

Japan's Green Technology for Earth and Economy

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(summary)

The need for natural preservation has recently evolved into a global agenda from just mere projections. Environmental damage has cost many nations (such as China and United States) billions of dollars worth of loss; and the fact that the number is increasing rapidly every year has made it intolerable. Slowly but surely, leaders and economists around the globe are beginning to include environmental impacts into their calculations. The world is obviously going through a revolution; and this time it's green.

There has been an ongoing debate over which has to be prioritized, the environment or economic growth. This question simply assumes that both terms are a totally separate entity; a mindset that I doubt is true. Through this paper, I attempt to prove that environmental preservation and economic growth are indeed closely interrelated as when one is neglected, the other will be negatively affected.

What the world clearly needs now is a business model that adopts a value of sustainability. A framework that doesn't only embraces that element but also turn them into a profitable opportunity. Through environmental-friendly technologies (the green technologies), Japan has the comparative advantage to lead the market in the 21st century.

The paper first explains how actually environmental condition is going to play a more determining role within economic growth, and how it will eventually give economy its new shape in the future. The paper also argues that through green technologies and Japan's lucrative business philosophies, Japan can and should see this as a huge opportunity. The market for green technologies mostly will come from developing countries, especially from China. As these developing countries are the ones who undergo rapid growth at the moment, they will also be the ones who use energy and omit pollutant the most. Therefore I believe that it is extremely crucial for Japan to strengthen its partnership with these countries in many possible ways, such as: investments, funding (especially in R&D and practitioners) and technology transfer. This essay also intends to analyze possible approaches such as: raising awareness and optimizing expertise that Japan can exercise in fortifying its position. I will try to connect the whole idea and wrap up by referring back to Japan's biggest goal – sustainability in growth, in environment and in life.

(full text)

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Background

Without we even realize it, the world has changed so much these past decades. We can feel the choking pollution when we are walking on the streets, we can feel the horrid heat, and we witnessed how climate change could cause many disasters. The world experienced more tornados, earthquakes, floods, and plagues every year. Rapid population growth and aggressive economic activities had apparently led to environmental degradation and pollution. Not only ignorant humans' activities endanger the environment, it has also been raising the demand on resources. Coal, oil and other nonrenewable energy resources suddenly became an important commodity. This certainly puts new constraint on corporate activities as they have to struggle with the endless rise of oil price and the pressure to preserve the environment on the side. Today, the world is screaming for a solution to escape this energy abuse. Through this paper, I attempt to prove that environmental preservation and economic growth are indeed closely interrelated as when one is neglected, the other will be negatively affected.

First, I believe that it is important that we analyze why environmental condition is going to play a more determining role within economic growth, and how it will eventually give economy its new shape in the 21st century. From that idea I will then try to discuss how it will be a huge opportunity for Japan to develop and market its environmental-friendly technologies.

Last but not least, the paper discusses about possible approaches that Japan can exercise in strengthening its position as trading partner with both developing and developed countries.

1. How Environment is Giving Economy its New Shape

To a great extent, economic growth is highly depending on the supply of resources such as coal and oil. Currently oil, natural gas and coal provide more than 85 percent of energy supplies for the United States, Europe, Japan and other industrial economies, and about the same proportion of industrial energy for the world as a whole¹. This current condition is indeed problematic due to the fact that there is a physical limit to its amount. When the economy accelerates and the population increases, the economy automatically needs more energy. Well, the question then is; are there enough energy resources to facilitate that need? Since most energy being utilized now can be depleted, there is concern about the impact when resources have run out. When that happens,

¹ U.S. Department of Energy, 2004

economic growth will decline for sure. An MIT research team in 1972 actually addressed this issue by concluding that, we would reach the environmental limits to global growth within a century, and that without drastic changes there was a strong likelihood of an “overshoot/collapse” outcome: “a sudden and uncontrollable decline in both population and industrial capacity”². This is why the term “sustainability” has been heard and discussed every where recently.

Environmental limitation is seen as a more prominent issue because it started disturbing the whole economic process. Environment apparently has the power to bring an economy up and down. An article from Beijing revealed that pollution costs china 64 billion dollars in 2004, amounting to 3.1 percent of total economic output that year (Agence France-Presse, 2006). This number has in fact got worse in the following years. The effect of climate change also has a big impact to agricultural sector. According to the little green data book 2008 released by United Nation, worldwide agricultural potential could fall as much as 16 percent due to climate change. The drop would be particularly steep in developing countries (-20%) compared to industrial countries (-6%). Especially for Sub-Saharan Africa (SSA) and South East Asian countries, where poverty, lacking infrastructure, and awareness are still low; the effect will likely be more felt.³

Leaders from around the globe who have acknowledged that resources limitation endangers their nation’s future; begin to include environmental impact into their calculations. Some nations even consider counting their natural resources and translate them into dollars and cents. The bottom line, the whole issue suggested a common need for a new analysis in which economy and environmental considerations are addressed. More people, economists and policy makers will base their decisions without disregarding the issue of environment. It will be the goals of many businesses to preserve the earth in the 21st century, it’s not a choice anymore; it’s a requirement.

