



**Asia-Pacific
Economic Cooperation**

**Final Implementation Report on APEC project
“HRD 01 2014A – Systematic Design of Green
Skills Development in TVET”**

Beijing, China
31 December 2016

Human Resource Development Working Group

January 2016

APEC Project: **HRD 01 2014A**

Produced by

Yufeng LIU

Tel: (0086) 10 58556720

Email: civte@moe.edu.cn

Nie Ruilin

Division of International Organizations

Department of International Cooperation and Exchanges

Ministry of Education, People's Republic of China

Tel: (0086) 10 66097620

Fax: (0086) 10 66097684

E-mail: nieruilin@moe.edu.cn

For

Asia-Pacific Economic Cooperation Secretariat

35 Heng Mui Keng Terrace

Singapore 119616

Tel: (65) 6891 9600

Fax: (65) 6891 9690

Email: info@apec.org

Website: www.apec.org

© 2017 APEC Secretariat

APEC#217-HR-01.1

Table of Contents

Final Implementation Report on APEC project “HRD 01 2014A – Systematic Design of Green Skills Development in TVET”	2
1. Implementation progress of the project.....	2
1.1 Inception workshop preparation (February –27 May 2015)	2
1.2 Inception workshop (28-29 May 2016)	2
1.3 Green skills development (June-November 2015).....	3
1.4 Mid-term workshop (26-28 November 2015).....	3
1.5 Continue to do research and outputs revision (December 2015 - September 2016).....	4
1.6 Final workshop & Launching Ceremony of the APEC Network of Green Skills Development (17-18 October 2016)	5
2. Outcomes of the project	6
2.1 General contents of “green skills”	6
2.1.1 General contents of “green skills”	6
2.1.2 Contents framework of general contents of green skills	7
2.2 Put forward new and typical green skills specialties or directions.....	7
2.3 APEC green skills development network	8
2.3.1 Has developed APEC green skills development network programme, which includes the following contents:.....	8
2.3.2 Has developed green skills website.....	9
2.3.3 Has formed operating mechanism of green skills development network.....	9
2.4 Green skills curriculum development or revision	9
2.5 Service enterprises and industries	10
3. Challenges and suggestions	10
3.1 Challenges	10
3.2 suggestions.....	11

Final Implementation Report on APEC project “HRD 01 2014A – Systematic Design of Green Skills Development in TVET”

Since its approval, the project team members have been implementing the project in accordance with the project plan. With the support and active participation of related APEC economies, the project has achieved its objectives.

1. Implementation progress of the project

The implementation of this project could be classified into 6 stages, Inception workshop preparation, Inception workshop, green skills development, Mid-term workshop, continue to do research and outputs revision, and final workshop.

1.1 Inception workshop preparation (February –27 May 2015)

Inception workshop preparation stage started from Feb 2015. During this stage, a project working group was established, and workshop agenda was developed. We tried to look for green skills development TVET experts through APEC secretary and our own TVET networks to confirm a list of speakers. Meanwhile, we arranged administrative arrangements and logistics for the inception workshop, etc.

1. 2 Inception workshop (28-29 May 2016)

Inception Workshop was held from 28 to 29 May 2015 in Beijing, China, by CIVTE. More than 100 delegates from 9 APEC economies, including Australia; Canada; China; Hong Kong, China; Indonesia; Korea; Malaysia; Singapore; Viet Nam; and UNESCO delegates attended it.

The main contents of this workshop include the following aspects: introduction of the APEC project; introduction of the demands, current situation and future

plans for green skills development in TVET in some APEC economies; cases introduction of green skills development in TVET in APEC economies; discussion about general contents of green skills in TVET, TVET green skills specialties offering list, and the establishment of green skills development in TVET network; and discuss about the project work-plan for next steps.

This inception workshop has improved delegates to have deeper understanding about the contents of sustainable development policies, experiences of green skills development in practice in some APEC economies, the contents of the project. During this workshop 10 specialties research teams, including agriculture, mechanic, tourism, logistics, computer, chemical industry, construction, energy, electronic commerce, and mapping, and one general research team were established. Project implementation plan also developed.

1. 3 Green skills development (June-November 2015)

During this period, each specialty research team held their own workshop to discuss about the own research tasks, the methodologies to do research, and the implementation plan. General research team provided professional guidance on specialty research team.

Each specialty research team reviewed current situation of green skills development in their own specialty, and went to enterprises to do survey, and to do job analysis. They also did literature review. On the basis of the working outcomes, each specialty research team tried to develop the general contents of green skills, and to put forward to find new typical green skills specialties in its own specialty.

