Finland

is also engaged in cooperation aimed at improving the state of the environment in neighboring areas (and to promoting sustainable development in developing countries.)

Protecting the Baltic Sea is one of the most important goals of Finland's involvement in regional cooperation. Most of the projects in the framework of Finland's cooperation with neighboring countries have supported this goal.

Nature in the northern hemisphere is vulnerable and sensitive to pollution. Cooperation for the protection of the Arctic environment is also one of Finland's priorities, as well as the wider framework for cooperation in the northern region; the Northern Dimension Action Program of the European Union.

Transportation Overview

Motorization: 0.96; 0.61 for private use cars

Status of mass transit

Finland has a reliable, well functioning public transportation system throughout the whole country.

Status of local auto industry

The Finnish company Valmet Automotive is a well established service provider for the automotive industry and a leader in the field of electric vehicles. The company is an engineering and manufacturing partner for electric cars THINK City and the Garia Golf Car, as well as the premium plug-in hybrid electric vehicle Fisker Karma. In 40 years, over 1 million high-quality and premium cars have been produced by Valmet Automotive in Uusikaupunki, western Finland.

On June 7, 2010, the city of Espoo, Valmet Automotive, Fortum and Nokia announced the "Eco Urban Living Initiative". This initiative for electric cars will drive technology development and create an eco-conscious living environment in the city of Espoo, in close proximity to Helsinki. For Valmet Automotive this is a very important step to ensure that the company stays at the front line of electric vehicle development.

A Finnish company, Elcat Electric Vehicles, established in 1985, has been researching electric vehicles since the beginning of the 1970's. Its primary product is the Elcat Cityvan 202, a successful example of an environmentally friendly, dependable and economical commercial vehicle. So far, the company has manufactured approximately 200 ELCAT Cityvans, which are all circulating in ordinary traffic all over the world and have already covered over 3 million kilometers in daily commercial use.

Government incentives to encourage purchase/use of no-emission vehicles

Under the Finance Ministry's budget plan, published in July 2010, fuel taxes will be changed to favor less-polluting options. If the proposal is approved, taxes on petrol-powered cars will remain about the same, while the use of diesel will become slightly

cheaper. Taxes on vehicles running on electricity, ethanol or other bio fuels would be cut significantly.

Companies active in the electric automobile area

Finnish Electric Vehicle Technologies Ltd. - www.fevt.com

- Valmet Automotive - www.valmet-automotive.com/automotive/cms.nsf
- Elcat - www.elcat.fi/eng/index.php
- European Batteries Oy - www.europeanbatteries.com
- Electric Vehicles Finland Oy - www.evf-electric.fi

Analysis and Conclusions

Finland, with a population of 5.3 million, had a total of about 2.8 million passenger cars in 2009. That year, 90,574 new passenger cars were registered. According to statistics from 2008, 6,539 cars were directly imported from the United States. However, the total number of U.S. passenger cars in the market is considerably higher because of U.S. car manufacturers' imports from the European Union (EU) area. Vehicles equipped with catalytic converters and other low emission vehicles made up 67% of all automobiles and 72% of passenger cars.

For Finns, the most important factors for choosing and buying a new car are driving characteristics, appearance, durability, driving comfort, standard of equipment, and collision safety. Because of weather conditions, the best sales prospects for automotive parts and accessories are devices that improve traffic safety. U.S.-made products, such as steering systems, brake systems and parts, transmission systems, chassis and body parts have some sales potential in Finland. Also alloy wheels, accessories, chemicals and lubricants have market potential in Finland.

Traditional gasoline-fuel cars still make up the lion's share of the market, although a change in taxation about two years ago boosted the popularity of diesel automobiles. There are just over 2,000 hybrid vehicles, which mostly use petrol, on Finnish roads. Less than 100 new ones are registered monthly. The number of cars operating on natural gas, electricity or ethanol is even lower.

Local auto dealers say that in the past years, few customers asked about environmental factors. The automotive sector in Finland expects that sales of low-emission cars will increase in 2012, when a proposed change in tax law would favor vehicles that run on electricity, ethanol and other non-fossil fuels.

Environmental concerns have become a major competitive factor. The following product lines appear to offer opportunities for U.S. companies in Finland's electric vehicles market:

- Lightweight composite materials
- Battery management systems, industrial battery production
- Battery chemistry knowledge, services and licensing
- Special machinery
- Electric motors

***On a scale of 1 to 4 how would you rate your country*: 3**
1 – Little to no probability of success for U.S. Exporters
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3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

Finnish Energy Industries
www.energia.fi

Energy and Environment Finland
www.energy-environment.fi

The Association of Automobile Importers
www.autotuojat.fi/eng

The Finnish Information Center of the Automobile Sector (AuT)
www.autoalantiedotuskeskus.fi

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France

Country:	France
Capital:	Paris
Size:	640,053 (sq km land)
Population:	64,057,792
GDP per capita:	USD 32,800 (2009 est.)
Population Concentration:	77% Urban (2008), estimated growth 0.8% (2005-2010 est.)
Commuter Needs:	In large urban areas, public transportation prevails over individual transportation; mass transportation infra-structures are readily available and affordable compared to high fuel costs. The average commute time is 60 minutes by car and 30 minutes by mass transportation for urban residents and 60 minutes by car and 20 minutes by mass transportation for rural residents. The average number of miles driven per year per person in France is 8,080.

Energy Consumption

Dependence on foreign oil:	90.2%
Net Import:	1,791,900 bbl/day (2008 est.)
Consumption:	1,986,000 bbl/day (2008 est.)

Status of electrical generation and transmission

In 2007, the country generated 535.7 billion kWh of electricity and consumed 447.2 billion kWh. Electrical generation capacity for the country was 116.3 million kW.

Amount of alternative energy produced in country

France is one of the most dynamic and largest renewable energy markets in Europe. In 2008, the French renewable energy market was valued at EUR 12.280 billion. Provided the objectives for 2020 are met, the French renewable energy market is estimated to reach EUR 25.5 billion, EUR 14.2 billion coming from equipment and installation services and EUR 11.3 billion from the sale of energy.

Wind Power: France is the fourth largest European market for wind power. The goal for 2012 is 13,500 MW and by 2010, 25,000 MW installed and an additional annual production of 5 MTOE (Million Tons of Oil Equivalent) derived from wind power.

Solar Photovoltaic: has a total capacity of 33MW. France plans to install 5 million square meters of photovoltaic panels with a total capacity of 5 Gigawatts (GW) by 2020.

Solar Thermal: France is one of the most dynamic solar thermal markets in Europe. It remains one of the most promising sectors and is considered the fourth largest market in Europe, with 313,000 square meters of collectors installed in 2008 equivalent to 219 MWth (Megawatts thermal) according to Enerplan.

Geothermal: Capacity is expected to reach 36.5 MW in the near term. In early 2008, two geothermal heating projects were launched, and another 10 projects will come on line in the mid to long-term.

Heat Pumps: 21,725 units were sold in 2008, with a total of 124,181 installed (estimated). The aerothermal heat pumps segment has been curbed since it was disqualified from the tax credit scheme in 2009.

Biomass**:** 9,609 MTOE produced. France's goal is to reach 23% renewable energy by 2020. Consequently, France will need to produce an additional 11 MTOE of renewable energy from biomass annually by 2020.

Biofuels: In 2007, France was the second largest market for biofuels in Europe, with a consumption of 1,214,200 tons of biodiesel and 272,095 tons of bio-ethanol. That year, it had seven production plants operating. France has set out an ambitious biofuel plan for 2015 with an incorporation rate of 10%. To do this, France is offering generous tax exemptions. It is also planning to invest EUR 1.2 billion and build 21 new plants (6 bio-ethanol and 15 biodiesel operations) over the next 8 years.

Concern with environmental issues

When asked, around 38% of French people responded that they feel directly concerned about the state of the environment. 97% of this group use energy-saving light bulbs, sort household wastes, prefer taking a shower over having a bath, buy local products to limit truck transportation of goods, walk or cycle to go to work when possible and think "green" when renovating their houses (solar panels, wood boilers, etc.). As far as electric vehicles are concerned, the French like the idea, but when polled state that the prices are still prohibitive.

Transportation Overview

Motorization: 0.50

Status of mass transit

Mass transit is very advanced. Industry leaders are: RATP (Parisian Mass Transit Authority) and SNCF (national railways).

Status of local automotive industry

France is the fourth largest European automotive market after Germany, the U.K. and Italy, with 2,050,283 new registered passenger vehicles, and 5,393,000 secondhand passenger vehicles in 2008. 60% of registered light vehicles in France are powered by diesel engines and 56% are French brands (Renault/PSA).

In regard to electric vehicles, the leading French car manufacturers, Renault and PSA Peugeot Citroën, have adopted different strategies. Whereas Renault is investing in 100% electric vehicles for the future, Peugeot Citroën is pursuing multiple partnerships with other car manufacturers for hybrid vehicles and other alternative vehicles.

Apart from suppliers specializing in thermal (diesel and fuel) engines, mechanical parts, and equipment for these engines, the same suppliers will be involved in the manufacture of electric vehicles that presently already supply to the car industry. French automotive

parts suppliers' sales totaled approximately USD 34.2 billion in 2008. Of this, OEM auto parts sales reached approximately USD 28.2 billion, OES (Original Equipment Suppliers) + IAM (Independent Aftermarket) auto parts sales reached USD 6 billion.
The automotive parts market in France is dominated by big multinational firms, many of them American with French or European operations. Large U.S. suppliers are already present in France. Among the 20 top suppliers, eight are American (Delphi, Visteon, Johnson Controls, Lear, TRW Automotive, Dana, Arvin Meritor, Federal Mogul). There is little or no room for mid-sized exporters in this very closed environment, where competitive requirements, transportation costs, etc., make it very difficult for firms not physically established here to sell their products to OEM and OES. The U.S. industry generally supplies the French market from its European subsidiaries or via local joint ventures.

Government incentives to encourage purchase/use of no-emission vehicles
France passed a law that promotes the purchase of low-emission cars through bonuses, while punishing drivers of cars with high emissions. The system, called the "bonus-malus," Latin for "good-bad," was introduced in 2008 as an attempt by the French government to tighten its regulation of $C0_2$ emissions. In 2010, a person purchasing a car with a $C0_2$ emission rate equal to or lower than 60 $C0_2$/km can receive a bonus of EUR 5,000, while a car emitting more than 155 $C0_2$/km will get a penalty depending on the rate of the emissions. Cars with a rate of 125-155 $C0_2$/km will receive neither a penalty nor a bonus. The exact penalty and bonus amount depends on the year one buys. This incentive will remain in place until 2012.

Analysis and Conclusions

The French government supports development of electric vehicles and alternative vehicle propulsion initiatives in general. 50,000 vehicles have been ordered for 2011: 30,000 for companies, 14,000 for regional organizations, and 10,000 for the French state.

The development of electric vehicles on roads by 2020 involves the participation of many actors:

- Infrastructure developers for charging stations
- Automotive Tier One suppliers for batteries
- Electricity providers
- Manufacturers of electric vehicles
- The Ministry of the Environment and regions in France

Presently, the majority of electric vehicles are owned by public companies or territorial organizations. La Poste (The French Mail Company) will test new electric vehicles in order to replace its 50,000 light and light-duty vehicles. A French law dating from 1996 (loi LAURE: La Loi de l'Air et l'Utilisation Rationnelle des Energies) requires certain public organizations to renew 20% of their vehicle fleets with "green" vehicles.

Various projects are underway to test electrical vehicles and charging stations in large cities in France. A couple of examples are:

The SAVE project:

The French Environmental and Energy Management Agency, ADEME, has confirmed that it will support the so-called "*SAVE*" project with EUR 6.5 million. The main project partners, the Renault-Nissan Alliance and EDF, supported by the Ile de France region and the Yvelines General Council, are behind this experiment in collaboration with Schneider Electric, Better Place and a variety of other partners. Approximately 100 Renault and Nissan electric vehicles will be tested by individual customers and professionals. Users will be provided with charging stations at home and at work, as well as in car parks and on public roads. The Renault-Nissan Alliance will supply the electric vehicles and study customer behavior and associated services, particularly those linked to in-vehicle and external communications. EDF will help set up the infrastructure and analyze user behavior towards charging and testing business models. Schneider Electric will help build the charging infrastructure and the related energy management mechanisms. Better Place will install and manage the battery switch stations and test the associated commercial offerings.

The Power Line Communication System (PLC):
EDF and Renault-Nissan will work together to develop a communication tool system to allow exchange of secured data between charging stations and electric vehicles. This system, called Power Line Communication, will exchange such information as identification of the vehicle, invoice transfer or the location of the nearest charging station in accordance with the remaining range of the battery.

The Kleber Project in Strasbourg:
Local administrative entities will test 100 Prius Toyotas with new charging stations put in place around the city. The Prius will be equipped with li-ion batteries, which will drive in electric mode for 20 kms, then switch into hybrid mode. Batteries will be recharged in 90 minutes. The Prius uses 2.6 liters/100 kms (62 miles) and emits 59g/km of $C0_2$. DBT, Schneider Electric and Technolia will provide 150 charging stations that will be installed in parking garages, company parking lots, public car parks and individual houses. EDF will be in charge of enabling inter-station communication thanks to its integrated communication system. Each station will be connected to a central computer system.

Electric Vehicles Supply
EV supply in France already exists, with different types of models from the main car manufacturers located in France: Renault with Kangoo ZE, Fluence ZE, Twizy and Zoe ZE, Eco & Mobility (Simply City); Fiat with E500, Newteon, Fiorino, Palio and Doblo); BMW with ActiveE, Mini E, Bolloré/Pininfarina (BO Vluecar); PSA with C- Zero, C1 Ev'ie, Ion and Berlingo); FORD (Focus BEV); Heuliez (Mia); Hyndai (i10); Nissan (Leaf); Smart (ED); Volkswagen (Golf Blue e-motion). These vehicles have a battery autonomy that runs between 100 and 250 Kms (from 62 to 155 miles) at speeds up to 190 Km/h (118 miles/hour).

Charging Stations
European automobile manufacturers have defined joint specifications to connect electrically chargeable vehicles to the electricity grid in a safe and user-friendly way. The joint specifications cover, as a first step, the charging of passenger cars and light

commercial vehicles, both at home and at public charging spots. During a transition period, customers will be able to use the different plugs already on the market. A uniform solution will become standard for all new vehicle types by 2017. The auto industry expects to make recommendations for quick charging and heavy-duty vehicles shortly. In France, suppliers of charging stations involved in the main ongoing projects are: DBT, TECHNOLIA and WALTHER.

Twelve major cities in France have agreed to install charging stations for the public by 2012: Bordeaux, Grenoble, Rennes, Nice, Angoulême, Aix-en-Provence, Orléans, Paris, Rouen, Strasbourg, le Havre and le Grand Nancy.

