



GlobalMBA Cohort 2011/12: Abstracts of Global Business Team Projects

- **"Global Shift in the Renewable Energy Sector: A Comparative Analysis of Catch-up Strategies in China's Wind Power and Photovoltaic Industries"**

Marta Karska, Luke Jensen, Vanessa Willen, Zheng Wang (Nina)

The purpose of this research is identifying strategic patterns across companies in China's wind turbine manufacturing and solar PV sectors in order to understand how they caught up with first-mover nations. Capitalizing on favorable industry framework conditions, in particular strong government support, Chinese renewable energy firms have established themselves as global competitors within a short period of time. China is market leader in the wind power sector in terms of newly and cumulative installed capacity, and in the solar PV sector in terms of equipment production and exports. Upon analyzing the global shift in the renewable energy sector, it has been found that learning in Chinese companies occurred within international networks. Specifically, domestic laggards cooperated with firms from abroad, initially as sole manufacturers, later also as design partners. In this regard, a general sequence of strategies has been identified, namely from imitative innovation, over collaborative innovation, towards indigenous innovation. During their catch-up process, Chinese firms followed a two-leg forward strategy, combining international technology transfer and internal R&D efforts. Apart from this cross-sectoral strategic pattern, the strategies applied in the two industries diverged from each other. While solar PV companies invested in in-house R&D right from the start-up stage, and barely used foreign licensed technologies, wind turbine manufacturers changed their strategic pattern, taking off with licensing and shortly after joint R&D, finally moving towards more independent innovation approaches. Although there is still a technological gap to first-movers at the firm-level, Chinese companies are gradually becoming innovators, and may move beyond catching-up.

- **“Sustainable E-Waste Management in China: Present State and Future Prospects”**

Maciej Kwaśniewski, David Blackwelder, María del Pilar Acosta Pérez, Yunshuzhan Wu (Susan)

The global electronic and electrical equipment (EEE) industry is well-known for its high production and consumption rates. This trend is followed by the increased presence of discarded products of this kind. The ever rising amount of this sort of waste is causing a series of impacts on societies, which will be discussed in this paper. China, as an important player in the EEE industry in terms of production, consumption and trade, deals with large amounts of waste originated from this activity. In addition the country still receives large amounts of illegally imported e-waste. The management of this material containing both hazardous and valuable materials is becoming one of the challenges of this century at a global level, but especially for China. In order to profit from effective material reuse while ensuring environmental protection, governments and manufacturers are taking a series of responses to the issue, which will be exposed in the following chapters. This project defines the current situation of the e-waste challenge at an international scale and in China. In addition, the current status of the e-waste management sector in China is described within the framework of environmental, economic and social sustainability. Finally, the authors identify the current approaches adopted by Chinese regulators and manufacturers that are shaping the current status and future prospects on the e-waste management scenario in China.

- **“Sustainability in the Brazilian Clothing Industry: A Critical Analysis with a Focus on the State of Pernambuco”**

Jan Bochiński, Justin Riddell, Christin Schmidt, Aline Brasileiro Cerqueira

Considering Brazil’s continuous economic development, the clothing industry needs to become more sustainable to ensure future prosperity. One way to overcome the challenges of rising wages and competition from Asia can be to create a sustainable industry, which may serve as a basis for competitive advantage. It is therefore vital to investigate the current state of the Brazilian clothing industry’s sustainability. Focusing on the clothing clusters in the State of Pernambuco allows for hands-on information. Alongside in-depth scientific research, field research and interviews provided detailed information for this work. In conclusion, the high degree of informality and the small size of Brazilian clothing businesses constitute the main challenge for the creation of a sustainable environment in Per-

nambuco, Brazil. To increase the level of sustainability in Pernambuco, de jure labor standards have to be enforced and businesses need to become formalized. After providing an analysis of the Brazilian clothing industry and presenting global sustainability challenges, this Thesis gives an insight regarding Brazil's existing sustainability challenges in the industry. The Thesis draws attention to a research field that has not been elaborated on in detail due to demanding challenges in Asia and can be used to improve sustainability in the region.

