Building Green Transport Ecosystem in the Operation of Logistics in the Kingdom of Saudi Arabia

Dr. Asha Alexander

Department of Business Administration - Female Branch, Jubail University College P O Box 10074, Jubail Industrial City 31961, KSA.

Sustainability is an opportunity and the Middle East especially Saudi Arabia offers extremely lucrative opportunities for companies able to take advantage of the region’s emergence as global logistics hub. Green transportation takes a crucial part in the operation of logistic. Reshaping the green transport ecosystem flows to combat environmental challenges and build a sustainable ecosystem in the operation of logistic, is the need of the hour. The purpose of this paper is to illuminate and identify the holistic role of government, corporate sector and civil society in building of green transport ecosystem through collecting and analyzing various application cases and practices in transportation from literatures. It especially, emphasis the pragmatism of civil society as a main tendency and education as an invigorating tool in restoring the equilibrium in green transport ecosystem in the operation of logistics. As an academician the researcher believes that this will provide an insight of general framework and expect to be referred for further researches.

Keywords: Green Transport Ecosystem, business opportunity, sustainability, civil society, logistic

INTRODUCTION

Rapid pace of globalization in recent decades has gained momentum in transportation and logistics industry. Over the last 30 years, governments have greatly reduced barriers to trade. Trade liberalization has been complemented by technological and managerial advances (WEF, 2013). There has been an ever-increasing share of world trade consisting of intermediate inputs, reflecting the capacity of firms to fragment the production process into ever finer parts and to locate different tasks in different countries so as to reduce total costs of production. The transportation sector is currently at a point in time characterized by both great opportunities and challenges. The introduction of new technologies, new players and changing customer behavior

*Corresponding author: Dr. Asha Alexander
Department of Business Administration - Female Branch
Jubail University College P O Box 10074, Jubail Industrial City 31961, KSA.
E-Mail: alexander.asha@gmail.com
provide the sector with the potential to transform as a system, for new business models to develop and for the different modes to provide more concrete responses to the challenge of environmental sustainability (WEF, 2012). UN secretary general Ban Ki-Moon has very rightly said that energy transforms lives, businesses and economies and to succeed, we need everyone at the table including governments, the private sector and civil society (Accenture, 2012). All these players have to work together to accomplish what none can do alone. There is a need to raise sustainable energy to the top of the global agenda and focus our concentration, resourcefulness, wealth and funds to make it a reality. The researcher has therefore made a small attempt to analyze and comprehend the transport ecosystem in the Kingdom of Saudi Arabia in the operation of logistics. It presents the commitment and support of the government and corporate obligation in the region for a green transport ecosystem through literature reviews. The paper concludes by calling for shift in behavior by the civil society through education for maintaining equilibrium in the green transport ecosystem in operation of logistics.

**EMPIRICAL STUDIES AND LITERATURE SCANS OF GREEN TRANSPORT ECOSYSTEM**

Literature scan and workshop with transportation experts, to examine the major trends shaping the future and their interrelationships with transportation, shows that demographics, societal factors, environment, technology, economics, government and politics have great impact on travel demand behavior, advanced transportation system operation and performance, sustainable transportation, transportation finance and delivery of transportation services (ICF, 2008). There is also great impact of sustainable management practices on better reputation, employee motivation, employee relationship with stake holder, contribution to innovation of products, improved ability to attract talent, risk mitigation competitive advantage, cost reduction and easier access to new market (Business and Society, Belgium, 2011). According to a Delphi survey, climate change and carbon dioxide emissions are clearly becoming significant factors in logistical decision-making. Over 50% of companies involved in road freight transport operations are likely to see their activities affected by climate change concerns to a significant or large extent by 2015 (Piecyk and McKinnon, 2009). This is expected to rise to over 80% by 2020. Open dialogue, information sharing and pro activity amid both transport buyers and providers are essential for environmentally sustainable freight transport and it is important to also have a holistic view when aiming for environmentally sustainable freight transport (Vendela Santén, 2013). The issue of green supply chain management is critical for the successful implementation of industrial ecosystems and industrial ecology. Today’s competition is not between companies but between supply chains. This has been described from production firm perspective, in Turkey, where the main concerns of firms were to continuously thinking tracking and controlling how to manage their all kinds of cost, especially transportation cost. Green supply chain management encompasses potential to make cost saving in transportation and there exists a relation between fuel consumption & maintenance, repairing expenditure and transportation cost (Mehmet Saridogan, 2012).