2. Big Opportunity: Japan and Green Technology

2.1 The demand for green

It is necessary for developed countries to reduce the amount of energy used and the amount of pollution if they want to maintain their high living standard. Same thing also applied in developing countries, the escape from energy addiction is essential not only to sustain the economic growth, but also to prevent declining growth and inflation. The need for solution has apparently created a demand, and demand means opportunities.

Recently, green technologies come as a solution along with the wide alert of sustainable development. It is because of the pressure from soaring energy price that many

² Meadows et al., 1972

³ The World Bank, May 13, 2002

companies around the world are converting to these kinds of technologies, technologies that are efficient and economically viable. Take Chinese companies for example, they are buying everything from scrubbers for oil-fired power plants to alternative power resources such as wind turbines and methane gas from decomposing solid waste (Engardio, Pete, 2007, p. 299). Other big companies around the world such as General Electric, Wal-Mart, Google, Dupont Chemical, etc are doing pretty much the same thing (Karabell, Zachary, 2008). Not only green technologies are economically sounder, they are good in terms of corporate branding. In the study of marketing, the green revolution undergone by companies is seen more as investments and a new method of attracting more consumers. It is believed that customers who have been highly influenced by green movements everywhere prefer buying green products rather than regular products when faced with the same price or features.

Another opportunity arises from this global conversion is the chance in attracting investments into the country. Since the Kyoto Protocol whose goal is to cut carbon emission as much as 50% by 2050 - enacted and ratified by many countries, many investors started considering investing their money in energy investments. Philip Wittome, who manages Japan fund at Investec Asset Management said in Financial Times:

“ Investors looking to park their money somewhere internationally that could benefit from high oil prices might want to look at somewhere that is creating energy-efficient technology and has an economy that is hit less hard by oil prices. Japan certainly fits that bill.”

(Financial Times, 2008)

2.2 Japan's specialty

I argue that Japan has all it takes to lead and rule the market in utilization of energy conservation and environment-friendly technologies in the 21st century. Japan has been the expertise in energy-efficient technologies for a long time. Japan basically had no choice; Japan has no domestic oil supply and imports almost all of its oil and 60 percent of its food (Loth, Renee, 2007). Forced by its geographic and land condition, Japanese had to figure out creative ways on how they would survive. With hard work, Japan has managed to be the second strongest economy in the world after United States. However, in the case of energy consumption, Japan is only half as much as in United States. According to the International Energy Agency, Japan has the lowest energy consumption as a percentage of GDP (Loth, Renee, 2007). The need for alternative energies is one of many things Japan had realized a long time ago, therefore Japan has been quite prepared. Soon, the rest of the countries will have to learn from Japan, because Japan has the answer. Now is the momentum to turn it into opportunity.

Japan is famous for its environment-friendly and energy-efficient vehicles, batteries,

air conditioner, buildings, subways, hybrid cars, gadgets, power plants and many more! Japanese companies not only have the technologies, they have the human resources, the right habits, and all of those have become their trademark. Why don't put this advantage to its use? Translate this situation into opportunity. I say Japan should put more efforts in maximizing its expertise and be the one who supply and lead in this green revolution.

3. Japan, green technology and possible approaches

3.1 Japan and China

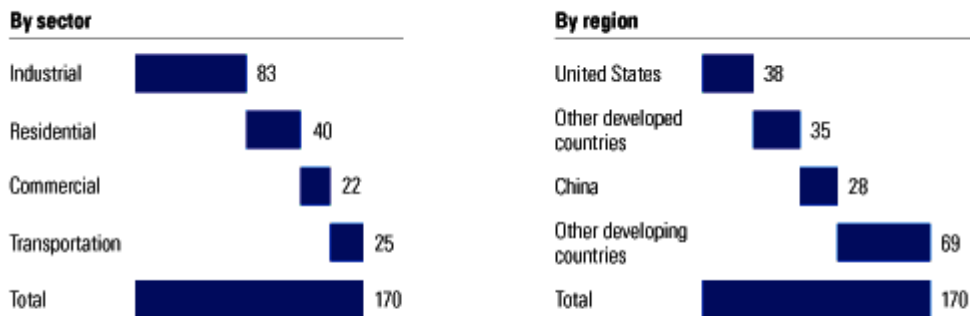
The rise of Asian economy especially across East and Southeast Asia offers myriad opportunities for developed countries. Japanese companies have also reaped a lot of profits from the immense growth, especially from China. Japan's total trade value with China (excluding Hong Kong) reached ¥ 27.9 trillion in 2007, exceeded the US for the very first time (JFTC News no 125, 2008). Besides, it was also because of the surge of Asian growing economy that Japan experienced considerable growth in trade surplus. Not only Japan, other countries like US and France also realized the arising presence of a huge market in Asia. Many of those countries also have great technologies, so Japan should be prepared facing those existing companies. Therefore, in order to win the competition in energy-efficiency technologies, Japan will have to strengthen its economic integration with developing countries especially with China. Why China? Apparently, China was the country who contributes the biggest number in world trade growth. China is the largest manufacturer today but also the biggest polluter. It is growing fast and doesn't seem to stop anytime soon; environmental damage is a huge and growing thing there. China desperately needs help to keep up with its rapid growth. So basically, China is Japan's biggest market at the moment.

