FINANCE CLIMATE: CHINA'S EXPERIENCES AND LESSONS FOR VIETNAM

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ABSTRACT

Following decades of rapid economic growth, China is in the process of restructuring its economy to make future growth more sustainable in social, economic and environmental ways. Today, China is the world's largest investor in clean energy and also energy efficiency. With the strong support of government and mobilize many finances from public, private and foreign capital sources, climate finance plays an important role in the successes of China in the process of transformation to the environment friendly economy. This paper studies the experiences of China in the set up of policy and use efficiency finance climate address climate change. As predicted, Vietnam is a country affected greatly by climate change and sea level rise due to warming of the Earth. The learned lessons in the mobilization and use of climate finance from China are essential towards a green economy and sustainable, which the Vietnam government has set.

Keywords: *China climate finance, environment, China climate change.*

1. Introduction

Over the last three decades, China has experienced remarkable growth, transforming the country into the second largest economy in the world. The growth, largely driven by heavy industry and export oriented manufacturing, has also made China the largest energy consumer as well as the largest emitter of greenhouse gasses (GHGs) in the world. This has come at a steep price to its environment and as the economy continues to grow, the environmental challenges will inevitably escalate. China is in the process of restructuring its economy growth toward more sustainable, economic and environment friendly.

China has strongly invested in low carbon technologies over the past few years. Now, it is the world's largest investor in clean energy and also energy efficiency. China managed to attract $54.2 billion, $65.1 billion and $54.1 billion investment in the clean energy sector in 2013, 2012 and 2011, respectively. It now has a total installed renewable capacity of 191 GW, the highest in the world (29% of G20 total). Considering that China was a relative latecomer in the global clean energy race, its ability to scale up and become a main player in the production of low carbon technology in less than a decade is evidence of the determination of the government towards the agenda. Large-scale investment in the Chinese clean energy sector began when the government introduced a 4 trillion RMB ($586 billion) stimulus package in the aftermath of the financial crisis in 2008. Out of this, $46 billion was set aside for the clean energy sector. The government has

recently announced the goal for investment of 1.7 trillion RMB ($273 billion) for tackling air pollution, which can also be seen as some kind of stimulus package for scaling up within the environmental sectors. Similar packages may soon be introduced to treat water and soil pollution.

This money will be spent on a range of activities including energy efficiency, technology upgrades for clean energy and production processes, and environmental rehabilitation. In addition, the environmental sector is also seen as one of the new strategic pillars for growth, which is to account for 15% of GDP by 2015 (International Energy Agency, 2013).

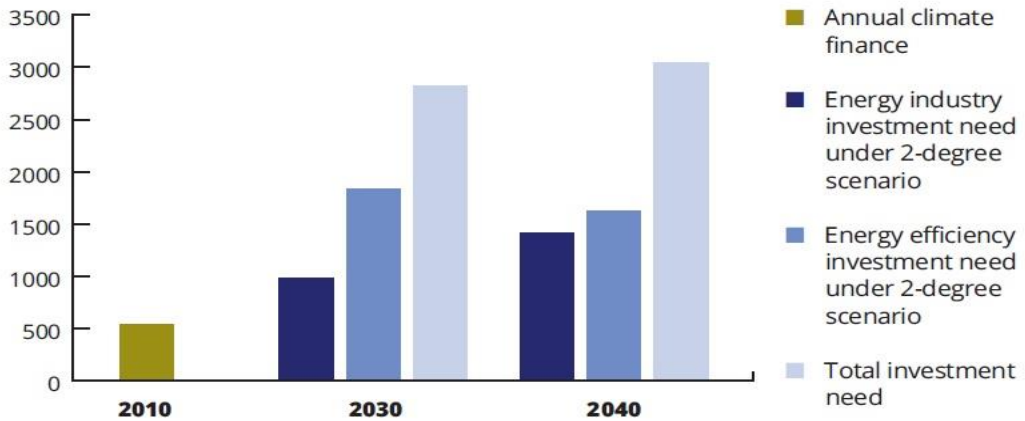
The recent report by WGII of the IPCC shows that Asia being one of the worst hit regions where climate change impacts will be widespread and significant. Climate change could make sea level rise, floods, extreme heat and hunger. China increasingly recognises the threats posed by climate change to its future prosperity, and issued its first draft of a national adaptation plan at the end of 2013. It pointed out that climate change has cost China 200 billion RMB ($32.9 billion) since 1990, and called for more support to be directed to farmers, highlighting rising levels of soil erosion, poor water management and a lack of access to drought-tolerant crops. However, it also admitted that China is not enough prepared to deal with the consequences of climate change (Climate Policy Watcher, 2013).