Batteries, Parts and Systems

The main types of batteries developed are: - Lead - Lithium Ion - Polymer Lithium- Zebra (sodium chloride) - Zinc Nickel- Nickel Cadmium- Nickel Metal Hydride. Main suppliers of batteries in France are: E4V – Batscap – SCPS Group – FAAM – Trojan – MES DEA – Thunder Sky - Saft Batterie.

R&D projects are ongoing between car manufacturers and suppliers to improve battery efficiency. Standards will have to be established regarding charging plugs, stations and computer system integration to avoid incompatibility among European countries. The EU is working on regulations regarding electric vehicles and charging infrastructures:

- In 2010, the EU will specify safety regulations for charging stations.
- In 2011, the EU will announce common charging standards among countries.
- In 2012, the EU will establish regulations regarding shock-resistance of electrical vehicles.

Battery Technologies:

	Lead	**Nickel Cadmium**	**Nickel Metal Hydride**	**Li-ion**	**Polymer Metal Lithium**
Energy Density (Wh/jkg)	30-50	45-80	60-120	110-160	100-130
Number of Life cycles	400 to 1200	2000	1500	500 to 1000	n/a
Temperature	-68 to 140 F°	-104 to 140 F°	-68 to 140 F°	-68 to 140 F°	0 to 140 F°
Examples of applications	E bicycle, cart	Peugeot 106, Partner, Kangoo (light utility vehicles)	Hybrid vehicles (Prius, Honda Civic, ADS scooter)	Cell phones, laptops	Bolloré BlueCar, Cleanova

France will be a very challenging market for U.S. suppliers. However, opportunities might still exist for U.S. suppliers of parts (plugs), charging stations and integrated communication systems. Experiments are underway in the use of chemicals for electric batteries; opportunities also exist there for U.S. laboratories and scientific centers.

On a scale of 1 to 4 how would you rate your country: 2
1 – Little to no probability of success for U.S. Exporters
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3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

European Automotive Manufacturers Association
www.acea.be

Avenir du Véhicule Electronique Association:
All about electric vehicles in France
www.avem.fr

ADEME - French Environment and Energy Management Agency
www2.ademe.fr

CEA "Commissariat a l'Energie atomique et aux energies alternatives" Nuclear and Alternative Energies Comittee"
www.cea.fr/technologies

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Germany

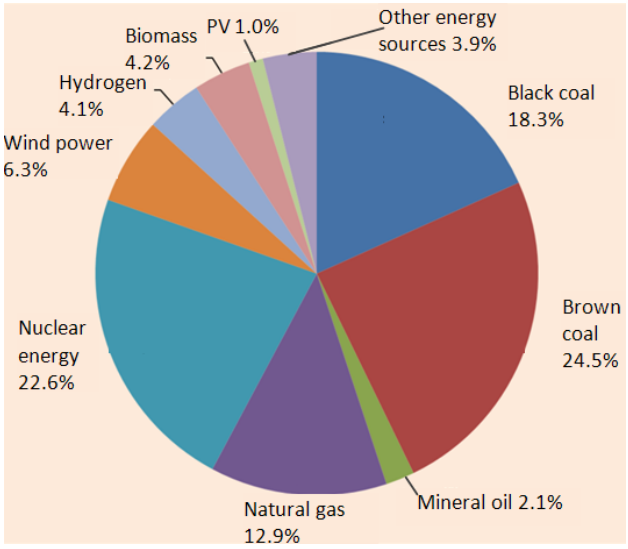
Country:	Germany
Capital:	Berlin
Size:	357,022 (sq km land)
Population:	82.3 million
GDP per capita:	USD 34,212
Population Concentration:	74% Urban (2009), About 3.45 million people live in Berlin metropolitan area.
Commuter Needs:	Germany had a total of about 558 passenger cars per 1,000 inhabitants in 2008. Germany's public transportation system is highly developed, featuring the sixth-largest railway network worldwide and local railways in almost all cities. Average commuters travel 30-40 kilometers per day.

Energy Consumption

Dependence on foreign oil:	97%
Net import:	2.777 million bbl/day (2008 est.)
Gross Energy Consumption:	2.569 million bbl/day (2008 est.)

Status of electrical generation and transmission

There are over 900 electricity providers in Germany. The four largest companies, RWE, E.On, Vattenfall and EnBW have a total market share between 80% and 90%. The other providers operate mostly on a small-scale local or regional level. In 2009, Germany produced 596.8 TWh, based on a wide mix of energy sources such as fossil fuels, natural gas, carbon, nuclear energy and renewable energies. Most of Germany's electricity is produced from fossil and nuclear fuels. Renewable energies are being promoted strongly and have grown considerably over the past several years.



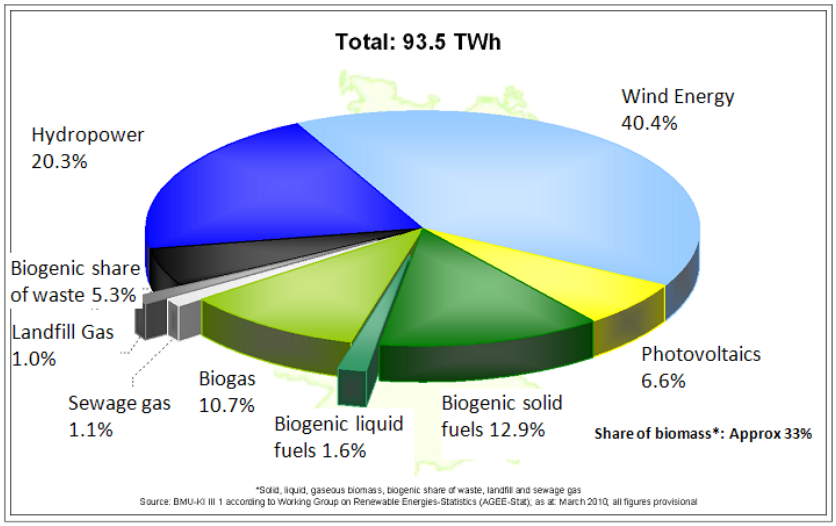
Germany relies heavily on imports. Currently, 63% of all energy sources are imported, oil even reaching a 97% import dependency. About 24,000 people are employed in the energy sector.

Amount of alternative energy produced in country

Germany is the EU leader in renewable energy utilization, covering 9.5% of its total energy consumption through renewable energies. The federal government is promoting renewable energies through numerous incentive schemes. The incentives are targeted at the residential sector as well as industry, making Germany a leader in renewable technology innovation.

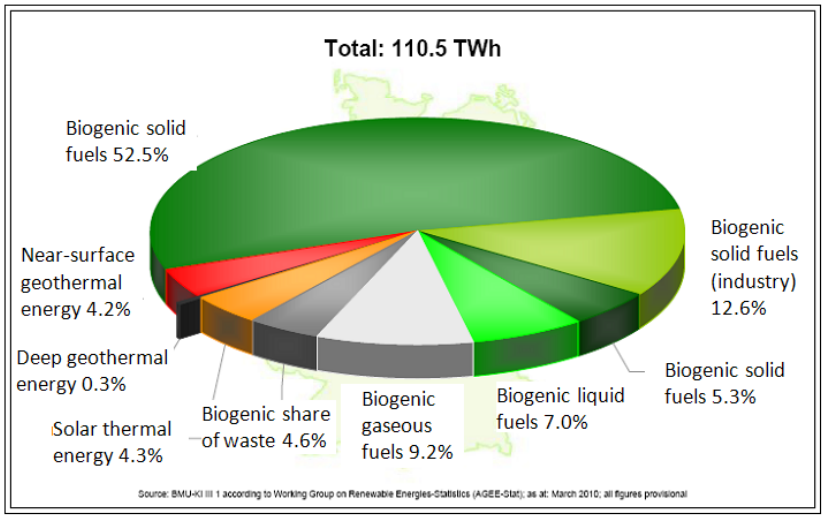
Wind: Germany has taken a pioneering role in the development of this technology and is currently providing around 50% of the wind capacity in the European Union.

Geothermal power: There are around 150 exploratory fields for geothermal electricity and heat in Germany. Around 350,000 geothermal heat pumps were sold in 2008. An annual increase between 20% and 30% in installed capacity is expected.



Hydropower: In 2008, around 20.9 TWh of electricity was generated by 7,500 hydropower plants in Germany. This means that hydropower provided approximately 13% of all renewable energy in Germany.

Biomass: Nearly 7% of the total final energy consumption in 2008 was supplied by biomass. Electricity and heat were generated from 210 wood-fuelled power plants, almost 4,100 biogas plants and about 9 million residential biomass heating systems. The most important contributor was solid biomass, which provided around 5.4% of the total energy consumption, or 74% of all renewable energies, in 2008.



Solar: Germany is Europe's largest photovoltaic and solar thermal market. Large subsidies in 2009 and 2010 gave solar energy an additional impetus. Solar thermal power supplied 4.3% of heat generated from renewable energy sources and photovoltaic power supplied 6.6% of all renewable electricity. Double-digit growth is expected in the coming years.

Nuclear: Nuclear power supplies around 11% of Germany's total energy consumption. In 2002, an effort was made to phase out the use of nuclear energy by 2022. The current

government coalition opposes this step and is discussing several alternatives, ranging from a general extension till 2030 to individualized operating times for each nuclear power plant.
Under current conditions, Germany will probably achieve the EU 2020 climate goal, covering 18% of its total energy usage from renewable energies. In 2008, there were approximately 280,000 jobs related to renewable energies. The industry had a total turnover of EUR 28.8 billion.

General concern with environmental issues
The German federal ministry for the Environment, Nature Conservation and Nuclear Safety has adopted a national renewable energy action plan, targeted at achieving an 18% share of the total energy consumption by renewable energies. Broader energy plans are to be issued later this year. Germany also participates in international cooperation to contribute to solving global and regional environmental problems. The government is supported by the state-level ministries and a number of councils, for example the "Scientific Council for Global Environmental Change" or the "Federal Agency for the Environment."

Many local and regional environmental initiatives offer further support and demand more environment-friendly legislation.

Ensuring continuous energy supply security is one of Germany's most important environmental goals. Further, Germany is making an effort to cut $C0_2$ emissions in all industries as well as in residential households.

Germany plays a key role in international cooperation and has signed more than 75 legally binding international energy-related treaties.

Transportation Overview

Motorization: 0.558

Status of mass transit
Germany has a well-functioning public transportation system throughout the entire country. Trains are the most common public transportation method for long distance travel, followed by domestic flights and buses. Local transportation is covered by tram, bus and metro services.

Status of local auto industry
If Germany is known for one thing, it's the automotive industry. It is Germany's largest industry by turnover, and accounts for more than a third of total domestic R&D spending. German car manufacturers and suppliers are world leaders in innovation, with more than 3,500 registered patents every year. With 48 OEM components and assembly plants, over 30 of the best performing industry-related innovative clusters, 3,600 tier 1, 2, and 3 suppliers, and Europe's most experienced workforce, Germany is the primary location for technology-driven companies active in all stages of the value chain.

Manufacturers and suppliers earned over EUR 288 billion in annual combined revenues in 2008. 834,000 people work directly in the automotive industry – of which around 40%

are employed at the supplier level. In 2008, industry R&D expenditures approached the EUR 18.9 billion mark - more than a third of overall German industry R&D spending.
Hybrids are slowly becoming more popular in Germany. By the end of 2010, every German car manufacturer will have at least one vehicle in production. They are usually in the middle and higher price segments, as the additional costs for batteries are proportionately lower when a customer has already paid a high price.

So far, electric cars have remained case studies. However, the German car industry is adapting to the new increased demand. Two case studies with fully electric corporate fleets by Vattenfall and E.On have been successful. "E-mobility Berlin", a joint initiative by Daimler and RWE has shown that electric vehicles can perform well in a city setting. Daimler contributed 100 vehicles, while RWE installed 500 charging stations around the capital. This initiative will drive technology development and raise awareness in Germany's capital.

Government incentives to encourage purchase/use of no-emission vehicles
Holders of no-emission or low-emission vehicles do not receive special benefits. There are discussions on how to promote electric vehicles and proposals have been made to the government. So far, the only advantage which is enjoyed by e-car owners is their ranking in the lowest emissions-tax category.

Companies active in the electric automobile area
All major German car manufacturers are active in the electric automobile sector. The following five companies cover e-mobility exclusively:

- Mennekes Elektrotechnik GmbH & Co. KG
- SEGWAY Vertriebszentrale Deutschland GmbH URBAN MOBILITY Germany Auth. SEGWAY Distributor GmbH
- Klaric GmbH & Co. KG
- Smiles AG
- Generalimporteur für Deutschland ISEKI-Maschinen GmbH

Analysis and Conclusions

There were almost 46 million cars registered in Germany in 2008, a car for every two inhabitants. In 2009, 3.81 million new cars were registered. The market is dominated by German cars, followed by Japanese and French. American cars are represented by the GM subsidiary Opel and Ford.

The most important factors when choosing and buying a car for Germans are driving characteristics, driving comfort, standard of equipment, appearance, durability, and collision safety.

Traditional gasoline-fuelled cars still make up the lion's share of the market; however a study conducted by Continental AG shows that many Germans would be willing to buy a hybrid or electric vehicle if the additional cost were lower. 8,374 new hybrid cars were

registered in Germany in 2009. Electric cars are lagging behind, with only 160 registrations.

Best prospects can be expected for the development and introduction of electronic systems for vehicles using alternative/hybrid/electric fuel. This includes engine electronics, power-trains and other solutions that improve a car's fuel efficiency. The German market offers suppliers of advanced materials, such as light metals and composites or manufacturers of forged and pressed parts, great opportunities too. The upcoming hybrid and e-car wave requires that special attention be given to batteries. US manufacturers of battery management systems, battery chemistry, and new battery solutions can expect to find a market open to their products.

***On a scale of 1 to 4 how would you rate your country*: 4**
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3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

Ministry of Economics and Technology
www.bmwi.de

Association of the Car Manufacturing Industries
www.vda.de

Association of the Electric and Electronic Industries
www.vde.de

ADAC (Allgemeiner Deutscher Automobil-Club)
www.adac.de

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Greece

Country:	Greece
Capital:	Athens
Size:	131,957 sq km (roughly the size of Alabama)
Population:	10,749,943 (July 2010 est.)
GDP per capita:	USD 30,035
Population Concentration:	The population of Greece in 2008 was estimated at 11.3 million, with an estimated growth of 0.1% and urban population comprising more than 60%. Greece's largest cities: Athens, Thessaloniki, Patras and Iraklion.
Commuter Needs:	The distances that Greek commuters cover to work tend to be shorter in mileage compared to the distance commuters in the U.S. face. However, commuting is generally time-consuming. The lack of enforcement of certain internationally observed driving rules/principles leniency i.e. towards parking violators or towards those making deliveries round the clock, and frequent public transport strikes or obstruction by protestors, can make commuting rather difficult.