To win the market in Asia, Japan will have to consider partnership as an essential factor. A strong and sustainable partnership with potential countries will make market penetration a lot easier. Moreover, partnership means that both engaging parties will together hold the risk and the benefit of the business. The most basic and visible example is when Japanese companies like Toyota, Honda, Matsushita, Sanyo, etc get the benefit from the huge Chinese market. The profits from selling a million Toyota cars to China had actually helped Japan economy. Imagine how hard it will be if Japan only has small market in Asia. Domestic market indeed is important, but it's not enough to sustain economic growth forever. Partnership will ensure that Japan will get a share in the rising tide of Asia or China's massive growth.

As other countries like US and France are also in for the game, Japan needs to focus on how Japan could be the country who gets the most of it. One way is by ensuring strong bond through investments and aid. If Japan has familiarized its existence in Chinese market strong enough, Japan will likely experience a higher demand and of course a higher economic growth in the future. That will be the fruit of Japan's current

investments.

Capital requirements for capturing global energy productivity opportunity,¹ \$ billion per year



¹Our approach estimates the 2020 energy savings available, beyond base-case productivity improvement, using existing technologies with an internal rate of return (IRR) of 10% or more. Next we assess the incremental capital, beyond base-case investment, required between 2008 and 2020 to capture this potential and then annualize the cumulative investment.

Source: McKinsey Global Institute analysis

3.2 Market penetration

-awareness

There are some strategies Japan can utilize to win and maximize the market in China and other developing countries. One is of course by raising more awareness and conscious about the importance of environmental sustainability to economic growth. Many leaders and policy makers in developing countries still prioritize their development goals without the concern over environmental degradation impact towards the economy. Japan can convey the message through international economic organization such as World Trade Organization (WTO), Association of Southeast Asian Nations (ASEAN) or any other international organization. Even though green living has been a widespread routine in Japan, it may be unpopular in many developing countries; for example: Indonesia. In Indonesia, even the simplest daily conduct such as recycling is still rare. Seeing that developing countries are potential partners, Japan should help familiarize this environmental issue by emphasizing its crucial impact towards the whole economy. This way, Japan will not only help preserving the earth, but also nurture potential market for its green technology growth in the future. It's a win-win solution.

Awareness is not only vital in marketing the business, but also in protecting it. I argue that Japan should put more attempts in raising more awareness about intellectual property rights among its partnering countries. Intellectual property violations created a major loss for many big corporations, especially multinational corporations coming from developed countries. In China, counterfeits have turned into a global threat as two third of all fake and pirated goods worldwide are apparently produced there (Engardio, Pete, 2007, p. 331). Chinese companies can almost imitate anything starting from General Motors cars (see Chevrolet Spark minicar and China's Chery Automotive), Honda's workhorse CG125, Mitsubishi's elevators, etc (Engardio, Pete,

2007, p. 331). There are million other kinds of products as well, from software to designer bags. It's something so common and big that China is afraid that its absence could hurt the economy.

The fact that intellectual property violations have started to hinder local companies from growing because their products are too easy to be imitated - needs to be reminded. Not only that; fakes also hurt people. In 2004, for example, 15 infants died from phony milk powder (Engardio, Pete, 2007, p. 337). This is where Japan can help. Japan could once again emphasize how dangerous this thing is to international organizations and of course to the committing countries as well. In this case, Japan can cooperate with other developed countries like US, France and International organizations to be more aggressive in demanding stricter regulations. Agreed regulations in patents, copyrights, and license are important in securing Japan's products from huge losses in the future.

-encourage practitioners and fund R&D

Raising awareness sometimes is still not enough. Japan should not forget that most developing countries still have many problems in education, poverty and infrastructure. It is difficult enough for these countries to solve those problems let alone consider another aspect (environment) as a priority. These countries need help coping with environmental impacts, they need fund, they need the human resources and they need the technologies. This is where Japan can fill in. See this not as a threat but rather as investments. When Japan provides more help, let's say in the area of Research and Development, Japan is actually deepening the bond and dependence of that particular country to Japan. After all, the investment will eventually turn into sales.