- **“Fair Trade and Sustainability in the Clothing Industry: An African Perspective”**

Magdalena Dybiec, Erika Godsey, Simon Röwer, Alejandro Nordlund

The Fair Trade model is frequently criticized and is not well integrated into some of the most deprived areas in the world like Sub-Saharan Africa. This paper addresses Fair Trade and its applicability to SSA, specifically to the clothing industry. The aim is to provide insight into how Fair Trade works within the concept of sustainability, Sub-Saharan Africa, and the clothing industry. Analyses of the global as well as the Sub-Saharan African clothing industry revealed the high degree of fragmentation of the value chain, challenges in overseeing geographically diversified production stages and high buyer power as the most significant hindrances for the Fair Trade concept and its sectorial implementation. A thorough look at Sub-Saharan Africa's overall environment has shown that the lack of integrated regulatory forces among the different countries, the overall high degree of corruption, and small local demand numbers are aspects posing problems for Fair Trade Organizations. In general, however, the region features the environmental factors the Fair Trade concept was created for: low supplier power, poor access to markets, education, and information as well as poor social structures. As a concept advertised as socially, environmentally, and economically sustainable, Fair Trade fails to fulfill these self-imposed requirements. While the premium received by producers is often used to improve social structures and access to education and information, environmental sustainability is hardly addressed. The analysis has shown that even the concept's main goal, improved economic conditions for the farmers, is only approached on a short-term basis by treating the symptoms rather than looking at long-term structural changes and improvements.

- **“Sustainability of the Ethanol Industries in Brazil and the United States: A Comparative Analysis”**

Michał Sójka, Mary Jensen, Anja Ludwig, Ivanna Pereyra Rojas

This thesis explores and compares social, environmental and economic sustainability factors surrounding ethanol production in Brazil and the US, the two biggest players in the global ethanol industry. Production and consumption patterns differ in both countries. This can be explained by different production processes, as well as different degrees of government support. In terms of social sustainability, Brazilian sugarcane derived ethanol contributes to a lesser degree to rising food prices than US corn derived ethanol. Employment conditions in the ethanol industry in Brazil are less sustainable than in the US, due to low wages, harsh working conditions and incidences of forced and child labor. Land ownership rights are not sufficient to protect small farmers in Brazil. Brazilian ethanol is environmentally more sustainable than US ethanol because fewer greenhouse gases are emitted during the production and combustion of ethanol. The sugarcane feedstock in Brazil requires little irrigation and low quantities of fertilizers and, thus, does not contribute to water scarcity and water pollution to the same extent as US corn-based ethanol does. As for economic sustainability, currently production costs are lower in the US than in Brazil, but productivity is higher in Brazil. Major government support measures have been phased out in both Brazil and the US, but blending mandates are still required in both countries to sustain consumption. Currently, neither sugarcane nor corn-based ethanol is an economically viable alternative to gasoline. Ultimately, it is difficult to establish which industry is more sustainable, because there are a number of different academic perspectives about the system boundaries of ethanol production and there is a lack of consensus regarding which of the sustainability criteria are more significant than others.

- **“Sustainability in China’s Agriculture: The Water-Food-Energy Nexus”**

Tianjiao Wang (Alexa), Katarzyna Dżegan, Garrett Weeks, Christiane Schneider

Due to China’s natural shortages of arable land, water and mineral resources combined with its large population, rapid urbanization, and economic activities, the country is facing serious resource constraints. Each resource constraint is usually analyzed in isolation from the others. However, there are strong inter-linkages between the food, water and energy systems. The purpose of the thesis is to prove the existence of those linkages, to identify these correlations, to discuss possible solutions that can solve part of the problem or

