

An Ecofeminism Perspective on Economic Globalization: A Pollution Case in China

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ABSTRACT

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Economic globalization is a double-edged sword. On the one hand it compels more countries to get involved in global production chains; however, on the other hand it also brings many adverse effects in still developing countries. China, as one of the biggest developing countries and an emerging economy, has experienced economic reforms in the past 35 years. As a result, China's economy has developed quickly. One of the areas where China has paid the price for such fast-paced economic development and rapid industrialization is environmental degradation and pollution. Women largely bear the brunt of the effects of environment pollution, but their voices usually remain at the margins.

This research strives to find the role that education can play in balancing economic development and environmental conservation. However, in order to design an appropriate context bound curriculum it is necessary to examine how women workers perceive and experience economic globalization and environmental pollution. Drawing from a conceptual framework based on ecofeminism, women workers were invited to participate in a Photovoice project. They presented their concerns about environmental pollution and economic globalization through their photos. Based on the case research, some suggestions are given on how to deal with the pollution issues from an educational perspective, and how to balance economic globalization and environmental sustainability.

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With regards to my future, I would like to use the words of Sir Winston Churchill who said: “Now, this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning.”

List of Acronyms

EKC	Environmental Kuznets Curve
FDI	Foreign Direct Investment
FTA	Foreign Trade Agreement
GDP	Gross Domestic Product
GNP	Gross National Product
IMF	International Monetary Fund
MDGs	Millennium Development Goals
NGOs	Non-Governmental Organizations
OECD	Organization for Economic Co-operation and Development
PM	Particulate Matter
PV	PhotoVoice
WB	World Bank
WED	Women, Environment, and Development
WID	Women in Development
WTO	World Trade Organization

Table of Contents

Chapter 1 Introduction	1
1.1 Background	1
1.2 Problem Statement	2
1.3 Research Method and Data Management.....	3
1.4 Ethical Issues.....	4
1.5 Limitations of the Research.....	5
1.6 Structure of the Thesis.....	6
Chapter 2 Literature review	7
2.1 Neoliberalism and economic globalization	7
2.2 Critics of economic globalization	9
2.3 Environmental impacts of economic globalization.....	10
Chapter 3 China’s economic development and environmental issues.....	14
3.1 Stages of China’s participating economic globalization	14
3.2 The effects of FDI on China’s economic growth.....	18
3.3 The effects of FDI on China’s environment.....	23
3.4 The environmental pollution and the public health in China	27
Chapter 4 Conceptual Framework: Ecofeminism.....	29
4.1 History of Feminism.....	29
4.2 Main Concepts of Ecofeminism.....	31
4.3 Ecofeminism and globalization.....	34
4.4 Ecofeminism and sustainability	35
Chapter 5 The PV Method.....	38

5.1 Concepts of the PV Method	38
5.2 Advantages of the PV Method	39
5.3 Use of the PV Method.....	41
5.4 PV in this research.....	43
Chapter 6 PV Project	45
6.1 Purpose of the PV project.....	45
6.2 The process of PV project	46
6.3 Data analysis	48
6.4 Results	49
6.5 Discussion	62
6.6 Recommendations	66
Chapter 7 Conclusion	71
Endnotes	75
References	76
Appendix I	91
Appendix II.....	94
Appendix III	95
Appendix IV	97

Lists of Charts, Images and Tables

Chart 1 China's total FDI amount and FDI growth rate (1983-2015)	19
Chart 2 China's GDP growth rate and FDI growth rate (1983-2015).....	20
Image 1 The seven themes of this thesis.....	65
Table 1 Problems need to be dealt with	66

Chapter 1 Introduction

1.1 Background

Globalization has been a growing force for changing the way people work and live since the 19th century (James & Steger, 2014). In 2000, the IMF identified four basic aspects of globalization: trade and transactions, capital and investment movements, migration and movement of people, and the dissemination of knowledge (IMF Staff, 2000). With increased movement of goods and people across borders, nations collaboratively face many environmental challenges, such as global warming, cross-boundary water and air pollution, and over-fishing of the oceans. These issues are directly linked to economic globalization (Bridge, 2002). The development of economic globalization is greatly supported by the theory of neoliberalism, which advocates for a largely free market economy. However, rapid economic growth and the relentless pursuit of profit lead to issues such as environmental pollution, new forms of colonization and slave labor. These issues particularly impact women, and especially poor working class women, in developing countries. The dark side of economic globalization is often overlooked by its advocates; however, these issues are the focal point of critics who condemn economic globalization.

China is a typical case of the link between economic development and environmental pollution. Over the past 35 years, China has developed very rapidly. In 1978, the policies of *Reform and Opening* were put forward, and China began to join international economy. Since 1992, China has moved on from being a planned economy to a market economy, and more and more foreign companies have invested in China. In terms of economic development, China has made great progress: China's GDP has increased rapidly; the amount of international trade has grown nearly 100 times; and the FDI has expanded dramatically (Spatafora, Yang & Feyzioglu,

2004). However, one cost of economic development is the overexploitation of resources and environmental pollution. As it became more integrated into the global economy, China gradually realized that it was necessary to turn rough economic development to sustainable economic development. As a result, the government began to formulate policies and implement laws and regulations. However, the effect of path-dependency¹ makes it a difficult task. The corporations did not want to slow down production, and they wanted to invest less to meet the environmental standards. The workers did not want to lose their jobs, even though they realized the effects of the pollution issues (Fan, 2011). Therefore, the pollution problems have been difficult to resolve.

1.2 Problem Statement

Economic globalization has been considered from multiple perspectives, and environmental pollution in developing and underdeveloped countries attracts much attention from scholars. A lot of research focuses on China's economic development and environmental pollution; however, most of the research is focused on technology and policies, as a means to deal with these challenges. Ecofeminism links various problems women face with ecology and environment. According to ecofeminists, women are closer to the environment, and they suffer more from the environmental pollution. In China, women workers have begun to realize the danger of the pollution produced by the factories they work in. The women workers have also recognized the consequences of the environmental pollution. However, their voice is hardly heard. The main aim of this research is to examine the impact of economic globalization on environmental degradation in China, especially from the perspective of women workers while using ecofeminism as my conceptual framework. The three main objectives of this research are:

1. To explore the relationship between environmental degradation, resulting from neoliberal policies focused on economic growth, and women's health and lives.

2. To provide an avenue for women to voice their concerns about their health and raise consciousness through the use of PV.
3. To explore the role education can play in balancing the economic growth and environmental destruction.

1.3 Research Method and Data Management

PV is a group analysis method, which combines photography with grassroots social action. Participants are asked to represent the situation or express their points of view by photographing scenes that highlight research themes. These photographs are collaboratively interpreted, and narratives can be developed that explain how the photos highlight a particular research theme. PV is often used by marginalized groups to provide insight into how they conceptualize their circumstances and their hopes for the future. It also attempts to bring the perspectives of the participants into analysis and the policy-making process. In this research, PV was used to allow women workers' voices to be heard by the public.

This PV project was conducted from January and February, 2017, and data collection began at the very beginning of the project. Data analysis was constantly evolving, and it lasted until the end of March. Data collection and analysis was performed in four steps. In the first step, the participants took pictures with the disposable cameras and returned the cameras to the researcher. The researcher reviewed all of the photos, choosing those that met all the requirements for inclusion. After printing the pictures, in the second step, individual, in-depth interviews were conducted with the participants. The participants told the stories that they felt their photos depicted, and with their permission, all the interviews were recorded and transcribed. The transcribed data were given back to the participants to ensure their ideas were accurately captured. In the third step, the data was categorized and organized by subject. The data were

summarized and coded into several themes. Finally, in step four, the researcher concentrated on finding solutions to the issues which emerged through the PV project.

1.4 Ethical Issues

To avoid causing harm to the participants, this research paid special attention to ethical issues:

First, all the participants were freely consenting volunteers. A consent form (both English and Chinese version) (See Appendix I) was explained and presented to the participants at the beginning of the project. They were allowed to take home the consent form and signed it only if they chose to be a part of this research. All the participants were informed that they were free to discontinue their participation in research at any time, and that they were free to withdraw from the study if they felt uncomfortable or changed their mind for any reason without any repercussions. The participants were told that once the data was published in the form of a thesis, it would not be possible for the researcher to exclude their views/photographs'/analysis. Hence they had to inform the researcher before the prescribed deadline, February 20, 2017, if they wanted to withdraw.

Second, the identity of the manufacturer/factories/industries and participants has been protected. Although some participants might know other participants due to their attendance at the information session, the identity of the person taking the photos and the content of the in-depth interviews were kept confidential. Additionally, to further add a layer of security, the researcher recruited participants from different factories. The final pictures are presented under the themes generated by interviews. The research team knows the real identities, but they will not be revealed to other participants or to the public. Data in this thesis is presented in aggregate form and pseudonyms are used for the participants, as well as the city and the factories they work

in.

Finally, all the information and data obtained from participants are, and will be kept confidential, including interview records, photographs and information obtained through casual conversations. All the pictures were taken with disposable cameras provided by the researcher, and subsequently collected and printed by the researcher. The researcher also copied and scanned the pictures and kept them on a personal laptop. All the hand-notes were destroyed as soon as the digital file was established. The only person who can access the laptop is the researcher with a password. All the material on the laptop was backed-up to an external drive that was also protected by a password. The data will be deleted three years after the thesis has been written.

1.5 Limitations of the Research

This research was conducted in a challenging environment with limited time and participants. To minimize the impact of these constraints, the researcher tried to employ a practical qualitative methodology, PV, and develop the resources efficiently. However, inevitably, a number of limitations remained.

Firstly, because of the translation between English and Chinese, the ideas of the participants cannot be represented one hundred percent. Chinese is the first language of the researcher, and strategies were employed to improve accuracy. All the materials given to the participants were in Chinese, and the researcher explained the details verbally to the participants to ensure their full understanding. However, there were limitations in translating the expressions of the participants from Chinese to English. The participants sometimes used Chinese slang to express their feelings. The researcher tried to be as faithful to the participants' words as possible; however, in some instances it was hard to find equivalent words in English, so some nuances

may have been lost. The researcher strove to preserve the participants' speech patterns and added some description of their behaviour.

Secondly, due to ethical considerations, participants were given rules for taking pictures (e.g. pictures should avoid human subjects and be far from working place to protect the participants). Because of these rules, participants had to think about and choose the subjects of their pictures carefully, which may limit or reduce the efficacy of the research. In addition, some participants avoided telling the stories that might bring up their traumatic memories, such as fear, and guilt, which could result in a loss of valuable information.

Finally, according to PV, the participant group was made up of 10 members. The group was relatively small. The researcher tried to make up the groups with participants from different age groups and working locations. However, the results could only reflect the situation of women workers in City A, China, but could not be generalized or extrapolated to a wider China context.

1.6 Structure of the Thesis

This thesis is organized as follows: Chapter 2 presents a review of the related literature on neoliberalism, globalization and critics of economic globalization. Chapter 3 presents the analysis of China's economic development and environmental pollution. Chapter 4 lays down ecofeminism as the conceptual framework of this thesis. Chapter 5 discusses PV as the methodology of this research. Chapter 6 presents the PV project with women workers in China. Finally, Chapter 7 presents the conclusions of the study along with some recommendations for environmental education for less educated workers as well as in the schools.

Chapter 2 Literature review

As a result of economic globalization, over the past 50 years, there is an immense amount of literature that has been produced on the subject, written from a variety of perspectives. Starting points for my research are the studies that look at the relationship between economic globalization and the environment.

2.1 Neoliberalism and economic globalization

Neoliberalism is an economic and political term which has been used since the 1950s. *Neo* indicates that old ideas have been adopted and updated, while *liberalism*, based on Adam Smith's classical liberal ideas (Chomsky, 1999), refers to a political philosophy founded on ideas of liberty and equality (Dunn, 1994). Neoliberalism is defined as a political philosophy or world view of free markets with less government influence (Liverman & Vilas, 2006). It has been used in economics since the 1970s, and emphasizes the market-oriented system. Neoliberalism comprises a series of theoretical and ideological systems and propositions concerning the global order of free trade, market price and privatization. It is promoted as a set of policy prescriptions that international financial institutions call the "Washington consensus" (Chomsky, 1999). The Washington consensus includes fiscal discipline; refocusing public spending on education, health and infrastructure; tax reform; interest and exchange at market rates; reduced or uniform trade tariffs; openness to foreign investment; privatization of state enterprises; deregulation; and securing of property rights. It was implemented by international financial institutions to adjust economic structure in the developing world (Liverman & Vilas, 2006).

Neoliberalism advocates replacing government in the market and the behaviour of firms with non-intrusive guidelines that ensure the smooth functioning of the market (Liverman & Vilas, 2006). The main arguments are framed in terms of the efficiency of the market in contrast

with the inefficiencies and high costs of government intervention. Advocates of neoliberalism support extensive economic liberalization policies such as privatization, fiscal austerity, deregulation, free trade, and reductions in government spending in order to enhance the role of the private sector in the economy and society (Springer, Birch & MacLeavy, 2016). It frames its arguments by contrasting the efficiency of a free market with the inefficiency, and high cost, of government intervention. “Its advocates support... government spending, thus enhancing the role of private economic policies” (Jones, Parker & Ten Bos, 2005, p.99). Market-oriented reform policies, such as the elimination of price controls, deregulating capital market, lowering trade barriers, and reducing state influence on the economy, have all had a significant impact on economic globalization (Boas & Gans-Morse, 2009).

Globalization is supported by neoliberalism because neoliberalism claims that “a largely unregulated capitalist system (a ‘free market economy’) not only embodies the ideal of free individual choice but also achieves optimum economic performance with respect to efficiency, economic growth, technical progress, and distributional justice” (Kotz, 2002, p.64). Globalization is evident in almost every aspect of social life. As Held, McGrew, Goldblatt and Perraton (2000) state, “few areas of social life escape the reach of processes of globalization. These processes are reflected in all social domains from the cultural through the economic, the political, the legal, the military and the environmental” (p.27).