**Transportation for tomorrow**

Transport has a vital role to play in supporting sustainable economic growth (Department of transport, 2007). All big cities are concerned with flows of people, vehicles, goods and services, waste, energy and even data. All these flows are necessary to augment cities’ economic growth. Larger cities are becoming increasingly complex ecosystems. The flow of both people and services within them is rising as one of the most difficult challenges of our time. While urban overcrowding was merely an inconvenience some years ago, it is now a source of competitive disadvantage for business (WEF, 2013). The negative consequence of traffic jam affects almost every aspect of a city’s performance. Regardless of location, these cities increasingly need to be able to respond to a variety of turbulent events, be they environmental or sociological. The urgent to build toughness is forcing concerned officials to prepare for
unplanned shocks to their systems. They hope to maintain continuity in the supply of goods and services, often by conducting risk assessment and contingency planning similar to that found in many multinational corporations.

Technological innovation has come together as a solution in a meaningful and practical way for these turbulent events. Catalyst paper has initiated a dunnage return program, taking advantage of the closed-loop distribution system that returns to take back dunnage to benefit customers and the environment (Catalyst, 2007). London Drugs has optimized reverse logistics by making use of a closed loop truck delivery system between its distribution center and stores. It centralizes recyclables, such as pop cans and film cases and customer returns, such as appliances and electronics, allowing efficient handling of returned goods and disposition of recyclables (Elizabeth Withey, 2014). The effect of additive manufacturing, popularly known as 3D printing is reflected on the future ability of consumers to manufacture their own devices at home which were difficult to forge otherwise thus avoiding manufacturing complexity. Although supply chain risk is now firmly on the corporate agenda it is not the only threat that companies facing. The cyber hackers are increasingly targeting the information and communications technology. The transportation sector is finding itself increasingly in the line of fire (WED, 2013).

Sustainability as a business opportunity
Planning for the impact of urbanization, cyber threats, changing market dynamics, impacts of extreme weather, increasing environmental and social regulation, unexpected increasing risk of legal action over environmental and social transgression, migration and potential conflict over resources and reshaping logistical flows accordingly is a mammoth task. There is a need to define sustainability as a concrete strategic issue. Sustainability should be viewed as an opportunity (Balkan Cetinkaya, 2011). The business models opportunity are reduce costs through more efficient and sustainable production processes, innovate new products and services that provide solutions to the challenges of environment, tap into new markets in new places, protect brand value by managing risks effectively, enhance corporate reputation and strengthen stakeholder relationships.

Many transportation managers are of the view that climate change is just another risk factor of concern in business. Allowance is already made for adverse climatic conditions in the management of transport and there exists contingency plans to accommodate extreme weather conditions. Firms like Nike regularly assess their exposure to climate risk. The business models should consider ‘climate proofing’ of transport infrastructure, ‘climatic stress-testing’ of current and future transportation systems and cross-sectorial impact of climate change on transportation system as an opportunity (WED, 2013). Besides this changes in temperature regimes are already causing significant shifts in agricultural zones, forcing the reconfiguration of food supply chains to a new geography of food production and distribution providing yet another growth opportunities for transportation system.

For sustainability, business needs to invest in research and development and push for activities with regard adaptive logistics and transportation system. Research and development activities should examine all the ways in which transportation systems will need to be modified over differing time-scales and geographies in response to climate change. It would provide transportation system providers and their clients with advice on adaptation planning and help raise the profile of adaptation issues in corporate agendas. Mercedes Electric Supply leveraged UPS’s integrated transportation network to deliver everything from letters to cargo containers and saved 20 percent on its bottom line. Wal-Mart has revolutionized trans-modal road transport with tactics such as cross docking, warehousing and radio frequency identification; the same must be achieved for trans-modal and intermodal for rail and ship transport (Accenture, 2012).