As predicted, Vietnam is a country affected greatly by climate change and sea level rise due to warming of the Earth. The learning experience in the mobilization and use of climate finance from china is essential towards a green economy and sustainable which the government has set.

2. Climate financing demands of China

Researchers suggest that China faces a potentially huge investment gap in transform to low carbon economy. According to the modeling of the Energy Research Institute (ERI), China's total financing need for energy industry and for energy efficiency (for industry, building and transportation) under a 2-degree scenario reaches 2.8251 trillion RMB ($453 billion) per annum in 2030. As the annual average climate finance from 2008¬2012 in China was only 546 billion RMB ($87.6 billion), the gap could potentially reach 2.3 trillion RMB ($370 billion) by 2030 (Jiang Kejun, 2014). To addressing the short of climate finance, China is having many dynamic polices to attract the capital sources. This also creates the opportunity for enable private financing capacity in China adds in climate capital maker.

Chart 1. Climate financing demands of China



Source: ERI.

3. The funding against climate change in China

3.1. The foreign funding

In the past few years, China is the main country received public funding from the developed world. From 2008 to November 2012, 46 projects were approved in China received a total of $294 million financial commitment to address climate change. The United Nations Framework Convention on Climate Change (UNFCCC) national communications data shows that, up to 2010, China had gained 1.09 billion USD of climate funding from bilateral sources[8]. Analysis by the Organization for Economic Cooperation and Development (OECD) indicates that, in 2009, Development Assistance

Committee (DAC) countries' commitments to provide development assistance in areas related to climate mitigation in China reached 607 million USD (including aid to climate change as a primary or important goal, 79% of which was in the form of loans), which was the fourth highest among developing countries. The database shows, from 2006 through 2009, OECD countries provided a total of 1.68 billion USD in development aid for China's climate change related targets, of which funds dedicated to climate change objectives reached $1 billion. Among the DAC countries, Australia, Germany and France were the main providers of large-scale climate funding to China. The total amount of development aid commitments in 2009 declined from 2008, and the negative impact of the economic crisis. With the large amount provided capital is reflected in the willingness of developed countries to provide development assistance to developing countries against climate change.

In addition, the developed countries support export trade in the form of export credit, including the provision of loans, export credit insurance, export credit guarantees and investment insurance, and others. According to OECD estimates, from 2002 to 2009 the medium- and long-term export credit provided by OECD countries were mainly invested in the transport (37%), industry (26%), and energy (11%) sectors, of which only 1% flowed to the field of renewable energy and energy efficiency, with an average amount of about 200 million USD annually.

Although foreign direct investment in China has increased in recent years, reaching $ 117.7 billion in 2011, official statistics on foreign direct investment related to the climate shows that it is still very low. Based on the statistics are incomplete, the number of foreign investment projects in the new energy industry in China from 2005 to 2011 reach 105 projects, totaling approximately $25 billion. FDI not only provides foreign capital, but also facilitates or enables low carbon technology transfer, technology and experiences to develop China's environmentally friendly economy, thus playing an important role in China's economy shifts from high carbon emissions to low carbon emissions.

3.2. The domestic funding

3.2.1 The domestic public funding

In China, public finance has played an indispensable role in promoting rapid and large-scale low carbon investment. The government sets targets for energy intensity reduction for its 11th FYP (2006-2010) and 12th FYP (2011-2015) - 20% and 16%, respectively. It has also set a carbon intensity reduction target of 17% under the 12th FYP and increased the share of non-fossil fuel in primary energy consumption to 15% by 2020. These are hard targets that the government expects to achieve through various means, including using its administrative influence in state-owned enterprises (SOEs) and state-owned banks, mainly to undertake or finance mega-projects relate climate change.

China has invested large sums of money

into improving energy efficiency, especially in the industry sector through the "1000 Enterprises" scheme. In 2011, China invested nearly 416 billion RMB ($66 billion) in energy efficiency, the largest investment in energy efficiency in the world These investments were achieved via two main instruments: using large amounts of public money to leverage private investment and implementing an ambitious and mandatory energy efficiency obligation system. Public finance contributes to more than 30% (126 billion RMB) of the total investment while nearly 50% has come from corporate (which includes SOEs) self-financing. Other financing sources, including bank lending and ESCOs, contributed only 20%. Almost 93% of all corporate self-financing went to industrial energy efficiencyHowever, the biggest potential for industrial energy efficiency is as yet untapped in China: small and medium-sized enterprises (SMEs), which consume 2.5 times the energy that big enterprises use, currently struggle to attract private capital. Lenders tend to prefer, or are directed, to lend their money to local government agencies via investment vehicles and larger companies, where transaction costs are lower and credit worthiness is easier to assess.

