

Stage 2 Research Project – 2013

School Assessment Cover Sheet for

➤ Assessment Type 1: Folio

SACE Registration Number:

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Research Topic: Is Economic growth in Shanghai (1995 – 2012) associated with its environmental pollution?

P1 Consideration and Identification of a Research

Refinement of Topic

Having not done a major research project, I think that it is important that I choose a topic that I can relate to and experience it in my life. As I had just migrated from Shanghai to Adelaide for many reasons, one of the major ones was the drastic change in pollution in Shanghai. This was more obvious as the environment in Adelaide is so clean and fresh. I became very concerned and started comparing the two cities and discussed this with my parents. I had difficulties in coming up with a question that would connect with the rapid economic growth. As I had lived in Shanghai for 16 years, I have seen the environmental and economic changes. I began looking for information in the newspaper articles (online) and asked my uncle in Shanghai to help me get some information. There were lots of information on economic growth and I had to look for “environmental pollution” articles. Finally after feeling confident that this would be the topic, I came up with sub-topic (fig.1) so that I could manage my research project.

Research Project Topic Questions

“Is Economic Growth in Shanghai from 1995-2012 associated with Environmental Pollution?”

Oxford Dictionary Definition

Economic Growth: the development of wealth of a country, an area or a society, (relevant to my Research Project because of China’s rapid economic growth).

Association: a connection between things where one is caused by the other. (connection between economic growth and environmental pollution)

Environmental Pollution: the process of making air, water, soil, filled with hazardous particles (as is observed today).

Other Research Project Topics

The social effects of cosmetic surgery: Cosmetic surgery has become more popular in recent years since more and more people believe that “beauty” is quite important for the success of an individual. A lot of magazines advertised cosmetic surgery. So I wanted to find more, but I felt that I was not able to have interviews with experts, so I gave up this idea.

Chinese local food: China is a country with various cuisines, and I am interested in explaining the different cooking methods, and creating a recipe books that with nutritional values. As, there are many recipe books have covered all of these comprehensively, my research will have to be different. I lost interest in this topic

Capability Development

The capability that I have chosen to develop as part of my Research Project is the Personal and Social Capability. Environmental Pollution becomes a severe issue in big cities since many health problems occur as a result of it. In addition, the living standards of the citizens is largely influenced by environment. Hence, it might be a good idea to examine locally how these issues happen, with the purpose of giving suggestions for the control of the problem today and in the future. This will become a big social issue for Shanghai in the future unless steps are taken to reduce the environmental pollution, while still allowing the economy to grow. This issue will be crucial not only for Shanghai, but can be applied globally. As I was born in Shanghai, I hope to advocate social action and assist my local community to be proactive about environmental issues on a long term basis.

Whether inflation will influence the living standards of ordinary people in China: Inflation has become a serious issue in recent years in China as witnessed by most ordinary people (e.g., the price increase in daily products like vegetables and fruits; the rapid growth of real estate, etc.). As I grew up in Shanghai, I have some knowledge that would be reliable and relevant for this research and how this inflation might affect the living standards of ordinary Chinese citizens. However, it seems that data is difficult to access or collect, due to difficulty in obtaining true information from Government sources or relying on publicized information which may not be true. This seems too difficult.

D4

¹ Main river in Shanghai around which the city is built

² The 15-year time period (1995-2012) will be split into four time periods for investigation purpose: 1995-2000; 2000-2005; 2005-2010 and 2010-2012

P2 Planning of Research Processes Appropriate to the Research Topic

Planned Research Processes

In general, both primary and secondary sources will be used in my research. For secondary sources, I will use internet and books to find sources investigating the association between economic growth and environmental pollution to enable me to explore it further. It is important that I use reliable web-based resources such as Google Scholar. This will be supported by visiting a library in Shanghai and in Adelaide. I will locate reliable primary resources such as the Chinese Academic Journal and localised property papers in Shanghai. I will use many keywords such as in “Economic Growth”, “Associations” and “Environmental Pollution” I will type in Google Scholar, EBSCO, ABI/Inform Proquest and Chinese Academic Journals to broaden my information gathering. These journals are highly reliable in Shanghai. The property papers researched will be downloaded and studied. In addition, some library and online data and resources will be accessed in specific data searches.