Sustainability in business is also about creating value, knowledge and transparent system. The good concepts behind best practice have often been developed from simple ideas by the people directly responsible (Balkan Cetinkaya, 2011). The values, awareness and the mindsets of the people
in ecosystem are fundamental in implementing and determining sustainability results. So need arises to establish a dedicated organization. At Purolator’s high company standards and maintenance methods are the foundation of greening the fleet initiative for pollution prevention. Drivers are trained on pre-trip vehicle inspection procedures to verify fluid levels, lights and steering functions and to check for leaks and tire bulges daily. A formal no-idling policy requires that vehicles be turned off when stopping for a delivery. Defensive driver training encourages drivers to maintain steady, safe-driving speeds, which enhances fuel efficiency (Purolator Courier limited, 2004)

To build a business that is sustainable in the long-term, is a journey comprising of phases like analyzing risks and opportunities, planning and develop strategies, implement new systems and delivering training and education, monitor and measure environmental and non-financial information social impacts, design reporting approach and assure reporting systems and measure return on investment and analyze cost/benefit (KPMG, 2013)

The Transport Ecosystem And The Operation Of Logistics In The Kingdom Of Saudi Arabia

The Kingdom of Saudi Arabia has long been recognized as a powerhouse of the Middle East. The Kingdom of Saudi Arabia is located strategically between 3 continents namely; Asia, Africa, and Europe. The Middle East countries, mainly on the Arabian Gulf, have built contemporary warehouses and transportation infrastructure and are filling the gap for Africa, Central Asia, India and Pakistan, which have fast-growing consumer markets and local production but lack the transport infrastructure, storage and services. Gulf countries have also developed free trade zones, adopted liberal policies, simplified customs procedures and strengthened anti-corruption measures and are able to act as gateways for goods coming from Asia, Europe and North America. This region is also serving as a major distribution points for goods moving within markets in the Middle East. The transportation and logistics industry represents companies that transport goods and that put forward logistics services in a range from trucking, rail, air, and marine and form of logistic operation variety of ways from supply chain management, reverse logistics and freight.

The Kingdom’s strong economic growth and continuous urge to spend on infrastructure have all made it a market ripe for investment. It was awarded third spot in the 2014 Index and has been a star performer among globally emerging markets. Ti, the leading global, transport-focused research house, estimates that the logistics sector in the Middle East will increase from €2.36 billion in 2013 to €3.15 billion by 2017. There will be an expansion by 33% in the logistics sector by 2017, approximating an average of 7.5% a year. There is a strong growth in international freight forwarding and is predicted of 7.8% annually until 2017, ocean freight as a share of this region is expected to grow up from 55.2% last year to 57.8% in 2017 (Worldtradewt100, 2014)

Oil and Gas, infrastructure and trading industry segments are the foremost contributors for this sector in the region, Saudi Arabia, UAE and Oman report for around 85 per cent share. The transport and logistics Sector in Kingdom is supporting a population of 27.14 million (2010), and within only 3 hours flying radius, the sector can serve more than 250 million for both cargo and passengers. Considering even wider service circle, the two holy cities of Makkah and Madinah located in Kingdom, this makes a great value proposition of the wider Muslim world where Saudi Arabia transport and logistics sector can also provide services to a wider 1.4 billion Muslim consumers. Besides having an attractive and large transportation & logistics market there was high commitment and support from government reflected in the national transportation strategy. While the vision addresses the needs for the transport sector in the context of social and economic development the strategic goals covers the fields of efficiency, socio-economic development, safety, environment, national protection and Hajj transport (NTS, 2011)

Education And The Holistic Role Of Government, Corporate Sector And The Civil Society
In the Kingdom, various government agencies play significant role in all levels of management in the transport and logistics sector. All modes of transport; Road, Rail, Sea and Airports complement the infrastructure for the transport and logistics sector. Those government agencies play complementary roles to provide comprehensive infrastructure and services to users in the Transport and logistics sector. With the right incentives and by leveraging the countries strategic location to attract more traffic to its Sea and Airports, Logistics network; The Government aims to strategically privatize operation and management of components of the transport and logistics sector. Transport and logistics sector infrastructure tied with best practices regulations will provide needed ingredients to position the Kingdom as a country of choice and be positioned as a global hub for cargo and services. (SAGIA, 2010)