Theoretically speaking, globalization is commonly subdivided into three major areas: economic, cultural and political (Babones, 2007). However, among these three aspects, economic development attracts the most attention from all countries. Sklair (2005) called international economic integration *generic globalization*. International economic integration marked the rise of the modern capitalist system in the sixteenth century. The growth of developing countries,

implicated by this system, has been seriously compromised. International economic integration has led many developing countries into economic globalization and has seriously affected the progress of their development. Brady, Beckfield and Zhao (2007) conceptualized economic globalization as “international economic exchange and the flow of goods, services, people, information and capital across national boundaries”, and defined operationalized economic globalization as “international trade and investment” (p.316). Economic globalization is at the core of cultural, political, and social changes at the global level, and it involves the local, regional, national, and international levels of social development.

The following data from the WTO’s Annual Report in 2000 shows that economic globalization has been occurring since WWII. From 1950 to 1999 the average annual growth rate of world real GDP was 3.8 percent; the average annual growth rate in the trade of goods, during the same period, was 6.2 per cent. The average annual growth rate in the trade of services, from 1980 to 1999, was 7.0 per cent, while the average annual growth rate in the stock FDI from 1982 to 1999 was 13 percent. These numbers show that economic globalization significantly contributes to economic growth around the world.

2.2 Critics of economic globalization

Neoliberal globalization has been critiqued on so many aspects, such as the inequalities of wealth, the impact of international competition on national self-sufficiency and human rights and labour standards. This section will review critical literature specific to environmental issues.

Many scholars fear that economic globalization trumps environmental concerns, and indeed, according to the WTO dispute settlement system, economic globalization takes precedence over environmental concerns (Trebilcock, Howse & Eliason, 2013). Some countries are choosing to lower their environmental standards to attract foreign investment, evoking

comparative advantage, and the environmentally damaging industries are particularly drawn to these areas (Legrain, 2004). Repetto (1993) concluded that it is not wise to give trade policy a priority over environmental policy. Efficiency gains from trade liberalization were estimated to range from 1-2 percent of GDP to 3-4 percent of GDP. However, environmental control costs and residual environmental damage costs range from 1-2 percent of GDP to 3-5 percent of GDP (Repetto, 1993). Therefore, environmental cost should be considered when trade efficiency is estimated. Environment management should be an important part in the development of international trade, or economic globalization. Panayotou (2000) pointed out that:

The challenge is to manage the process of globalization in such a way that it promotes environmental sustainability and equitable human development. The more integrated environmental and trade policies are, the more sustainable economic growth will be and the more globalization can be harnessed for the benefit of the environment (p.II).

2.3 Environmental impacts of economic globalization

Scholars have complex opinions on the environmental impacts of economic globalization. Below I present some of the arguments put forward by scholars who see a positive link between economic growth and environmental protection followed by the arguments put forward by the critics of such arguments. Advocates of international trade and investment insist that environmental protection can be improved by implementing environmental regulations in trade agreements, and by increasing average incomes. They emphasize that the scale and technique effects are maximized from the development of free trade. Scale can expand economic activity, and technique can change the technology or method of production; both scale and technique effects are positive steps towards environmental protection (Liverman & Vilas, 2006). Antweiler, Copeland and Taylor (2001) discussed how scale, technique and composition effects were impacted by economic globalization. They pointed out that economic structures could be

optimized by changing the composition of industries, such as moving from the heavy industry to the service industry. They also argue that pollution can be decreased when scale of production is increased. Industries that are pollution-intense can be improved by investing in cleaner technologies. It is the commonly held opinion of Liverman and Vilas (2006) and Antweiler *et al.* (2001), that economic globalization will improve economic development, and therefore, with more financial support, pollutants can be better treated.

The EKC is another approach used to examine the environmental impacts of economic globalization. The WB (1992) makes the case that, although trade-led growth may cause sharp increases in environmental degradation during the early stages of economic development, such degradation would begin to taper off as nations reached turning points ranging from \$3000 to \$5000 GDP per capita. Grossman and Krueger (1991) state that pollution initially increases as industrialization and GDP increase but then falls when the economy shifts to cleaner technologies and service-based activities, and when residents demand investment in cleaner habitats. However, the main criticism of the EKC is the assumption that there is no feedback between economic growth and environmental pollution (Ekins, 2000; Fare, Grosskopf & Zaim, 2001; Stern, 2004). Fare *et al.*, (2001) argued that the environmental quality could not be measured accurately, and that was the major restriction of EKC studies. They try to provide an index number approach to measure environmental performance. Ekins (2000) questioned the reliability of the data used in EKC. The data problems possibly affected the environment-income link for the environmental indicator. Therefore, as for the EKC hypothesis, critics argue that it has more limitations than applications; it applies to a finite number of countries, a finite number of pollutants, and concerns per capita data (rather than absolute pollution data) (Stern, 2004).

Numerous studies have examined the indirect effects of economic globalization on the environment. The *Pollution Haven Hypothesis* is put forward to discuss the composition effect. The *Pollution Haven Hypothesis* was first proposed by Walter and Ugelow (1979) and improved by Baumol and Oates (1988). It argues that firms in developed countries face higher environmental costs, but must adopt liberal environmental measures – or “bottom line competition” – in order to attract foreign investment (Zhang & Jiang, 2014). As a result, many international corporations are more likely to transfer the polluting industries and production chains to developing countries with low environmental standards, and this has a negative impact on the environment at the investment location (Sanna-Randaccio & Sestini, 2011). Critics of economic globalization argue that such relocation will not only increase pollution in developing countries, but also exert pressure on developed countries’ standards, effectively creating a “race to the bottom” (Bhagwati & Daly, 1993). In the literature that concerns the world economy, there is indeed a lot of evidence of these relocation phenomena. Cole (2004) examines the North-South trade flows of 10 air and water pollutants. Although when compared with other factors, the pollution haven effects are quite small, they are still quantifiable. Kahn and Yoshino (2004) studied the bilateral trade data of 34 manufacturing industries in 128 nations over the years from 1980 to 1997. They examined how low, middle, and high-income nations differ regarding their income elasticity when exporting pollution-intensive products. They find that, among nations outside of regional trade blocs, there is evidence to support the pollution haven hypothesis. As national incomes rise, exports of pollution-intensive products decrease relative to the exports of cleaner goods.

The effects of economic globalization on environment also attract attention from ecofeminists, who connect women to ecological issues. They claim that women are closer to

nature, and they critique the ecological and environmental destruction caused by technological improvement and economic globalization. Ecofeminism is the conceptual framework of this thesis. The next chapter will review the literature related to ecofeminism.

Chapter 3 China's economic development and environmental issues

China has experienced rapid economic and social development over the past 35 years. Since implementing the policies of *Reform and Opening* in 1978, China has shifted from a centrally-planned to a market-based economy. China's GDP growth has averaged nearly 10 percent a year – the fastest sustained expansion by a major economy in history – and has lifted more than 800 million people out of poverty (WB, 2013). In 2010, China's GDP surpassed that of Japan and became the second largest economy around the world (WB, 2013). However, considering the amount of per capita GDP, China remains a developing country, and the market reforms are still incomplete. Furthermore, the rapid economic ascendance brought in many challenges, and the environmental issues are the most urgent and serious.

3.1 Stages of China's participating economic globalization

China was established in 1949 as Peoples' Republic, and executed centrally-planned economic policies until 1978. During this period, China had infrequent trade with other countries. The central government made a plan for everything, and market forces were largely eliminated in commerce. The inputs and outputs of industry were allocated by the government to be in accordance with the plan. Workers were also allocated jobs with set wages by the government rather than the labor market. Furthermore, many consumer goods were rationed. The demand and supply were planned by the government. Such centrally-planned economy made China fail to produce efficient economic growth and fall far behind not only the Western industrialized nations but also the new emerging economies in Asia. However, in 1978, the Third Plenum of the National Party Congress's 11th Central Committee was held, and the leaders decided to undertake a program of gradual but fundamental reform of the economic system (MacFarquhar,

1997). It was a milestone of China's economic development, and China began to participate in economic globalization.

3.1.1 The first stage (1978-1991)

The Third Plenum of the National Party Congress's 11th Central Committee is considered the beginning of China's economic development. Economic development was set as the core of China's development. *Reform and Opening* was put forward, and the concept of cooperation was emphasized. The Chinese government advocated economic cooperation with other countries around the world, and it also encouraged existing factories to adopt advanced technology and equipment from other countries. China began to open its market to the world, and gradually participated in economic globalization.

In July 1979 and May 1980, the Chinese government opened Shenzhen, Zhuhai, Shantou and Xiamen as trial special economic zones. Special economic policies were implemented in these zones, and the application of these policies was flexible. These special economic zones took advantages of foreign capital, technology and management experience. The market performed an important role in their economic development, in particular the development of their export oriented economy.

After evaluating the development of the four special economic zones, the Chinese government recognized the importance of implementing the policies of *Reform and Opening*. In May 1984, based on the experience of the four special economic zones, Chinese government opened another 14 port cities, including Dalian, Qinhuangdao, Tianjin, Yantai, Qingdao, Lianyungang, Nantong, Shanghai, Ningbo, Wenzhou, Fuzhou, Guangzhou, Zhenjiang and Beihai. The population of these 14 cities took up 8% of the total population of China at that time, but their GDP made up 20% of the total. Historically, all of these cities had experience with foreign

trade, and developed the fields of industry, technology and education. The openness of these cities encouraged their development, and they were built as economic and technological development zones. In these zones, foreign investment was relatively free of the bureaucratic regulations and interventions that hampered economic growth. These regions became engines of growth for the national economy.

In February 1985, the coastal economic development strategy was put forward, and Yangtze River Delta, Pearl River Delta, Minnan Delta and the Bohai Sea region were established as coastal economic open areas. These areas include 41 cities, 218 counties. Starting in trial special economic zones and expanding northwards along the coast, China formed an open area of more than 200 million people. In these area, the government implemented many priority policies for FDI. The income tax of many enterprises, including Chinese-foreign equity joint ventures, Chinese-foreign contractual joint ventures and wholly foreign-owned enterprises, were levied at a rate of up to 20% according to the tax law at that time, and the local government could decide if the local income tax was reduced or exempted. With the support of the government, the export-oriented economy in these areas developed very fast, and China participated more and more in the economic globalization.

3.1.2 The second stage (1992-2000)

From 1992 to 2000, China deepened their involvement in international trade and further opened their economy to the world. In 1992, some updated concepts of *Reform and Opening* were put forward after the leaders' inspection of the Southern special economic areas. In 1994, the Third Plenary Session of the 14th CPC Central Committee made a strategic plan for the establishment of a socialist market economic system and put forward the new requirements of developing an open economy and collaborating with the rest of the world (OECD, 2011).

The central government decided to open the Pudong New Area of Shanghai. Within this area, four further functional zones were created, including Lujiazui Financial and Trade Zone, Jinqiao Export Processing Zone, Waigaoqiao Free Trade Zone and Zhangjiang Hi-Tech Part. The implementation of economic and technological development zones and special policies accelerated the development of the Yangze River Basin hinterland, which is 1.8 million square kilometers with a population of 300 million.

At the same time, China began to expand *Reform and Opening* inland. During this period, many developed countries experienced the industrial transfer of mechanical and electrical industry to China. In order to further the *Reform and Opening* policy China implemented a series of measures to attract the strategic investment of multinational corporations. Foreign trade developed rapidly, and the trade structure was updated gradually. China reduced tariffs on 3,771 imported products and eliminated the import control tax. Foreign investment in China increased. The actual utilization of foreign capital in 2003 was US \$ 73.523 billion, of which FDI was US \$ 69.468 billion

3.1.3 The third stage (2001 to present)

In 2001, China became a member of the WTO in the WTO fourth ministerial meeting in Doha, Qatar, from November 9 to 13. Being a member of WTO opened a new historical stage for China's economic development and globalization. Since then, China has strongly encouraged the cooperation of other countries around the world by developing a model with a limited regional and territorial scope into an all-directional, multi-level, and wide-ranging model. The open market has changed from unilateral to multilateral among China and the WTO members. The openness of economic and trade relations relied not only on a bilateral consultation mechanism, but also on a multi-bilateral mechanism which played an important role in their integration and

promotion. Furthermore, China gradually turned from policy-oriented opening to an institutional opening under the legal framework. The Chinese corporations did not passively accept international economic and trade rules any more, and they gradually participated in the formulation of international economics and trade actively.

Now China is the largest trading nation in the world and plays the most important role in international trade. Until 2015, China was the world's fastest-growing major economy, with growth rates averaging 10% over 30 years (Goldstein & Schwartz, 2015). It has become a global hub for manufacturing, and it is the largest manufacturing economy in the world, as well as the largest exporter of goods (Liu, Davis, Feng, Hubacek, Liang, Anadon, ... Guan, 2016). Similarly, China's consumer market has grown very rapidly, and it is the second largest importer of goods in the world (Wardrop, Barnett, Atkinson & Clements, 2013). Currently China has 14 free trade agreements with other economies, and another 9 free trade agreements under negotiation (China FTA Network). The impact of economic development on China was far-reaching. China reached all the MDGs by 2015 and made a major contribution to the achievement of the MDGs globally.

3.2 The effects of FDI on China's economic growth

There is a widespread belief that host countries benefit significantly from FDI because the host countries can adopt foreign technology and know-how in the process. The external mechanisms, such as licensing agreements, imitation, employee training and the introduction of new processes and products by foreign firms, generate positive productivity effects for host countries, and they also help to create linkages between foreign and domestic firms. FDI exerts a major influence on economic growth (Irandoost, 2001), and there is equilibrium between FDI and economic growth in the long run (Awolusi, 2012).

In developing countries, the positive effects of FDI on economic growth are based on technology spillover (Balasubramanyam, Salisu & Sapsford, 1996). The technology spillover effect promotes the upgrading of the industrial structure of the host country, thus contributing to economic growth (Caves, 1996). FDI gives host countries the opportunity to obtain high-technology and high-quality intermediate products at low prices to create conditions for subsequent technological upgrading. This greatly accelerates the economic growth (Markusen & Venable, 1999).