1. 4 Mid-term workshop (26-28 November 2015)

Midterm workshop was held from 26 to 28 November 2015 in Sydney, Australia, by CIVTE and TDA. More than 30 delegates from 9 APEC economies, including

Australia; Canada; China; Hong Kong, China; Korea; Malaysia; New Zealand; Thailand and Viet Nam, attended it. This workshop has achieved its goals and is successful.

The main contents of the workshop including the following aspects: introduction of the project progress; discussion about the framework of general contents of the green skills; discussion about the establishment of APEC green skills development network; introduction of the green skills development in TVET in some APEC economies; discussion about the future work plan; and Field study and discussion about how to put green skills development into practice.

This workshop has achieved the following outcomes: improve the understanding about project progress; reach the common understanding about the contents framework and the way of description of general contents of green skills in TVET; improve the understanding of the specific contents of green skills in TVET specialties; got more understanding about the establishment of APEC green skills network in TVET; got more information about green skills development in TVET in some APEC economies.

5 Continue to do research and outputs revision (December 2015 - September 2016)

To improve the progress of the implementation of the project, the project held two important workshops. One was held in 14-15 January 2016, in Changchun city, Jilin province, another one was held in 19-23 September 2016 in Tangshan, Hebei province. During these two workshops, each research team presented its research outcomes, the highlights and shortcomings; and exchanged ideas about the development of green skills. These two workshops have improved the understanding about the general contents of green skills, and the methodologies to

develop green skills.

A workshop was also held to discuss about the specific contents of the establishment of green skills development network on 20-21 April 2016 in Qingdao, Shandong province. For instance, the mechanism of the network, the daily maintain office, the members' responsibilities and tasks, etc.

At this stage, most specialties research teams finished their research tasks. The outcomes of this stage have established good basis of the final workshop.

1. 6 Final workshop & Launching Ceremony of the APEC Network of Green Skills Development (17-18 October 2016)

The Final Workshop of the project "HRD 01 2014A–Systematic Design of Green Skills Development in TVET" & Launching Ceremony of the APEC Network of Green Skills Development in TVET was lunched on 17-18 October 2016 in West Coast Economic District, Qingdao City, China. The workshop achieved expected goals and made a great success.

The workshop program included opening ceremony, project general report, APEC green skills development network launching ceremony, presentations from international experts, sub-project reports, and workshop summary, etc.

This workshop has given a specific introduction of the background of green skills development, general contents of green skills, and typical new green skills specialties, and the working way of APEC green skills development network. Therefore, this workshop has improved deeper understanding of the significance of green skills in TVET, and established the basis to develop green skills in TVET, and the foundation for the green skills development network, etc.

2. Outcomes of the project

This project has achieved its designed objectives. For it has put forward general contents list of green skills and typical new specialties or directions, and established green skills networks. Beside the designed objectives, this project has achieved greater results, including curriculum reform to make it greener, industries consultation to make it more friendly, etc.

2.1 General contents of “green skills”

The project not only put forward the general contents list of green skills, but also put forward general contents framework of green skills and methodologies.

2.1.1 General contents of “green skills”

On the basis of analyzing the contents of the green skills proposed by the 11 VET specialties research teams, this project sorted out general contents list of the green skills, which includes the following 12 aspects:

- 1) to save resources
- 2) to reduce waste
- 3) classification of life and work related waste
- 4) the proper use and maintenance of working equipment
- 5) follow the post safety operation procedures
- 6) the implementation of occupational health and safety and environmental health system
- 7) to judge the work or equipment to prevent accidents
- 8) good faith work
- 9) application of information technology or intelligent equipment
- 10) application of health and safety, energy saving technology and equipment
- 11) to provide green services
- 12) the promotion of green concept and knowledge

2.1.2 Contents framework of general contents of green skills

This project put forward to contents framework of general contents of green skills by the combination of three elements of green economy (economy, environment and society) and three dimensions of VET (operation, technology and management). According to modern VET teaching and learning concept, this project also proposed the description of the general contents of green skills.