In China, financing sources for the clean energy sector are more diversified. While it has not been possible to identify specific levels of investment by source, public finance constituted around 5.1% of the total in 2011, with investment coming from a range of financial sources, including bank loans, stocks and debt markets, venture capital/private equity and so on. The government provides incentives through feed-in tariffs, especially for wind and solar energy.

However, the picture is not as straightforward as it seems: most of the leading companies investing in solar and wind energy are SOEs, which have developed 90% of the country's wind farms and all of its solar power plants and state-owned banks, which led by China Development Bank, provide the bulk of the finance. The speed and scale of investment in the clean energy sector over the last few years is a direct result of the government's administrative influence to ensure that policy targets are achieved. This has enabled China to build up a strong manufacturing base for clean energy, and also to develop clean energy projects domestically. Intensive investment in this sector has resulted in production overcapacity and a vicious boom and bust cycle for the wind and solar power industries.

In addition to public finance, China also benefited from the carbon market under the UNFCCC's CDM. China was the largest recipient of funding raised under the CDM, which accounted for 59.9% of all Certification Emission Reduction (CER) units issued. [16] By the end of 2012, China had 2,915 CDM projects registered by the United Nations, and the total of CERs issued for China hit 703 million tonnes, and the cumulative revenue of the CDM facility reached 12.15 billion RMB. This seems utterly inadequate given the capital requirements in China, but the role of CDM is not only to provide climate funds for China, but also to develop various infrastructures that are necessary to develop the domestic carbon market (Chen Bo et al, 2014).

Carbon Market. In line with the emission reduction target of the 12th FYP, China has chosen seven regional pilots of emissions trading systems (ETS). The pilot markets include Beijing, Tianjin, Shanghai, Shenzhen, Chongqing, Hubei and Guangdong. The experience from the regional pilots is expected to be applied to the development of a national unified carbon market planned to be launched during the 13th FYP. Among the seven pilots, Shenzhen was the first one to pass a carbon trading law in November 2012.

By the end of 2013, the Shenzhen Stock

Exchange trading volume reached 10 million RMB, and Guangdong Carbon Trading Market raised 180 million RMB in the first auction. The domestic carbon market will generate significant capital in the future.

3.3. Private capital supply

Debt financing market is the main source of climate funding. Currently, bank loans are the main financing channels for Chinese enterprises. In the credit markets, banks actively strengthen credit support for energy saving, environmental protection (ESEP) and the low-carbon economy. In 2011, the number of projects and loan amount related to ESEP supported by banks grew by 28.79% and 25.24%, respectively from the previous year, and loans granted to strategic emerging industries reached 363.46 billion RMB, an increase of 36.5% from the previous year. By the end of 2011, the aggregate loans provided by just six banking financial institutions - China Development Bank, Industrial and Commercial Bank of China, Agricultural Bank of China, China Construction Bank and Bank of Communications - for ESEP was more than 1.9 trillion RMB. Although loans in the field of ESEP grew rapidly, compared with the traditional industries, however, loans obtained by the projects of energy saving, environmental protection and low-carbon industrial still comprise a small proportion of the total.

The corporate bond market has gradually become one of the sources of climate finance. In 2011, green bonds in China reached 6 billion USD, accounting for about 3% of total "green bonds" globally. The scale of financing received by new energy enterprises bond issues rose fourfold, reaching 4.3 billion USD (accounting for 72%); the rest was mainly concentrated in the transportation industry.

Equity financing has grown rapidly. The venture capital and private equity (VC/PE) market in China has developed very rapidly in recent years. Since enterprises associated with climate change and low carbon technologies are typically start-ups or small and medium enterprises, the VC/PE market is also very critical to climate funding. In 2011, VC/PE investment in the field of clean technology totaled 1.72 billion USD, up from 1.27 billion USD in 2010, but this was mainly the result of the overall trend of rapid development in the VC/PE market from 2010 through 2011. In fact, the clean technology industry accounted for 4.25% of all investment in 2011, which was a relatively significant decline compared with the 8% in 2010. Since 2012, due to overcapacity, shrinking international market and other problems, financing situation for the clean technology industry in the capital market is not optimistic (Chen Bo et al, 2014).

