

~~TVEI for Green Growth~~
An infant issue in China

Prof.Huang Chunlin (*Chandler*)

(Vice president at Zhejiang Technical Institute of Economics China)

1. Introduction

In the second decade of 21st century, green and inclusive growth issue is getting more crucial for human beings. In China, green growth (GG) is a very important part of our national development strategy- scientific concept of development which is becoming a consensus to cope with the serious challenges in environment, economy, society and culture in the new era. It is called “the construction of harmonious society” in China. Technical and Vocational Education and Training (TVET) is believed a “master key” to solve the problems such as Peace Building, Poverty Reduction and Sustainable Development in the world today. TVET for GG is a very important part of education for sustainable development (ESD) in the world. In China, since 1998, basic education and higher education have taken a series of projects to carry out the ESD systematically. However, TVET for GG is still a new topic and rarely mentioned. The real action research is elusive. By an action research of TVET for GG, we did a trial to get some experiences on TVET for GG and explored some problems encountered in this field in China.

2. The Green Growth issue in China

Since 1978, China has reformed its economy by opening to the outside world. The rapid development in traditional industrial sectors has taken place. It is obvious that the living standard and comprehensive national strength has been improved dramatically. However, to accompany with those achievements, many problems in terms of environment, society, economy and culture are also encountered. In aspect of environment, for instance, The United Nations indicated that China has made progress in increasing access to water for its citizens but still faces serious challenges in fighting pollution. Water pollution and a lack of clean drinking water are some of the most serious problems facing China, with many of its canals, rivers and lakes severely tainted by agricultural, industrial and household pollution. "Pollution of water sources is widespread and increasingly serious in China. Meanwhile, more water is being used than is being replenished, which shows in falling groundwater tables and drying rivers," said Alessandra Tisot, senior deputy resident representative of the UN Development Program in China.

Coping with the challenges in the new era, China brings out and carries out its national strategy—scientific concept of development. It is pointed that the new pathway of development in the new era of 21st century will be the holistic, balanced and sustainable development. This concept is consensus through all the country. Many policies and regulations have been implemented in many aspects including: environment protection,

energy reduction, harmonious societal building, maintaining traditional culture, etc. As the permanent members of the United Nations Security Council, China has been implementing the MDGs and has been making more and more achievements.

In social aspect, on 13 April 2009, China published the nation's first human rights action plan as a major step in promoting the cause's all-round development in the country. The National Human Rights Action Plan of China (2009-2010), issued by state council, defines the Chinese government's goals in promoting and protecting human rights in less than two years, and the specific measures it is taking to this end. The 54-page document is divided into five sections: Economic, Social and Cultural Rights; Civil and Political Rights; Rights and Interests of Ethnic Minorities, Women, Children, Elderly People and the Disabled; Education in Human Rights; Performing International Human Rights Duties, and Conducting Exchanges and Cooperation in the Field of International Human Rights.

As a part of SD strategy, China has been enhancing the development of green economy. The report from UNEP indicated that China's green stimulus is US\$218 billions (among the top of G20). It includes that 48% is allocated to railway infrastructure, 35% Grid, 12% Energy efficient buildings, 4% Water/waste, 1% Low carbon vehicles. The Green fund % of the total GDP is 5.24%.(Republic of Korea 6.99% , Australia 0.87%) Green stimulus per capita (US\$) is 166. (Republic of Korea- 1,238 Australia- 420 USA- 365- Japan- 282 Germany- 168). (<http://www.unep.org/greeneconomy>)

During the 11th Five-Year Plan period (2006-2010), annual growth in China's green industry services is expected to be 15% and accounting for 3.4% of GDP. Composition of Chinese Green Industry services: 75% - Integrated resource utilization; 14% - Environmental protection equipment; 11% - Environmental services. In addition, the government would share 50% of the investment cost for solar power capacity over 500 MW through 2011 (70% for remote regions). (<http://www.unep.org/greeneconomy>)

A case has been recognized by UNEP that Shanghai's efforts to organize an environmentally-friendly Expo 2010 which aims to benefit not only the 70 million expected visitors, but also leave a green legacy for the city's over 20 million residents.

3. The important role of TVET in China

The TVET system in China consists of education in vocational schools and vocational training. It is provided at three levels: junior secondary, senior secondary and tertiary.