According to China's economic development history, FDI began to enter China after the implementation of *Reform and Opening*. With the development of openness, more and more cities and areas gave the FDI priority in their policies. At the same time, with the development of FDI and the implementation of *Reform and Opening*, China's total economy has been promoted, and the economic structure has been updated.

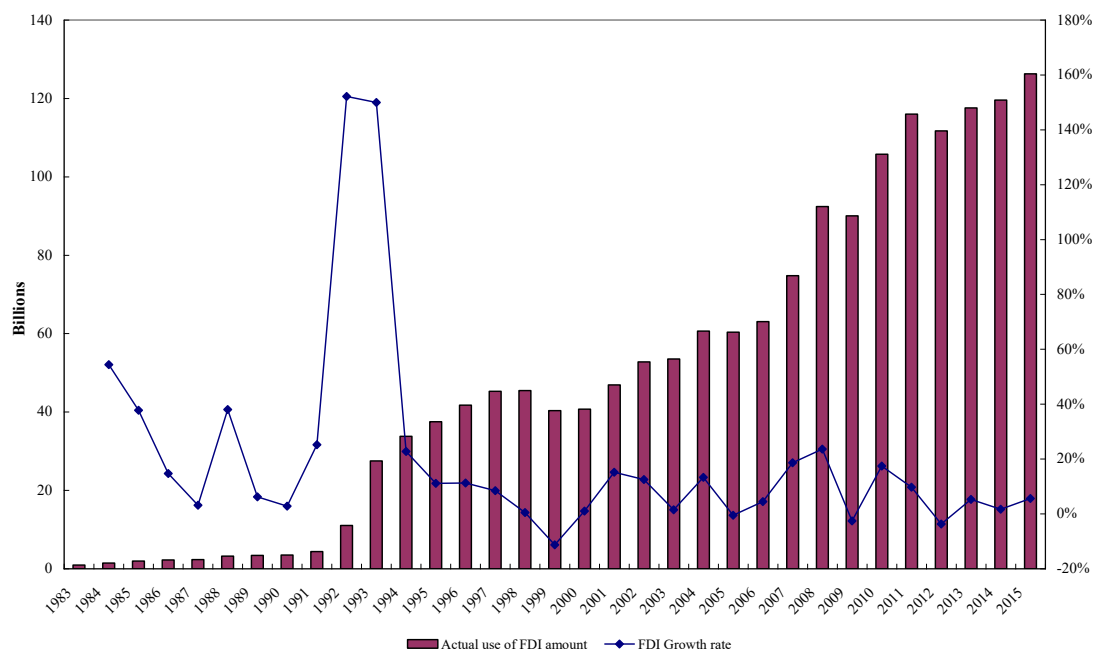


Chart 1 China's total FDI amount and FDI growth rate (1983-2015)

Source: National Bureau of Statistics of China website <http://data.stats.gov.cn/easyquery.htm?cn=C01>

It is clear that the amount of FDI is huge, and that it has been increasing rapidly. Chart 1 shows the total FDI amount and the FDI growth rate from 1983 to 2015. The total amount increased from 0.92 billion US dollars in 1983 to 126.26 billion US dollars in 2015. This final figure was 137 times greater than the original one. The average growth rate of actually utilized FDI over 32 years was 20.31%. Such a fast increase was rare in other developing countries, which demonstrates that China was privy to high investment intensity.

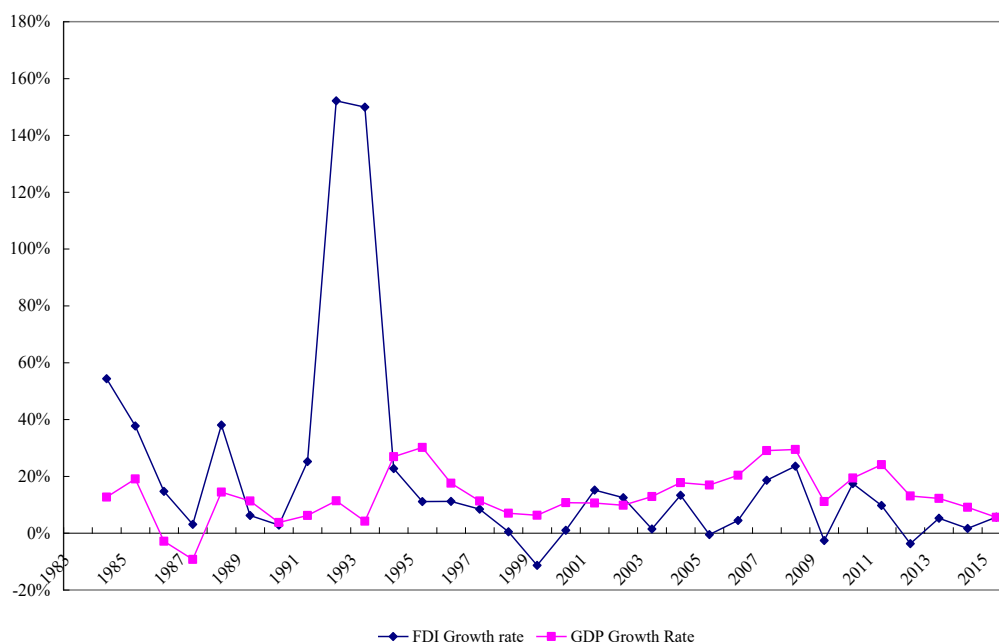


Chart 2 China's GDP growth rate and FDI growth rate (1983-2015)

Source: National Bureau of Statistics of China website <http://data.stats.gov.cn/easyquery.htm?cn=C01>

The WB

<http://databank.worldbank.org/data/reports.aspx?source=2&series=NY.GDP.MKTP.CD&country=CHN#>

China's GDP growth is closely related to the growth of FDI. From 1983 to 2015 (Chart 2), the growth rates of FDI and GDP present a stable relationship. Throughout the entire period the average correlation coefficient reached 94.79%. There is an anomaly between 1992 and 1993. In

fact, as is mentioned above, 1992 is the beginning of the second stage of China's economic reform and development. The thorough implementation of economic openness during these years attracted a large influx of FDI, which resulted in the disparity seen above. However, when the correlation between the growth rates of FDI and GDP is studied in stages, the correlation coefficient is higher than the overall correlation coefficient. The coefficient of the first period (from 1983 to 1995) is 96.27%, and that of the second period (from 1996 to 2015) is 98.08%. Many scholars have studied the correlation between FDI and economic growth from different perspectives. Ren (2003) introduces FDI as an independent input factor into the growth equation. The data regression of 1985 to 2001 shows that the contribution rate of FDI to GDP is between 5% and 6%. The average contribution rate is about 5.9%. Cao (2005) pointed that FDI provided a great amount of foreign capital, which made up the shortage of domestic capital. 2% to 3% of China's economic growth rate should be attributed to FDI. Based on the empirical data of China's Pearl River Delta economic circle from 1999 to 2010, Zou and Han (2013) concluded that FDI was an important factor that constituted the economic growth of the region. Different scholars have shown that FDI has greatly promoted China's economic growth.

FDI has greatly affected China's economic structure. First, the entry of FDI has optimized China's resource allocation. China has the advantage of rich natural resources, cheap labour, and a huge market; however, it lacks high technology and capital which are essential for economic development (Zhao, 2001). FDI provides a great amount of foreign funds and advanced technology. By combining these funds with labor resources and natural resources, and by applying new technology to production, China has improved the rational allocation of resources, and the resources have been transferring to the field of high efficiency (Zhao, 2003).

Second, the optimization of resource allocation has promoted the adjustment of China's economic and industrial structure. Previously, China's industries were mainly confined to the fields of agriculture and heavy industry. The high-tech industry had not developed rapidly due to a lack of funds and technology (Zhao, 2003), however FDI can play a catalytic role in economic growth through positive technology spillovers (Balasubramanyam *et al.*, 1996). FDI gives host countries the opportunity to obtain high-quality intermediate products at low prices to create conditions for subsequent technological upgrading of production processes (Markusen & Venable, 1999). When FDI first came to China, it was mainly engaged in the processing industry. FDI has effectively promoted the expansion of China's processing industry and the improvement of the internal industrial structure of China's processing industry, and the development of the processing industry has also contributed in China's labor market (Yang & Zhang, 2004; Zhang, 2012). China's economic and social development attract more and more FDI in the service industry fields, including real estate, wholesale and retail catering, transportation, warehousing, and post and telecommunications (Zhang, 2006). The development of the FDI has spread advanced foreign technology and management concepts in China. The spillover effects have been fully developed and they promote the upgrading of industrial technology (Wang & Shen, 2015). According to the investigation of 127 foreign-funded enterprises' investment projects in China, Jiang (2002) points out that the investment of multinational companies helped to promote the development of China's high-tech industry, speed up the upgrading of industrial structure and fill the gaps in some areas.

Thirdly, with the enlargement of FDI scale, China's openness is increasing and the international competition is becoming more and more intense (Zhang, 2006). Chinese enterprises must improve their competitiveness in order to survive. Therefore, the development of

supporting industries is quickly accelerating, and the overall quality of the industrial structure has been improved to meet international standards. These improvements make many originally introverted industries turn into intermediate industries, or even export-oriented industries, both of which can further improve the opening-up of the industrial structure, and promote the upgrading of the overall industrial structure (Zhao, 2003).

Finally, the industrial spreading effect has further promoted the evolution of inter-industry trade. FDI introduced advanced foreign industries to China, and at the same time, China has outsourced marginal industries to other countries (She, 2004). The limited resources and capital were focused primarily on the development of high value-added and high-tech industries. Such investment created new investment opportunities, which gradually expanded to other industries and promoted the overall industry to a higher level (Fu & Zhou, 2005). The economic activity among various industries involves complex technical and economic ties. All industries rely on the output of other industries, but must also take into consideration the market demands on their own outputs. The industrial spreading effects made the entire industry sector adjust or optimize, and it also promoted overall economic development (Zhao, 2003).

3.3 The effects of FDI on China's environment

In the context of economic globalization and international industrial transfer, China plays the role of “world factory”. As a result, China's environmental degradation comes not only from the environmental costs of its own economic development, but also from the effects of transboundary pollution transfer (Chen, 2011). In the past three decades, FDI indeed significantly contributed to the high economic growth rate in China (Tian & Liu, 2016); however, China has also experienced severe environmental deterioration, including water pollution, soil contamination and air pollution. Nearly 90 percent of rivers close to cities are so severely

polluted that the water is unfit for drinking and fishing. The New York Times (Kahn & Yardley, 2007) stated that 500 million Chinese people were without safe and clean drinking water. At the same time, the contaminated water is used to irrigate, and it resulted in serious soil contamination, which is a threat to food safety and sustainable agriculture. An estimated 13.86 % of grain production is affected by heavy metal (WB, 2017). Air pollution has become a major issue in China. It is so severe that breathing it can result in serious health consequences, and it has become a threat to public health (Yu & Abler, 2010).

The coexistence of increasing FDI and environmental deterioration is not a coincidence, and there is much research on the causal effect. Regarding the relationship between FDI and environmental pollution in China, most research has approved the Pollution Haven hypothesis. As the environmental standards of developed countries become increasingly stringent, many enterprises engaged in the production of pollution-intensive products have to bear the high cost of pollution control. In the field of oil processing, paper making, and metal smelting, pollution control costs have accounted for 1/4 to 1/3 of the total cost. Therefore, many multinational companies have transferred these high-polluting industries to developing countries. China, as the largest developing country, has attracted more and more FDI engaged in the production of polluting industries. In 1991, among all foreign-invested enterprises, nearly 30% of enterprises engaged in the production of pollution-intensive industries, such as food processing, food manufacturing, rubber, plastics, chemicals and fiber. The amount of the investment accounted for 36.8% of the total (Lu & Pan, 2004). According to the third national industrial census (Xia, 1999), in 1995, among 312,000 foreign-invested enterprises invested in China, 16,008 enterprises invested in pollution-intensive industries. Their industrial output value was about 70 billion US dollars, comprising 30% of the output of all foreign-invested enterprises. There were

7487 enterprises invested in the serious pollution-intensive industries, including textile printing and dyeing, paper industry, black and non-ferrous metal smelting, oil extraction, processing, and coking. Finally, the total industrial output value accounted for more than 40% of the value created by all the foreign-invested enterprises.

According to the statistics from National Bureau of Statistics of the People's Republic of China, during the decade of 1996-2006, the share of foreign investment in China's pollution-intensive industries was expanding, especially in papermaking, oil processing, coking, non-metallic mineral production, chemical fiber, rubber and plastics production, leather, fur feathers production. In 2006, the total FDI in these industries reached more than 35% of China's total assets in these industries. Furthermore, plastic products reached 47.06%, and leather, fur and other products was up to 58.63%. From 1996 to 2006, the pollution industry shares increased. The overall increase was 5.67%, and the average annual growth rate of some industries reached more than 10% (Chen, 2008).

The Pollution Haven hypothesis provides an explanation for these occurrences in China. Pan and Yu (2005) collected the data of Jiangsu, Zhejiang and Shanghai over 1986 to 2003, and examined the causal relationship between the growth of FDI and the increase of environmental pollution. The result shows that the growth of FDI was the cause of the increase of environmental pollution in the three regions. Sha and Shi (2006) use the panel data of 30 provinces to measure the environmental effects of FDI. The negative effect of FDI on China's environment is significant. According to the research, every 1% increase in the total assets of FDI will increase industrial emissions by 0.358%. Su and Zhou (2010) take industrial waste water discharge as a measure of the degree of environmental pollution. Based on the annual data of China's 30 provinces from 1992 to 2007, Su and Zhou use dynamic panel data model to

analyze the effect of FDI on the China's environment. After examining the data in Eastern, central, and Western China, they found that the negative impact of FDI on China's regional environment is consistent with its distribution in China. Chen (2011) studies the data of Yangtze River Delta over 1985 to 2009. The results show that there is a co-integration and causality relationship between FDI growth and environmental pollution in China. The emission of waste gas and sulfur dioxide (SO₂) is highly related to the FDI, and the impact is significant.