Economic indicators for 2010 states that the Kingdom’s GDP growth increased by 3.2%, and as emphasized in the 9th Five-Year Development Plan (2010-2014) GDP growth expected to raise to 5.2%. Government expenditure for the transport and communication sector alone, was SR 58.3 BN which comprised 6.8% of GDP in 2009. The Government expenditure expected to rise to SR 78.3 BN (7.1% of GDP) – growth rate of 6.1% by 2014. The 9th Five-Year Development plan estimated Government spending on Transportation Sector (including Ministry of Transport, Railway Organization, Ports Authority, and Civil Aviation Authority) to increase from 8th Five-Year Development plan by 97.5% (from SR 51.4 BN to SR 101.5 BN). The Saudi Arabian General Investment Authority SAGIA developed 2005-2010 strategy with a Vision to achieve rapid and sustainable economic growth in Saudi Arabia by capitalizing on the Kingdom’s

**FIGURE 1 & 2 HERE**

Competitive strengths as the global capital of energy, and as a major hub between East and West. As a result of the economic growth and the progress of its economic cities, annual cargo capacity will triple from 300 million tons in 2005 to around 900 million tons in 2020. 60% of the growth is due to basic demand growth, 30% due to the development of Economic cities, and 10% due to the successful leverage of launch pads on the Red Sea. The international share of cargo movements will increase to more than 60% in 2020 with a shift to relatively more trade with Middle East and Africa. Domestic volumes and international volumes will be transported by road and rail and sea respectively. Kingdom’s unique location at the Red Sea allows launch pads to contribute ~10% to overall logistics demand growth by 2020 (Sagia, 2010)

Business and Investment Opportunities as offered by the Kingdom’s expansion plans on spending in the Transport Sector was stated in the 9th (2010-2014) to SR 101.5 BN.

The Multi Modal Transportation and Logistics Opportunities investment are shown in figure 1. The program actions framed by National Transportation Strategy, Kingdom of Saudi Arabia Ministry of Transport is shown in figure 2. The program actions in three areas related to transport namely infrastructure, freight and environment shall achieve progress towards higher levels of transport infrastructure efficiency and initiate additional impulses for economic growth, generate momentum for regional integration of expanding international road, rail, and maritime transport, and for efficient and integrated transport services to reduce the economic distance between the regions and global markets and improve and enforce standards as well as strengthening institutional and professional capacities.

As mercury goes progressively up, the hot weather conditions does not appear to deter the mounting levels of logistics activities in the region. The business runs as a usual with frenetic logistics-related activities in the nodal points particularly the airports and seaports (Link, 2014). With a model transport system in the Kingdom, business will thrive. Economic prosperity can spread to remote regions and villages, where small industries can rejuvenate local economies. Health, education and social services will expand along the transport routes, bringing the payback of the Kingdom’s modern development to all citizens (Riyadh Chamber of Commerce, 2005)

**Corporate Sector Obligation**
In the Middle East, the domestic services segment especially inland transportation and warehousing of the logistics market on one hand is dominated by the local player’s on the other hand international service segment from freight forwarding and international transportation by air / ocean is dominated by multinational players such as DHL, TNT and Agility (Frost & Sullivan, 2013). Transportation and logistics companies are major consumers of petroleum based fuels and therefore have a considerable opportunity to transform their core operations through improved energy efficiency and through innovations in sustainable energy. Companies DHL, TNT and Agility are driving value levers through revenues generation, brand enhancement, and risk management by building sustainable energy considerations into the services offered to the marketplace.

The dominant multinational player in the region, TNT Express reports in accordance with the Global Reporting Initiative (GRI) G4 reporting criteria and guidelines. Since 2004, it has been included in the Dow Jones Sustainability World Index. In 2013, TNT Express scored 88 out of a possible 100 in the Carbon Disclosure Project (2012: 74) and in the Dutch ‘Transparantie Benchmark’, it ranked 62 (2012: 49) with a score of 161 points (2012: 160 points). Their key initiatives were own drivers trained in eco-driving; 90% of own vehicles in the European Union at Euro 4 or higher emission standards; telematics applied to 50% of own road vehicles; 100% of own line haul trucks and trailers equipped with aerodynamics; and 100% of British Aerospace Bae 146 aircraft replaced by latest, greater fuel-efficient fleet (TNT express annual report, 2013).