Junior vocational education refers to the technical and vocational education after primary school education and is a part of the 9-year compulsory education. The students in this stage should be graduated pupils from primary school or the youth with equivalent cultural knowledge, and its schooling lasts 3 to 4 years. To meet the needs of world of work for the development of rural economy, junior vocational schools are mainly located in rural areas where the economy is less developed.

The secondary level mainly refers to the vocational education in senior high school stage. Named as specialized secondary schools (SSS), skill workers schools (SWS), and vocational high schools (VHS), and as the mainstay of vocational education in China, secondary vocational's education plays a guiding role in training the workforce with practical skills at primary and secondary levels of various types. By the end of 2009, there had been 11324 secondary vocational schools in China.

The postsecondary education system in China is huge and complicated. For secondary school leavers, they can choose 4-year universities or colleges through college entrance examination (CEE) to complete their academic education. Another path is to go to 3-year college to complete their TVET. For adults, there are some adult colleges which provide diploma teaching in part-time. Self-learning examination and television -universities are also favorable ways to the learners, especially to adults. Comparing with adult colleges, Self-learning examination and TV-university, full time universities and colleges have a bigger proportion in both school number and student number. The schooling of TVET in tertiary level is the 3 or 2 year colleges which provide diploma for secondary school leavers in full time. By the end of 2009, there had been 1215 tertiary TVET colleges in China.

Vocational training, of various forms, has been playing a more important role in TVET system. It comprises of pre-service training, training to facilitate change of occupations; apprentice training, on-the-job training, job-transfer training and other categories of vocational training (disable migrants etc). At present, vocational training is mainly conducted and managed by the departments of education and labor, but private sectors are encouraged to be vocational training providers.

In basic education, ESD in China has been carried out since 1998. (Originally, it was named as EPD *Environment, population and development*). Over 100, 000 schoolmasters and teachers have been involved in the project for the past ten years. They put forward the operational principles as Exploring/inquiring, Comprehensive infusion, Team work, and Creative results oriented. A series of workshops and seminars have been held and many teachers were trained, and new textbooks on ESD have been edited.

At the same time, higher education initiated their Green University Project. Since 1998, many flagship universities in China are involved in this project. They reformed their education toward the SD notions. They constructed their campuses in accordance with SD requirements. There are also several high-level research institutions involved with SD and gained fruitful outcomes from those universities.

When we look at the field of TVET in China, it is rare that SD has been mentioned. Traditionally, people believed that TVET is work-oriented only. ESD should be carried out by general education. They partially understand the function of TVET and overlook the new trends in TVET.

4. TVET for GG, contents and methodologies

Form the year 2008 to the year 2009, UNESCO UNEVOC support a research on TVET for SD in China. Reviewing the outcomes of the research, we can see the contents and methodologies of TVET for GG in China.

In China, more than half of the TVET institutions have set up the green programs like environment control. But infusing the sustainable development notions including environmental, economic, social and cultural issues to the contents of teaching delivery are still elusive. From the trial, we find the ways of this issue as,

- 1) Incorporate SD into the teaching and learning by changing the contents and teaching methods.
- 2) Integrate the hot issues of SD in China to their course reform.
- 3) Students' changes in values and skills toward SD are emphasized.
- 4) Enlighten the teachers to rethink the TVET in a new point of view.

For the skills improvement for GG, here are some methodologies as,

Aiming	Pedagogies	Brief comments
1、improving the employability	Case-study approach situation-centered approach role-play approach comprehensive operating appr. site-visit approach work-project based teaching	Matching the work requirement by the effective approaches to improve the employability.
2、improving the critical thinking	Exploratory learning Material-searching approach Q & A's Brain storming Stimulating learning	Encourage students to think in holistic and different ways.
3、improving the collaborating	Group discussion Team assignment Collaborative activities	To improve the team works. This is very important to those who live in a one-child family in China.
4、improving the problem-solving	Learning by Doing Problem-solving topic-presentation	The training of real doing and innovation will fulfill the long-term needs of students' development.
5、improving the sustainable learning	Problem-seeking Information sorting Self learning Self evaluation	Learning to learn

5. Challenges in TVET for GG in China

Comparing with the high growth and demand of green economy in China, the TVET for GG is less developed. The challenges are:

1. The awareness of the relevant issues to the government, TVET faculty and staff,
2. The policies have not clearly identification of the issues,
3. No holistic design of the TVET for SD and concrete steps in TVET institutions.