Energy Consumption

Dependence on foreign oil:	98%
Net import:	401,700 bbl/day *(est. 2008)*

Status of electrical generation and transmission

Greece is focusing on natural gas as an energy source and currently buys the bulk of its natural gas from Russia via Bulgaria. In early 2000, Greece also started importing Liquefied Natural Gas (LNG) from Algeria. Greece currently does not have any domestic gas production capability. Fourteen large power plant projects are expected to be developed in the next three years. Greece has committed to increase the use of renewable energy sources, including thermal power, from 8.4% in 2002 to 20.1% in 2010. The country's dependency on oil is 16.29% and overall consumption is 53.376 GWh in to 2008.

Amount of alternative energy produced in country

Greece's production of alternative energy includes hydro, wind, solar, geothermal, and biomass. Amounts produced in 1,000 TOE: hydro 285, wind 149, solar 174, geo-thermal 17, and biomass 970. (1 toe is equivalent to the energy created from burning approximately one metric ton of crude oil.) Greece has no nuclear power plants.

Concern with environmental issues

Greece ranks among the top five in the EU as far as for $C0_2$ emissions are concerned because the majority of the mainland's power plants are fired by coal lignite. (Power plants on the islands not connected to the national grid are fired by oil.) Waste

management is also a problem and a lot of waste continues to end up in illegal landfills, for which Greece has been repeatedly fined by the EU.

Transportation Overview

Motorization: 0.329

Status of mass transit

There are 3,890,000 passenger cars, 1,138,000 trucks (most light commercial vehicles), 28,100 taxis, 3,200 buses, 1,080,000 motorbikes and 5,000 military vehicles. The government of Greece plans to build/upgrade 2,500 kilometers of highway by 2014. There are 118,000 kilometers of paved highways.

The public transportation system

There are 2,500 modern and environmentally friendly buses operating in the Attiki and Thessaloniki regions. ILPAP, the Athens Electric Bus Company, has a fleet of 320 single trolley buses and 51 articulated buses. ISAP and Athens Metro comprise the three-line subway system, which connects the airport, the main railway station and the port of Piraeus to many parts of Athens. There are also around 500 modern privately owned but jointly operated intercity busses.

Status of local auto industry

Greece has no local auto production. So far, the Greek population appears to be indifferent about electric vehicles (EVs).

Government incentives to encourage purchase/use of no-emission vehicles

Incentives for EVs do exist, i.e. lower registration fees and exemption from the annual road tax, but so far EVs are not sought after by Greek consumers.

Greece has legislation that extends "lifetime" exemption from registration and the annual road tax to owners and buyers of electric vehicles and of hybrid technology vehicles. Additionally, hybrid and EVs, presumably, are exempt from inner city entry restrictions that apply to gas engine vehicles. However, these advantages have not sufficed to attract interest in Greece because of the high prices of EVs and their perceived limited specifications and performance characteristics.

There are no charging stations for EVs. Outside Athens, where people have driveways and garages on their properties, it would be easier to introduce EVs. However, Greek terrain is fairly mountainous, which reduces EV driving range.

The National Technical University of Athens (NTUA) in cooperation with MIT has developed a city electric car, and a number of U.S. and European car manufacturers expressed interest in collaborating with NTUA.

Companies active in the electric automobile area

Reva, Mitsubishi, Nissan, GM, Opel, and Smart are active in the Greek electric car market. Over the past five years a total of 58 electric vehicles have been sold in Greece.

Analysis and Conclusions

Industry sources believe that the high cost of the batteries is the main factor preventing fast acceptance of EVs in Greece. Another factor currently hindering immediate prospects is that in recent years, the price of pre-owned cars has been falling dramatically in Greece because of people being laid off and no longer able to afford the upkeep or service of their bank loans. This makes the prospects for breaking into the market an even greater challenge. The Hellenic Institute of Electric Vehicles (HEL.I.E.V) has called on the government to provide further incentives, but with a deficit close to 14%, the government has other priorities to address.

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Resources and Useful Contacts

The Hellenic Institute of Electric Vehicles (HEL.I.E.V.)
Hellenic Institute of Electric Vehicles (HEL.I.E.V.)
Tel: + 30-210-9210288
Website: www.heliev.gr

The Hellenic Institute of Electric Vehicles (HEL.I.E.V.) is an internationally recognized, scientific, non-profit organization promoting environmentally friendly and energy conscious mobility in Greece. HEL.I.E.V was founded in 1991 by 36 founding members primarily scientists, journalists and ecologists. HEL.I.E.V. members agree that vehicle electrification is the only way to save the environment from the catastrophic effects of the transportation sector - currently dominated by internal combustion engines. The Institute's membership is also open to legal entities working on the same principles for scientific, humanist and/or commercial objectives.

The majority of HEL.I.E.V.'s active members are academics, production engineers, and researchers. The Institute is a full and active member of the European Association of Electric and Hybrid Vehicles (AVERE) and - through this affiliation - is also a member of the World Association of Electric Vehicles (WEVA). The Automobile and Touring Club of Greece (ELPA) acts as sponsor of HEL.I.E.V and has nominated the Institute's General Secretary as a member of the Alternative Energies Commission of the Federation Internationale del Automobile (FIA).

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Hungary

Country:	Hungary
Capital:	Budapest
Size:	93,036 sq km
Population:	10.1 million
GDP per capita:	USD 12,411
Population Concentration:	64% urban, annual growth rate 0.3% (2005-2010)
Commuter needs:	Public transportation prevails over individual transportation in urban areas.

Energy Consumption

Dependence on foreign oil:	88.3%
Net Import:	152,000 bbl/day (2009)
Consumption:	172,100 bbl/day (2009)

Status of electrical generation and transmission

In 2009, the country generated 37.8 billion kWh of electricity and consumed 37.5 billion kWh. Electrical generation capacity for the country was 6.6 million kW.

Amount of alternative energy produced in country

In 2009, the country generated 2.66 million kW of nuclear energy and 0.8 billion kW of renewable energy.

Green Energy Overview

The Hungarian Renewable Energy Strategy forecasts sizeable growth, mainly in biomass, wind, solar and geothermal energy. The cost-effectiveness of renewable energy production is supported by competitive feed-in tariffs and investment subsidies. Hungary's subsidy plan for renewables is based on four pillars:

- Feed-in-tariff system: Guaranteed until 2020, the system was modified in 2008 in favor of smaller plants and those providing remote heating.
- EU Funds: The EU is set to provide EUR 22.4 billion (USD 30.7 billion) to Hungary, from 2007-13, to finance infrastructure upgrades as part of the New Hungary Development Plan. About USD 500 million is designated to support renewable energy-related investments in the framework of the Environment and Energy Operational Program.
- National Energy Program: The government subsidizes clean energy usage and energy efficiency for households that fulfill the requirements.
- Bio-fuels: In accordance with the EU directive, the Hungarian government set the objective of achieving a bio-fuel proportion of four% in the fuel market by 2010. Differentiated taxation is now in force, whereby fuels containing bio-components enjoy a more favorable tax situation. E85 fuel (bio-fuel, which contains about 85% bio-ethanol and 15% petrol) was introduced to the market in 2008: there are currently 65 filling stations in Hungary offering E85 fuel.

Concern with environmental issues

The EU "20-20-20" Goals include binding targets to raise the share of renewable energy to 20% by 2020. The government of Hungary has made long-term commitments to increase alternative energy use in the coming decades. In addition to environmental concerns, renewable energy also contributes to supply security by increasing the share of domestically produced energy and reducing dependence on fossil fuels. At present, Hungary relies on imports for almost 80% of the country's energy needs. In 2009, renewable energy accounted for 4.3% of the total electricity production and 5.1% of the total primary energy supply.

In 2008, the Hungarian government approved the Renewable Energy Strategy for 2007-2020. The strategy favors decentralized energy production, the co-generation of heat and power and the establishment of small power plants utilizing renewable sources locally.

Despite excellent natural resources and easy availability of raw materials, Hungary is well behind in its plans to become a major bio-ethanol producer. Plans drawn up five years ago forecast that the country would now be delivering up to a million tons of bio-ethanol, but total production still stands at 100,000-150,000 tons. Increasing crop prices combined with falling oil prices and the debate around the sustainability of bio-fuels have slowed development.

Transportation Overview

***Motorization*:** 0.25

Status of mass transit

Hungary's geographic position in Central Europe provides a strategic transportation and logistical hub for the Central-Eastern European region. Road, rail, aviation, and waterway networks fan out from Hungary into neighboring countries. The full length of the Hungarian road network amounts to close to 200,000 km; the length of highways in Hungary is close to 1,200 km. 15% of the roads in Hungary are state-owned, while 85% are owned and managed by local governments.

The density of the national road network corresponds to the European average but some aspects, such as the frequency of the highway network, are still lagging. The M0 ring provides transportation around Budapest and its total length is 70 km. The average Hungarian spends about 90-120 minutes commuting every day to and from work. About two-thirds use mass transportation in cities and only a third use passenger cars because of extremely high petrol prices. Hungary has some of the highest in Europe: petrol is EUR 1.2 per liter; parking fees are expensive, and there are limited parking facilities in urban areas. "Park and Ride" is popular in the capital but parking is limited at bus and metro terminals.

According to the "Transport Infrastructure Development in Hungary", the Ministry of National Economy identifies five specific priorities. Between 2007 and 2015, it aims to develop:

- Road and rail networks in order to meet EU standards;
- A network of logistics centers and modern, combined-transport terminals to increase the share of environment-friendly transportation solutions;
- Basic infrastructure of public ports on the Danube River;
- International airports with regional importance;
- Use of Intelligent Vehicle System (IVS) to increase the effectiveness of the transport of people and goods by applying radar, video and sensor functions.

Status of local auto industry

The European Green Cars Initiative (www.green-cars-initiative.eu) is one of the three Public Private Partnerships (PPP) of the European Economic Recovery Plan. This initiative includes research on internal combustion engines, bio-methane use, and logistics. However, the main focus is on alternative fuel options (SyntFuel, SunFuel, CNG, hydrogen) and the electrification of mobility and road transport. Beyond providing loans through the European Investment Bank, the PPP European Green Cars Initiative is making available over EUR 1 billion for R&D through joint funding programs of the European Commission, industry, and member states. Hungary has joined the pilot research program of the EU Green Car Initiative and has taken an active role in efficiency improvement of the conventional driveline; on-board energy management; development of alternative fuels for vehicular application; and improvement in efficiency for vehicle and road traffic control.

Companies active in the electric automobile area

Private companies, research departments of technical universities, and professional associations have also taken the lead in the development of alternative propulsion. There has been significant promotion of development of electric cars by the major regional power company MVM (Hungarian Electricity Works) and a dozen small- and medium-size companies that formed the Automotive Grand Coalition. The coalition is focusing on regulation of $C0_2$ emission; reduction of $C0_2$ intensity of fuels to 130 gram/km by 2015; utilization of renewable sources for vehicle-drive train, and clean transport issues. It has also indentified and has been developing competencies for automotive R&D regions: Gyor is set to be the center of engine and vehicle manufacturing; Veszprem is the center of tribology (fuels and lubricants); Budapest is the center of vehicle technology and electronics; Kecskemet is the center of vehicle assembly and material sciences, while Miskolc is the center of driveline systems.

The most important annual event for electric car developers and builders in Hungary is the "Szechenyi Race." Various EV prototypes are introduced and compete with each other there every year. These EV prototypes are produced by private Hungarian companies, but in cooperation with Regional University Knowledge Centers for Vehicle Industry at Széchenyi István, Pannon, Miskolc and Budapest Technical Universities. There are about a dozen EV developers in Hungary (see list in the "Useful Contacts" section, p.44).

Hybrid cars are expected to reach a 10% market share by 2015 but the presence of hybrid cars (Toyota Auris and Prius, Opel Ampera or Honda Civic Hybrid) remains marginal in Hungary. There is optimism for the growth of electric vehicle use (like Citroen C-Zero, Peugeot ION, Nissan Leaf, Daimler E-Smart, Audi E-Tron), which will be introduced in

011-2012. Mass production and use of electric vehicles and EV diesel-hybrid LCVs is expected to start in 2012-2013 and increase through 2020.

The largest challenge will be the availability of fast charging stations and appropriate Plug-in Li-Ion batteries for EVs. Over 2.6 million Li-Ion batteries are forecast to be produced by 2015 for the first series of EVs. The lowest retail price of an EV is set to be around EUR 30,000 and the repayment period will be two to three years.

Analysis and Conclusions

Currently, Hungarians have three cars for every 10 people. Cars in Hungary tend to be smaller, older, and many have been imported as used cars. Suzuki and Opel have local production facilities of main parts and assembly in Hungary. Engines are mostly small to medium (1,200-1,600 cm3), transmissions manual. Increasingly, Hungarians are acquiring a second car for their families. Among American cars, Ford (both for passenger cars and pick-ups), Chevrolet (for passenger cars), and Chrysler (for vans) are the most prevalent brands on the roads in Hungary.

The desire for passenger cars in Hungary is high, but the average net monthly income is only USD 500 and most Hungarian families can only afford to maintain a used car. Pricing is a decisive factor in purchasing new cars and automotive aftermarket and maintenance products in Hungary. Independent service garages have increased their presence in Hungary. However, both quality- and brand-awareness have been growing noticeably in Hungary and increasingly customers look for well-known brands and reliable after-sales service and customer support. In general, the market is opening to more innovative and prestigious after-market products and accessories.

Suzuki SX4, Splash, Wagon-R+ (made in Hungary) cars are the market leaders. Second is Opel, with its popular Astra, Corsa, Zafira, followed by Ford (Focus, Fiesta, Mondeo) Renault, Peugeot, VW and Chevrolet. Ford and Chevrolet have increased sales 35%, while VW and Citroen have declined, highlighting the Hungarian preference for economy-size cars. However, a limited countertrend has begun toward large family vehicles such as Chrysler 300C, VW Touareg, Citroen C8 or Opel Combo Tour minivans. U.S. models such as the Chrysler Voyager and Jeep are also beginning to sell, but the numbers are still marginal.

With 80% stick-shift transmissions, clutch parts are in high demand, as are brake parts, suspension parts, particularly shock absorbers, because of Hungary's rough roads. Upgraded pollution control is mandatory and use of security devices such as alarm systems and anti-theft products is considered essential, as car theft is a common problem in Hungary. There is increased interest in drive systems parts (ABS, ESP), airbags, driver assistance-devices, high-pressure injection systems and navigation systems.

In 2009, production and sales of new vehicles fell by an average of 28%. Dealers do not expect a rebound any time soon: tighter lending rules will further reduce demand for medium- and small-class cars in 2010. The number of dealerships has declined from

1,200 to 800 in two years and a quarter of those remaining are considering withdrawing from the market, according to a survey by PriceWaterhouseCoopers. The number of car dealers will inevitably fall and larger dealers that sell more than one brand and have more than one outlet will dominate the market in the future.