In terms of primary data, I plan to conduct an online/paper questionnaire, as well as several interviews to examine the opinions of Shanghai citizens towards the cause and effect of pollution in Shanghai. This could explain any potential reasons for the origin of the pollution. After this, some emails will be sent to the Shanghai Environment Management Authority to collect some information about their explanation for the pollution (or Shanghai Xinmin Evening Newspaper describing the interviews of these government officials will be used instead as secondary data).

Ethical Considerations

For the survey and interviews I will need to get permission to collect and use information and I need to be sensitive regarding other people’s social and security implications in providing information that involves the government. I will need to be sensitive and understanding in collecting information from the public, especially in Shanghai due to the current government’s control on sensitive issues of environmental pollution. To collect empirical data from government and public sources I will need to use them accurately. Acknowledge all contributions and obtain permission to state the use of all information that I will gather in interviewees and survey.

As my interviews are relatives, I need to be extra sensitive about their opinions and keep it all anonymous.

Excerpt from Journal

Monday, 4th March

Today I conducted some online research. I found some relevant articles on the websites as well as some data (e.g. GDP) that could reflect the economic growth in Shanghai. I used Google of these website resources. In addition I used Google Scholar to access some academic papers. I met with the key research librarian in my school to access books from interstate and national libraries. After reading these papers, I found a link between economic growth and the environmental pollution which was supported by the research. It is really important that the link between pollution and economic growth is well understood within society, so proper decisions can be made about environmental regulations. Shanghai should not end up with the same air pollution and health problems as Beijing

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Wednesday, 6th March

Today, I designed my questionnaires for my interview. Also, I distributed my survey and explained the purpose of my survey. First, I used the online questionnaires – the Monkey Survey and Google Documents. I posted the web link of my questionnaires on some local forums so as to get some answers from Shanghai citizens. Also, I attempted to get some answers to the questionnaires by using face-to-face discussion. I chose one of the busiest streets in Shanghai and tried to collect some answers from strangers in Shanghai. In addition, I received responses from my relatives and friends. Some people expressed that they thought we know how to reduce the pollution, but that the government isn’t committed to actually regulating the industries causing the pollution.

D4

<u>Excerpt from Timeline</u>	
<u>Term 1</u> Week 1-5	<p>Secondary Research:</p> <ul style="list-style-type: none"> Use Google to search for website articles Use national websites to get GDP data Use Google Scholar for academic papers Browse for books, journals, newspaper articles in local, school and state library
Week 6-11	<p>Primary Research:</p> <ul style="list-style-type: none"> Use QQ (which is a Chinese communication software like MSN) and telephone people to do my questionnaires I will place Questionnaires online for all respondents Meet people in Shanghai (Puxi) and give them the paper questionnaires Meet my father and uncle, then use interviews to collect the opinions of them (ordinary Shanghai citizens).
Holiday	<ul style="list-style-type: none"> Field excursion (take photos of the Bund³ and the sky)- in Shanghai in January holiday Let my friends and relatives in Shanghai do the survey to get more accurate results.
<u>Term 2</u>	<ul style="list-style-type: none"> Correct the grammar mistakes Finish the outcome (Draft need to be checked) Check the reference list Make a draft to evaluate everything that I have done so far and correct then improve it Make sure all the parts of the Research Project are ready to be sent

³ The Bund is the waterfront area of Huangpu River. It runs along the western bank of the Huangpu River, facing Pudong

Excerpt from Science Daily: (April 27, 2012)

The Science Daily posts credible information from IJGEL (*International Journal of Global Energy Issues*) and Chinese Academy of Sciences that has contributors who research qualitative and quantitative data. I was inspired by reading their contributions and I was encouraged to become involved in my Shanghai community by taking some action that could advocate some local action within my community.

① These two concepts complement each other showing the intensity of each and the effect of it on environmental pollution.

Polluting China for the Sake of Economic Growth

China's economic growth will continue to be energy-intensive and highly polluting for the foreseeable future will
② Being an Economist this is a very balanced view for developers to recognize this reality and his proposal could state some concerns for environmental pollution.

D4

⑤ Need some empirical data to support all these statements so that governments are committed to sustainable strategies.