The researchers also give some suggestions to improve China's environment. First of all, it is necessary to adjust the FDI structure. The government should try to attract more emerging FDI projects based in the high-tech and service industries (Chen, 2011). The principle of FDI attraction should be transferred from emphasizing on capital flows to technological innovation and institutional transplantation (He, 2010). Second, the government should establish incentives to reduce pollution and protect the environment (Chen, 2008; Sha & Shi, 2006). In addition to using legal means to establish a disciplinary mechanism, economic and policy means should be used to establish appropriate environmental incentives (Chen, 2008). The FDI preferential policies provided by government should focus on encouraging technology transfer and institutional demonstration, which will promote the technology effects if FDI increases environmental protection. Third, the environmental standards of FDI entry should be improved (Su & Zhou, 2010). It is important to improve the quality of foreign investment, and gradually reduce the introduction of foreign-related projects in the pollution-intensive manufacturing industry. Although in the short term, it may reduce the inflow of FDI, in the long run, it can maximize the protection of the environment, and be conducive to sustainable economic development.

3.4 The environmental pollution and the public health in China

The environmental pollution in China has seriously harmed the public health. The expenses resulting from public health issues caused by environmental pollution are gigantic, and the impact on the community's health will have long term consequences (Kan & Chen, 2002; Kan & Wu, 2013). China's Environmental Science Research Institute (2011) pointed out in their report that the expense of residents' diseases caused by environmental pollution accounted for about 21% of the total expense of the diseases in China, which brought great losses to China's economy and society.

Air pollution is the biggest pollution issue in China, and it is seriously affected by industrial production. Inhalation of PM³ can lead to inflammation of the systems in the human body, increased blood pressure, thrombosis and the change of cardiac structure and functionality (Zhou *et al.*, 2014). In recent years, China's air pollution has also attracted worldwide attention. Van Donkelaar, Martin, Brauer, Kahn, Levy, Verduzco and Villeneuve (2010) pointed out that in China, the concentrations of PM are high, especially in Northeast China. In Beijing, based on PM_{2.5} concentration readings, the US embassy indicated that, from 2008 to 2015, unhealthy, very unhealthy and hazardous days made up 67 percent of the entire period (BBC, 2015). To raise the awareness to the public and government, many Chinese scholars have been working on quantifying the consequence of air pollution, and they have conducted some in-depth investigations. Du, Wang, Chen and Jin (2013) found that each year there were 213,000 people suffering from pulmonary heart disease and 1.5 million people suffered chronic bronchitis. Air pollution is the main contributor for both diseases. Chen, Chen and Kan (2010) studied the impact of PM₁₀ on the health of residents in 113 major cities in China. The results showed that in 2006, PM₁₀ resulted in 165.5 million patients with cardiovascular disease and 89,000 patients

with respiratory system illnesses, and 299,700 patients died prematurely. Xie and Li (2013) focused on the impact of PM_{2.5} on the health of residents in Beijing. The study has shown that short-term high concentrations of PM_{2.5} caused 201 premature deaths, 545 cases of hospitalization for cardiovascular disease and 1056 cases of respiratory disease. Therefore, it can be said that the problem of environmental pollution will be a threat to the basic living and survival of Chinese residents (Liu *et al.*, 2013).

According to ecofeminists, women are closer to nature, and because of the different institutions involved, women are weak in resisting environmental impacts, so the impact of environmental pollution on women's health is more obvious. Liu, Zhao, Liang and Wu (2013) analyzed the statistics in Guangdong, China, and reported that the impact of air pollution on the death of females was more severe. Every 100 $\mu\text{g}/\text{m}^3$ increase of the average PM₁₀ and SO₂ concentrations caused 1.055 and 1.073 relative risk of total mortality.

In this research, PV method was used to give women workers a voice to express their views on environmental pollution. This research also intended to help and educate women workers to understand environmental pollution and self-protection, as well as enhance women's awareness of environmental protection. The next chapter will present the development of the PV project.

Chapter 4 Conceptual Framework: Ecofeminism

The conceptual framework guiding this research is ecofeminism, which is one of the sub-movements of feminist ideology developed over the years. In order to contextualize ecofeminism, this chapter begins with a brief review of history of feminism.

4.1 History of Feminism

Feminism is a political, cultural, and economic movement. The aim of feminism is to establish equal rights and legal protection for women (Hawkesworth, 2006). Before late 19th century, women had limited opportunities for involvement in social life and spent most of their time at home managing their households. They were expected to focus on practical and domestic activities that encouraged the improvement of their families, and they were especially expected to please their husbands. Women were discouraged from directly expressing their political views because they lived in a patriarchal system that generally refused to grant merit to women's views (Bomarito & Hunter, 2005a). However, with the development of the British Cultural Revolution in the eighteenth century, the power of the middle class increased, and the corresponding expansion of consumerism encouraged the evolution of women's status at home and in the larger society (Bomarito & Hunter, 2005b).

The economic changes provided more opportunities for women to be directly involved in commerce. Women in the lower- and middle-classes began to assist their husband in work outside the home, but being knowledgeable of business was still considered unseemly for women. However, as women became increasingly involved in social activities, they gradually recognized that they were subordinates in a male-centered society (Bomarito & Hunter, 2005b). Charles Fourier, a Utopian Socialist and French philosopher, is credited with having coined the word "feminism" in 1837 (Goldstein, 1982). The words "féminisme" ("feminism") and

“féminist” (“feminist”) first appeared in France and the Netherlands in 1872, in Great Britain in the 1890s, and in the United States in 1910 (Cott, 1987). In 1848, the first feminist conference was held in the city of Senegal Falls, New York. The Seneca Falls Convention is the first women’s rights convention and it is regarded as the beginning of the organized feminism movement (Dumenil, 2012).

The feminism movement’s history is usually considered to have experienced three waves. The first wave was in the nineteenth and early twentieth centuries, the second extended from the 1960s to 1970s, and the third wave began in the 1990s (Beasley, 1999; Hawkesworth, 2006).

The first feminist wave refers mainly to women’s suffrage movements which were concerned with women’s right to vote. It was coined, retrospectively, after the term second-wave feminism. The term *First-wave* is used to describe the feminist movement that focused as much on fighting social and cultural inequalities as political inequalities. During the nineteenth and early twentieth centuries, many feminist activities were organized in the United Kingdom and the United States. Originally, it focused on promoting equal contract and property rights for women and opposing “chattel marriage” and ownership of married women (and their children) by their husbands. However, by the end of the nineteenth century, feminist activities focused primarily on gaining political power, particularly women’s suffrage.

The second-wave was a continuation of the first-wave which involved the suffragettes in the UK and USA. However, compared to the first-wave, the second-wave was largely concerned with other issues of equality, such as ending discrimination. The second wave refers to the ideas and actions associated with the women’s liberation movement. The second-wave feminists regarded women’s cultural and political inequalities as inextricably linked and encouraged women to understand aspects of their personal lives as deeply politicized and as reflecting sexist

power structures. The second-wave feminism has continued to exist since the 1960s and coexists with third-wave feminism.

Beginning in the early 1990s, third-wave feminism arose as a response to perceived failures or unfulfilled promise of the second wave and also as a response to the backlash against initiatives and movements created by the second wave. Third-wave feminism seeks to challenge or avoid what it deems as the second wave's essentialist definitions of femininity. They believe that the second-wave over-emphasized the experiences of upper middle-class white women. Ecofeminism is viewed as the forefront of the third wave feminism theory and politics, and it grew out of various social movements – the feminist, peace and the ecology movements.

4.2 Main Concepts of Ecofeminism

The development of ecofeminism can be traced back to second-wave feminism (Warren, 1990). The term of ecofeminism was first coined by the French feminist Francoise d'Eaubonne in 1974 to “represent women's potential to instigate an ecological revolution entailing new relations between women and men and between people and nature in the name of ensuring human survival” (Merchant, 1995, p.84), however, it became popular predominantly in the context of numerous protests and activities against environmental destruction. Ecofeminism is about connectedness and wholeness of theory and practice. It asserts the special strength and integrity of every living thing. Since the mid-1970s, some feminists have noted that women around the world have been consistently seen as closer to nature. Cumulatively it offers a framework that might conceivably unite people across numerous social and cultural divides (Smith, 2015; Warren, 1990).

The majority of literature on ecofeminism is concerned with corporate aggression against the environment and resists the general industrial warrior system. Such literature perceived

corporate aggression physically, as an aggression against the female body. (Mies & Shiva, 1993/2014) Ecofeminists blossomed into a social movement in the wake of a number of environmental disasters caused by corporations. Swiss women protested against the Seveso Disaster, an industrial accident which occurred in a small chemical manufacturing plant in Italy in 1976 (Rigby, 2001). Women in the demonstration claimed that:

We should think of controlling our bodies in a more global way, as it is not only men and doctors who behave aggressively towards our bodies, but also the multinationals! What more aggression against the body of women, against the children than that of La Roche-Givaudan at Seveso? From 10 July 1976, their entire lives have been taken over by the ‘accident’ and the effects are going to last for a long time (Prince & Silva-Wayne, 2004, p.538).

The Bhopal disaster occurred on the night of 2–3 December 1984 at the Union Carbide India Limited (UCIL) pesticide plant in Bhopal, India. It was a gas leak incident, and it is considered the world’s worst industrial disaster (Varma, 2005). Women-activists have struggled since then, and have played a central role in sustaining the on-going struggle for justice in the aftermath of the disaster (Shadaan, 2014). The activist have stated, “we will not stop our fight till the fire in our hearts goes quiet – this fire started with 3,000 funeral pyres – and it will not die till we have justice” (Mies & Shiva, 2014a, p.15). The movement has also influenced a new generation of young female activists, who play a key role in it (Shadaan, 2014).

Ecofeminists protest against the stationing of nuclear missiles and resist war technology. The meltdown at Three Mile Island Reactor Unit 2 prompted the first *Women and Life on Earth Conference* in the US in 1980, and subsequently the Women’s Pentagon Action was conducted to protest nuclear war and weapons development. In the UK, Greenham Common Women’s Peace Camp was established to protest against nuclear weapons at the Royal Air Force Greenham Common in England (Cortright, 2008). On December 12th 1982, 30,000 women held

hands around the 6 mile perimeter fence of the former USAF base to protest against the decision of the British government to site it with American cruise missiles. The Greenham Common Women's Peace Camp also inspired people all over Europe and the US to create dozens of additional camps (Cook & Kirk, 1983; Kirk, 1989). "Many women who got involved in the life-affirming actions of the early eighties had suffered from daytime flashes and recurring dreams of total annihilation... Moreover, some women had started having flashes and nightmares when they became pregnant..." (Zitouni, 2014, p.253) The women used their identity as mothers to legitimize the protest of these nuclear weapons; all of their actions were for the safety of their children and future generations (Shepherd, 2010).

Ecofeminists are also concerned by the new developments in biotechnology, genetic engineering and reproductive technology (Mies & Shiva, 1993/2014), especially their impacts on women from the global south, who live off the land. So-called "patents on life" provide a legal basis for biotechnology and genetic engineering and enable their fast development (Shiva, 2000; Werlhof, 2008). The agribusiness corporations invent products that cannot naturally reproduce, and are therefore able to protect their patents. As a result, women who used to farm by applying natural methods must instead pay the company that has the patents in order to continue their work on the farm (Shiva, 2014a). As women have become the main source of "organic matter"² and the targets of men's control over nature, the "creation" of life in labs has become totally unjustified, especially to women in the Third World. Shiva (2014a) states that "Patents and biotechnology contribute to a two-way theft; from Third World producers they steal biodiversity, while from consumers everywhere they steal safe and healthy food" (p.173). Mies (2014) also points out that the genetic engineering and reproduction technology are "presented as the great hope in the so-called third technological revolution of 'high tech'" (p.174), however, they raise

many ethical issues. As a result of the technology revolution, in the modern day, there is no criterion for judging what is beneficial for humanity and what is not. (Mies, 2014).

Regardless of what ecofeminists act against, there are parallels between the domination of nature and the domination women (Warren, 1993). As Reuther (1975) puts it:

Women must see that there can be no liberation for them and no solution to the ecological crisis within a society whose fundamental model of relationship is domination. They must unite the demands of the women's movement with those of the ecological movement to envisage a radical reshaping of the basic socioeconomic relations and the underlying values of this society. (p.204)

4.3 Ecofeminism and globalization

Ecofeminists criticize globalization, which they identify as an outgrowth of neoliberal capitalism. Globalization, in fact, does not represent universal human interest but a particular local interest which has been globalized through its reach and control. “The World Bank does not really serve the interests of all the world’s communities, but is an institution in which decisions are based on voting weighted by the economic and political power of the donors” (Mies & Shiva, 2014a, p.9-10). Globalization is also considered a new way of colonizing, and it is at the root of many social and environmental crises. There are many negative effects of globalization on the female workforce population across the globe, especially in the global South (Peterson & Shepherd, 2010).

Globalization is usually considered, by the public and certain scholars, from an economic perspective focusing exclusively on the financial indicators, such as GDP. However, these indicators cannot demonstrate the environmental degradation associated with the development process. These economic growth indicators see some costs as benefits, such as pollution control, but neglect to consider other costs. Shiva (2014b) states: “in GNP calculations clear-felling a

natural forest adds to economic growth, even though it leaves behind impoverished ecosystems which can no longer produce biomass or water, and thus also leaves impoverished forest and farming communities” (p.71). The environmental degradation and poverty caused by globalization are not considered when calculating the viability of a project, and thus they are ignored in the process of globalization. These policies have devastating effects for women in the global South.

Financial indicators only measure those activities taking place through the market mechanism, regardless of whether or not such activities are productive, unproductive or destructive (Mies & Shiva, 1993/2014). Such economics of commodification create a culture and social system where everything is judged by its price, however, the price of environmental degradation is invisible and, therefore, not considered included the system of market mechanism. Therefore, to increase their economic indicators, many countries develop their economy regardless of their or other countries, environmental concerns. Developing and under-developed countries are the victims of economic globalization, and one of the prices they pay for globalization is their environmental degradation. Shiva (2014a) suggests that economic development means well-being and affluence for everyone in the global south but the reality is that most regions and people have instead seen environmental degradation and poverty. Women are, by virtue of their biological relationship to reproduction, more closely linked to nature and thus more likely to be harmed by environmental degradation (Meinzen-Dick, Kovarik & Quisumbing, 2014). They are almost always easy prey of environment pollution.

