

"Making Trade and Finance Work for People and the Planet"

## Inputs received

---

### The green economy agenda: how the current policy should be adjusted to realize sustainable growth path

Ye Wang  
Faculty of Economics and Behavioral Sciences, University of Freiburg  
Platz der Alten Synagoge, Zimmer 2421, Freiburg, Germany, D - 79085  
+49-17662407014  
[ye.wang@venus.uni-freiburg.de](mailto:ye.wang@venus.uni-freiburg.de)  
[www.GGEDI.com](http://www.GGEDI.com)

---

### Abstract

This paper develops a new index to reflect the global green economy development, by using the econometrics model to fit the stock price data of the companies in green industry and isolate the discrete jump component of the stock return. The results support that the relation between green index and oil price is significantly positive, and the green industry performs unstable. In order to correct this, government should using economical and political instrument to support the green industry when the energy price decreases rather than do the opposite way. And stabilization of green economy development should be the primary task of policy formulation.

### Disclaimer:

The inputs are made available by the UNCTAD secretariat in the form and language in which they were received. The views reflected in the documents do not necessarily reflect the views of the United Nations or UNCTAD.

## 1. Introduction

In recent years, with rising energy price and the threat of global warming, governments of different countries and global organizations are now realizing that the sustainable development of the green technology industry, including clean energy, environmental management and conservation of natural resources, is the effective means of solving the problem caused by economic growth. However, our current policy and strategy in the green tech industry are problematic and should be adjusted to achieve a better development path.

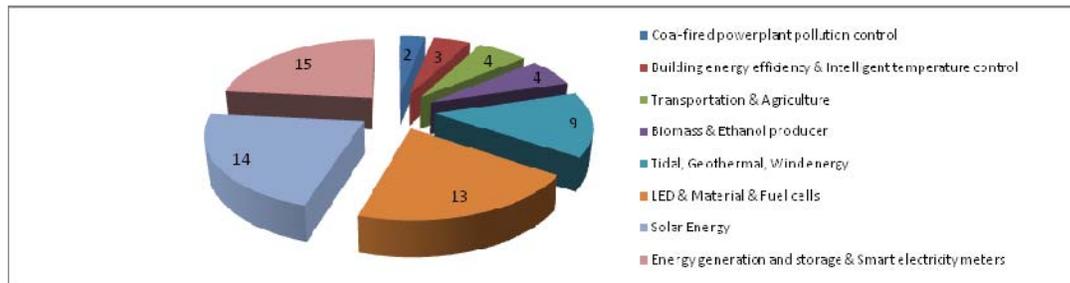
For traditional industries and the overall economy, most governments take the 'stable development' as the guidelines to make the relevant policies and by using a variety of means to adjust the forward direction. As a good example, the policies and countermeasures taken by governments in response the late-2000s financial crisis well reflect this point. When this financial crisis (or called credit crunch) occurred on a global scale, governments and relevant international organizations, are taking a quick response. Putting aside the question whether this response worked well or not, or what the consequences on the economy in the future, this rapid reaction and attention paid by the whole society, all reflect that the economic stability is highly valued. The governments made appropriate monetary and fiscal policies to deal with this financial crisis. As a result, the devastating impact from it can be brought under control within a short period, although in the long term the economic consequences have not reached a final conclusion. Please try to imagine that, if the policy-makers did not take timely measures to respond to the financial crisis in the early stage, but just let things drift, and then what the result would be? Borrowing a word from current Fed Chairman Ben Bernanke is, 'There will be no economy on Monday!' This may be the common consensus of governments and public opinion right now.

However, if we think about our attitude towards the green industry, the current policy in fact is a kind of 'laissez-faire in a crisis and stimulate the bubble in a boom'. One can imagine that such a strategy would result in great negative impact to the prospects of the green economy. Reviewing the history, we find that whenever policy makers concerned with the green economy, were the time in fossil fuel prices rising, environmental pollution problems appearing, and public increasing degree of attention on these issues. On the other hand, when energy price decreased substantially, or that there was no stable development of the economy, in this case, for the green industry both the support from the decision-makers and the capital inflows from financial markets had a large decline. This alternating prosperity and depression not only against the sustainable development of green economy, but also bring huge uncertainty to the future.

But we should clearly aware that, the green economy as an irreplaceable basis of sustainable development, the importance of its place are not changed by the fluctuation of fossil fuel prices, financial market volatility or the policy preferences of policy-makers. If we ignore this, then the green economy will only become some insignificant political or economic issues or a concept of economic development. The environmental, economic, social cost caused by ignoring green economy is huge and the consequence is irreversible. In order to avoid this mistake, governments, international organizations or the private sectors should re-examine the development strategy of green economy. Green economy should be independent of other economic aspects, and as a separate object to be properly treated. The policies should also be developed from the view of stimulation method, changed to aim the stabilization as the main purpose of the development of green economy, to eliminate the bubble in the boom and to provide the necessary political and economic support in the downturn. Only after this conversion of policy focus, sustainable development of society and the future of next generations could be really protected.