Economist Yanqing Xia of Dongbei University of Finance and Economics and the Northeast Branch of the Chinese Academy of Sciences in Liaoning has looked at almost a decade's worth of data from 30 Chinese provinces

③ A model is created from a collection of relevant and reliable data. Extremely useful, proving the point of economic growth and evidence of environmental pollution.

Economic growth in China is heavily invested in the dev and heavy industries, export and fixed asset investment, thus growing rapidly. In one sense, energy consumption is unfortunately, this rapid increase in energy consumption a carbon emissions reflect rapid economic growth but is adding to environmental harm on a global scale and having a tremendous impact on ecological systems.

④ These facts have progressively led to the true connection between Economic Growth and Environmental Pollution and Energy Consumption. This shows the relationship between all types of manufacturing industries and how many countries depend on China which has led to financial greed and environmental degradation.

⑤ The author has proposed that economic growth is associated with environmental pollution and suggests some strategies to control environmental pollution. This is environmental protection must now be bounc project.

China is a rapidly developing nation but X environmental protection must now be bounc project. Environmental regulations so that firms and consumers can be properly encouraged to reduce pollution and energy consumption," she asserts. Economic growth may continue unhindered for many years in China but the environmental payback may stymie opportunities to reap the rewards of that growth because of the harm that ignoring environmental urgency may cause.

Analysis of Information and Exploration of Ideas

① This indicates the futuristic nature of China's economy, that relies on energy, leading to definite environmental pollution.
③ The creation of this 'economic model' from 30 provinces in China reflects the existing concerns based on this data and I hope to confirm these with other resources.

④ The established relationship between economic growth and environmental pollution in these resources confirms the harmful impact on ecological systems on a global scale.

Source:
Science Daily (2012) Polluting China for the Sake of Economic Growth, [Online], Available:
<http://www.sciencedaily.com/releases/2012/04/120427100117.htm> [24-Mar 2013].

Research Process:
I intend to find the adverse effects on the environment (refer to concept map). I searched for this information using Google by entering the keywords: "economic growth", "environmental pollution" and "China".

Evaluation of Source:
Especially, the authors mentioned are credible and concerned about the unsustainable and energy-based economic development patterns in China, well known Chinese economist working on the "Economic mode 1".

Key Findings:

- China's manufacturing in light and heavy industries is increasing.
- There is a relationship between economic growth, energy consumption and environmental pollution.
- Progressive damage to society and ecological systems is evident.
- This community, social, environmental economic and government issues will be crucial for me to assist my communities in Adelaide and Shanghai.
- The government recognises the effect of it all.

Development of the Research - Annotation

Excerpt from China Daily: http://usa.chinadaily.com.cn/opinion/2012-11/13/content_15920338.htm (November 13, 2012)

The 18th National Congress of the Communist Party of China has placed greater emphasis on ecological civilization and sustainable development. The environment has paid a high price for China's high growth and sustainable development. The increase in air and water pollution. The second is the increase in carbon emissions. These increases are the result of rapid industrialization, energy-intensive products and demand for energy- and carbon-intensive products (such as automobiles).

① Evidence of the effect of environmental pollution being acknowledged by CPC resulting in critical economic challenges, substantiated by the EKC Curve.

② Confirms the relationship of economic concepts and labelled civilisations.

③ State clearly all the features that lead to Environmental Pollution.

Rapid industrialization from a low base always increases pollution because initially industries do not have access to less-polluting and energy-saving technologies. Several core manufacturing industries such as cement, paper, chemicals, plastic, leather, rubber and steel are highly polluting. The literature on the relationship between economic growth and pollution, namely the "Environmental Kuznets Curve", suggests the increase in per capita income until it reaches a certain threshold of income. Once a country crosses this threshold, it will begin to develop cleaner and more expensive technologies. This explains why middle-income countries are more polluted than the richest and poorest countries.

④ Seems like no planning forethought done at all to develop technology to reduce environmental pollution. It increases about environmental protection among consumers, and producers are able to increasingly adopt cleaner but more expensive technologies. This explains why middle-income countries are more polluted than the richest and poorest countries.

The research on the relationship between per capita income and environmental sustainability for an association, greenhouse gas (GHG) emissions from burning fossil fuel and wastewater discharges are expected to the continuing reliance of households on fossil fuels like coal for direct energy. This could be due to the continuing reliance of households on fossil fuels like coal for direct energy. Shows that changes will occur slowly.