The next corporate player DHL’s, Solutions & Innovation department leverages its partner network covering from smart technology to behavioral analysis. DHL-led consortium has collaborative joint research into city logistics on behalf of several local governments. It further is also into analyzing the differing needs of ageing demographics across the world. The department has been supported by the Eindhoven University of Technology through a study of game theory to understand how greater collaboration can be forged between logistics carriers undertaking last-mile deliveries. DHL engages with the World Economic Forum, the World Business Council for Sustainable Development and the International Council for Local Environmental Initiatives (ICLEI) for knowledge exchange on sustainability and resilience (WED,2013).

Agility Saudi Arabia, the largest 3PL warehouse in the country, delivers cost-effective logistics solutions tailored to Kingdom’s, retail, fashion, industrial and oil and gas businesses. Shipments from and into the kingdom were taken care at capital Riyadh. To fulfill customer’s demand a 40,000 sqm state-of-the art, and 870,000 sqm of, open yard warehouse was constructed. Their logistics experts are continuously seeking to build efficient, transparent end-to-end supply chains. It was recently awarded Nokia’s annual sustainability award for a supply chain innovation that helped the global telecommunications company slashing costs and carbon dioxide emissions. The customer-focused environmental carbon dioxide impact reporting tool provides customers with Greenhouse gas (GHG) emissions associated with transportation –mainly the carbon dioxide resulting from the fuel of vehicles used to move customers’ goods (Agility, 2014).

With the logistics sector increasing its focus on the Kingdom’s market, list of entrants from the Kingdom in this year’s power list is becoming more prominent. Syed Mustafa, vice president of logistics at the Almajdouie Group, has helped to pioneer the concept of outsourced logistics with major breakthroughs being achieved in recent years. The growth of its various logistics operations has outperformed some of the biggest players in the industry. Brian McHale is another powerful man of the region who was appointed the chief executive officer of Wared Logistics in 2009, to develop the company as most promising entrant to the global 3PL sector. Klaus Dahl Tindborg Tindborg, of Damco had successfully carried out the merger process of Damco and Maersk Logistics under the Damco brand, helping to strengthen his position as a prominent force in Middle East logistics (Arabian business, 2010).

And while some of these corporate sector has played significant role in sustainable
transportation others seem to still be taking short-term actions in order to weather the storm, while still others are pursuing new approaches and reorganizing their operating models to turn volatility into opportunity. Some of directors in the transportation system are of the view that they were grappling with demand volatility; those with more mature systems also demonstrated that they were starting to take measures to develop stronger collaboration with their suppliers and customers in order to improve planning, reduce fluctuations, enhance flexibility and drive out costs (KPMG, 2012). So there is need to focus on bringing agility to their transportation system, not only to manage current volatility in the markets, but also to put themselves in a competitive position.

Still many manufacturers overwhelmingly focused on profitable growth in transportation system. But rapid globalization of trade, blossoming of E-commerce, pressure of globalized market, such as World Trade Organization (WTO) transparency and visibility remain a key challenge for the manufacturers along with data improvement, integration of new technologies; greater partnerships and collaborative business models (KPMG, 2014). The new challenges and complexities bring substantial impacts on the purchasing and supply strategies of the manufacturing sectors, Efficient Consumer Response (ECR) and Quick Response (QR) for more demanding consumers and continuously changing consumer preferences.

Understanding of business opportunities at the bottom of the pyramid is very essential (CSR Asia, 2011). Sustainability in transportation in the region is possible if all the player give priority actions to advance their business opportunities in the sustainable energy market, focus on better operations of vehicles, vessels and aircrafts to maximize energy efficiency of transport, upgrade fleet to enable use of alternative, less carbon-intensive fuels, improve the intermodal and transmodal transfer systems to increase energy efficiency and partner with manufacturers to improve the design and energy performance of vehicles, vessels, and aircraft (Accenture, 2012).