General contents framework of green skills

elements	dimensions	General contents of green skills
Economy	Operation	Action oriented; Students' centered; Feasible; Measurable
	Technology	
	Management	
Environment	Operation	
	Technology	
	Management	
Society	Operation	
	Technology	
	Management	

2.2 Put forward new and typical green skills specialties or directions

On the basis of occupational analysis and current situation review, some specialties research teams have put forward the following new and typical green skills specialties or directions:

1 Tourism specialty:

Hotel engineering management (intelligent direction)

2 Logistics specialty:

(1) logistics management (Internet of things)

(2) logistics management (Electronic Commerce)

(3) logistics management (big data)

3 Mapping major:

Smart city information technology

Geographical condition monitoring technology

Environmental investigation and control technology

4 Architecture specialty

1) green construction technology

2) assembly construction

5 E-commerce specialty

1) tourism e-commerce

6 agriculture:

1) green breeding technology

2) green agricultural (ecological agriculture skills, leisure agriculture, modern agriculture skills, green food production and inspection and so on)

7 Manufacturing specialty

1) green manufacturing technology

2.3 APEC green skills development network

We think that the APEC green skills development network includes the network of people and the internet. Therefore, this project made efforts to establish APEC green skills development network which includes people network and internet.

2.3.1 Has developed APEC green skills development network programme, which includes the following contents:

- Objectives
- Organization
- Members
- Proposed research project
- Conditions

2.3.2 Has developed green skills website

Green skills development website already developed. The contents of this website include the columns related to green skills development, green economy, green job, green skills, green skills development, green skills network which includes members, latest events, and research outcomes, etc.

2.3.3 Has formed operating mechanism of green skills development network

In order to make the network run smoothly, this project has made decision to set an office in Tangshan Industrial Vocational Technical College, Hebei, China, as a daily operation office of the network. The dean of the college is the managing director of the network. On the basis of voluntary willingness, and the conditions review, this project also confirmed a number organizations as deputy directors' units or governance units. The establishment of these institutions has laid a certain foundation for the smooth development of the network.

2.4 Green skills curriculum development or revision

Some specialties research teams think that general green skills course should be offered in their own specialties. Some other specialties research teams have put the concept of green skills into VET curriculum to make curriculum greener.

For instance, energy specialty research team think that courses related to environment protection, occupational safety and health, cost control, and energy saving technology should be provided. Construction specialty should introduce

courses related to BIM modeling, building energy conservation technology, BIM calculation, BIM construction management, etc. Manufacture specialty proposed to introduce robot welding technology course.

2.5 Service enterprises and industries

In the process of enterprises survey, several project research teams provide service to enterprises by using the knowledge of green skills.

Logistic research team provide suggestions to port enterprises to control noise and dust. Manufacture research team develop "subway line guide" machine to help passengers to pass quickly. And agriculture research team provide green skills training for farmers, Etc.

This project has already have positive impact on industry. Chemical industry in China have already put green skills development as one of working priorities in year 2016.

3. Challenges and suggestions

3.1 Challenges

Though we made great efforts to implement the project, due to various reasons, we faced some problems or challenges in the process of implementation:

- The concept of green skills to many people is vague and not comprehensive
Green skills is a new concept. There is no accepted concept about green skills at the moment. People always recognized the concept of green skills as environmental protection, which is very narrow. Due to this problems, we need to take much time to explain to research team about the concept in our mind.
- Project implementation time is very tight.

To achieve the objectives of this project, our research teams need to go to enterprises to do survey, to do job analysis. Research teams also need to do literature review, to check current situation of green skills in their own specialty. They also need to put forward to general contents of green skills in their own specialties, new and typical green skills specialties or directions. The project have to analyze the 10 different specialties outcome to find the general contents of green skills for all VET students. Compare to these tasks, the project time period is very tight.

- The funding could not be used to APEC economies to attend final workshop which will be not conducive to the promotion of research results.

3.2 suggestions

In the process of the project implementation, participants recognized the significance of green skills development to VET reform, to the development of enterprises, industries and society. Some of the research teams have already introduced the project outcomes into their own work. Therefore, we put forward the following suggestions:

- To design a new project to put the outcomes of this project into practice.

This project has achieved its objectives. But how to embed the general contents of green skills into different specialties to make all specialties green. How to offer new and typical green skills specialties, what're their cultivating objectives, what's the relationship with former specialties. It's necessary to have a new project to put the outcomes into practice.

- To design a project to provide green skills training for VET teachers

In the process of the project implementation, big percentage of VET teachers have no any concept of green skills, or have very narrow understanding about green skills. To develop students green skills, teacher should have them. Therefore, it's necessary to have a project to provide green skills training for VET teachers. Green skills development could also be one part of training modules of VET teachers.

- To allow research teams to attend related international meetings, workshops, or conferences outside of APEC economies.

Some regions have significant experiences in green skills development. We suggest APEC project could allow project researchers to participate relevant activities outside APEC regions.