4.4 Ecofeminism and sustainability

Ecofeminism claims that women have a special connection to the environment that has been ignored. Shiva states that:

Women in subsistence economies, producing and reproducing wealth in partnership with nature, have been experts in their own right of holistic and ecological knowledge of nature's processes. But these alternative modes of knowing, which are oriented to the social benefits and sustenance needs are not recognized by the capitalist reductionist paradigm, because it fails to perceive the interconnectedness of nature, or the connection of women's lives, work and knowledge with the creation of wealth" (Mies & Shiva, 1993/2014. p.304).

As a way of repairing social and ecological injustices, ecofeminists feel that women must work towards creating a healthy environment.

Women's inherent connection to nature became a popular subject during the 1980s. Previously, scholars talked about environment and development without gender. In the 1970s, the WID movement criticized mainstream development thinking because it excludes women from access to the resources that make development possible. WID argues for women's greater involvement in the development process (Ray, 2007). However, WID's argument did not pay attention to the complexities of gender relations and was replaced in the early 1980s by the WED movement. The WED argument was heavily propagated by NGOs and that portrayed women as having a strong affinity for the environment (Jackson, 1993; Ray, 2007). These ecofeminist scholars posited that women are more closely linked to nature, and they gave rise to images of women as *Earth Mothers* (Jackson, 1993). According to WED, women were seen not only as more likely to be harmed by the environment's degradation, but also as more likely to be responsible for its care and conservation. Some scholars view women as more interconnected with nature because a greater amount of their time and of their physical body is involved in reproduction (De Beauvoir, 1949/2014). The limitation of women's physical and bodily processes in social movements and involvement reinforces the perceptions of women being

closer to nature. As women generally engage in material practices, especially domestic and subsistence activities, they are much closer to nature than men, and they have more opportunities to learn practical knowledge of ecosystems (Agarwal, 1992; Plumwood, 1991). Furthermore, in many societies, though domestic work is considered the domain of women, it doesn't encompass all of their tasks. As a matter of fact, women have gradually started working outside the domestic sphere, and have broken from traditional gender norms around the world. Many ecofeminists also assume that women have an essential connection to nature that gives them an innate understanding of ecosystems and environmental protection (Shiva & Bandyopadhyay, 1989).

Leach (2007) summarizes in her critique as follows: "this is a timeless, perhaps even natural role; subsistence, domesticity and environment are entwined as a female domain; women are victims of environmental degradation (walking ever farther for that wood) but they also are environmental carers and key fixers of environmental problems" (p.69). The exploitation and degradation of nature is linked to the survival and development of women. Both women and the environment are portrayed as victims of development. Women are thus understood to have a particularly strong interest in ending environmental exploitation, as doing so would result in their own liberation (Mies & Shiva, 1993/2014).

Based on the concept of ecofeminism, this thesis focuses on the attitude of women workers on economic development and environmental pollution in China. PV is used as research method to collect the attitude of women workers. Next chapter lays out the main tenets of PV as the methodological framework of the study.

Chapter 5 The PV Method

PV is a way of understanding the participants' point of view by juxtaposing images and words. According to Palibroda, Krieg, Murdock and Havelock (2009), PV is not a new idea because we have always blended images and words to express our ideas, and PV is "one recent example using this form of expression" (p.8). The PV method was founded within feminist theory and was used in feminist research because it was relatively unobtrusive and the participants were empowered to express their experience freely without subjective to intensive measurement and preconstructed questions (Wilkin & Liamputtong, 2010). As a result of this history, this researcher has adopted the PV method to give voice to women workers in China.

5.1 Concepts of the PV Method

Wang developed the PV method in the early 1990s (Palibroda *et al.*, 2009). PV is an effective Participation Action Research (PAR) strategy, and it is designed to empower members of marginalized groups to work together to "identify, represent and enhance their community through a specific photographic technique" (Wang & Burris, 1997. p.369). PV provides exposure and voice to marginalized groups, and highlights the difficulties in their life in ways that questionnaires or surveys may not.

According to Wang and Burris (1997), the three main goals of PV are: "(1) to enable people to record and reflect their community's strengths and concerns, (2) to promote critical dialogue and knowledge about important community issues through large and small group discussion of photographs, and (3) to reach policymakers" (p.370). The PV method equips participants with cameras and asks the participants to take pictures and tell the stories related to these pictures. In this way, the marginalized groups can actively participate in developing and improving their communities. They can represent their communities with the cameras in their

hands and share their ideas and concerns about their communities through their pictures, and they are regarded as *co-researchers* who are involved in the research of their communities (Palibroda *et al.*, 2009).

The pictures taken by the participants have the potential of influencing policy because visual images can provide powerful, concrete evidence of reality in a way that words simply cannot capture (Palibroda *et al.*, 2009) and provide new ideas to policy-makers. Because of each individual has different experiences, they can help policy-makers consider the issues from multiple standpoints. As a result, policy-makers may gain a broader and more inclusive understanding of specific issues and be better equipped to pass policies that benefit the people involved.

The PV method is an individual action as well as community action. PV, as a form of participatory action research, emphasizes action, which means the information and evidence collected for the purpose of social action and social change instead of statistical analysis. The task of the PV project is not only to examine the problems and struggles of the community, but also to find solutions and determine how to implement these solutions (Palibroda *et al.*, 2009).

5.2 Advantages of the PV Method

There are many advantages of the PV method. Wang, Cash and Powers (2000) states PV allows for visual and verbal representation and “by sharing and talking about their [the participants’] photographs, they [the participants] use the power of the visual image to communicate their life experiences and perceptions” (p.83).

PV projects offer valuable first-hand material to the research and PV facilitator. The PV method encourages participants to take pictures, participate in in-depth interviews and answer questions derived from the pictures, providing perspectives that are not presented by traditional

researchers who concentrate on the academic realm. Pictures taken by the participants will be used as the basis for in-depth interviews, and the participants are given room to describe and interpret their images (Palibroda *et al.*, 2009). The research is directed by the participants' expressing their experience and understanding. The research process, including data collection and analysis, or even the final thesis can be directed by the participants' commentary (Wilkin & Liamputtong, 2010). Newman (2010) pointed that:

The structure of Photovoice lays the foundation for participants to function as partners and eventually leaders as the participatory research process progresses This process resulted in shared power between the "traditional academic researcher" and the community, fostered trust, and promoted a sense of ownership in the community, which in turn builds capacity for social change (p.57).

The PV method empowers the participants by making their voice heard. They are involved in the research and work for change in the community. Everyone in the community, including the marginalized groups, has an opportunity to make their voices heard. According to the pictures taken by the participants, the realities of their lives are reflected, and different perspectives of the issue can be exposed to the public (Wang, 1999), which can then be considered by policy-makers. The actions of the participants can influence policy decisions that affect their lives (Blackman & Fairey, 2007), and policy will be more practical and benefit more people in the community. Furthermore, the participants improve their self-esteem in the process of taking pictures, telling stories, and discussing community issues. The participants think seriously about the issues in their community, express their awareness and try to find solutions for the problems. They develop a sense of belonging. From the PV project, the participants gain confidence in their ability to assert ideas and engage in self advocacy (Blackman & Fairey, 2007).

The community benefits from the PV method because the purpose of a PV project is to solve the issues in the community. The PV project is conducted by the community members, who provide different opinions to the community issues. These ideas are valuable to the development and improvement of the community because they are not obvious to the researchers who concentrate in academic field and the policy makers who pay more attention to the whole. The participation of the community members also makes them better understand the strengths and struggles in their community. They gain more information about the issues of their community and they are willing to accept education. Their participation also influences others in the community to add their ideas and effort to the improvement of the community. The sense of belonging among the community members will greatly help the development of the community (Palibroda *et al.*, 2009).

5.3 Use of the PV Method

As a flexible approach to research and reveal diverse social issues, PV has often been used with marginalized and under-represented groups. PV method provides a way for them to represent their own lived experiences rather than having their stories interpreted and told by others (Wang, 1999). In the realm of feminist research, PV method allows women talk more freely and “discuss important topics that they would not have normally thought appropriate to bring up with others”. (López, Eng, Randall-David & Robinson, 2005, p.113) PV projects have been carried out in a wide range of topics on social and health issues of women (McIntyre, 2003; Wang, 1999; Wilson, Minkler, Dasho, Carrillo, Wallerstein & Garcia, 2006).

PV has been used to better understand local realities and promote women’s health. Wang (1999) notes that the traditional method, such as literature reviews, surveys, and statistical studies, are passive methods of data analysis, which fail to bring to life the depth and breadth of

women's lives and burdens. PV is an effective method of researching for women's health. In addition, PV balances the goals of research, action, and evaluation (Israel, Gummings, Dignan, Heaney, Perales, Simons-Morton & Zimmerman, 1995), and is a reflective process that educates the participants by engaging their critical consciousness. Wang (1999) emphasizes that, "successful application of photovoice to exert positive change on women's status in society requires an understanding that images teach and may bring to fruition healthful public policy" (p.191).

McIntyre (2003) used PV to explore the relationship between place and everyday lives of working-class women living in Belfast, in Northern Ireland. The project "provided them [women living in Belfast] an opportunity to describe how they experience the place where they live in" (p.47). Participating in the PV project makes the women engage in the formulation and reformulation of place and identity within contexts of everyday life.

Some research on single mothers also applied PV method. Duffy (2010) recorded a PV project on single mothers assessing community health. Duffy points out that the project makes the participants feel a sense of belonging and more confidence in themselves. They move forward instead of worrying about the past, and they improve their self-worth and find more employment opportunities. In another research, Duffy (2011) explored the impact of community health assessment in eastern Canada by working with seven single mothers in a PV project. These women are empowered by PV project. As a result, they have more control over their lives, feel more confident in themselves, and think more positively. Valiquette-Tessier, Vandette and Gosselin (2015) invited disadvantaged single mothers to participate in the community-based program *Toward Success*, which aims to enhance their social inclusion, parenting, and coping

skills. “Results showed that participants experienced generally positive impacts, such as a sense of accomplishment and increased agency in their lives, and reported no negative impacts” (p.1).

Prairie Women’s Health Centre of Excellence (PWHCE) engaged in many PV projects on poverty, such as *Poverty: Our Voice, Our View* in Winnipeg, *Looking Out/Looking In: Women, Poverty & Public Policy* in Saskatoon and *Photovoice: Freedom from Poverty* in Regina. They state PV is “a compelling way to portray what we knew, and to gain added insights”, and it is “effective in inspiring action by decision-makers” (Palibroda *et al.*, 2009. p.20). They also emphasize that PV is “able to cross language, socio-economic boundaries” and “creates common voice of experience nationally and internationally”.

Sewell and Harris (2015) used PV in their research to explore how women care for the local environment. The research engages “women in a small town in south-east Queensland to reflect on and illustrate their practices of environmental care” (p.195). Sewell and Harris (2015) also suggest the researcher should pay attention to context and use a combination of research methods that “best enable women to give voice to their environmental knowledge and practices” (p.195).

5.4 PV in this research

The purpose of this research is to design and develop environmental education curricula that can be used in informal settings to educate female workers in City A, China. However, in order to design appropriate a context bound curriculum, it is necessary to examine how women workers in China perceive and experience economic globalization and environmental pollution. A PV project was conducted to involve women workers in the research. As co-researchers, they were encouraged to take pictures and share their stories and understanding of globalization and environmental change. The PV project collected opinions of the women workers, and it also tried

to inspire the women workers to engage in the environmental protection. The PV project can be considered as a part of informal environmental education curricula.

Chapter 6 PV Project

The rapid development of economic globalization has caused serious environmental issues in China. The Chinese government has gradually recognized these issues and begun to manage them. However, it is not easy for society in general to change the way they manage the path of their economic development. According to ecofeminists, women are more interconnected with nature, and more likely to be harmed by environmental degradation. Therefore, it is necessary to educate women workers to protect themselves and engage in the environmental protection. In order to design an appropriate, context-bound curriculum it is necessary to examine how women workers in China perceive and experience economic globalization and environmental pollution.

6.1 Purpose of the PV project

This PV project worked with women labors in City A, China to examine their attitudes towards economic globalization and environmental degradation. Special attention was given to exploring what strategies women workers use to deal with environmental pollution, and the wider implications of environmental pollution on women's lives. This PV project asked the research participants (women workers) to take pictures, and to participate in in-depth interviews. In this way, the women workers whose voices usually remain on the margins can be given voice. Based on their understanding of economic globalization and environmental pollution, the researcher can explore how women workers employed in various factories in City A, China, experience pollution, and describe the impacts of environmental pollution in their lives; how to make education as a valuable tool in the process of balancing economic globalization and environmental pollution; what role environmental education can play in improving and helping women to deal with the current environmental problems that affects them.

6.2 The process of PV project

6.2.1 Recruiting Participants

Participants of the PV project were women workers, aged 30-55, working in various factories in City A, China. The selection criteria included all literate participants able to understand the research description in the recruitment letter (See Appendix III), and who would want to contribute their perceptions about environmental pollution and its impact on their lives.

The participants were recruited through a purposive sample with the help of a key informant that the researcher had already made contact with in China. The key informant helped identify prospective participants for this research. The key informant nominated, through his social networks, other participants who met the eligibility criteria and could potentially contribute to the research. With the permission of the potential participants, the key informant gave their email or phone number to the researcher. The researcher contacted the potential participant(s) in person, and snowballing was used to invite further potential participants to the research group.

The researcher contacted possible participants, and explained the study in detail, highlighting the risks and benefits, and the confidentiality of their contributions. The researcher then presented the interested participant with the recruitment letter and answered all their questions. Those female workers who showed interest in participating in the study were asked to return a consent form after they had read and signed it. After all the additional questions were answered, the participants were invited to an information session.