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3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

National Office for Research and Technology – National Technology Program "Innovative Hungary"
www.nkth.gov.hu

Automotive Grand Coalition
www.autosnagykoalicio.hu

Eotvos Lorand University, Faculty of Science
Department of Applied Analysis and Computational Mathematics
(The first Hungarian Fuel Cell Portal)
www.fuelcell.hu

Hungarian Electricity Works (MVM) – Alternative Traffic Solutions
www.hy-go.com

TZ ELMA Zrt.
www.tzelma.hu
(Development of EVs, solar batteries for vehicles)

Intermotor Environmentally-Friendly Development and Manufacturing Kft.
www.intermotor-kft.hu
(Production of green products, EVs)

European Green-Cars Initiative Industrial Advisory Group
www.green-cars-initiative.eu/

National Bioethanol Association
www.bioethanol.hu

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Israel

Country:	Israel
Capital:	Tel Aviv
Size:	20,271 sq km (sq km land)
Population:	7.5 Million
GDP per capita:	USD 28,400 (2009 est.)
Population Concentration:	92% Urban
Commuter needs:	Israel is in desperate need of an efficient mass transit system to alleviate the massive traffic congestion on intercity roads and to reduce the dependency on private vehicles as the major mode of transportation. Commute distances between Israel's three major cities (Tel Aviv, Jerusalem and Haifa) range from 60km to 95km, and approximately 35 km from and around the greater Tel Aviv metropolitan area to downtown.

Energy Consumption

Dependence on foreign oil:	100%
Net import:	318,900 bbl/day (2007 est.)

Status of electrical generation and transmission

In 2008, the country generated 54,504,000 KWh of electricity and consumed 50,161,000 KWh. Electrical generation capacity for the country was 11,675 MW.

Amount of alternative energy produced in country

N/A

Concern with environmental issues

The government of Israel has been slow to adopt a national environmental protection plan, but with its recent entry into the OECD it will have to invest substantially to meet OECD environmental standards. At the Copenhagen Summit in December 2009, Israel declared its intention to reduce its greenhouse gas emissions by 20% by the year 2020. Air pollution in Israel is highly affected by the country's unique features. Most of Israel's economic activities and half of its population are concentrated on the coastal plain, in a strip spanning 171 kilometers from north to south and 10 kilometers from west to east. Israel's principal power plants operate in this area and about 70% of its motor vehicles are located there.

Transportation Overview

Motorization:	0.324

Status of mass transit

In line with a worldwide trend, Israel's three major cities - Haifa, Jerusalem and Tel Aviv - are currently in the process of building mass transit systems. Israel's transportation has

traditionally been based on buses and private cars. However, space for building roads is running out in this tiny country, and traffic and air pollution have been worsening in urban areas. Meanwhile, Israel has been developing its intercity train system over the past decade into a convenient and popular alternative to the motorized commute. The train has become a hit with Israelis, and in the future will connect with the urban mass transit systems currently being constructed.

Status of local auto industry

Israel has embarked on a plan to drastically reduce its dependence on oil imports with a private-sector initiative for a nationwide electric car network. The privately funded plan to build 500,000 recharging points and battery-swap stations for electric cars is scheduled to commence in mid-2011.

Government incentives to encourage purchase/use of no-emission vehicles

In 2010, the government enacted a "green law" that created a tax differential between zero-emission vehicles and traditional cars to accelerate the transition to electric cars.

Companies active in the electric automobile area

Better Place (www.betterplace.com), the American-Israeli company, has reached agreements with Renault-Nissan and the Israeli government to begin the first phases of the company's efforts to create in Israel the world's first integrated electric car network. Better Place will start importing and distributing Renault's first passenger electric vehicle - the Fluence ZE, five-seat sedan - to Israel in the first half of 2011. The battery for the Fluence ZE, which is made by US-based A123 Systems, can be re-charged by means of a standard charge in four to eight hours or switched for a charged battery in less than five minutes. According to Renault, Israel is considered a viable site for this groundbreaking endeavor because of the country's relatively small size and the fact that approximately 90% of the nation's car owners drive less than 60 km (40 miles) a day and all major urban centers are within 150 km of each other. Better Place has calculated that if all of Israel's 2.5 million cars were all electric, they would require 2,500 MW of electricity per year, which could be provided by a one-off investment of USD5 billion in solar plants.

ETV Motors Ltd. (www.etvmotors.com) develops advanced power-train technologies that address the automotive industry's growing embrace of electric vehicles (EVs). ETVM's scientists are focused on two achievements: a compact, energy-dense, power-dense battery; and an ultra-efficient on-board power generator that keeps the battery charged with energy sourced from currently available infrastructure.

Israel Military Industries (www.imi-israel.com) is developing an electric Hummer, which will use a powerful battery-operated electric motor combined with a diesel engine, which functions as a generator and recharger for the batteries when necessary. The combination extends the effective operating range of the Hummer from a few dozen kilometers on electric power to more than 450 kilometers with a single tank of diesel fuel.

Analysis and Conclusions

According to a recent study on consumer EV sentiment sponsored by a leading global market-research company, strong consumer interest in electric vehicles bodes well for a new era of sustainable transportation. The multinational survey reveals that electric cars

have mainstream appeal. Nearly one in three (30%) U.S. car buyers are interested in purchasing an EV for their next car. While interest in EVs was strong in all five nations surveyed, interest was highest in Israel, where 57% of drivers are interested in purchasing an EV for their next car. In the other countries surveyed: Denmark (40%), Australia (39%), Canada (35%; Greater Toronto area only), and the U.S. (30%), while 28% of Israeli respondents said they would only consider an EV for their next vehicle.

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4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

Better Place
www.betterplace.com

Ipsos (Market Research Firm)
www.ipsos-interactive.com/

Commercial Service Contact Information

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Italy

Country:	Italy
Capital:	Rome
Size:	301,340 sq km
Population:	60,340,328
GDP per capita:	USD 30,300 (2009 est.)
Population Concentration:	68% urban areas (2008) / 29.8% in main towns (2009)
Commuter needs:	Individual transportation prevails over public transportation. In Italy there are 14 million commuters and the majority of them use their own car. Italy is one of the countries with the highest motorization (vehicles per capita) mobility per capita (+ 91% from 1980); in 10 years, the average daily commute has increased from 9.6 km (about 6 miles) to 11.4 km (about 7 miles). Slightly more than 2.5 million commuters (14% of total) use trains, which are often unreliable and crowded.

Energy Consumption

Dependence on foreign oil:	more than 90% (2009)
Net Import:	1,537,900 bbl/day (est. 2008)

Status of electrical generation and transmission

In 2008, electric energy production was 319,129 GWh (+1.7% compared with 2007).

Amount of alternative energy produced in country

The total amount of electric energy produced from renewable sources in 2009 was 66,000 GWh (+13% compared to 2008). The largest increase was in solar energy produced by photovoltaic systems, which is 1,000 GWh (+410%). The wind sector produced 6,600 GWh (+35%); hydroelectric sector: 47,226 GWh (year 2008); and bio-masses: 6,500 GWh (+9%). Production of electric energy from renewable sources amounted to approximately 20% of the Italian internal energy consumption.

Concern with environmental issues

There is widespread concern about poor air quality (because of several factors, including traffic and industrial emissions), coastal and inland river pollution from industrial and agricultural effluents, and industrial and domestic waste.

Transportation Overview

***Motorization*:**	0.598

Status of mass transit

Use of private transport prevails over mass transport: only 9.2% of the population used public transport in 2009. In the main cities there were 228.7 passengers per 1,000 inhabitants, a decrease of 0.7% compared to 2008.

Status of local auto industry

In 2009, the production of vehicles declined (-17.6%) compared with 2008 and the turnover of the automotive industry declined to EUR 41.7 billion from EUR 49.6 billion in

2008. In the last two years, because of the economic crisis, national production decreased from 1.28 million vehicles assembled in 2007 to 843,000 in 2009.

FIAT GROUP is Italy's largest private industrial group. In 2008, the company manufactured 1,849,200 cars worldwide. Fiat Group puts effort into designing devices that will reduce emissions, manufacturing hybrid and electric vehicles through its subsidiaries. For example, *IVECO* has been a leader in the sector since 1994, when it produced its first Turbocity hybrid bus. Through its Altra subsidiary, Iveco has extensive experience in the manufacture of electric and hybrid propulsion systems for commercial vehicles and city buses. Iveco installed its first all-electric drivetrains on buses in 1982 and completed development of the first Daily Electric in 1986.

- ***Hybrid and Electric Cars:*** At present, FIAT GROUP does not directly manufacture electric vehicles. *MICRO VETT*, a small independent company, adapts Fiat vehicles, both for passenger and cargo uses. In May 2010, Fiat Chrysler announced the development and production of an electric car, Fiat 500 EV, which will be marketed starting in 2012;
- ***Hybrid and Electric Buses:*** *BREDA MENARINI* is a major manufacturer of hybrid and electrical buses. *ALTRA* specializes in designing and manufacturing alternative fuels for Iveco vehicles, in particular buses with electrical transmissions, hybrid (diesel and electrical) and fuel cells; *TECNOBUS* designs and produces electric buses;
- ***Hybrid and Electric Trucks:*** *PIAGGIO GROUP* specializes in electric light commercial vehicles manufacturing.

Motorcycle sector

In 2009, the motorcycles market declined (-4.2%) compared with 2008. In particular, scooters registered an increase (+10.8%), because of the incentives set up by the government, while motorcycles declined (-20.2%), compared with 2008. In April 2010, the government set up a second set of incentives, allocating EUR 12 million for the purchase of low-emission motorcycles.

Hybrid Motorcycles: *PIAGGIO GROUP* is a scooter, motorcycle and light commercial vehicle manufacturer (brands Aprilia, Piaggio, Moto Guzzi, Vespa, Gilera, Derbi). In 2009, Piaggio introduced the first scooter with parallel hybrid technology; *MALAGUTI* is another manufacturer of hybrid scooters.

Companies active in the electric automobile area

- *ATEA* manufactures electric vehicles and assembles cars by Fiat (Panda, Fiorino, Cinquecento) and Renault (Twingo);
- *EFFEDI* manufactures electric commercial vehicles;
- *EKOCAR* imports and distributes electric vehicles (Melex);
- *E.P.T. ECO POWER TECHNOLOGY* adapts electric vehicles;
- *OXYGEN* develops, manufactures, and markets light electric vehicles;

Government incentives to encourage purchase/use of no-emission vehicles

In 2010, both the national government and some Italian regional governments set up initiatives to facilitate purchasing electric vehicles. For example, there are incentives such as a reduction of property tax for five years from the first registration, as well as a 50% discount on insurance premiums.

Analysis and Conclusions

It is not simple to predict the evolution of the car market over the next several years. Today's uncertainties may slow down the growth of the hybrid and electric vehicle market; at the same time the need for a different approach to individual mobility may offer opportunities for change. Although most car manufacturers are planning to market new hybrid models in the coming years, it is expected that total hybrid car sales will be limited because of the issues related to a lack of public charging stations and high purchase costs of vehicles and batteries. For example, a case study of the Province of Milan, one of the most important urbanized areas in Italy, estimated "at most" a 30% share of electrical vehicles in the whole fleet with a 2030 time horizon.

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4 – Very high probability of success for U.S. exporters

Some opportunities for U.S. manufacturers of vehicles, parts and components could arise from factors currently limiting the development of electric vehicles, including:

- The limited reach of batteries used in electric vehicles: this forces all manufacturers to look for more efficient batteries;
- The lack of infrastructure: users must be able to recharge their vehicles even when away from home.

These problems need to be solved in order to encourage more people to buy electric vehicles as an alternative to long-term rental (as in the E-Mobility Italy initiative mentioned above).

Resources and Events

CIVES: the Italian chapter of AVERE

www.ceiuni.it/cives/home.htm,

The European Association for Battery, Hybrid and Fuel Cell Electric Vehicles (AVERE)
www.avere.org

MotorSport ExpoTech 2010 - International Exhibition and Conference for innovative materials, technologies, products, and services for motorsport industry, Modena, Oct. 13-14, 2010
www.motorsportexpotech.it/notizia.asp?ID=0000000419&Lingua=IT&idcat=1

MobilityTech 2010 - International Forum on technology innovation for the mobility and public transport, Milan, Oct. 18-19, 2010
www.mobilitytech.it/english/index.php

EICMA 2010 - 68th International Bicycle and Motorcycle Exhibition, with '**THE GREEN PLANET' area**, Milan, Nov. 2-7, 2010
www.buyusa.gov/italy/en/eicma2010.html
Key Energy - International Expo for Sustainable Energy and Mobility, Rimini, Nov. 3-6, 2010
www.en.keyenergy.it/

Ecomondo - International Trade Fair for Materials & Energy Recovery and Sustainable Development, Rimini, Nov. 3-6, 2010
www.en.ecomondo.com/

EIV 2010 - The Electric and Intelligent Vehicles and Transports Event, within '**HTE-Hi.Tech.Expo'** - The Innovative Technologies Trade Show, Milan, Nov. 16–19, 2010
www.hitechexpo.eu/en_hte/intro_eiv.asp

MotorShow - International Automobile Exhibition, Bologna, Dec. 4–12, 2010
www.motorshow.it/it/dir/205/3/Focus-Motor-show-2010

Commercial Service Contact Information

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Netherlands

Country:	Netherlands
Capital:	Amsterdam
Size:	33,893 sq km / 41,528 sq km including inland waters
Population:	10.7 million
GDP per capita:	USD 39,200 (2009)
Population Concentration:	82% Urban (2008), estimated growth 0.39% (2010 est.)
Commuter Needs:	Optimal distance between work and home is 30 minutes or less. Commuting to urban areas is common and supported by the highly advanced road, rail and waterway transportation infrastructure. In the four largest cities (Amsterdam, Rotterdam, The Hague, Utrecht), there are 7 million inhabitants, who travel on average 28 minutes to get to work.

Energy Consumption

Dependence on foreign oil:	91%
Net import:	1,031,000 bbl/day (2008 est)

Status of electrical generation and transmission
112.7 billion kWh of electricity. Production: 97.3 billion kWh.

Amount of alternative energy produced in country
Amount of alternative energy produced in country: natural gas reserves: 1,693 billion cubic feet; nuclear electricity generation: 3.7 terawatt-hours; wind energy installation: 1,078 MW; biomass: more than two-thirds of current sustainable-energy consumption in the Netherlands comes from biomass (waste, wood, agricultural waste streams, manure, rapeseed, ethanol); solar energy: using solar energy to generate electricity (solar PV) is still very expensive, but developing rapidly. It will contribute to the government's goal of equipping an additional 100,000 homes (compared with 2007) with sustainable energy.