that can prevent an aggravation of the current situation, to examine approaches that have already been undertaken, and to evaluate them with regard to their sustainability. In order to achieve that, the three basic industries are analyzed in detail. Subsequently, two of the three systems at a time are linked to one another, resulting in three nexus approaches. Afterwards, the water-food-energy nexus approach is conducted by analyzing to which extend the two major projects, the South-North-Water-Transfer Project (SNWTP) and the Three Gorges Dam Project (TGDP), are capable of addressing and being beneficial for all three systems and, thus, applying an integrated solution-identification approach. Moreover, investigations of both projects identified whether or not (or in which aspects) they are sustainable. Both projects exemplify the difficulties that exist due to the nexus. The SNWTP's main purpose is the improvement of the water availability in larger parts of China, However, it fails to achieve sustainability in ecological, social and cultural terms. The TGDP, which should utilize water from the Yangtze River for sustainable energy generation, is expected to be far more sustainable in the long run. The only aspect where it is unlikely to achieve sustainability is culture.

- **“E-Mobility in China”**

Yi-hsuan Cheng, Piotr Woszczyński, Pascal-Ramon Mansmann

This paper examines the alternative fueled vehicle industry in China. This country has evolved into the biggest global automotive market in terms of product and sales. The growth rate was outstanding, but is slowing down a bit as of lately. The industry is dominated by foreign manufacturers from the United States, Europe, Japan, and Korea. China is trying to push its domestic car manufacturers through governmental support and regulation. The sub-industry of alternative fueled vehicle has caught the nation's and the world's attention, because growing carbon footprints and increasing oil prices are forcing the world to look for more ecological alternatives. The Chinese government sees a chance to compete in this sub-industry and is aiming to become the world leader. So far, the sub-industry is still struggling to grow and is waiting for a boom. Especially the private consumers have not adopted the new technology yet. The low numbers of units sold in China are mostly generated by the public sector. The government is eager to provide offer assistance via subsidies. The key players, meaning car manufacturers, component manufacturers, governments, power companies and infrastructure providers have to work together in order to make progress and establish the industry of alternative fueled vehicles.

GlobalMBA Cohort 2012/13: Abstracts of Global Business Team Projects

- **"Organic Food Retail in Urban China: Progress, Challenges, and Opportunities"**

Ann-Christin Leisching, Xiomara Nunez, Youyou Wang, Raoul Horn

Organic food is a growing niche in the food retail industry today. Markets in developed countries have successfully established organic food retailers with steady incomes and substantial consumer bases. The organic food market in China is still in its early stage. However, growing concerns about the food safety of domestically produced food have been fueled by numerous serious food accidents such as the milk powder scandal in 2008, which could be a key driver for even higher growth rates. Organic products realize price premiums of up to several hundred percent and are thus highly interesting for domestic and international producer and retailer. The purpose of the thesis is to investigate the potential risks and challenges for domestic and foreign investments. This paper provides an overview about the world leading countries in organic food, the Chinese food market and a detailed analysis of the current state of the Chinese organic food market. The analysis focuses on China's positioning in organic food retailing, social characteristics, economic aspects, organic food consumer, legal and regulatory aspects, and the numerous challenges of the growing market. The objective is to provide the reader with a realistic assessment of opportunities, challenges and risks of the Chinese organic food market and recommendations for further research are included.

- **"The Evolution and Prospects of Clean Coal Technologies in China"**

Anja Wilden, Jonathan Mann, Hao Wu, Manuel Oliveira Costa Carvalho

Over the past two decades China's economy grew by nearly 10 percent per year on average and has become the world's second greatest energy consumer. The main domestic energy source in China's energy mix is coal, accounting for 70 percent. Worldwide, China is responsible for nearly half of the global coal usage and more than 80 percent of the global increase in coal demand, within the last 10 years comes from China. With that in mind, large-scale exploitation and utilization of coal is also one of the major causes of ecological destruction and environmental pollution. Coal was the leading contributor of all fuel com-

bustion related CO emissions in the past few years. The continued growth in coal use makes it more urgent than ever to develop a strategy that unites the clear economic benefits of coal use with sustainable development goals. One of the primary solutions to this dilemma has consisted in developing and utilizing clean coal and carbon capture technologies. In order to meet national requirements of energy improvement and emission reduction, China began to build their own plants in the 2000s and invest in research and development. The combination of both has resulted in expanded knowledge and the desire to innovate more in the present and future. In order to gauge the condition of coal technologies and innovation in China, this study implements the National Innovation System and Triple Helix models. This hybrid model is employed to analyze the institutions of government, industry, and education, along with way in which they are linked. The main focus of the thesis is the evolution and development of China's new clean coal technologies, while a comprehensive overview of the current status of technologies on a national level will direct the study. Performance measures, such as diffusion, absorptive capacity, demand for R&D and innovation, and R&D capability are used to operationalize the developed model.