6.2.2 The information session

The information session was a group session. First, the related information was provided, including the research background, the research purpose, the voluntary and confidentiality, a

brief introduction of PV method and a training of using disposable cameras (See the guide of information session in appendix IV). The researcher answered different questions put forward by participants, which helped all of them understand the project better. The purpose of the research was re-stated, and the objective of the research was explained again. The researcher emphasized the voluntary nature of their participation again. They were told about confidentiality. Their identities would be well protected by pseudonyms. All the information and data would be kept in personal laptop of the researcher. The hand-notes would be destroyed immediately when the electronic file created, and all the data would be deleted three years after the thesis has been written. Participants were told that the extent of their participation would be approximately three hours in 2 weeks, including taking photographs and in-depth interview. After that, the participants were trained to use the disposable cameras given to them. The disposable cameras were distributed with a handout that detailed instructions and rules for taking photographs. The researcher used sample pictures to further explain the rules, and confirmed that all participants understood their task. Then, the researcher taught the participants to use the disposable cameras step by step. In the end, all the participants were asked to take a picture with their camera independently as a test.

6.2.3 Taking pictures

All of the participants were given two weeks to take pictures. They were asked to return at least 3 pictures. The participants were told not to take pictures of the factories or their workplace or anything that may identify them or the city; people should not be the subject of the pictures. Moreover, the women workers were told to take pictures in their free time in surroundings that they were comfortable with. At the end of the two week period, all the participants returned their

disposable cameras provided by the researcher, and they all took more than 3 pictures with the camera. The researcher accessed all digital photographs and printed them all.

6.2.4 In-depth interviews

After collecting all the printed pictures, the researcher conducted individual, in-depth interviews with all the participants in a secure room. During the interviews, the researcher asked questions (See appendix III) and collected the stories behind the pictures the participants had taken. All in-depth interviews were audio recorded and transcribed immediately after the interview. All of the transcribed data was given back to each participant to ensure that their ideas were accurately captured.

6.3 Data analysis

Ten women workers participated in this 6-week PV project. All of them were between the ages of 35 and 55, and their average age was 40. Six of them graduated from junior technical school, and four had only finished their junior middle school. They were all married with children, and had worked in factories for at least 14 years (19.4 on average).

According to the participants, their average wage was 2300 RMB (about \$480 CAD) per month, which deducted insurance contributions and tax. These figures were higher than the minimum social wage (1350 RMB or \$270 CAD) in City A, but lower than the average social wage⁴ in City A. In 2016, the social average wage was 4015.83 RMB (about \$800 CAD) per month in City A, without deducting insurance contribution and tax.

Twenty-percent (20%) of the participants were retired from their factory jobs and were then re-employed by their factories. Generally speaking, workers retire at the age of 50 (female) and 60 (male), but in some hazardous fields, workers retire earlier, at the age of 45 (female) and 55 (male). Many women workers who should have retired at 45 continue to work in these

factories because they need financial support for their family. What's more, factories prefer to re-employ these retired workers because, though they pay the same wage, they do not need to pay for their insurance.

6.4 Results

Photovoice allows the participants to help define issues in their society and depict the most relevant social action (Morse & Richards, 2002). The 10 participants of this PV project took a total of 42 pictures that they felt represent their understanding of economic globalization and environmental pollution. After all the interviews, the researcher reviewed the notes, transcripts, and corresponding pictures. All the data were organized, categorized and coded into 7 conceptual themes: (a) Physical injury, (b) Fear and worry, (c) Mental distress, (d) Moral dilemma, (e) Protection, (f) Ignorance, and (g) Nostalgia.

Theme 1: Physical injury

The negative nature of environmental pollution manifests in many facets of life. Some pollutants may be the cause of organ failure, cancer, or even increase the risk of defects in children. In this PV project, almost all the participants talked about how environmental pollution has hurt them, or their relatives. In North China, the air pollution is serious, especially in winter. It mainly causes respiratory disease and physiological dysfunction, as well as the disease of other mucosal tissue.



Lily said, “I took this picture in the hospital when my son had pneumonia. In fact, he suffers pneumonia every year, starting from an early age. The first time he had pneumonia, he was only ten months. It was during Spring Festival (Chinese Spring Festival takes place around January or February each year. It is in the first month of Chinese lunar calendar.) My milk was running out, so I stopped breast-feeding. His immune system was weak at that time, and he was infected by the virus. He had high fever for a whole week, and finally, he was diagnosed with pneumonia. He had to be in hospital. The whole family spent the Spring Festival in the hospital. The hospital was full of children with pneumonia. We stayed in hospital for two weeks. He seemed to be better, and we thought he could rest better at home. However, within one week, we went back to hospital (sad, over-emotional). We spent more than 20000 RMB (\$4000 CAD). But the most important point is his lungs were badly injured, and now he has pneumonia every year. As a mother, you know, I feel guilty to him (crying)...”

Contaminated water is another serious issue. Many women workers work with liquid chemicals. Even though they are asked to wear gloves at work, their skin is badly damaged. These same problems can be transferred to their families when the workers return to their homes.



Susan said, “I work in a chemical fibre plant, and I, as well as my coworkers, know the story of this hand. This is the hand of my mother’s friend. She used to work in my factory, and she has retired for several years. You see the color in her nail. It will never wash away.

Nowadays, our situation is better because the factory distributes gloves and enforces us to wear. However, you know the quality of the gloves, it cannot last long. You can see my hands (show her hands). They are chapped. At first, I thought it was the problem of my skin, which was very dry. But I found many coworkers had the same problem. I went to the hospital, and the doctor said it may be related to my working environment. To be honest, we do not know what kind of chemical we touch every day. We cook with our hands, and we do not know what kind of chemical we add into the food...”

Theme 2: Fear and worry

Because of the negative symptoms they've witnessed, both in themselves and in their relatives, many participants show their fear through their pictures. They are scared of the pollution and worried about their children, relatives and themselves.



Lisa said, “This picture was taken outside the ward of my friend’s father when I visited him. The ward was on the 19th floor. You know, I could not believe when I saw it (shakes head). I know that the air pollution in our city is very bad, but this is the first time I see something in the air. I was scared. You see the pile of gray things on top of the city. It looks like a lid covered on our head. We want to get rid of it, but we cannot escape. My friend’s father suffered lung cancer, and he is in the late period. I am afraid one day I will be here too, and I will see and breathe the smog and die. In recent years, we heard of too many cases of lung cancer. Sometimes we heard the news that someone we knew died from lung cancer. I feel so scared, especially when they were at the similar age with me. I really think death is close to me. It is horrible...”

Five participants mentioned their worry about exercising in the polluted environment. They questioned the benefit of doing exercise in such an environment, and were particularly concerned the health of their lungs.



Mary said, “My son loves playing basketball, but in winter, I forbid him to play basketball. You see this is the playground, where they play basketball. The air quality of that day was not too bad, but still the visibility was low. The chimney was working near to the playground. When doing more exercises, the intake of polluted air increased. The aim of doing exercises is improving physical fitness, but do you think they can benefit from it? They may be taller and stronger, but the polluted air is harmful, and can damage their lungs. It is invisible, and you do not know when they may suffer the disease. How terrible it is! (Over-emotional and then silent for 10 seconds) Many parents asked the school to cancel sports activities in winter; at least long-distance running should be suspended. However, considering about the requirement of entrance examination of high school, the long-distance running still continues. I know the government cannot solve the problem, let alone the school. The point is who considers our children.”

Another participant took a picture of the old people who were wearing masks while doing their morning exercises. She had the same worry as the participant above, but also added:



Susan said, “My husband and I are both only child at our families. In the future, we need to take care of 4 old parents, as well as our child. It is a burden for us. Now we both work in the factory. We are worried about the physical health of our parents. If one of the parents is sick in hospital, at least one of us has to quit the job. The environmental issues make us think more about the health of the old people.”

Theme 3: Mental distress

The environmental pollution does not only result in visible physical injury, but also causes serious invisible mental distress. The visible hurt makes them the victim of the environmental pollution. Their suffering makes them feel scared about the environmental pollution, so they have mental distress on environmental pollution. In addition, they want to protect themselves and their relatives, but it is hard to find reliable information. There is much information on protection, and some is provided with commercial purpose. Such information exaggerates the negative effect of the environmental pollution, and over-emphasizes the function of the production. It makes the women workers confused, and sometimes, it makes them hyper-cautious.



Sophy said, “This picture was taken at my son’s. My grandson will be 1 year old soon. My daughter-in-law concerns about his health every day. To reduce the smog and protect my grandson’s lungs, she taped the window at the beginning of winter. She also bought an air purifier online, and it runs 24 hours, never stops. She also downloaded software on her cell phone to monitor the air quality. My grandson can go out when the air quality is good. Thus, he only went out a few times in the past 3 months. I know she is worried about the environment (nod her head), but it seems to be too much. I think she has some psychological problems.”

Theme 4: Moral dilemma

Some participants felt they were trapped in a moral dilemma. The factories promote the idea of cooperating with foreign companies to enlarge their scale, and they are proud of the increase in their output. The women workers realize the change of economic collaboration, but at the same time, they know they work in a pollution-intensive industry. They feel it is a struggle to confront this reality.



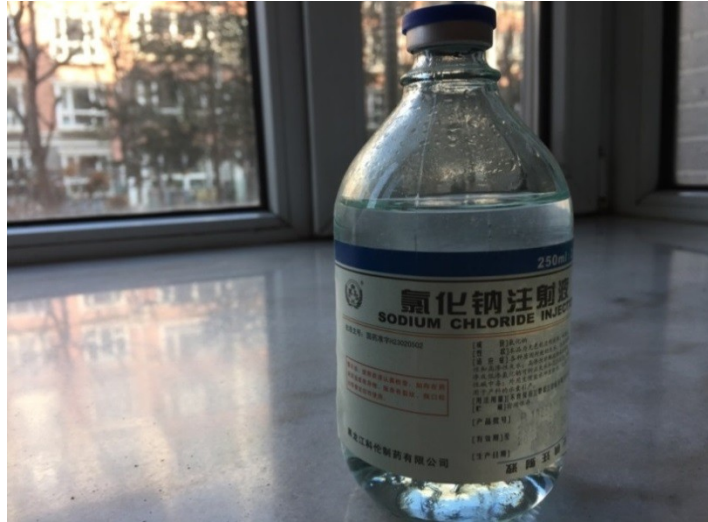
Amy said, “This picture was taken outside our factory. There is sewage and dirt all year round. You see, the water was green. I think it was waste water from our factory. It is terrible. Twenty years ago, when I began my work, there was no tall building in our factory. At that time, the factory began to reform. It was said with the help of local government, our factory would cooperate with a foreign company. The foreign company wanted to help us transform into a modern enterprise. In the following ten years, the workplaces were updated constantly. But what about something invisible? Who will consider about these issues? We work hard to make profit for the factory, but at the same time we are also making pollution which cannot be dealt with. Should we continue our work and pollution? This picture is very ridiculous. We see not only the building from the contaminated water, but also our future. We may kill ourselves one day...”



Lisa said, “I know that my work pollute the environment, especially the air, and I also know the working condition is not good for my personal health. But what can I do? My son is in middle school. We need to pay for the tuition and extra-curricular courses. We hope he can receive better education, so we want to choose some clubs for him. We have to work and earn money. Furthermore, my son is a teenager. You know, at this age, they have to eat nutritious food. So we have to buy grocery every day to keep it fresh. My husband and I both work in the factory. Our income can only maintain our family life. We do not want to make the environmental pollution more serious, but we also do not want the factory be closed because of pollution. Otherwise, we will be out of work. How can we support our family? What can I do with my son? Now we are talking about the polluted environment. If the factory is closed, we have to talk about the problem of survive.”

Theme 5: Protection

Some participants talked about their fear, recognizing how urgently they needed to protect their family, especially their child. They collected protection tips in different ways, and they wanted to try all the possible methods to protect themselves from the environmental pollution.



Emily said, “I bought a box of sodium chloride each month because I asked my daughter to wash her nose and mouth every day after school. I heard that this would help to clean the dust and kill the virus. She goes to school every day wearing a mask. It is only 20-minute walk from home to school, but the mask turns dirty, especially the nostrils place. I really worried about my daughter, and I do not know when the pollution can be dealt with. I want to protect her, but what can I do? I check the air quality report every day, and force her to wear a mask and clean with the sodium chloride. However, I know that is not enough (sigh). When the air quality is particularly bad, you can see something in the room. Maybe it is the smog.”



Cici said, “I bought these masks online. They are designed for the smog. It is 7 yuan (\$1.5CAD) each. I bought 70 pieces for my family this winter. The smog cannot be managed in a short time, but we have to continue our life, so what I can do is self-protection. I found various suggestions online and I chose the most popular ones, such as wearing masks. There are different brands of masks, with different prices. Some are too expensive and we cannot afford. This one is fine. Usually we wear one mask for 3 days, which means 2 Yuan (40 cents) a day. In addition, we also pay more attention to the diet. We eat more food that helps clear the lungs and strengthen our immunity system. I hope we can get some more professional advice on self-protection.

Theme 6: Ignorance

Even though most of the participants knew the harm of environmental pollution, some of them were ignorant, especially the senior women workers. Sophy, the lady who took the picture in theme 3 (cf page 55), thought her daughter-in-law had psychological problems. She had a totally different understanding of how to deal with environmental pollution. Unfortunately, she is not the only person who misunderstands the situation.

Daisy said, “I know the current environmental pollution is very serious. The fact is air quality is not good, and then what should we do? I think we need to be exposed to the polluted environment to adapt to it. When I was a child, the air was also not good, or even worse. The smell of the smog was very strong. However, I am well now, and I never had serious health problem during my life. We, especially the children, should breathe in the environment. It can enhance the function of the lungs, and help to establish a better immune system. Anyway, environmental problems cannot be resolved in one day. In the long run, we have to be exposed to the environmental pollution and adapt to it...”