Concern with environmental issues
Environmental concerns drive many decisions behind mobility in the Netherlands. The Dutch government promotes the use of environment-friendly vehicles with tax breaks, subsidies and other incentives. Electric and hybrid vehicles are becoming increasingly popular. Technologies to reduce harmful emission enjoy positive attention.

Transportation Overview

***Motorization*:**	7.7 million passenger vehicles (or 4.6 per capita)

Status of mass transit
Highly advanced. The Dutch railway network is the busiest in the European Union. The scale of operations, measured per kilometer of line, is 5 million passengers per kilometer, compared to the EU average of 1.8 million.

Status of local auto industry
Facilitator.

Government incentives to encourage purchase/use of no-emission vehicles
Yes.

Analysis and Conclusions

There is a growing interest in electric vehicles, which offer many "green" opportunities in the Netherlands. In fact, the purchase of green passenger cars tripled compared with 2007. Sustainable mobility or the development of hybrid economical and clean freight vehicles is also high on the government's agenda. The government aims to purchase and operate a sustainable fleet of vehicles that use renewable fuels. Although the government aims for 1 million electric passenger cars on the road by 2025, the national industry association offers a more conservative estimate of 400,000 vehicles.

In addition, the Dutch government aims for a broader national network of pumps for alternative fuels (natural gas, bio-fuel, and eventually hydrogen) and has allocated almost EUR 3.6 million (or USD 4.8 million) in subsidies to add new filling stations to accommodate green gas, ethanol (E85) and biodiesel (B30). The bulk of the subsidies will be invested in 53 filling stations for "green gas." It will also be necessary to conduct research into the possibility of a so-called smart grid electricity network for plug-in hybrids and cars that run entirely on electricity.

The move to electric mobility is also supported by private businesses, such as ING Bank. They are partnering with energy companies and possibly with car manufacturers to invest between EUR 500 million and EUR 1 billion (or USD 1.33 billion) in electric infrastructure.

Best Opportunities for Electric Vehicles, Parts, and Systems
The Dutch government tries to accelerate the introduction of electric mobility through various fiscal stimuli. Consumers enjoy fiscal tax advantages if they purchase hybrid vehicles. In addition, road and luxury taxes are waived for more than 20 "green" vehicles. Companies are encouraged to select environment-friendly techniques and equipment through the Environment-Investment Deduction (MIA) with a USD 157 million budget and the Random Write-off Environment Investment (VAMIL) with a USD77 million budget for 2010. Companies can apply for fiscal advantages through these programs if they use products or technologies that are on the "2010 environment list," which includes: hydrogen fueling stations; adaptive cruise control systems for trucks; public charging stations for electric vehicles; automatic battery replacement stations; buses with hybrid engines; noise-reduced loading cranes, garbage trucks and sweepers; automatic lubricant systems; and driving simulators. U.S. suppliers with products and services that further green mobility and intend to enter the Dutch market are well advised to partner with a Dutch company.

Special Vehicles: Busses

The government aims to increase the energy efficiency of buses used for public transport by at least 20% in the near future. Public transportation service providers are encouraged to pursue green alternatives. Buses running on "green gas," a by-product of biomass, were introduced in the area of The Hague in 2009. The entire local area fleet of 135 buses should be running on green gas by 2011. More recently, the Rotterdam region added the "e-Busz" to its fleet, which will be tested over the next two years. The "e-Busz" is the first fully electric bus. It can run on electricity for four hours and has a small back-up generator, which can charge the battery en-route.

Motorbikes and motor scooters
Motorbikes and motor scooters are becoming increasingly popular in the Netherlands in all age groups. One does not require a driver's license, only a certificate. It is a practical, handy and affordable means of moving quickly through congested traffic. Parking costs and availability are rarely an issue, while maintenance and acquisition costs are relatively low. Top brands sold in 2009 include: Microcar, Ligier, Aixam, JDM, Mega, Chaternet, Bellier, Casalini, and Crecav Spa. Electric motorbikes and motor scooters are gaining ground in the Netherlands.

European Union
The European Green Cars Initiative (www.green-cars-initiative.eu) is one of the three Public Private Partnerships (PPP) of the European Economic Recovery Plan. The objective of the initiative is to support R&D on technologies and infrastructures that are essential for achieving breakthroughs in the use of renewable and non-polluting energy sources, safety and traffic fluidity. Research topics include passenger vehicles, trucks, internal combustion engines, bio-methane use, and logistics. However the main focus is on the electrification of mobility and road transport. Beyond providing loans through the European Investment Bank, the PPP European Green Cars Initiative is making available a total of EUR 1 billion for R&D through joint funding programs of the European Commission, industry and member states.

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Resources and Useful Contacts

RAI Vereniging (Vehicle Industry Association)
www.raivereniging.nl

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Poland

Country:	Poland
Capital:	Warsaw
Size:	304,255 (sq km land)
Population:	10.7 million
GDP per capita:	USD 17,800 (2009 est.)
Population Concentration:	61% Urban (2008), estimated growth -0.3% (2005-2010 est.)
Commuter Needs:	Increasing commuters, especially in large urban areas. Public transportation in larger cities strongly promoted over commuting by private vehicles.

Energy Consumption

Dependence on foreign oil:	96.9%
Net import:	528,060 bbl/day (2008 est.)

Status of electrical generation and transmission
In 2007, the country generated 149.1 billion kWh of electricity and consumed 129.3 billion kWh. Electrical generation capacity for the country was 32.5 million kW.

Amount of alternative energy produced in country
In 2010, a capacity of 2,334.8 MW of alternative energy sources was installed. The dynamics of the growth is spectacular; the capacity installed in the first half of 2010 was higher than the capacity installed in the whole of 2009.

Concern with environmental issues
EU policy imposes environmental legislation upon Poland.

Transportation Overview

***Motorization*:** 0.261 personal cars per capita

Status of mass transit
Relatively advanced but needs improvements

Status of local auto industry
Supportive.

Government incentives to encourage purchase/use of no-emission vehicles
None.

Analysis and Conclusions

Poland is just getting ready to introduce the concept of "e-mobility." The first project, financed by the European Union, began in 2009. Five cities were selected - Warsaw, Katowice, Mielec, Krakow, and Gdansk. The project will develop a network of charging

points. Under this pilot program electric vehicles (EVs) are being made available to the City Halls of the chosen cities:

- Mielec - 12 public charging points, 30 terminals, 3 EVs;
- Gdansk - 24 public charging points, 50 terminals, 4 EVs;
- Katowice - 24 public charging points, 50 terminals, 4 EVs;
- Warsaw - 36 public charging points, 130 terminals, 6 EVs;
- Krakow - 24 public charging points, 50 terminals, 3 EVs.

Data gathered from vehicles will be used to develop plans for further expansion of the network. The authors of the project hope to develop a functional and user-friendly system that will foster electric mobility in Poland. The first EV financed with this program, a Fiat Punto, was just given to the Warsaw Police Department in the summer of 2010.

So far, the number of electric vehicles in Poland is very limited – there are less than 20 such cars in Warsaw and only nine in Katowice. They usually are personally owned standard cars that have been converted into EVs by the owner.

The majority of the charging points organized under the EU program are "slow" charging Level 1 stations – which take about six to eight hours to fully charge one vehicle. Industry experts stress the advantages of the fast charging Level 2 stations. However, Level 2 stations are approximately four times more expensive. The e-mobility idea is in its infant stage in Poland – for example there is no publicly available or single point of reference about the existing network of charging points.

In addition, state and city authorities alike have not yet developed any incentive policy towards owners of EVs. For example, unlike in other European cities, EV owners do not have the privilege to use bus lanes. They also have to pay for parking in city centers. Only recently have the City of Warsaw authorities announced their plans to buy electric buses as well as their intention to encourage electric taxis.

Polish experts conclude that electric vehicles will not meet immediate demand in Poland because of the high price of EVs and the lack of infrastructure of charging points. The situation may change in four to five years, but it is expected that EVs will generally be bought only as a second car.

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4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

RWE Polska S.A.
www.rwe.pl
Contact: Mr. Karol Holdynski, Specialist
E-mail: karol.holdynski@rwe.pl

RWE started to work on charging points in Poland. RWE currently operates 3 charging points in Warsaw. The company plans to open 130 points in the city by the end of 2010. The charging points run by RWE are Level 2 – a full charge takes 15-20 minutes.

POLENERGIA Dystrybucja Co. Ltd.
www.polenergia.pl
Mr. Karol Pawlak, President
Contact Person: Mr. Marcin Janusik
Tel: +48 22 391 58 23,
E-mail: marcin.janusik@polenergia.pl

In April 2010 Polenergia Dystrybucja opened its first charging point in Warsaw at Krucza 24/26.

EVCONVERT.EU Co. Ltd.
www.evconvert.eu
E-mail: info@evconvert.eu
EVCONVERT.EU is a distributor of components necessary for EV conversions of passenger cars and small trucks. The company also works with motorbikes, boats and many other vehicles.

EVolta
www.evolta.pl
E-mail: evolta@evolta.pl
Arkadiusz Mizgala
Tel.: +48 501 797 087
E-mail: arek@evolta.pl
EVolta is a distributor of the electric scooter, "EV-CITY", in Poland. It also is active in converting passenger cars into EVs.

Impact Automotive Technologies Co. Ltd.
www.imotive.pl
www.re-volt.com.pl
Tel.: +48 22 728-23-56
E-mail: sales@re-volt.com.pl
Impact Automotive Technologies manufactures an electrical car, "Re-volt" - a three-wheeled car for two passengers. Its retail price is approximately 70,000 PLN (23,000 USD). It can be registered as a motorcycle in Poland.

Melex A&D Tyszkiewicz Sp. J.
www.melex.com.pl
E-mail: board@melex.com.pl
Melex' main business profile has always been the production of electrically-powered and multi-purpose vehicles, the first introduced on U.S. golf course in the early 70s. Today,

Melex vehicles can be found not only on golf courses, but also in city centers where the Polish police have begun to use them.

Agencja Rozwoju Regionalnego MARR
Regional Development Agency MARR
www.marr.com.pl
Contact: Ms. Grazyna Gajek, Project Coordinator
E-mail: ggajek@marr.com.pl
MARR is responsible for the implementation of an EU-funded project to develop the market for electric vehicles and the charging infrastructure. MARR coordinates this project and chooses contractors for different parts of the entire project.

EKOENERGETYKA-Zachod s.c.
www.ekoenergetyka.com.pl
E-mail: ekoenergetyka@ekoenergetyka.com.pl
The company produces charging stations for electric cars. It also plans to organize a network of charging points in the western part of Poland – Zielona Gora, Sulechow, Pila, and Sieradz.

Klaster Green Stream
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Green Stream is responsible for part of a scientific project financed by the European Union and coordinated by MARR. The project aims to collect data on the technical and economic details of the existing infrastructure including the vehicles introduced into the five Polish cities during the 18 months of tests. The results will indicate the specific properties and conditions of the local electric vehicle market.

The company will be developing a charging infrastructure in five Polish cities – Warsaw, Katowice, Mielec, Krakow, and Gdansk. In the summer of 2010, Green Stream operated 9 charging points: 3 in Krakow, 3 in Gdansk, 2 in Katowice, 1 in Mielec.

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Portugal

Country:	Portugal
Capital:	Lisbon
Size:	35,316 (sq miles land)
Population:	10.7 million
GDP per capita:	USD 21,800
Population Concentration:	59% Urban
Commuter Needs:	Except in large urban areas, commuting is not very common; public transportation prevails over individual transportation.

Energy Consumption

Dependence on foreign oil:	83.1% (2007)
Net import:	297,740 bbl/day

Status of electrical generation and transmission
In 2008, the country generated 45.9 TWh of electricity and consumed 49.1 TWh.

Amount of alternative energy produced in country
Installed capacity reached 9.294 MW in May 2010. Electricity produced in 2008 reached 15.4 TWh.

Concern with environmental issues
Battery disposal and recycling.

Transportation Overview

***Motorization*:** 2.4 (2008)

Status of mass transit
Lisbon and Porto Metropolitan areas are well developed. All other major cities and towns have local urban transport networks. Taxi services are also available.

Status of local auto industry
The Portuguese Electric Vehicle Association was created in 1999. According to government officials, the sale of electric vehicles should grow over the next decade, and is projected to reach 800,000 vehicles or 10% of electric cars by 2020. This cluster, which includes the sale of energy to power electrical vehicles, charging stations, energy management systems and the manufacture of charging units, should represent a total value of USD1 billion by 2020.

Government incentives to encourage purchase/use of no-emission vehicles
The Portuguese government has created incentives to encourage the purchase and use of zero-emission vehicles by giving tax breaks to individuals and companies that switch to electric vehicles by 2015. Additional measures are currently being discussed.

Active companies in the electric automobile area

EDP, Siemens, Nissan/Renault, Galp, Toyota Caerano Portugal, among others. Toyota, Nissan, Renault and Mitsubishi plan to offer electric vehicles in the Portuguese market by the end of 2010. The estimated sale prices are between USD 32,000 and USD 104,000.

Analysis and Conclusions

The Portuguese government has been taking measures over the last couple of years to reduce its dependency on foreign energy and promote the local production of clean energy. As a result, by the end of 2010, Portugal may be producing nearly 45% of its electricity from renewable sources, a 28% growth compared to 2005.

Another important step to free Portugal from foreign energy imports is to promote "green" transport by developing the necessary infrastructure to supply and charge electrical vehicles, and adopt government incentives to encourage the purchase and use of "green" vehicles in Portugal.

Public and private entities have been proactively promoting the wider use of electrical vehicles, whether fully electric, hybrid or using fuel cell systems such as the case of the Portuguese Association of Electric Vehicle (APVE). The members of APVE include companies such as EDP, EFACEC, Siemens, Honda Portugal, FIAT, Citroen, as well as small- and medium-size companies.

Portugal is committed to becoming the first country to launch a national network of charging stations for electrical vehicles. This will offer manufacturers a guarantee that customers will have a recharging network, allowing them to invest in mass production sales of battery-powered vehicles. However, the government and power companies have been cautiously investing in the networks since there are no cars on the market yet.

In order to achieve this national network of charging stations, in early 2009 the Portuguese Electric Mobility Program called "Mobi-E" was created. This program will include charging stations accessible to all electric vehicle brands. The network will have normal charging points that will be able to charge an electric vehicle in six to eight hours using wind energy produced during the night, as well as rapid charging points, which will charge an electric vehicle in less than 30 minutes. Portugal plans to have more than 1,300 charging stations by the end of 2011. The stations will be installed throughout Portugal in places such as public car parks, shopping centers, hotels, airports and gas stations. Electric vehicle users will require only an identification card to access the network, regardless of the charging station location, providing a quick and seamless experience.

According to industry experts, the recharging market could be worth up to USD 2.8 billion by 2020, with more than 25,000 recharging stations installed across Portugal.