- **“Sustainability of Chinese Steel: An Industry Analysis”**

Martyna Gorska, Lu Li, Scott Rejonis, Kai-Rasmus Witt

This paper provides an overview of the global and Chinese steel industry and introduces the definition, methods, challenges and meanings of sustainable development in the steel industry. It then discusses the practical implications in economic, environment and social aspects by assessing sustainability indicators. The findings show that the Chinese steel industry is struggling to be profitable, having a negative impact on the environment and causing social dislocations. Conclusions are made that Chinese steel is, whether from an economic, environmental or societal viewpoint, not sustainable at this moment in time. However, if all stakeholders involved follow changes that have been implemented or are about to be implemented, Chinese steel can make a big step towards sustainability.

- **“Feeding the Masses: Sustainability Analysis of Rice Production in China”**

Judith Hönig, Maximilian Miller, Jing Pang, Lin Shi

China is the most populous country on the planet with 1.3 billion citizens as of 2013. As this number continues to increase, it becomes increasingly difficult for the Chinese Government to provide enough food to meet the demands of its population. To combat hunger, the

Chinese have worked towards increasing rice crop yields. However, their success has come at the expense of the environment. Soil degradation, contamination and erosion as well as water pollution have all occurred as a result of overplanting and the use of harmful fertilizers. Therefore, it is believed that current rice production methods in China are unsustainable. This means that if changes are not made to the process soon, the agricultural environment will continue to degrade to the point where it is no longer possible to grow rice. To solve this growing problem, China must make considerable efforts to improve the sustainability of the rice production process. This piece of work analyzes the economic, environmental, and social sustainability of current processes and investigate into potential drivers and barriers to make recommendations for improvements. In particular, the paper focuses on the value chain of rice production by breaking it down into four segments: seedlings, fertilizer and pest management, irrigation, and harvesting. As an outcome, it has been found that current growing methods are indeed unsustainable and result in more and more inedible rice each year due to contamination. If new processes and improvements in the value chain can achieve a balance between economic, environmental, and social sustainability, Chinese rice producers should be able to improve environmental conditions without sacrificing rice yields.

- **“Green Energy Transition in China: A Focus on the Offshore Wind Industry”**

Sebastian Hernandez, Sarah Hoffmann, Alissa Shaw, Mingxu Yang

The purpose of this research is to explore the green energy transition that is taking place in China, and, more specifically the offshore wind power industry. China has an abundance of wind energy resources and stands as a worldwide industry leader in both wind and solar industries. Additionally, the sheer size of the population and the heavy industrialization within the country are further indicators of rapid development. Along with this is the opportunity for China to supply power to its coastal regions by constructing offshore wind projects – hence, the primary focus of this paper is to examine the new movement toward offshore wind power generation and its effect on supporting domestic industries. Policymakers in China have shown a commitment to integrate environmental policies in the future (including wind power growth) and are backed by ambitious goals set forth by the government as defined in the “12th-Five-Year-Plan” and “Medium- and Long-Term Development Plan for Renewable Energy”. In light of these ambitions, this paper aims to uncover the challenges faced by both the Chinese government and domestic firms operating in the wind power industry. Furthermore, an in-depth analysis of the complete wind tur-

bine manufacturing industry is conducted, with an emphasis on cultural-specific characteristics and the competencies of domestic firms to further develop their indigenous innovation capabilities as new technologies emerge in the offshore sector. The likelihood for China's offshore wind power industry to become competitive is high, so long as the main challenges identified in this piece of work are addressed and a conscientious approach to installed capacity targets are developed.