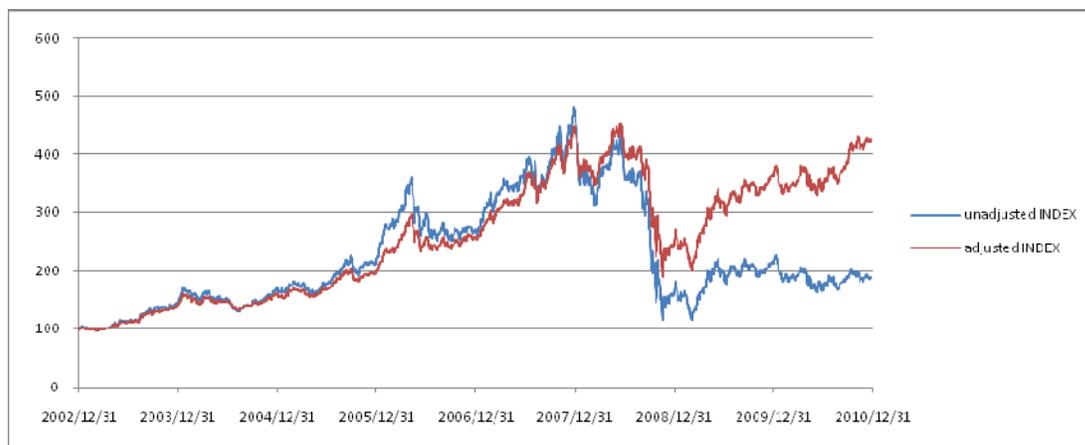
## 2. Brief Description of Data and Model

As a booming one, Green Tech industry has already become a very popular concept today. However there is only very few indicators to describe the Global Green Tech industry, not like e.g. DOW or S&P500 to reflect the financial market and using such kinds indicators to indirectly represent the whole economy. Based on the works of Maheu and McCurdy (2004), Nelson (1992) and Nyberg and Wilhelmsson (2009), a new econometric models 'EGARJI-M model' is developed, and within the scope in the international field of the green tech industry 64 listed companies' stock prices historical data is studied. Figure1 represents the numbers of companies in different industry considered in this research. By using this econometric model to isolate the discrete jump component of the stock return, a new index is formed which reflects the development of the global green economy from the viewpoint of financial markets.



**Figure 1.** Numbers of companies in different industries considered in this research

In order to form the index, two parameters are used to adjust the returns of these stocks. One is the 'business field weight factor'. For example, if a company does the business in solar energy area, its weight should be higher than the other company which do the business just related to energy storage. The other important factor is the 'continuous return weight'. It is based on the result of another research. The basic idea is that, since the volatility of the stock return come from two sources, one is continuous part which is caused by surprising news, unexpected earning reports etc. So in order to isolate the real driven source of the development of green industry, I just use the continuous part of the stock return to form the index. And in the **Figure 2**, one index is adjusted by using this continuous weight, the other one is not. The shape of the unadjusted index is very similar to indices developed by other research. However, the adjusted index reveals the true driven source of this industry, not just to reflect the overall market price level of companies' stocks. The reason of this difference between two indices will be discussed below.



**Figure 2.** Comparison between adjusted Index and unadjusted Index

The gap between the two indices after mid 2008 should come from the negative effect to the stock prices from financial crisis. After that the stock prices kept in the very low level. However the oil price increased after that until now, so the green tech industry has large incentive to develop. And different countries also focus on green tech industry in order to promote economic recovery. For example, the U.S. House of Representatives passed the American Clean Energy and Security Act of 2009 (ACES Act). Chinese government also made policy to stimulate the green tech industry. And the same is happening in Europe. From this view, the true value of this industry is relatively higher than the market price. This should be a very good opportunity to invest this industry for the private and institutional investors.

### 3. Global Green Economy Development Index (GGEDI)

An interesting pattern could be found that after the adjustment, the index is highly correlated to the crude oil price, represented in **Figure 3**, but the unadjusted index has not so clear pattern. So based on this, I have a result that, the Green Tech Industry is highly influenced by the oil price (and also other energy prices).