Theme 7: Nostalgia

All the participants talked about economic development. They all experienced the outcomes of China’s economic development and belong to the middle- or lower-class families. Over the past 30 years, they witnessed the changes around them. The city has changed a lot, taller buildings, wider streets and more business circles. However, they were also concerned by the effects of economic development on their personal life. There were not many changes in their lives, or maybe it has gotten worse. The gap between the rich and the poor is bigger now. Therefore, based on their experience, they did not think economic development benefited everyone in the society. Some of them insisted that economic development made their life harder. They preferred their lives before economic development.



Lisa said, “We used to live in the city. But the land was sold to a business group by the government, and we had to move. They gave us some compensation, and built these buildings for us. The fact is these buildings are part of the fine community, but we have different entrances to the community and our apartments are small. I admit that we live in the building now. It may be the benefit of economic development. However, we all miss the past days. There was no building and the living condition was not good. But we were happy. Now, though we live in the tall building, we cannot see very far. When the air quality was bad, you cannot see the ground. What’s more, this area is very inconvenient. It is easy for the families with their own cars. We have to take bus to work, and it takes a long time every day.

Therefore, to tell the truth, I do not think we benefit from economic development. I think it bring many troubles for us...”

Julie said, “If I can choose, I would rather go back to 20 years ago. The economic development did not bring me any actual improvement, maybe the situation is worse. The wage is rising, but we have to work harder than before. Furthermore, the price rises faster

than wages, and we are poor now. In addition, economic development brings various new styles of consumption. Education is a good example. My son takes part in some extra curriculum clubs because it is said that taking part in these activities may help them develop different kinds of skills for their future competition. I think it is business, and they charge a lot. As parents, if we can afford, we will let our children participate, even though we do not know it is really helpful. When we were young, we did not have such kind of education. It comes along with the economic development, and it costs a lot every month.”

6.5 Discussion

In China, the status of women has been increasing since the establishment of People’s Republic of China. First, the women’s basic rights were gradually recognized in the form of laws. Women have the right to vote and be voted for, which means they have the right to participate in politics. Second, women can receive education and work with men. Women have the opportunity to develop themselves and be independent. However, women workers are still marginalized in society, so their voices are hardly heard. In China, women perform most domestic tasks, and so they have to work as well as taking care of the family. They care very much about their family members, but seldom think about their own health and working environment. In fact, they do not have time to consider their own lives. Furthermore, on top of these problems, the education level of women workers is limited. Most of them finished their compulsory, nine-year education and then began to work. Therefore, even though they have some understanding of some of the social issues that affect them, they can hardly draft a formal document to report on them. This lack of ability is verified in this PV project. During the in-depth interviews, the women workers have some opinions, but their expressions lack a logical order, and they continuously switch from one topic to another. The women workers had to be encouraged by researchers, and with some help, they could think about their issues properly. At the same time, the researchers have to collect

their opinions and help them formulate the right words. The organization and clarification of these collected voices can help make the voice of women workers in China heard, and help the public better understand the issues in China. This PV project offered women with the opportunity to perceive and experience the economic globalization and environmental pollution. The project was conducted smoothly, and the objectives were achieved.

The China's fast economic development over the past 35 years is well-known, and was also witnessed by all the women workers participating in this PV project. However, the women workers, as the marginal group, understood the economic development through the tangible changes in their lives, rather than through economic indicators. As the increase of their income was slower than that of the inflation, there was not much improvement in their lives. Hence, they did not think they were the beneficiaries of economic development. Furthermore, they believed that the economic development resulted in the environmental pollution, and that they were the victims of the environmental pollution. All the women workers in this project talked about environmental pollution through their pictures. Their understanding of environmental pollution came from the public opinion and social media, so their understanding was superficial or one-sided. They knew the environmental pollution, but they did not know what it exactly was. They tried to find some method to protect themselves and their family, but they could not tell if the method really helped, especially those recommended in commercial advertisements.

This project provided a tangible and practical tool for women workers. By taking pictures, they could depict their experience and stories. From their experience and stories, they shared their ideas with the researcher. At the same time, engaging in the project made the women workers pay more attention to the environmental issues and their own health. They began to think about environmental issues more seriously, and they wanted to receive more information on the

pollution and protection. Therefore, the PV project is an effective research method for women workers; it encouraged the women workers to engage in the research, and it also educated them in the process. This project coded 7 themes of environmental pollution from the perspective of women workers. Based on the 7 themes, many questions are put forward.

Before considering the questions, it is necessary to briefly elaborate these themes. The physical injury is the most visible one, and marks the beginning of women workers' awareness of environmental pollution. It is also one of the original reasons for conducting this project. However, the physical injury is only one of the consequences of environmental pollution; it also causes serious fear and worry. With the increase of fear and worry, some women workers experienced mental distress which often enhances anxiety and eventually becomes a vicious cycle. Women workers had different ways of dealing with the physical and mental pain. Some of them were ignorant. They did not have much education, and they dealt with the environmental problems by using their experience and imagination. Some women workers suffered a dilemma: the reality of supporting their family made their desire to stop the pollution-intensive work unachievable. Some chose to protect their family and themselves. The protection included the use of masks, as well as what the young mother did in theme 2. In fact, the young mother in theme 2 represented a typical group. These new mothers wanted to protect their babies as much as they could, and sometimes they were hyper-cautious. A documentary called *Under the Dome* was made by a famous reporter in China. She talked about what she had done with her new baby. "I covered her nose with my handkerchief. I know it seems stupid, since in her struggle to breathe through it, she would just inhale more smog..." The fact that this female reporter, with advanced education, did something she knew was silly in an effort to protect her child demonstrates the verity of the situation. Some women workers became nostalgic, preferring their lives before

economic development, and questioning its benefits. They thought the gap between the rich and the poor was not as substantial prior to their country's development; their lives were less stressful, and the environment was cleaner. As these points demonstrate, the 7 themes are co-related (Image 1), which makes assessing the environmental issues more complicated (Table 1).

Education should play an important role in resolving these issues. The education should be given to different social and economic classes to improve the recognition of the whole society, which can help balance the economic development and environmental pollution.

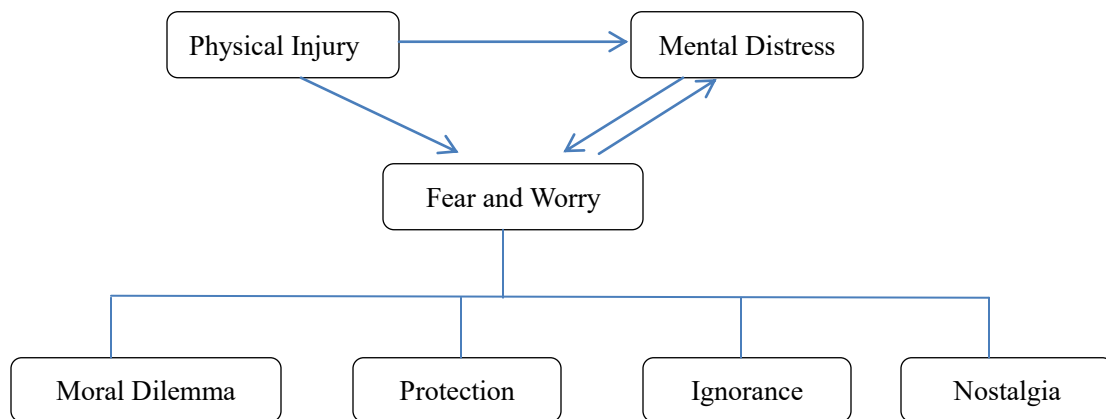


Image 1 The seven themes of this thesis

Table 1 Problems need to be dealt with

Group	Problems
Women workers	What is their work? What kinds of material are used in their work? Will the materials physically hurt them? What kind of measures should they take to protect themselves? If there is an emergency, what should they do about it? What is the reality of environmental pollution? What kind of measures should they take to deal with the present pollution?
Entrepreneurs	What kinds of effects can factory production have on its workers and the environment? What kind of protection should they provide for their workers? How can they reduce the negative impact of production? What kind of social responsibility they should take? What are the environmental laws and regulations related to their production?
Local government	What laws and regulations should they make to restrict the polluting production? What kind of FDI should they encourage during economic globalization? How can they educate the public about environmental protection?

6.6 Recommendations

To deal with the issues put forward in this PV project, the improvement and updating of the technology is important. However, the environmental education is also essential. Environmental education can help change people's concept; this is therefore a logical place to begin when managing environmental pollution. The implementation of environmental education can improve society's awareness of environment protection, and engage everyone in the preservation of the environment, and ecological sustainability.

Environmental education should be provided to women workers by the government and by the companies running the factories. Such environmental education should be intensive, and

incorporated into pre-job training. The education level of the women workers should be considered and the words of the training should be simple and clear so that they are easy to comprehend. The content should include two parts: the detrimental aspects of their work environment, and how to protect themselves from these detriments. The company should introduce the material that the women workers will be handling, and the hazards of the material. Women workers should also be told how to protect themselves from the threat, and what should be done in the event of a health-related emergency. They also should know what kind of pollutant may be produced in the production, and what will be done with the pollutant by the company. Providing such information will release the women workers from the fear that is caused by a lacking of relevant knowledge. In addition, the government should provide general, environmental education to women workers. Women workers can be the communicators of environmental education. They can affect and teach the younger generation in daily life.

The government should provide environmental education to the public. The government should publish objective reports about present, environmental pollution, and relevant research should be done by authorized institutions. The reality that environmental pollution exists should be presented to the public, even though it may generate fear. Being transparent will negate the panic that is caused by exaggerated, commercial promotion. At the same time, the government should introduce proper solutions to deal with the environmental pollution by utilizing various social media. China's environment pollution is serious, and it cannot be solved in a short time. Therefore, it is necessary to provide information on how to protect oneself, as well as how to protect the environment.

The government should educate entrepreneurs about environment protection. A clear explanation of environmental laws and regulation should be provided to entrepreneurs. The

entrepreneurs should know the cost of breaking the laws and regulations, and produce cleaner by-laws and regulations to avoid these potential ramifications. At the same time, the local government should help entrepreneurs recognize their social responsibility. The entrepreneurs should think about environmental impact as well as the profits.

The researcher also thinks that environmental education should be added to school curriculum. The Chinese government has already made some laws and regulations, but their implementation has been hindered by ideas like path-dependency. Individuals and companies are used to their recognition and lifestyle, so it is hard for them to change in a short period of time. Putting environmental education into the curriculum system will help the younger generation establish a sense responsibility where of environment protection is concerned, and this awareness will encourage positive, future habits in the future. In this way, the environmental protection will be improved.

The government should strengthen education legislation at the national level. China does not currently have a specific law to regulate and protect the implementation of environmental education. There are some rules for environmental education in relative laws, but they are not systematically. Therefore, the Chinese government has to promote the research, practice and formulation of environmental education legislation. Environmental education law should clear the responsibilities of relative departments, and the punishment rules should be included in the law. In the process of implementing environmental education legislation, Chinese government can learn from the experience of other countries. In the US, the first environmental education act was passed in 1970, while the National Environmental Education Act (NEEA) was passed in 1990. In Japan, Law for Enhancing Motivation on Environmental Conservation and Promoting of Environmental Education was published in 2003. The Korean government passed the National

Environmental Education Promotion Act in 2008. These laws focus on different points, but they all clearly clarify the responsibility of the government in environmental education and set up the environmental education administration agencies. These experiences can be of great significance to China's environmental education legislation.

The rules of funds to support the implementation of environmental education should also be established. As a public good, environmental education should be primarily supported by national and local government. Investing in environmental education is a long-term project. The results of the investment in environmental education cannot be seen in the period of current government. Therefore, the government should take long-term consideration and set the goal of sustainable development. The government should keep the funds support in environmental education and ensure its effective implementation. Environmental education can help realize sustainable development. At the same time, it is necessary to develop more resources for environmental education, such as social fundraising, individual donation and international investments.

A viable meaningful environmental education evaluation system is a guarantee of the implementation of environmental education. The evaluation system can be used to examine the rationality and effectiveness of environmental education legislation. It can also reveal the problems in the process of environmental education practice. Solving these problems will keep the environmental education implementing effectively.

In addition, international organization should disseminate environmental education to the whole world, especially developed countries. Under the guise of globalization, many companies in developed countries enhance their businesses as multi-national companies, and move pollution-intensive production to developing and underdeveloped countries, without

acknowledging that environmental pollution eventually impacts everyone. Therefore, when talking about globalization, environment globalization is another, important element.

Chapter 7 Conclusion

China's environmental issues have attracted much attention around the world. They not only affect China's economic growth, but also international, ecological and economic development. Because of the close relationship between women and the environment, it is necessary to examine how women in China perceive and experience environmental issues. This research adopts PV method to and applies it to women workers from City A in China. Based on the research and PV project, several conclusions are drawn:

China's economic indicators have been increasing continually, and environmental issues have correspondingly increased in severity. Over the past 35 years, China has achieved considerable economic development, and now plays an essential role in global economic development. The large population makes China a huge market in international trade, and its rich resources and cheap labour make China competitive in global production chains. The introduction of FDI played a significant role in China's economic growth. Many foreign companies came to invest in China, and FDI provided great capital support for China's economic development. However, a large part of FDI was invested in pollution-intensive industries, which resulted in serious environmental pollution alongside the increasing rates of GDP and economic growth. China's situation supported the *Pollution Heaven Hypothesis*. China's economic development and growth will definitely continue, and the environmental issues must be effectively solved. Therefore, determining the best course of action to manage environmental pollution is urgent, and it is time for China to adjust the path of its economic development towards a model that is more environment-friendly and sustainable.

Women workers are the main victims of environmental pollution. Many FDI have invested in China because of the low cost of labour, and many women workers are engaged in these jobs.

They work in pollution-intensive environment that threaten their health. In addition to their personal health, they must also consider the health of their families. In China, most women take care of their families. They have to continue the housework after work and therefore transfer the threats posed at work to their family members. When they recognized their health or the health of family members are suffering, they are caught in mental distress. Many women workers suffer both physical and mental pains.