In addition, Renault-Nissan recently announced that Portugal will be the first country to manufacture lithium-ion batteries for electrical cars. The plant, located in Cacia, Aveiro, will produce its 50,000 units per year starting in 2012, of which 95% will be for export, mostly within Europe. The USD 355 million plant will create more than 200 jobs. According to Renault-Nissan officials, the Portuguese plant will be a major global supplier of batteries.

The charging station network, the Renault-Nissan plant, as well as other ongoing activities may offer good supply-chain opportunities for U.S. technology and service exporters.

U.S. exporters are advised to work with a local partner. This is considered to be the quickest and best way to enter the Portuguese market. Interested U.S. exporters should focus on innovation, quality and competitive pricing, despite the transportation costs they may encounter.

***On a scale of 1 to 4 how would you rate your country*: 3**
1 – Little to no probability of success for U.S. Exporters
2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

Portuguese Electric Mobility Program
Mobi.E: www.mobi-e.pt/Pages/Default.aspx

Portuguese Association of Electric Vehicle
APVE: www.apve.pt

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Romania

Capital:	Bucharest
Size:	237,500 sq km (91,699 sq mi)
Population:	21,959,278
GDP per capita:	$7,902 (IMF 2010 est.)
Population Concentration:	56% Urban
Commuter Needs:	Romanians prefer public transportation to individual transportation especially in larger urban areas. Those who are likely to commute are people living maximum 1 hour away from the main cities.

Transportation Overview

- **Motorization (motor vehicles per capita)** : 0.18 personal cars per capita
- **Status of mass transit (short description)**: The mass transit is in a state of reform. The Ministry of Transports is in the process of restructuring the infrastructure networks.

Passenger Transport, by mode of Transport and Type of Ownership		
Passenger intercity transport (thou passenger)		
	2008	2009
Road Transport	293,465	259,443
Rail Transport	77,759	69,899
Urban Transport - metro	18,2017	17,0887

Registered motor vehicles (number)		
	2008	2009
Cars (units)	402,7367	491,7456*
Motor bicycles (units)	71,827	94,325*
Buses and Microbuses	41,514	52,489*

Source: Ministry of Transports
*Unofficial estimates

- **Government incentives to encourage purchase/use of no-emission vehicles (rebates, tax write-offs, financial assistance, etc.)**

The auto industry is a significant employer in Romania, and represents 8.5% of Romanian GDP. The Romanian Government tried to implement a recovery plan for the local auto industry by developing concrete measures that several Member States of the EU already addressed. These measures were intended to:

a) encourage the acquisition of less polluting vehicles (through a pollution tax) and
b) encourage owners to scrap and replace old cars with new, less polluting ones

Unfortunately, these measures did not produce the desired effects as they coincided with more stringent credit underwriting by local commercial banks.

The automotive market

Car (motor vehicles market)	2008 (USD Millions)	2009 (estimation) (USD Millions)	2010 (estimation) (USD Millions)
A) Total Market Size	7,842	3,262	3,400
B) Total Local Production	6,402	6,090	6,500
C) Total Exports	2,942	4,060	4,500
D) Total Imports	5,940	2,610	2,700
E) of which: Imports from the US	50	15	20

The Romanian automotive industry has been one of the most profitable branches of the economy in recent years, but in 2009 fell victim to the international economic slowdown. A total of 147,809 units (down 54.4% from 2008) were sold in 2009, out of which 130,108 (-52%) were passenger cars, and 17,701 (-67.0%) commercial vehicles (including buses). While in terms of sales volumes, 2009 was unfavorable for most players in the market, automotive services gained importance. As a share of automotive dealers' turnover (sales), automotive services grew from below 20% before 2008 to over 40% in 2009. This result shows the reciprocal fall in auto sales as a contributor to dealer revenue, but also increased maintenance activity as vehicle owners invest in existing vehicles and postpone new purchases.

Romania's local production grew 20.9% across-the-board reaching a total volume of 296,498 units. Within this category, the production of cars increased above expectations (20.9%) reaching a volume of 279,320 units. The production of commercial vehicles also increased significantly (20.6% and 17,178 units). Considering that around 88% of Romania's domestic car production was exported, it seems clear that domestic production was supported mainly by external demand, reaching a total of 258,893 units.

Discussions with leaders in Romania's auto industry suggest that the growth in car production and sales depended on the scrapping bonuses, a determining factor meant to boost the new car sales. This stimulus program was run throughout 2009. The package granted $1,300 to people who chose to turn over cars more than 10 years and buy a new car. This program was intended to take 60,000 cars off the streets. In 2010, the fleet renewal program is likely to be more effective than the one run in 2009. The consumer and commercial credit markets have not quite "thawed" yet, and this trend is expected to continue throughout 2010. The car scrapping program re-launched in 2010 has been expanded to include both individuals (i.e. acquisition and disposal of vehicles), and light commercial vehicles. Most importantly, the program will offer up to three car scrapping bonuses (approx. 2700 Euro, tantamount to $3,800) for the acquisition of a new car. The program became effective February 2010. These new developments might add 15% to 20% growth to new car sales in 2010, considering that the number of cars included in the 2010 program will be the same as in 2009, which is 60,000 units.

Electrical Vehicle, Parts and Systems

Romania is the 14th largest car manufacturer in the EU. The two car manufacturers operating in Romania are Dacia Groupe Renault based in Mioveni and the Craiova based Ford

Renault will bring the first electric cars Fluence Z.E. to Romania at the end of 2010, as part of a trial program, to be tested by representatives of local authorities in cities where infrastructure for charging electric vehicles will be built electric vehicles.

The policy to bring electric cars for the authorities first and then for end users is a common practice among major car companies that produce or want to mass produce electric cars. It is contingent on authorities to create the charging network and the actual testing of the car could expedite things.

Electric cars produced by Renault will run on Romanian batteries. The local battery manufacturer Rombat will produce batteries for micro-hybrid cars produced by Renault, PSA Peugeot beginning with 2012, and if demand increases will also produce batteries for electric vehicles. At the same time, Rombat is considering starting a partnership with Ford Romania, for the production of batteries for micro-hybrid vehicles.

With regard to Ford' strategy, the near future improvements in conventional internal combustion engines will be part of Ford's global electrification strategy. Two zero-emission full battery-electric vehicles, the Transit Connect Electric light commercial vehicle that will be launched in 2011 and the Ford Focus Electric in 2012 will make the start. A hybrid and a plug-in hybrid derivative of the all-new C-MAX, plus another hybrid-electric model based on the future CD car platform, will follow by 2013.

According to the Romanian Motor Vehicle Registry, four electric cars and 750 hybrids have been registered and licensed in Romania, out of a total 134 electric vehicles and 756 hybrids. The four electric cars are a Peugeot, a Romanian Oltcit, a Jeamean and an Opel.
The Registry also reported it has registered 20 electric motorcycles and 110 buses.

Of the total 750 hybrid vehicles licensed in Romania, most are Lexus (422), followed by Toyota (220) and Honda (62).

Romania's vehicle park also includes two hybrid motorcycles and two hybrid tractors.
Hybrid vehicles account for 0.02% of Romania's car park, which amounts to 5.32 million vehicles.
The Romanian Government passed an emergency decree earlier this year allowing the Environment Fund Administration to use proceeds from selling surplus greenhouse effect certificates to encourage the use of eco-friendly cars.

Energy Consumption

Romania benefits of primary energy resources and hence is not so heavily dependent on imports. The energy import dependency is below the EU average.

EU Member State	**Gross Energy Consumption (**Mtoe)	**Net imports**	**Energy Dependency**
EU27	1825.2	1010.1	53.8%
Romania	40.9	11.9	29.1%

Source: Europe's Energy Portal

The country has the largest oil and natural gas reserves in Central and Eastern Europe. At the end of 2008, the following reserves were estimated for Romania:

- Oil: 0.5 billion barrels
- Natural Gas: 0.65 trillion cubic meters
- Coal: 422 million tons

(Source: Europe's Energy Portal)

Dependence on foreign oil: 54% percent
Energy production

Romania could become a major electricity exporter in southeast Europe due to a relatively low level of import dependence, a high proportion of renewable energy, and an established competitive landscape.

Electricity produced [GWh]	*2008*	*2009*	*2009 [%]*	*2008/2009 [%]*
Total	*64.1397*	*57.667*	*100,00*	↓ *10,97*
- *Coal*	*26.711*	*22.996*	*39,88*	↓ *16,47*
- *Hydrocarbons*	*11.054*	*7.192*	*12,47*	↓ *19,21*
- *Hydro*	*15.916*	*15.713*	*27,25*	↓ *8,14*
- *Nuclear*	*7.709*	*11.752*	*20,38*	↑ *4,71*

- Aeolian	*7*	*14*	*0.02*	*↑ 22,27*
Electricity Consumed				
Gross domestic consumption	*60.338*	*55.190*		*↓ 8,5*

Source: Transelectrica - the Romanian Transmission and System Operator (TSO) which plays a key role in the Romanian electricity market.

Electricity generation is primarily based on coal and renewable sources (mainly large-scale hydro generation) with a significant contribution also from natural gas and nuclear energy.

Type of fuels used for electricity generation 2009:

- Nuclear 21%
- Hydro 30%
- Natural Gas 10%
- Liquid fuels 2%
- Solid 37%

Source: National Regulatory Agency for Energy – estimates for 2009

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On a scale of 1 to 4 how would you rate your country: 2

1 – Little to no probability of success for U.S. Exporters
2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Slovakia

Capital:	Bratislava
Size:	49,035 (sq km land)
Population:	5,470,306
GDP per capita:	USD 21,100 (2009 est.)
Population Concentration:	56% Urban (2008), estimated growth 0.2%
Commuter Needs:	The main modes of transportation are bus and train. Slovakia is quite mountainous, with the capital, Bratislava, situated in the only area of flat plains. Thus, it is most efficient to rely on public transportation.

Energy Consumption

Dependence on foreign oil:	64%
Net import:	148,600 bbl/day (2008 est.)
Gross Energy Consumption:	18.8 bbl/day

Status of electrical generation and transmission

The Slovak market for electric power generation is small compared to that of other European countries. In 2008, there was a total installed capacity (from all sources) of 7,453 MW. Of the 29,309 GWH of electricity produced in Slovakia, approximately 56% was produced by nuclear power stations, 18.9% by conventional power stations, 14.3% came from hydro stations, 9% by industrial power sources and about 1.8% was imported, mostly from the Ukraine and the Czech Republic.

It is safe to assume that Slovakia will have to import approximately 1,000 – 4,000 GWh of electricity annually from 2009 through 2012. The Slovak government has indicated that the most probable sources of such electricity would be Ukraine, the Czech Republic and Poland.

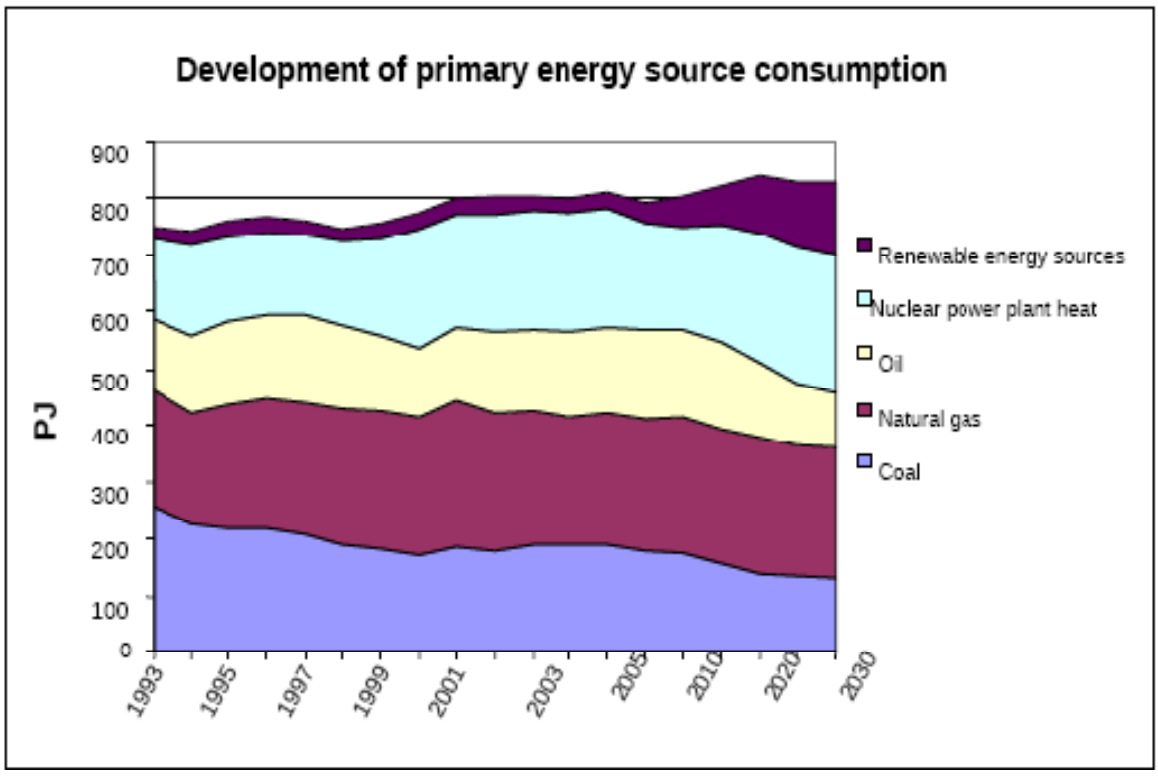
Based on projections for power plant construction and decommissioning, the following total development of electricity consumption and maximum possible electricity production in GWh is expected:

Year	Consumption	Production	Balance
2009	30,500	26,100	- 4,400
2010	31,000	27,400	-3,600
2015	32,900	38,100	5,200
2020	34,800	38,100	3,300
2030	38,000	35,500	- 2,500

Source: Ministry of Economy

Amount of alternative energy produced in country

Currently, 5.2 TWh of electricity is produced from renewable energy sources, including hydro power. This represents 16% of domestic electricity consumption. The total exploitable potential of renewable energy will enable the country to increase the total electricity production up to 19% by 2010 and 24% by 2030. It is estimated that the amount of renewable energy sources used in 2020 will reach 100 PJ, representing a 12% share of gross domestic consumption.



Biomass has the best potential as a renewable energy source, with approximately 75.6 PJ projected by 2010.

Concern with environmental issues

Motor fuels, liquefied petroleum gas-propane, liquefied petroleum gas (LPG) and compressed natural gas (CNG) represent strong alternatives to motor gasoline and diesel in regards to price and environment in the short run as well as in the long run.

Slovakia adheres to goals resulting from the European Directive 2003/30/EC on the promotion of bio fuels. According to the directive, goals for bio fuel use were 2% by the end of 2005 and 5.75% by the end of 2010 (calculated on the basis of motor fuels energy content).

Transportation Overview

Motorization: 0.085

In 2009, Slovakia produced 459,749 cars, (570,000 in 2008). The economic recession resulted in a 20% drop in annual car production.