**Figure 3.** Comparison between adjusted Index (GGEDI) and Oil price



**Figure 4.** Comparison between adjusted Index (GGEDI) and global major Indices

According to **Figure 4**, compared to the global major indices, we can see that the green tech industry in the financial market performed better than the market, the overall level of different countries, even during and after the late-2000 financial crisis. However, we can obviously find that this development was very unstable. Scale from a longer historical perspective, this fluctuation pattern is more apparent. After the oil crisis in 70s last century, governments actually took the incentive policies in order to get relevant promotions, including solar and other alternative energy. But when the price of crude oil fall

back and the stress situation of energy supply market reduced significantly, the alternative energy industry reverted to the slow development or even stagnation in the following years. Do our current policies be going back to this old path and make the same mistake as before? Whether or not our attention to green tech industry, including the alternative energy, environmental protection and other areas, will gradually fade out? Will the 'Green' just become an investment concept in the financial market, just like the 'Internet' in the beginning of 2000s? Hope not! If so, as mentioned above, we will certainly lose the last chance to save the environment and the last opportunity to achieve sustainable development in the future. But how should the governments as the core decision makers adjust the policies and development strategies exactly? The answer is simple. The same as the overall economic stability, decision makers should use political and economical tools to stabilize the development of the green industry. This should become the primary task to re-enact a more comprehensive and effective policy.

#### **4. Stabilized Development of Green Tech Industry as the purpose of the Policy Making**

The negative impact to the environment of fossil fuels would not change by the prices fluctuation. So, why the policies related to the green industry have to follow the movement of energy prices? We need to use a development perspective way, rather than the original cost-benefit method to do the policy analysis. Changes in prices should be adjusted by the market; the policy should become the complement of the market when the market does not play the role very well.

We can see from **Figure 4** that, the Green Index compared the historical development of the world's major stock indices, shows huge volatility. This would make massive capital resources to quickly flow in and out in this industry during very short period and this would definitely encourage the speculation. The result is, in financial market, when in the booming time green tech industry get a rapid expansion as investment objectives and form a huge bubble. However, policy makers also due to such as energy security, geopolitical, domestic economy and international trade and other factors, use policy tools to further stimulate this bubble. And when the economy faces problems, the government's support quickly shifted to the traditional industries, in order to deal with the problems such as unemployment and economic recession. At this point, policy resources, and capital would leave the green tech industry. This could cause the bust of bubble, and lead to a huge negative impact to the green tech industry. The devastating influence to the private sectors and small businesses within this industry could easily destroy the spirit of innovation and confidence in this area.

Governments should become a regulator to play the role of buffer layer to stabilize the development of green economy. Governments and international organizations could use GGEDI as a suitable indicator to monitor the situation of green industry. In the growing period, policy makers should let the market mechanism to play its role as much as possible. When the downturn, policy makers should use different instruments, such as the relaxation of credit, tax incentives, etc. to ensure the stabilization of the green economy, not to fall into a recession. Stable development of the green economy plays a very important role to realize the sustainable development. Compared to the potential loss in the future, the investment from the governments is much smaller. Government could even set up some related funds to purchase the stocks and other assets of green companies in a downturn in order to boost the industry. And when the boom comes back again, these funds could sell these assets in the market to get back the original investment or even get profit for tax payers. Other means include, support for research of universities and private research institutions, and governments could also run some research institutions to attract talent into this field and keep the research advantages in order to win the global innovation race. And during the boom, the government should avoid over-investment, the waste of resources and overcapacity problems, in order to prevent forming of bubbles, because it does not meet the original intention of the green economy. And also the policy support should be reduced, and let the market functions by itself. But at the same time, government should also prepare and plan ahead for that the green economy could slump again.

## 5. Conclusions

- Stabilization of development should be the first priority of policy making.
- Using the new Global Green Economy Development Index (GGEDI) to monitor the condition of green industry to guide the formulation and adjustment of relevant policies.
- International communication, to avoid the generation and expansion of regional gaps between different countries and areas.

**For any further information please visit:**

[www.ggedi.com](http://www.ggedi.com)

## REFERENCES

- BASEL. 2006. International Convergence of Capital Measurement and Capital Standards. A Revised Framework - Comprehensive Version. *Basel Committee on Banking Supervision*.
- Nyberg, P., and Wilhelmsson, A. 2009. Measuring Event Risk. *Journal of Financial Econometrics*, Vol 7, 265-287.
- Maheu, J. M., and T. H. McCurdy. 2004. News Arrival, Jump Dynamics and Volatility Components for Individual Stock Returns. *Journal of Finance* 59: 755 - 793.
- Nelson D.B., Cao C.Q. 1992. Inequality constraints in the univariate GARCH model [J] *Journal of Business and Economic Statistics*, 10: 229-235.
- UNDP(United Nations Development Programme).2002. Energy for sustainable development: a policy agenda. Edited by: Johansson,T.B. and Goldemberg,J. New York.