⑤ China's reliability on fossil fuels locally, socially and economically is a reality that cannot be changed currently.

⑥ Shows that changes will occur slowly.

The research also shows that GHG emissions and discharges are first expected to reduce in the coastal provinces of Guangdong and Jiangsu, and coastal cities of Shanghai and Tianjin, and Beijing. But hinterland provinces in Central and West China might take less time and a lower per capita income threshold to start reducing emissions as they begin adopting cleaner technologies faster because of technology diffusion from the coastal regions.

⑦ This shows that influential sources (Economist, science journal) based on research data can force key people to channel money into developing less energy intensive strategies.

⑧ Various health risks that our local communities should be actively involved in making the government aware of.

⑦ Various health risks that our local communities should be actively involved in making the government aware of.

⑨ Author is a senior research fellow at Singapore's well known National University. This provides high reliability for my research.

The National University. This provides high reliability for my research. By analysing this text, I am very worried that all the key facts that contribute to environmental pollution is acknowledged and the solution to control this is not put into practice. I can see how fossil fuels are being exhausted and we must use alternative energy sources – so research is crucial by Shanghai Environmental Protection Group to seek Government's assistance. Reliable published articles have indicated the health risks, but I fear that the government is ignoring this. Ethical practices such as using dead pigs for human consumption is a serious issue.

need for fiscal intervention both through a pollution (or carbon) tax and environment subsidies. Taxes will discourage polluting practice and greater use of clean technologies. In addition to these, it is essential to increase public awareness by dedicated efforts at provincial and municipal levels. The author is head (partnership & programme) and visiting senior research fellow at the Institute of South Asian Studies in Singapore.

Development of the Research

Excerpt from Shanghai:

<http://www.shanghai.gov.cn/shanghai/node27118/node27818/node27821/u22ai70753.html>

(Jan 28, 2013)

Excerpt from the China Perspective:

<http://www.thechinaperspective.com/topics/city/shanghai/> (2011)

This confirms that at a local level, Shanghai admits to environmental pollution and seeks to restructure industrialisation incorporating solutions mentioned in Mayor Yang Xiong's Speech.

■ Within 2 years, Shanghai GDP has fallen from 10.3 to 7.5%. This confirms the severity of environmental pollution and the government's efforts to curb it.

Evaluation of Source:
Reputable, current, biased

These figures confirm the rapid economic growth financially and commercially.

The cost of urbanisation has resulted in many challenges- one of which is environmental pollution.

Shanghai City

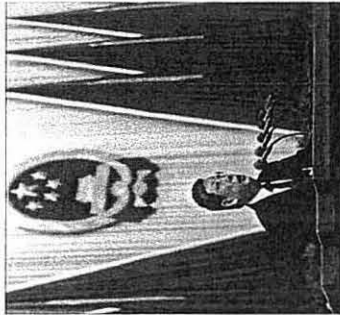
Shanghai is the commercial and financial centre of mainland China; a pilot area for integrated economic reforms. Major capital markets include the Shanghai Stock Exchange (SSE), the Shanghai Futures Exchange (SHFE) and the Shanghai Clearing and Settlement Center (SCSSC). Shanghai is also a clear leader in terms of the quality of its growth – 69.7% of GDP comes from the service sector, while the remaining 39.3% of GDP comes from relatively high end manufacturing of automobiles, electronics, petrochemicals, iron & steel and equipment. Shanghai has the highest average wage and disposable income and the lowest urban to rural income gap in China. GDP was RMB1.68 trillion (\$256 billion) in 2010.

Confirms factors that all lead to environmental pollution.

Shanghai has surged, increasing by 57% in 2009, to RMB13,000 per m2. Shanghai still faces numerous challenges, with traffic congestion, affordable housing, pollution control and population.

Better quality of life in prospect as city sets out its plans for the future

01.28.2013



Acting Mayor Yang Xiong delivers a government work report at the opening session of the Shanghai at the Expo Center yesterday. More than 800 legislators attended the first day of the week-long meeting to accelerate industrial restructuring, raise incomes and enhance efforts to combat pollution, Yang said.

Shanghai targets an economic growth rate of 7.5 percent this year, the same as the country's goal, and the city's actual growth in 2012. But it should be "with better quality," Yang Xiong, Shanghai's acting mayor, said yesterday.