Status of mass transit

Railway: 3,658 km, out of which 1,578 km are electrified
Motorways operated: 391 km

Expressways: 180 km
Length of roads and motorways: 17,946 km

Status of local auto industry

There are three car producers in Slovakia: Volkswagen, located in Bratislava (manufacturing the Touareg, the Audi Q7, and Škoda Octavia models and body shells for the Porsche Cayenne); PSA Peugeot in Trnava (producing the Peugeot 207 and the Citroën C3 Picasso models); and Hyundai Kia Motors in Zilina (producing Hyundai ix35, Kia cee'd and Kia Sportage).

The biggest investors that produce automobile parts in Slovakia are U.S. Steel (USA), SAS Automotive (Germany), Plastic Omnium (France), Delphi (USA), Visteon (USA and Germany), Johnson Controls (USA), Getrag Ford (Germany and USA). Other global companies include Faurecia, Lenovo, Siemens, Valeo, Mobis, ZF Sachs, ON Semiconductor, Bosch, Hella, Hansol, Continental, Ness, HP, T-Systems, Leoni, and others.

2010 is a challenging year for the Slovak automotive industry. Demand for cars in Slovakia and abroad will be of key importance for local car makers, impacting their employment, investment and manufacturing output. According to the Secretary General of the Automotive Industry Association of the Slovak Republic, the Slovak automotive sector will stabilize, with overall car production expected at the 2009 level.

Government incentives to encourage purchase/use of no-emission vehicles

According to the Slovak Ministry of Economy, Slovakia adheres to all EU regulations on green mobility. Slovakia has not yet developed a zero-emission vehicle incentive strategy but is very supportive of investments in the automotive industry for eco-friendly/electric /cars and eco-innovations. Unlike to other EU countries, Slovakia has neither legislative incentives nor barriers.

Analysis and Conclusions

In 2009, there were only 23 hybrids registered in Slovakia (17 Toyota Prius, 5 Honda Civics and 1 Mercedes S Class). By the end of May 2010, the Slovak Automotive Association recorded only 15 hybrid registrations (11 Toyota Priuses, 1 Honda Civic, 2 Mercedes S Classe and 1 BMW X6).
VW Slovakia was the first plant in the VW family to produce a car with a hybrid power train. The new SUV - the Touareg Hybrid, with its V6 TSI motor and an electric E-motor - is expected to roll off the Bratislava car plant assembly line in 2011.

According to unofficial media, local PSA Trnava will produce hybrid models Peugeot 207 and Citroën C3, which will be propelled by both diesel and electric engines. There is a high possibility that PSA Trnava will locally produce purely electric Peugeot iON and Citroën Revolte by the end of 2010 and in 2011.

The Indian firm Reva Electric Car Company has shown interest in investment opportunities in Slovakia. The EUR 60 million investment in Slovakia would create 1,100 jobs. To date, no final agreement has been signed.

Italian carmaker Fiat wants to launch a research and development (R&D) center at the Technical Faculty of the Slovak University of Agriculture in Nitra to work on electric-car technology. The Italian firm has shown a particular interest in the activities of the Department of Electrical Engineering and Automation, which is also involved in Mechatronics.

Generally speaking the idea of green mobility is welcomed by the automotive community. However, it is necessary to create the infrastructure for electric cars, including charging stations.

***On a scale of 1 to 4 how would you rate your country*: 3**
1 – Little to no probability of success for U.S. Exporters
2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

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Sweden

Country:	Sweden
Capital:	Stockholm
Size:	410,335 km^2
Population:	9.3 million
GDP per capita:	USD 36,800 (2009)
Population Concentration:	85% of the population is concentrated in urban areas (2008), with urbanization growth estimated at 0.5% per year between 2005 and 2010.
Commuter Needs:	Approximately 1.4 million Swedes commute to work in other municipalities than their home. Commuting is most common in suburban municipalities with close proximity to the largest cities, such as Stockholm and Gothenburg. The average journey to work is 16 kilometers and the average travel time is 27 minutes. Because of increasing commuting distances for workers, infrastructure has improved.

Energy Consumption

Dependence on foreign oil:	91.8%
Net import:	322,800 bbl/day (2008 est.)

Status of electrical generation and transmission

In 2007, Sweden's electricity generation was 144.0 billion kWh and consumption was 134.5 billion kWh. Electrical generation capacity for the country was 34.3 million kW.

Amount of alternative energy produced in country

The amount of alternative energy produced was 130.8 billion kWh, including wind, hydro and nuclear power.

Concern with environmental issues

The Swedish market is exceptionally favorable for environmental initiatives. Swedes in general have a high environmental awareness and are early adopters of new technologies. Plug-in hybrids, for instance, are deemed to have good prospects in the Swedish market.

Transportation Overview

Motorization: 0.465

In 2010, there were around 5.3 million motor vehicles in Sweden, including passenger cars, buses, trucks, motorcycles and mopeds. Of these, 4.3 million were passenger cars.

The sales of "eco cars," using ethanol and hybrid and conventional vehicles with lower $C0^2$ -emission levels, have been increasing steadily, reaching a market share of 38% in 2009.

Electric and hybrid vehicles amounted to roughly 15,600 in 2009 and are projected to reach 85,000.

Status of mass transit

Thanks to the increasing popularity of cars, public transport accounts for about 20% of all transportation methods. In urban areas however, 32% of work-related travel is still done with regional public transportation. In general, bus is the most common mode of transportation. The exceptions are Stockholm, where most journeys are by subway, and Gothenburg, where tramway is most commonly used.

Status of local auto industry

The automotive industry takes a central place in the Swedish economy. Because of the recession, the market for passenger cars fell by 16% in 2009 compared with 2008, and the industry had to lay off 15,000 employees. The main manufacturers are Volvo Cars and SAAB Automobile, which specialize in passenger cars, and Volvo Group and Scania, which produce trucks, buses and engines used for marine, industrial and aircraft purposes.

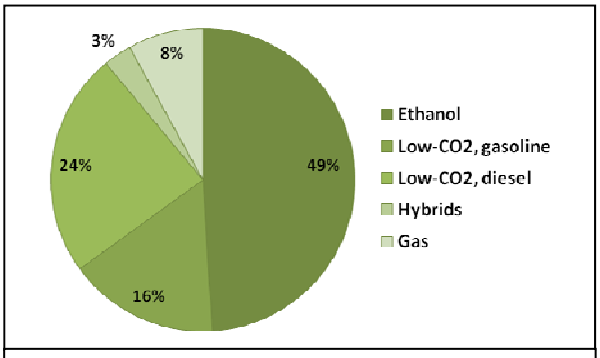

Figure 1: Relative Sales Shares of Eco Vehicles in Sweden (International Energy Agency, 2010)

Despite the general downturn in the automotive industry, eco vehicles made some progress during 2009. The interest in fuel-efficient eco cars remains high and their share of the total number of cars increased from 33% to 38%.

All major manufacturers have produced electric and/or hybrid concept vehicles. Some of the established manufacturers intend to begin small-scale production in the next few years. Volvo has initiated serial production of its hybrid buses and Scania has begun producing engines and hybrids – based on cooperation between the U.S. Department of Energy, the Swedish Energy Agency and the industry.

Swedish automotive and power companies are currently working on several joint initiatives to promote electric vehicles and plug-in hybrid electric vehicles, with the vision of bringing 600,000 vehicles to the market by 2020.

The *Strategic Vehicle Research and Innovation program (FFI)* coordinates research efforts between the government and industry, and finances initiatives to reduce road emissions and increase traffic security. *Energy Systems in Road Vehicles*, a program financed by the Swedish Energy Agency, aims at reducing fuel consumption in passenger cars and conducts research on hybrid systems and lithium-ion batteries. The *Swedish Hybrid Vehicle Centre (SHC)* program focuses on developing a competitive R&D center for hybrid and electric vehicle technology through continuous cooperation between industry and academia. Finally, the *Environmental Vehicle Development Program* involves several research projects on fuel efficiency.

Government incentives to encourage purchase/use of no-emission vehicles

In 2009, around 215,000 new passenger cars were registered in Sweden, which represents a decrease of 16% compared with the year before. New registrations of electric hybrid vehicles have also decreased but the long term trend continues to be positive.

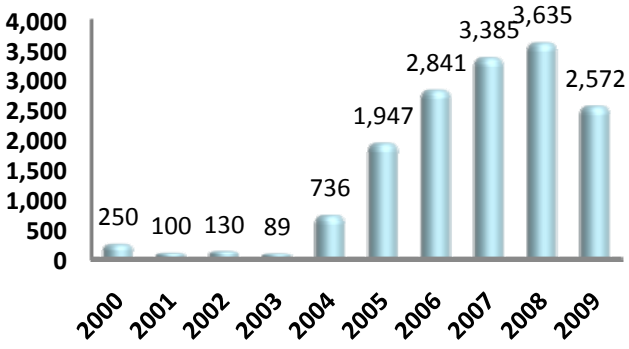

Figure 2: New Registrations of Electric Hybrid Vehicles in Sweden (BioEthanol for Sustainable Transport and BilSweden, 2009)

In a comprehensive report commissioned by the government, the Swedish Energy Agency determined the cost of batteries to be the greatest barrier to the introduction of electric vehicles. The charging infrastructure for electric cars and plug-in hybrids, however, are considered sufficient for the introduction of these vehicles.

Current government rules regarding the taxation of electric vehicles stipulate that the notional taxation burden of electric vehicles used as company cars is reduced by 40% relative to the closest comparable gasoline model. Cars that meet environmental requirements are also exempt from vehicle excise tax for five years. Moreover, some municipalities offer free or reduced parking fees for eco vehicles.

The criteria for a vehicle to be classified as an eco car are listed below:

Alternative fuel vehicles	Must run predominantly on alternative fuels. Fuel consumption should not exceed 9.2 liters of gasoline, 9.7 m^3 of natural gas or 37 kWh per 100 kilometers.
Fossil fuel vehicles	Maximum 120 g of CO^2-emissions per kilometer, implying that fuel consumption per 100 kilometers must not exceed 4.5 liters for diesel or 5.0 liters for gasoline models.
Diesel engine vehicles	Emissions of particulate matter should not exceed 5 mg per kilometer, implying that the vehicle must be equipped with a particulate filter.

An additional requirement for government authorities is that, from 2009 onwards, all purchased or leased passenger vehicles should be eco vehicles.

Companies active in the Automobile Industry

In addition to the major automotive manufacturers, there are also a number of suppliers and subcontractors active in this area:

Consat Sustainable Energy Systems www.consat.se/alternative-powertrain-energy
Effpower AB www.effpower.com

Electroengine in Sweden AB	www.electroengine.se
EV Adapt AB	www.evadapt.com
Park & Charge i Sverige AB	www.park-charge.se

Analysis and Conclusions

Challenges to the introduction of electric vehicles include limited access to charging stations, the perceived restricted range of the vehicles, security issues, and high costs.

Nevertheless, there are many opportunities. There exists a sophisticated Swedish consumer market and climate awareness in general is high. 70% of all car journeys in Sweden are shorter than 30 kilometers, which is within the range of an electric car. The existing infrastructure can also supply the electricity needed to accommodate a large electric vehicle fleet.

A long tradition of clean-tech and power technology, combined with an established local automotive industry creates a strong base for promoting electric and hybrid vehicles. New initiatives are being taken to accelerate the development within the field of electric vehicles and plug-in hybrids.

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4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

Sources

BIL Sweden	www.bilsweden.se
BioEthanol for Sustainable Transport	www.best-europe.org
City of Stockholm	www.stockholm.se
International Energy Agency	www.iea.org
Swedish Association of Local Authorities and Regions (SKL)	www.skl.se
Swedish Energy Agency (Energimyndigheten)	www.energimyndigheten.se
Swedish Transport Agency (Transportstyrelsen)	www.transportstyrelsen.se
Transport Analysis (Trafikanalys)	www.trafa.se
Vattenfall	www.vattenfall.se

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Turkey

Country:	Turkey
Capital:	Ankara
Size:	302,535 (sq miles land)
Population:	72,561,312
GDP per capita:	USD 12,476.449
Population Concentration:	75.5% Urban
Commuter Needs:	Commuting is widespread in metropolitans such as: Istanbul, Ankara, and Izmir. Nevertheless, public transportation is used by a large number of people especially by students and civil servants.

Energy Consumption

Dependence on foreign oil:	90%
Net import:	410,900 bbl/day (2008 est.)

Status of electrical generation and transmission

Turkey's demand for electricity grew at an average rate of 7% per year from 1990 to 2008. Because of the worldwide economic crisis, demand decreased last year and average market prices went 8-9 Eurocents/kWh in 2008 to 6.5 Eurocents/kWh in 2009. In the summer of 2010, demand increased so much that at peak hours prices went up to 20 Eurocents/kWh. Demand is expected to increase by 8% in 2010.

In 2009, Turkey produced approximately 195 billion kWh of electricity from existing installed capacity of 44,600 MW. Turkey will require between 440 billion kWh and 480 billion kWh of electricity production per year by 2020, depending on demand, and will therefore have to more than double existing installed capacity, requiring an investment of over USD100 billion through 2020.

The President of the Regulatory Authority announced a USD3.3 billion investment in power generation by the private sector, increasing capacity by 3,400 MW in 2010. Turkey increased power generation by 2,833 MW in 2009, which included 1000 MW of hydroelectric, wind, geothermal and biomass power plants. With these additions, total installed capacity is expected to be approximately 48,000 MW by the end of 2010.

Amount of alternative energy produced in country

The Ministry of Energy expects renewable energy power generation to meet 30% of Turkey's electricity demand by 2023 (the 100th year of the Turkish Republic).

Wind Power: Current wind power generation capacity of 800 MW is expected to increase to 2,200 MW by the end of 2011. The private sector also plans to invest in at least 2000-3000 MW wind power projects over the next three to five years.

Solar: Turkey has high potential. A recent solar atlas study calculated the total electricity capacity to be approximately 380 billion kWh (56,000 MW thermal power). According to

the Turkish Ministry of Energy, Turkey is ranked second in Europe after Spain as the best country for solar power generation investments.
Biomass: the potential is approximately 8.6 million TOE. Some of the agricultural area used for beet and wheat farming could be allocated for bio-ethanol production, producing 1.5 million tons of biodiesel and 3.5 million tons of bio-ethanol.

Geothermal: Turkey is ranked first in Europe and seventh in the world in geothermal energy resources. Turkey's overall geothermal energy potential is estimated to be 35,000 MW. Current geothermal production is 2 million TOE and expected to increase to 6.3 m TOE by 2020.

Concern with environmental issues

Turkey's economic emergence has brought with it fears of increased environmental degradation. Turkey's boom in industrial production resulted in higher levels of pollution and greater risks to the country's environment. Rising energy consumption and the increase in car ownership have increased air pollution, and as Turkey continues to develop its economy, the problem likely will be exacerbated unless preventive actions are undertaken. Recognizing these issues, the Turkish federal government and municipalities have taken several measures to reduce pollution from energy sources.