**Pragmatism in Civil Society**

Equilibrium in green transport ecosystem cannot be achieved in isolation. This ecosystem is a dynamic entity subject to periodic agility and perturbations (KPMG, 2012). The ecosystem yield and sustainability depends on all the three major players’ government, corporate sector and civil society. The green transport ecosystem can remain in equilibrium state, by resilience of organization of active citizens “civil society”. Community participation in sustainability measures is an age old concept (World bank, 1996).

There is increasing awareness of environmental issues within society, resulting in greater demand for green. There is still no denying that, environmental awareness has evolved from a marginal issue in mature western societies to an apex global consideration for consumers. It is shared by people in Europe, Asia and the Americas similarly. Echoing this, educational institutions are identifying the shared concern about sustainability and the need for qualified people to look at it. Consequently, the number of MBA careers that require sustainable knowledge is mushrooming. More and more business schools are incorporating green subjects into their curriculum (GradView, 2010). Transportation is an established module in civil and environmental engineering department curricula in a number of universities in the Arab region. Courses addressing the environmental implications of transportation activities and the technological options to make the sector more environmentally sustainable are taught by experienced lecturers within more specialized courses. Green transport concepts, like energy efficiency, are mostly taught as part of broader content areas in the undergraduate programs, and in selected graduate courses (AFED, 2011). There is a need to establish academic research and education programs that focus on the role of public policy in formulating the right mix of mandates and incentives for more sustainable patterns of transport. If established, such programs could conduct research to evaluate the efficacy of proposed regulations, quantify their market and non-market values, and offer proposals for new measures and for improving existing ones. More research studies in the travel behavior have to be carried out.
Consumers are aware of their market-shaping power. Surveys are carried out by companies to understand what matters to the customer and gain insight into consumer attitudes about sustainability and how sustainability affects their buying decisions (Accenture, 2012). Behavioral changes already are underway. Over the coming years consumers would further change their behavior to favor a company that uses green transport and logistics solutions over cheaper solutions. As a consequence, the green transport of their products would be a decisive factor for them in winning customers in the future. While environmentally concerned consumers tend to choose products that have been locally produced in order to avoid transportation emissions, it turns out that the calculus is not that simple. While the distance that food travels to reach the consumer is a significant factor, other variables, such as the transport mode, emissions in the food lifecycle, usage of greenhouses, pesticides and artificial irrigation, also substantially influence the product’s carbon footprint. This not only points to the key role logistics processes play in providing lower carbon products, it also underlines the need for clear and transparent information on carbon footprints. Only transparency will empower consumers.

The demand for low-carbon logistics solutions is on the rise. Today, more sustainable products are more costly. As far as fair-trade products and organic food is concerned, this has not been an obstacle to market success. There was an increase from GBP 21.8 million in 1999 to GBP 799 million in 2009 in UK, with regards to retail sales volume of fair-trade products. In period 2006-2007, the market for organic food has grown considerably by 70 % in the Czech Republic, 24 % in Norway and by 15 % in Germany. The total revenue in Europe from organic food was estimated at € 16.2 billion in 2007 (Paddle et al., 2009) Food is a very high involvement product, but for consumers to demonstrate the same willingness to spend more for more sustainable offerings for logistics products. Education is very important.

The use of information and communications technologies has dramatically helped shift climate change awareness levels to new highs in Saudi Arabia. This technological readiness is considered an important pillar of competitiveness (WED, 2012) There has also been a growth in civil society groups dedicated to environmental sustainability and research like, a public advocacy group ‘Save Corniche Jeddah’, ‘Muwatana’ key participating group in the disaster relief initiative regarding humanitarian aid and environmental sustainability and ‘Naqa’a Environmental Enterprise’ by Dar Al-Hekma College in Jeddah. Every year, World Environment Day is celebrated with dedication and sincerity throughout the Kingdom. But much needs to be done for restoring the equilibrium in green transport ecosystem (Rafid Fatani, 2010)