Private Participation in Renewable Energy and Energy Efficiency. Although most investments have been made by state-owned enterprises to meet the government-mandated targets for RE capacity, the contributions by the private sector have also been significant. For example, small private investors and the grid operators have emerged as the key participants in biomass and small and medium hydropower projects that involve small investments. An upward adjustment of the FiT for biomass-based electricity in 2009 and again in 2010 unlocked private investment flows in biomass power generation and generated a total of $1.3 billion of private investments in 422 MW of biomass power generation capacity.

During the 2001-2011 period, the private sector contribution to RE development amounted to $8.6 billion, adding 6.9 GW in renewable installed capacity. Hydroelectric power was responsible for 3.6 GW of generation capacity. Privately developed wind farms added another 2.7 GW, at a total cost of $3.8 billion. Private sponsors operating out of Hong Kong were responsible for 31% of the

privately developed wind farms. Solar plants appear significantly less popular among private investors and represented a mere 214 MW, at a cost of $545 million. As in the case with private sector participation in biomass power generation, all but one solar project was built after the implementation of the FiT in 2010.

During the 11th FYP, 79% of the investments in energy conservation came from the private sector, 19.1% from the public sector and 1.9% from the international community. Industrial firms, building owners, banks and the equity market were the main players in energy conservation investments. Investment of industrial firms amounted to $53.5 billion, representing 44.4% of the total private investments. Building owners invested $1.9 billion, or 1.6% of the overall private investments. Investments from banks and the equity market were $ 38 billion and $1.6 billion, contributing 38% and 1.3% of the total private investments, respectively.

The Voluntary Carbon Market refers to a carbon emissions trading market where companies or individuals not bound by the Kyoto Protocol voluntarily contribute capital to offset the carbon footprint they generate and alleviate the greenhouse effect caused by their activities. The current size of this market is relatively small. In June 2012, the Interim Trading Management Measures of Voluntary Greenhouse Gas Emissions Reduction was formally promulgated, which set out the foundation for China’s voluntary carbon market, i.e. voluntary emission reduction and the emission reduction target of the 12th FYP, although the market is yet to be active.

4. Conclusion and lessons learned for Vietnam

Overall, China is developing "green" spectacular in all industries over the past decade in the overall strategy of sustainable development and against climate change. China leads the world in wind energy production, and has witnessed the rapid growth of the solar energy, bio-energy and low-carbon industries. The growth in these sectors has been driven by a strong policy framework, especially from the uptake and use of diversity and flexible financial resources of China. Despite recent advances in renewable energy, new energy and energy saving, China still relies on coal and oil for 90% of their energy demand, carbon emissions of China's the largest in the world. It is this creates great challenges for China in the transition to a low carbon economy and environmental friendly.

From the experiences of China could draw lessons for Vietnam:

Currently, China is highest among developing countries receiving public funding provided by the developed countries. International finance, not only provides foreign capital, but also transfers, facilitates or enables low carbon technology, technology and experience to develop China's environment friendly industry, thus it is playing an important role in China's economy shifts from high carbon emissions to low carbon emissions. Vietnam needs to diversify funding sources against climate change, from international, especially the grants and low-interest loans from the developed countries. If Vietnam uses the advantage of international finance, it will create the significant capital and advantage technology. It will become a shortcut to transform the economy of Vietnam toward green economy and achieve its sustain development goals.

Currently, climate change is not yet independent public expenditures in the annual budget of China - all expenditure related to climate change from the central budget to be placed in more than 10 different types , such as: energy saving and environmental protection, energy, agricultural issues, forestry and water. Thus, the disbursement and distribution of funding against climate change

related are governed by many different branches of government as well as many management and supervisory regulations. Because of the fragmented fund to support investment spread use for many different projects and lack of focus reduced the efficiency of public finances. Vietnam should consider gathering all state budget expenditures related to climate change, stand in a group independent of climate change and need to be set in the public budget for the management, use and supervision more effective. Moreover, when governments strengthen public financial investment to leverage private investment, this creates the good affect to increase the amount of climate finance in Vietnam.

Vietnam needs to develop a policy framework and long-term political commitment clearly against climate change, strengthen the capacity for private sector investment and development policy portfolio to decrease investment risk. Creating investment environment with the rate of return/risk equal to or better than other types of investments will attract stronger investment among private investors for climate change. The government also needs to pay attention to help investors to identify risks and opportunities for investment in projects related to climate change. Create clear policy mechanism, simple and transparent to create favorable conditions for the development of climate financing markets for the private investors.

Recent pilot carbon marketsin China have been successful and promising. It initially generated significant capital in the future for China. Vietnam is also considering pilot carbon domestic market to create a new financial channel funding for the development of green economy. With policies and the growing interest of both the state and people, the carbon market in Vietnam is very promising as a funding channel to significantly address climate change.

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