Turkey was not able to implement environmental protection measures until recently, because of the scarcity of resources and the developing nature of the economy. However, with the start of accession talks with the European Union, Turkey adopted a new environmental law to initiate the harmonization of its regulations with EU standards. In 2006, the Ministry of Environment published the "EU Integrated Environmental Approximation Strategy Paper," which is a roadmap for allocation of resources and budget through 2023 to become fully aligned with EU environmental directives. To reach this target, the country will have to invest about USD100 billion by 2023 in water, wastewater, solid waste, air pollution and industrial pollution. The major step in discussing the alignment process began in December 2009 when the EU and Turkey opened the 'Environment Chapter' for official discussions.

In the 1980s, Turkey was dependent on coal for heating, which resulted in heavy air pollution across the country. The government now enforces the use of low sulphur coal and has started promoting the use of natural gas for heating. Today, approximately 16% of the country's energy imports are composed of natural gas.

Emissions from industrial plants, thermal power plants and cars also contribute to air pollution. Using catalytic converters has helped decrease the pollution caused by cars, but the problem of exhaust gas has not been solved. Smokestack emissions contribute almost 40% of the total sulphur dioxide pollution in the country. In the last few years there have been efforts to ensure that industrial areas do not operate outside environmental protection standards, but there are thousands of industries that have yet to install air pollution prevention systems.

Transportation Overview

Motorization: 19.5 motor vehicles per 100 people (2009 est.)

Status of mass transit

All municipalities in Turkey provide public transportation with buses, and minibuses, and in some cities with metros, railways, ships, and ferries. However, a large number of people in Turkey prefer using their own vehicles, causing traffic congestion in metropolitans such as Istanbul, Ankara and Izmir.

Status of local auto industry

Turkish automotive production capacity reached 1.2 million units, and is targeting 2 million in 2015.

Turkey ranks as the following among the European Union countries:

- The largest bus producer
- Third largest LCV producer
- Third largest truck market
- The 17th largest automotive producer in the world

Turkey is becoming a production base for commercial vehicles. Ford already has a strong commercial vehicle manufacturing presence in addition to its strong passenger car production, and the line keeps attracting new manufacturers. In July 2010, MWM, the South American affiliate of US truck maker Navistar, entered into a partnership with the Turkish bus maker, Otokar, to produce diesel engines. By 2014, commercial vehicle production is expected to reach an annual capacity of 700,000 vehicles.

The Turkish automotive parts/service equipment industry has expanded as Turkish automotive production and imports have increased. Today, the Turkish automotive and parts industry has become an integrated part of the global automotive and parts industry. The Turkish auto parts industry manufactures parts for the vehicle manufacturers in the Turkish market and for foreign partners, as well as for the aftermarket in all these markets. With its high production capacity, high standards, and a wide variety of manufactured products, automotive exports in Turkey now rank first in total exports ahead of such traditional goods as textiles and apparel.

Renault introduced its Fluance in Turkey, and then started working on its electric motor car. Renault is planning to start selling this version in mid 2011. Its primary focus is the export market, but it has also been working with local officials to make the infrastructure ready for electric motor vehicles. Renault sees three options for charging its batteries: quick drop, where vehicle owners will be able to change the battery, which needs a higher investment for charging centers; fast charge in about 20 minutes; and longer charging in seven to eight hours. Fast and slower types of charging will be possible in interior type parking areas and supermarkets with designated parking places.

The joint venture between Fiat and local conglomerate Koc Holding produced Tofaș, a leading local automotive manufacturer. Tofas introduced its new electric car, which is the first electric car success of Turkish engineers. The Tofas company has even more recently allied with Arcelik, also of Koc Holding. Arcelik will produce electric engines for the Doblo electric van. Tofas will invest between USD 6.5 and USD13 million to produce 1,500 Doblo vans per year beginning in 2011. An additional plan of making an electric

version of the Fiorino van, which is slightly smaller than the Doblo, is part of this agreement.

Turkish experts believe that such projects will firm up Turkey's position as one of the most competitive EV production bases.
Import models will also find a good market in Turkey. Chevrolet is expected to present its first electric vehicle, Volt, in the last quarter of 2011, and Opel will bring its first electric vehicle, Ampera, at the end of 2011 or beginning of 2012. However, both firms also state that depending on how things go with the infrastructure plans, timing might change.

An effort toward the production of hybrid vehicles has begun. A prototype kit that enables conversion of diesel and gasoline run engines to also use electric energy is already on the roads. Ten more will follow, depending on the success of the prototype. Tepas, a small electric motor production company, Forum, an engineering company, and Yigit a battery company are working together on this R&D project. Waste collecting trucks, cabs, and buses that provide transportation in the cities are the target customers. The project expects to bring a 30%-35% saving in fuel consumption.

Government incentives to encourage purchase/use of no-emission vehicles
Turkey's Ministry of Industry and Commerce states that it supports both the production and the use of electric cars in Turkey. However, there is no legislation covering electric cars, nor is there an infrastructure for them. Both local producers and importers expect the Turkish government to provide incentives to buy and use electric vehicles that are both environmentally friendly and energy saving, given that Turkey signed the Kyoto Protocol.

Companies active in the electric automobile area
Tofaş
http://english.tofas.com.tr
Contact: Mr. Alper Canyas, Institutional Communication Director

Renault
www.renault.com.tr
Contact: Mr.Tarık Tunalioglu, CEO

Tepas
www.tepas.com.tr/anasayfa_en.htm
Contact: Mr. Melih Aksoy, CEO

Chevrolet
www.chevrolet.com.tr
Contact: Mr. Murat Aydin, Managing Director

Opel
www.opel.com.tr
Mr. Sinan Ulusoy, Foreign Relations Manager

Most international vehicle producers already have production in Turkey. Presently, there are 19 international vehicle producers in the Turkish market including; Ford, Toyota,

Renault, Fiat, Chrysler, Opel, Honda, Hyundai, Peugeot, MAN, Mercedes, Isuzu, Mitsubishi, through joint venture (JV) partnerships with local firms, direct investment, or license agreements.

Analysis and Conclusions

Progress in this market is dependent on the local government. If the regulations (incentives, customs tariffs, HS numbers, and insurance incentives) can be put in place in a timely way that satisfies consumers and suppliers, the market can grow very rapidly. Experts believe that local officials need to react urgently to become a major player in this promising market.

On a scale of 1 to 4 how would you rate your country: 2

1 – Little to no probability of success for U.S. Exporters
2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

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United Kingdom

Country:	United Kingdom
Capital:	London
Size:	241,930 (sq km land)
Population:	61,284,806 (July 2010 est.)
GDP per capita:	USD 35,200 (2009 est.)
Population Concentration:	90% Urban (2008), estimated growth 0.5% (2005-2010 est.)
Commuter Needs:	Public (coach, bus, underground, train services) and private transportation.

Energy Consumption

Dependence on foreign oil:	11%
Net import:	49,000 bbl/day (2008 est.)
Consumption:	1,710,000 bbl/day (2008 est.)

Status of electrical generation and transmission

Production of electricity in the UK has decreased over the past four years. In 2009, it totaled 378.5 TWh (terrawatt hours), a 5.3% decrease from the previous year. Consumption of electricity fell by 5.7% to 322.4 TWh.

Amount of alternative energy produced in country

Electricity generated from all renewable sources as percentage of total UK: 6.7% in 2009. Of this percentage, biomass, wind generation, and hydro generation accounted for 44%, 37% and 21%, respectively. The total generation from all renewable sources was 25,222 GWh (giggawatt hours), up 17% from 2007. The 2008 Renewable Energy Directive, which requires that the UK produce 15% of the energy the country consumes from renewable sources by 2020, will ensure continued growth in this sector.

Concern with environmental issues

The main environmental concerns involve $C0_2$ emissions, other noxious emissions, and vehicle recycling. There are several national and international policies that address these issues.

Transportation Overview

Motorization: 0.40

Annual total of cars on UK roads in 2009: 31,035,791

Status of mass transit: Advanced

Status of local auto industry

A significant portion of the U.K. economy is attributable to the automotive industry: the sector accounts for USD 78 billion in turnover and USD 15 billion of value added to the UK economy. The UK is the fourth largest producer of vehicles in Europe, producing 1,446,619 and 999,460 vehicles in 2008 and 2009, respectively, and supplies to more than 100 markets worldwide. More than 1 million cars and commercial vehicles, and two million engines are produced in the UK every year. Seven volume car manufacturers and

eight CV manufacturers are based in the UK, and 19 of the top 20 global components suppliers have operations in the UK.

Sector Profile

	2004	2005	2006	2007	2008
Automotive manufacturing sector turnover (£bn)	46.9	48.2	49.3	51.0	52.5
Share of total transport manufacturing turnover (%)	67.1	67.7	66.7	66.7	65.2
Total net capital investment (£bn)	1.4	1.3	1.4	0.9	0.8
Automotive sector value added (£bn)	9.4	9.4	9.9	10.3	10.1
Total employees directly dependent on the UK automotive sector	866,000	874,000	841,000	841,000	827,000
Value of exports (£bn)	22.5	23.7	24.1	24.5	26.6
Percentage of total UK exports (%)	11.8	11.2	9.9	11.1	10.6
All automotive sectors - value added share of GDP (%)	3.4	3.3	3.2	3.3	3.1
UK share of global passenger car production (%)	3.8	3.5	3.0	3.0	2.9
Number of UK volume car manufacturers	9	8	7	7	7
Number of UK commercial vehicle manufacturers	9	9	9	9	9

(www.smmt.co.uk)

Government incentives to encourage purchase/use of no-emission vehicles

On April 16, 2010, the Department for Transport announced plans to create a USD 375 million program to reduce the price of electric and plug-in hybrid cars from 2011 onwards by making electric vehicles more affordable. USD 30 million of this scheme will be allocated to the development of an EV charging infrastructure framework.

On July 28, 2010, the Department for Business Innovation & Skills announced a USD 7,500 incentive for buyers of low-carbon cars. The program is scheduled to begin in January 2011 and is designed to "help Britain become one of the leading centers for the design, development, and manufacture of ultra-low carbon vehicles." The government also announced continued funding of USD 65 million to support the initial purchase of EVs in 2011.

Other national discounts available include a Vehicle Excise Duty exemption, enhanced capital allowance, and lowest rate of Benefit in Kind/company car tax. Local measures include the congestion charge exemption in London and free/reduced price parking in the City of Westminster.

Companies in the Automobile Industry

There are 30 automobile manufacturers and parts companies listed on the stock exchange active in the U.K. They range from small specialized firms to multinational car, van, truck and bus manufacturers. The top five car producers in 2009 were Nissan, BMW/MINI,

Toyota, Land Rover, and Vauxhall. Top commercial vehicle producers were IBC, Ford, Leyland Trucks, Vauxhall, and Land Rover. Top EV models include Aixam-Mega, Reva G-Wiz, EUAuto, Citroen, Smart, Tesla, and Mitsubishi. In the commercial vehicle sector Smith Electric Vehicles, the world's largest and oldest manufacturer of commercial electric vehicles, is the dominant player.

Analysis and Conclusions

Many manufacturers recognize the need for a transition to low-carbon alternatives. Stringent emissions and energy efficiency policies and legislation are pushing the local industry towards "green" vehicles.

Current Sector Issues

Electric vehicles represent an emerging sector in the UK and are becoming increasingly popular because of rising economic and environmental concerns. In 2009, there were 55 electric vehicle registrations in the UK and 14,645 petrol/electric registrations. To address the initial high costs of batteries and until manufacturing economies of scale can be attained, early market support is crucial to increase the affordability of electric vehicles. At present, there is a lack of infrastructure to support mass use of electric vehicles, and a network of charging stations must be established. Also, an increase in demand for electricity will increase additional demand on the electricity grid, which will necessitate the use of smart meters and dynamic tariffs. Current electric car models are small, have limited range and take hours to charge, which makes them less attractive to the average consumer.

Current Environmental Policies

In order to cut $C0_2$ emissions, legislation was passed in 2008 requiring European car manufacturers to reduce average emissions from new cars to 130g/km by 2015. In 2009, the European Commission passed additional legislation, directed at van manufacturers, which would require fleets to have an average $C0_2$ reduction target of 175g/km from 2014 onward. Because of the length of product development cycles, industry is concerned that the target lead time is not realistic.

The "Euro Standard 5," an engine emission standard that reduces noxious emissions from vehicles, will come into effect for passenger cars in 2011, but is already standard for all types of new commercial vehicles. The voluntary UK Climate Change Agreements (CCAs), mandatory EU Emissions Trading Scheme (EUETS) and Carbon Reduction & Commitments (CRC) also aim to reduce emissions in the manufacturing process.

The End of Life Vehicle Directive (ELV) was enacted to increase the reuse and recycling of vehicles and to raise standards at vehicle-processing sites. In 2009, the Department for Business, Innovation and Skills stated that the UK recovered an average of 84.2% of each vehicle in 2007 (www.smmt.co.uk).

Best Opportunities for Electric Vehicles, Parts, and Systems

- Ultra Low-Carbon Vehicles in the UK
- Carbon benefits
- Recharging and Infrastructure Grants
- R&D Programs
- Low-Carbon Vehicle Innovation Platform

- Competitions to accelerate research and development leading to the reduction of carbon emissions from mass market road vehicles

Details on these programs are available from the Department for Transport: www.dft.gov.uk

Electric Vehicle Network
There are already many electric vehicle charging points in the UK. Users can charge their vehicles at home, at work, or at public charging points on the street, car parks, and in certain shopping centers (see map).

(www.ev-network.org.uk)

On a scale of 1 to 4 how would you rate your country: 3
1 – Little to no probability of success for U.S. Exporters
2 – There are more challenges than opportunities for U.S. exporters
3 – There are more opportunities than challenges for U.S. exporters
4 – Very high probability of success for U.S. exporters

Resources and Useful Contacts

EV Network
www.ev-network.org.uk/

The Society of Motor Manufacturers and Traders Limited (SMMT)
www.smmt.co.uk

Department for Transport (DfT)
www.dft.gov.uk

Department for Business Innovation & Skills (BIS)
www.bis.gov.uk/

Low Carbon Vehicle Partnership (LowCVP)
www.lowcvp.org.uk/search/assets.asp

Department of Energy & Climate Change (DECC)
www.decc.gov.uk

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Key e-Resources

Trade Promotion	• www.export.gov • www.buyusa.gov
Finance	• www.exim.gov • www.sba.gov
Industry Market Intelligence	• http://export.gov/industry/auto/index.asp • http://trade.gov/mas/manufacturing/OAAI/
Trade Events	• http://export.gov/tradeevents/index.asp • www.buyusa.gov/auto

U.S. Commercial Service—
Connecting you to global markets.