More attention to practitioners in the environmental field is highly crucial. As most developing countries lack the fund to facilitate practitioners and experts, Japan can maximize its loan and aid in this particular field. Most experts and practitioners in developing countries choose to flee their own countries because there isn't as much opportunity as abroad offers. This is bad not only for that particular nation but also for Japan. Practitioners and experts are the ones who most likely engage in research and development, they are the ones with the proposals, the ones with solutions. Helping them understand the importance of environment sustainability and see green technologies as the most plausible solution is the same like helping Japan in promoting its comparative advantage. Practitioners and R&D institutions certainly need to be helped and guided if Japan wishes these developing countries to adapt.

-direct foreign investments

Certainly winning the market will not be an easy task for Japan. Japan needs a lot of fund on investments. Some economists predict that Japan will influence China and

other developing countries the most in the future. Many economists believe that direct investment is the bridge to approval, approval of much collaboration, especially collaborations in businesses. Business and trade is the most effective method of transferring technologies, therefore one can conclude that direct investment is a good approach in building strong partnership and promoting green technologies.

4. Seize the momentum

4.1 encourage companies to develop or match the most energy-efficient products and technologies in their industry

Due to the fact that technology is such a huge business, continuous innovation is a must if one wants to be a leader in this particular field. Competitors in green technology exist, even though it is still in a small number. Take Veolia Environment, a French company that had invested \$ 800 million in building water-treatment projects in China (Engardio, Pete, 2007, p. 308). Sooner or later, more nations will be drawn to join the competition. When that happens, will Japan still be the front-runner in environmental technologies? Will Chinese companies catch up eventually? Pessimistic feeling is actually good in driving people to be better and better. Japan might be seen as the leader in green technologies now, but in order to maintain that title, Japan should maintain its management philosophy, know how and innovative minds. Encourage new inventions, fund more research in green technology, even cross-training from another countries are some of many ways to do it.

Enhance companies' expertise and optimize their potential are crucial in green technology development. Encourage companies to develop or match the most energy-efficient products and technologies in their industries with current demand. When Japan has the full understanding of the need and wants of the market, Japan will be able to design and set more realistic targets in the future. That's why a clear insight of consumers' need and demands has to be highlighted.

4.2 Capture the right business model

The whole understanding about environmental preservation, the shifting economy and strategic approaches is of no value if it is not preceded with a fitting business model. A business model is basically a framework companies use to create their value proposition (Wikipedia). A business model answers the question on how one company makes its money. A good business model will determine one company's success. Japanese business model has one exceptional trait, it always highlights continuous improvement. We can note from its many management philosophies such as the world-famous kaizen or genchi genbutsu that they always put forward perfections. Continuous improvement adopted by Japanese companies is not just based on wild guesses, in fact it is meticulously based on in depth research of what the consumers really need and want. When a company keeps on improving, it will eventually create

more values and that's what makes it successful. This trait is an advantage in winning the market of green technologies. We know that in technology competition, the winners are the innovators, the ones who always offer more values than the rest.

Those earlier factors are indeed important, but a framework will work better with a thorough comprehension of its target. Understanding the behavior of Chinese market for example, is especially crucial. Information on how Chinese people respond, towards price, quality or function is important for Japanese companies in taking the right approaches. I argue that by allocating more efforts in market-research, Japanese companies will be able to design and apply a superior framework without disregarding their initial principle and philosophy, the philosophy on long-term goals, and the principle on continuous learning. It's time to show the world how those philosophies management, know how and good ethics are indeed invaluable.

Conclusion

Since environmental preservation has become a global agenda, companies are now faced with a new burden, retaining growth and preserving the earth at the same time. Some people argue that it's a one way street and one will never reach both goals; but lucrative businessmen feel that it's just the opposite.

Seeing that there is a huge market in green technologies in the future, I believe that Japan should focus more in this particular field. Besides, it's what Japan is famous for – technology and constant improvement. Not only will Japan be helping the world in fighting climate change, Japan will also be able to reap huge profits from it. Unlike coal and oil, technology doesn't deplete and thus it actually offers brighter prospect. It's time for the world to stop depending on nonrenewable resources. Technology provides the alternative, and everybody has begun paying more attention to what it is capable of doing.

Japan should strengthen its relationship with developing countries, especially China as they are the potential market for the coming years. It can be done by investing and funding. Japanese companies should also consider several approaches such as: raising awareness, optimizing expertise and designing the right business model to win the market in green technologies. Issue about intellectual property violations should also be given more attention. With the right combination of the market, business strategies and philosophies; Japan can ensure the sustainability of both environment and economy. Japanese companies should not be troubled by this constraint; in fact it is a momentum to be seized!

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