Education seems to be an invigorating tool to bring out small books in school curriculum and to creates, enhances and connect opportunities for learning about sustainability in and out of the classroom. The curriculum should be able to infuse experiential, field-based relates to environmental concerns. It should also encourage all faculties to integrate sustainability into their programs, courses and sections. Workshops and Seminars at national level and regional level should also be organized at regular intervals for faster dissemination and exchange of information among various categories of people especially academicians and students in civil societies. This will hasten the process of education and training for academicians to update and exchange their knowledge and experiences. The last few years has witnessed unprecedented growth in demand for internet services, which has unavoidably augmented awareness of climate change issues. As global citizens we should be primed to implant these methods in day to day life. Creating a green transport ecosystem is not only a government-mandated regulatory measures or corporate sector obligation. Voluntary shift in civil society behavior “Think Green and Live Green” can definitely make a difference. The ultimate objective of a green transport ecosystem is to provide an affordable, reliable and safe mobility services to all segments of the population, while minimizing the sector’s contribution to greenhouse gas emissions.
CONCLUSION

Constant change on all fronts, from environment, technology, economics to politics, creates a succession of challenges for business leaders. Success depends on understanding and managing the risks, while reinventing business models to unlock new commercial opportunities. Green transport ecosystem and value chains are an ever more prominent feature of global commerce. The operation of transportation determines the efficiency of their delivery to customers. Innovative techniques and government support in infrastructure improves the moving load, delivery speed, service quality, operation costs, the usage of facilities and energy saving. But sustainable transport remains impotent without the support and awareness among the civil societies. Educating mass will keep the ecosystem green.

REFERENCES


Barometer of CSR, conducted in 2011 by Business & Society in collaboration with the FEB, Vlerick Leuven Gent Management School and the Louvain School of Management: http://www.businessandsociety.be/te_assets/getFile/1b5e9f87ce355058d8c831b5ea20b73c.pdf


CSR Asia, 2011. Climate Change Adaptation: Engaging Business in Asia


Elizabeth Withey, 2014. Edmonton Journal June 10, 2014. London Drugs Emerald Award 2013: Doing good is good for business; Retailer’s sweeping recycling program earns kudos


GradView, 2010. Environmental Awareness Movement Inspires Green MBA Courses [Online], Available at: http://www.gradview.com/news
http://www.csr-asia.com/report/
http://www.edmontonjournal.com
http://www.kpmg.com
KPMG, 2014. Global Manufacturing Outlook Performance in the crosshairs
Vendela Santén, 2013. Exploring logistics actions enabling environmentally sustainable freight
World Economic Forum, 2013. Outlook on the Logistics & Supply Chain Industry