PV is a good way to study the issues of marginal groups. It provides an opportunity for people living on the margins of society to have their voice heard. They can express their opinions and understandings of the issues from their perspective, and these perspectives can bring new ideas to policy making. This PV project gave a practical tool to women workers in China to express their understanding toward economic globalization and environmental pollution. Almost all the women workers recognized the environmental pollution, and some of them questioned the economic development. However, for these women, economic indicators were only numbers. What they really cared about was the improvement of the quality of their life. In fact, the women workers were seriously affected by the environmental pollution caused by economic development. They suffered the physical and mental pain, which also made them anxious about their families and themselves. They want to protect their families and themselves, but they lacked tangible means to deal with environmental pollution, and therefore couldn't take steps to rectify their situations.

In light of the problems presented in this PV project, the researcher believes that environmental education should be utilized to deal with environmental pollution in China. As a public good, environmental education should be provided mainly by the government. To deal with the issues of women workers, some simple and intensive education should be provided to

raise their knowledge of environmental pollution and protection and enhance their awareness of protection their family and themselves. At the same time, it is essential to know that educating women workers is not enough to deal with the issues put forward by the PV project.

Environmental education should also be given to the public, entrepreneurs and local government. The entrepreneurs and local government should make sustainable development their priority. They should focus on improving economic growth as well as the increasing economic indicators. Environmental education can help them establish the concept of environmental protection and sustainable development. Furthermore, as the effect of Path-dependency is inevitable, environmental education should be set in curriculum system, which makes environmental protection a habit for the younger generation.

Environmental education legislation is an effective way to ensure the implementation of environmental education. The Chinese government should use countries that have successfully set up and implemented environmental laws as an example. The government should encourage the research and practice on environmental education legislation. The laws should refer to the necessity of implementing environmental education, environmental education funds and a practical evaluation system. Environmental education legislation can ensure the effective development of environmental education. The relative laws can help to improve the level of environmental education, and promote sustainable development.

Finally, environmental education should be a universal subject. It should not be provided only when countries or areas are forced to confront environment issues. Developed countries should also be educated that environmental pollution will not be limited to the countries that receive high volumes of outsource production; the pollution will permeate the globe via air and water currents. The pollution in one country will eventually affect the health of the whole world.

Therefore, the environmental education on a global scale should also be provided. Environment globalization should be considered as an essential element of the development of globalization.

Endnotes

1. Path-dependence extends from a perspective within economic and political science. It “explains how the set of decisions one faces for any given circumstance is limited by the decisions one has made in the past, even though past circumstances may no longer be relevant (Praeger, 2007. p.232).”
2. Plants obtain nutrients from several natural sources: organic matter and minerals, carbon dioxide (air) and water. Organic matter includes any plant or animal material that returns to the soil and goes through the decomposition process. Different soil organisms feed on different organic substrates. Their biological activity depends on the organic matter supply. In addition to providing nutrients and habitat to organisms living in the soil, organic matter also binds soil particles into aggregates and improves the water holding capacity of soil. Most soils contain 2 to 10% organic matter. However, even in small amounts, organic matter is very important.
3. PM stands for particulate matter (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. Particle pollution includes PM10 (inhalable particles, with diameters that are generally 10 micrometers and smaller) and PM2.5 (fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller). The greatest effect on health is from particles 2.5 microns or less in diameter.
4. Average social wages is used as an indicator in China to reflect the level of wages and living standards of workers. Usually it refers to a certain region or country within a certain period of time (usually one year). It is calculated by dividing the total wages of all employees with number of workers in this period.

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Appendix I



INFORMATION AND CONSENT FORM

Study Title: An Ecofeminism Perspective on Economic Globalization

Researcher: Yingnan Sun, Master's student in Educational Studies

Researcher's Contact Information: 1610 Saint-Catherine Street W., FG-5.150, 514-848-2424, yingnan.sun@concordia.ca

Faculty Supervisor: Dr. Adeela Arshad-Ayaz, Assistant Professor, Department of Education Concordia University

Faculty Supervisor's Contact Information: 1610 Saint-Catherine Street W., FG-5.150, 514-848-2424 ext.5327, adeela.ayaz@education.concordia.ca

Source of funding for the study: No

You are being invited to participate in the research study mentioned above. This form provides information about what participating would mean. Please read it carefully before deciding if you want to participate or not. If there is anything you do not understand, or if you would like to have more information, please feel free to ask the researcher.

A. PURPOSE

The purpose of this research is to design and develop environmental education curricula that can be used in informal settings to educate female workers in City A, China. However, to design appropriate context bound curriculum it is necessary to examine how women workers in China perceive and experience the economic globalization and environmental pollution.

This research is aimed at finding out what role can education play in balancing economic development and environmental conservation. Special attention will be given to exploring: What strategies do women workers use to deal with environmental pollution? What are the wider implications of environmental pollution on women's lives?

Education can be a valuable tool in the process of balancing economic globalization and environmental pollution. The Chinese government has already recognized the environmental issues, and some measures have been taken. What are the effects of implementing these regulations? What role can environmental education play in improving and helping women to deal with the current environmental problems that affect them? All of these questions will be referred to in the research.

B. PROCEDURES

If you participate, you will be asked to

- Attend a group information session at the researcher's room to introduce the study and explain procedures such as how to use a disposable camera. (1 hour)
- Take at least three pictures (outside of your workplace) within a period of two weeks using the disposable camera you will be provided with at the information session.
- Return the camera with your pictures to the researcher. You can contact me in advance, and I can pick it up. The researcher will print the pictures.
- Participate in a private in-person in-depth interview at the researcher's room to discuss your pictures. (2 hours)

In total, participating in this study will take approximate 3 hours over 6 weeks. Interviews will be audio recorded.

C. RISKS AND BENEFITS

You might face certain risks by participating in this research. These risks include possibly offending someone in authority. However, any such risk may be avoided by taking pictures outside of your workplace during your free time in surroundings where you feel secure on environmental issues that personally concern you.

This research is not intended to benefit you personally.

D. CONFIDENTIALITY

We will gather the following information as part of this research: the pictures you have taken, and your views on these pictures.

We will not allow anyone to access the information, except people directly involved in conducting the research except as described in this form.

The information gathered will be identifiable. That means it will have your name directly on it.

We will protect the information by storing all data on the researcher's password-protected personal laptop.

We intend to publish this information; however it will not be possible to identify you in the published results.

We will destroy the information three years after the end of the study.

E. CONDITIONS OF PARTICIPATION

We intend to audio-record interviews as described above. Please indicate your preference below by selecting only ONE option:

I agree to be audio recorded.

Please do not audio-record my interview.

You do not have to participate in this research. It is purely your decision. If you choose to participate, you can stop and withdraw from the project at any time. You can also ask that the information you provided not be used, and your choice will be respected. If you decide that you don't want us to use your information, you must tell the researcher before February 20th, 2017.

There are no negative consequences for not participating, stopping in the middle, or asking us not to use your information.

Participants are automatically bound by a confidentiality agreement prohibiting any disclosure outside the group session of the identity of any other participant and anything discussed.

F. PARTICIPANT'S DECLARATION

I have read and understood this form. I have had the chance to ask questions and any questions have been answered. I agree to participate in this research under the conditions described.

NAME (please print) _____

SIGNATURE _____

DATE _____

If you have questions about the scientific or scholarly aspects of this research, please contact the researcher. Their contact information is on page 1. You may also contact their faculty supervisor. If you have concerns about ethical issues in this research, please contact the Manager, Research Ethics, Concordia University, 514.848.2424 ex. 7481 or oor.ethics@concordia.ca.

Appendix II

China's Actual use of FDI and GDP (1983-2015) (US\$ Billion)

Year	GDP	Actual use of FDI	Year	GDP	Actual use of FDI	Year	GDP	Actual use of FDI
1983	230.69	0.92	1994	564.33	33.77	2005	2285.97	60.33
1984	259.95	1.42	1995	734.55	37.52	2006	2752.13	63.02
1985	309.49	1.96	1996	863.75	41.73	2007	3552.18	74.77
1986	300.76	2.24	1997	961.60	45.26	2008	4598.21	92.40
1987	272.97	2.31	1998	1029.04	45.46	2009	5109.95	90.03
1988	312.35	3.19	1999	1094.00	40.32	2010	6100.62	105.74
1989	347.77	3.39	2000	1211.35	40.72	2011	7572.55	116.01
1990	360.86	3.49	2001	1339.40	46.88	2012	8560.55	111.72
1991	383.37	4.37	2002	1470.55	52.74	2013	9607.22	117.59
1992	426.92	11.01	2003	1660.29	53.51	2014	10482.37	119.56
1993	444.73	27.52	2004	1955.35	60.63	2015	11064.66	126.27

Source: National Bureau of Statistics of China website <http://data.stats.gov.cn/easyquery.htm?cn=C01>

The WB <http://databank.worldbank.org/data/reports.aspx?source=2&series=NY.GDP.MKTP.CD&country=CHN#>

Appendix III

Dear Madam,

You are invited to participate in a research entitled *An Ecofeminism Perspective on Economic Globalization* that is being conducted by Yingnan Sun. I am Chinese, and now I am a Graduate Student in the Department of Education at Concordia University. Please feel free to contact me if you have further questions by email at yingnan.sun@concordia.ca. This research is being conducted under the supervision of Dr. Adeela Arshad-Ayaz and you can reach Dr. Arshad-Ayaz at adeela.ayaz@concordia.ca

Purpose and Objectives

The purpose of this research is to design and develop environmental education curricula that can be used in informal settings to educate female workers in City A, China. However, to design appropriate context bound curriculum it is necessary to examine how women workers in China perceive and experience the economic globalization and environmental pollution.

This research is aimed at finding out what role can education play in balancing economic development and environmental conservation. Particular attention will be given to exploring what strategies do women workers use to deal with environmental pollution? What are the wider implications of environmental pollution on women's lives?

Education can be a valuable tool in the process of balancing economic globalization and environmental pollution. The Chinese government has already recognized the environmental issues, and some measures have been taken. What are the effects of implementing these regulations? What role can environmental education play in improving and helping women to deal with the current environmental problems that affect them? All of these questions will be referred to in the research.

This research is being conducted as a part of my Master's thesis and will be published as a thesis.

Requirements of Participants Selection

1. You are a woman worker aging 30-55.
2. You are working in a factory with 10-15 years' experience.
3. You are interested in my research and want to contribute to the conversation regarding the environment.
4. You are willing to take photographs on the digital camera that will be provided to you.
5. You are fluent in Chinese, and you can understand and sign a consent form.
6. You are freely volunteering as a participant in my research.

What is involved

If you agree to participate in this research voluntarily, your participation will take 3 hours in total. This includes an information session (1 hour) and an interview (2 hours) + you will have two weeks to take photographs at your convenience on a digital camera that will be provided to you. During the one-hour information session, you will be provided a disposable digital camera. You will also get basic training of how to take pictures and minimize any risk of being identified. Then you will be given two weeks to take pictures. You are expected to return at least three pictures (though you will be able to take 32 photographs on the digital camera). The pictures should not have any identity markers, i.e.; people should not be able to pinpoint who took the photo, where or when it was taken. This is to protect your identity. After you take photographs in two weeks at the time and location of your convenience, there will be an in-depth one-to-one interview in which you will describe your story behind the photographs you took.

Voluntary Participation

Your participation in this research is entirely voluntary. If you decide to participate, you may withdraw at any time without any consequences or any explanation. If you withdraw from the study, your data will be returned and/or deleted. However, as this research is being conducted to write my master's thesis. Once the thesis is published, I will not be able to change or alter the information. You will have until February 20, 2017, to decide if you would like to withdraw from the study. However, the final thesis will not mention any specific names and data will be presented either with pseudonyms or in aggregate form.

Anonymity & Confidentiality

Regarding protecting your anonymity, all of your names will be removed from the data, and any identifying picture will be destroyed. Your confidentiality and the confidentiality of the data will be protected by ensuring that your pictures and all data from the interview are kept in my personal computer with a password, and all of the hand-notes will be destroyed as soon as the digital file is established.

I appreciate your interest and participation. I am looking forward to meeting you in my research.

Sincerely,

Yingnan Sun

Appendix IV

The guide of the information session.

1. Thank all of the participants.
2. The purpose of this research is to design and develop environmental education curricula that can be used in informal settings to educate female workers. However, to design appropriate context bound curriculum it is necessary to examine how women workers perceive and experience the economic globalization and environmental pollution. This research is aimed at finding out what role can education play in balancing economic development and environmental conservation. Particular attention will be given to exploring what strategies do women workers use to deal with environmental pollution? What are the wider implications of environmental pollution on women's lives? Education can be a valuable tool in the process of balancing economic globalization and environmental pollution. The Chinese government has already recognized the environmental issues, and some measures have been taken. What are the effects of implementing these regulations? What role can environmental education play in improving and helping women to deal with the current environmental problems that affect them? All of these questions will be referred to in the research. This research is being conducted as a part of my Master's thesis and will be published as a thesis.
3. Photovoice (PV) is a group analysis method, which combines photography with grassroots social action. Participants are asked to represent the situation or express their points of view by photographing scenes that they think related to research themes. These photos are collaboratively interpreted, and narratives can be developed that explain how the photos highlight a particular problem in subjects' lives and how it can be related to a particular research theme.
4. All of the participants are allowed to discontinue at any time they wish with no consequence, but once the thesis is written it would not be possible to change the data. However, the data will be presented in an aggregate form, and no single participant will be identified.
5. The PV project will take approximately three hours within 6 weeks, including a one-hour information session, two-hour in-depth interview and taking photographs in their own time within 2 weeks.
6. Disposable digital cameras will be distributed. The instructions on how the use of camera will be explained.
7. The rules for taking photographs include: Do not take pictures of the factories or their workplace. Do not take pictures around their workplace. Do not take anything that the

identity of the participants, the factory, the city can be identified from. People should not be the subject of the pictures. The participants should take pictures in their free time in surroundings they feel secure in order to avoid the risks of someone in authority misinterpreting this research for something else and the consequences for participants.

8. Participants' identities will not be revealed; pseudonyms will be used in the final aggregated report.