### APPENDIX

**Figure 1: The Multi Modal Transportation and Logistics Opportunities Investment**

<table>
<thead>
<tr>
<th>Railway Sector</th>
<th>Investment Opportunities in Logistical Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Saudi Land-bridge Build, Operation and Management</td>
<td>29. Set of warehouses &amp; Bulk storage Facilities</td>
</tr>
<tr>
<td>2. Haramin High Speed Rail - Operation and Management</td>
<td>30. Packaging and Construction Material Distribution Service Providers</td>
</tr>
<tr>
<td>3. North-South Project Operation and Management</td>
<td>31. Logistics and Transportation Centers</td>
</tr>
<tr>
<td></td>
<td>32. Manufacturing &amp; Distribution of Vehicle Spare Parts &amp; Tires.</td>
</tr>
<tr>
<td></td>
<td>33. Logistics Management Consulting Firm</td>
</tr>
<tr>
<td></td>
<td>34. Specialized Logistics Vehicle Maintenance Services Firm</td>
</tr>
<tr>
<td></td>
<td>35. Perishable Warehousing and Logistics Services</td>
</tr>
<tr>
<td><strong>Investment Opportunities in Public Mass Transit:</strong></td>
<td></td>
</tr>
<tr>
<td>4. Riyadh Light Rail</td>
<td></td>
</tr>
<tr>
<td>5. Makkah Light Rail</td>
<td></td>
</tr>
<tr>
<td>6. Jeddah Light Rail</td>
<td></td>
</tr>
<tr>
<td>7. Madinah Light Rail</td>
<td></td>
</tr>
<tr>
<td><strong>Investment Opportunities in Maritime Transport Sector Saudi Ports Authority (SPA)</strong></td>
<td></td>
</tr>
<tr>
<td>8. Developing and Administration of a Logistics Park Adjacent Yanbu Commercial Port</td>
<td></td>
</tr>
<tr>
<td>9. Operation of the Passenger Terminal in Yanbu Commercial Port</td>
<td></td>
</tr>
<tr>
<td>10. BOT of a 2nd Container Terminal in Jubail Commercial Port</td>
<td></td>
</tr>
<tr>
<td>11. BOT of a 4th Container Terminal in Jeddah Islamic Port</td>
<td></td>
</tr>
<tr>
<td>12. Upgrade and Operation of the Jeddah Shipyard</td>
<td></td>
</tr>
<tr>
<td>13. Operation of the Passenger Terminal in Jeddah Islamic Port</td>
<td></td>
</tr>
<tr>
<td>14. BOT of a 2nd Container Terminal in King Abdulaziz Port Dammam</td>
<td></td>
</tr>
<tr>
<td>15. Upgrade and Operation of the Dammam Shipyard</td>
<td></td>
</tr>
<tr>
<td>16. Development and Administration of 3 Logistics Parks adjacent King Abdulaziz Port Dammam</td>
<td></td>
</tr>
<tr>
<td><strong>Investment Opportunities in the Air Transport Sector</strong></td>
<td><strong>Investment Opportunities in Economic Cities:</strong></td>
</tr>
<tr>
<td></td>
<td>36. Intermodal transport Terminals and Transit Systems.</td>
</tr>
<tr>
<td></td>
<td>37. Implementation of modern logistics Centers and Service facilities.</td>
</tr>
<tr>
<td></td>
<td>38. Developing Aerospace Manufacturing and Distribution Facilities.</td>
</tr>
<tr>
<td></td>
<td>39. Operating PABMEC International Airport and Service/Retail facilities</td>
</tr>
<tr>
<td></td>
<td>40. Industrial and Logistical Park Development and Operations in KAEC &amp; JEC.</td>
</tr>
<tr>
<td></td>
<td><strong>King Abdullah Port (KAP) inside King Abdullah Economic City (KAEC)</strong></td>
</tr>
<tr>
<td></td>
<td>42. Shipyard / Ship Repair</td>
</tr>
<tr>
<td></td>
<td>43. Bunkering</td>
</tr>
<tr>
<td></td>
<td>44. Emergency Response</td>
</tr>
<tr>
<td></td>
<td>45. Insurance / Reinsurance</td>
</tr>
<tr>
<td></td>
<td>46. Nautical / Institute</td>
</tr>
<tr>
<td></td>
<td><strong>Jazan Economic City (JEC) Port</strong></td>
</tr>
</tbody>
</table>
17. Domestic Low Cost Carrier (LCC)
18. Hajj Charter carrier
19. Logistics Cargo Distribution Hub (e.g. at DMM airport)
20. Recreational Facilities at Int’l Airports
21. Commercial Retailers at Major Airports
22. Privatization of Dammam Airport (KFIA)
23. Privatization of Saudi's Catering Unit
24. Fuel Farm Operator
25. Aircraft Leasing Company
26. Internationalization of Madinah Airport
27. Privatization of Hail Airport (HAS)
28. Airport City projects.

<table>
<thead>
<tr>
<th>Transport Infrastructure Development Program Actions:</th>
<th>Freight Transportation Program Actions:</th>
<th>Environmental Protection Program Actions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Comprehensive Integrated Transport Infrastructure Planning for Saudi Arabia;</td>
<td>· Enhancing Professional Capacities and Competences of National Freight Transport Operators;</td>
<td>· Formulation of Environmental Protection Strategy and Emissions Regulations for the Transport Sector; and</td>
</tr>
<tr>
<td>· Guidelines for Prioritizing of Transport Infrastructure Projects;</td>
<td>· Enhancing the Legal Regimes for International Transport and Trade Facilitation Customs Clearance Capacities and Simplified Customs Procedures at Border Points;</td>
<td>· Capacity Building for Effective Implementation of EIA</td>
</tr>
<tr>
<td>· Development of Intermodal Terminals and Logistics Centers;</td>
<td>· Harmonized Guidelines for Highway and Road Design;</td>
<td></td>
</tr>
<tr>
<td>· Comprehensive Transport Statistics System</td>
<td>· Commercial Management of Transport Services;</td>
<td></td>
</tr>
</tbody>
</table>

Source: SAGIA, 2010

Source: National Transportation strategy, 2011