Analysis of Information and Exploration of Ideas

It is clearly evident of the relationship between economic growth and environmental pollution. Fortunately the government is proactive in accepting the GDP and other statistics and developing some strategies to reduce environmental degradation. There is a huge amount that has to be done with the rapid economic growth.

Source: The China Perspective (2011) Shanghai City, [Online], Available: <http://www.thechinaperspective.com/topics/city/shanghai/> [24 Mar 2013]
Shanghai (2013) Better quality of life in prospect as city sets out its plans for the future, [Online], Available: <http://www.shanghai.gov.cn/shanghai/node27118/node27818/node27821/u22ai70753.html> [24 Mar 2013]

Research Process: After finding negative effects of the economic growth on the environment, I intended to focus on the economic development patterns in Shanghai. I used Google to search for this development, using the key words: "economic growth" and "Shanghai". These website discuss GDP growth of Shanghai.

Key Findings:

- Greater emphasis on quality of life
- Governments making some sensible decisions based on GDP statistics
- Credibility of statistics

Shanghai City Quick Facts

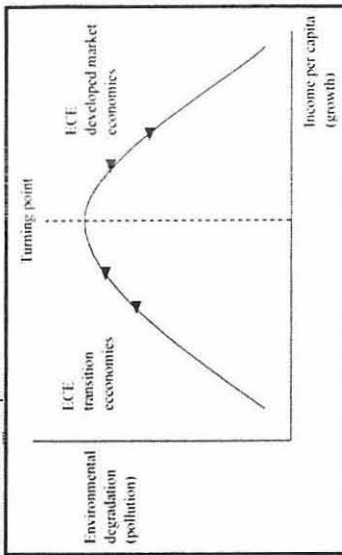
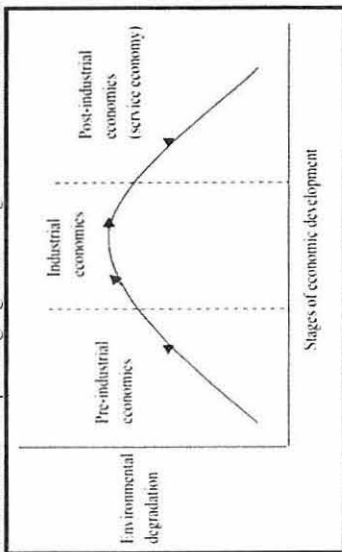
Area	6,340.5 km ²
Population	23,026,600
Gross domestic product	1,716.6 billion RMB
GDP growth	10.3%
Fixed Asset Investment	531.80 billion RMB
Utilized Foreign Direct Investment	11.1 billion US\$
Imports	188.1 billion US\$
Exports	180.8 billion US\$



Development of the Research

Excerpt from ECONOMIC GROWTH AND THE ENVIRONMENT:

Panayotou, T 1994, *ECONOMIC GROWTH AND THE ENVIRONMENT*, Harvard University, Cambridge, MA, accessed March 2003. <http://staging.unece.org/fileadmin/DAM/ead/pub/032/032_c2.pdf>.



The relationship between the economic growth and the environmental pollution could also be seen in these graphs, where there is a turning point. If the economic growth of an economy has exceeded this point, there would be a negative relationship between these two variables.

At low levels of development, both the quantity and the intensity of environmental degradation are limited to the impacts of subsistence economic activity on the resource base and to limited quantities of biodegradable wastes. At higher levels of development, structural change towards information-based industries and services, more efficient technologies, and increased demand for environmental quality result in levelling-off and a steady decline of environmental degradation, as seen the first curve.

Economies in transition find themselves to the left of the turning point of the environmental Kuznets curve, on the rising segment of the curve where growth comes at the price of increased environmental damage. In contrast, developed market economies find themselves to the right of the turning point and hence on the falling segment of the EKC, see as the second curve.

Analysis of Information and Exploration of Ideas

These papers give detailed explanation of the model – **environmental Kuznets curve (EKC)**. According to this model, the inverse effects of the economic growth on the environments will reduce as the development of a particular economy has reached a certain level. Since Shanghai is classified as a developing nation (China) rather than a developed country, its economic development has not reached this certain point. Hence, negative association would be expected.

Key Findings:

- Reliable association between economic growth and environmental pollution
- Empirical research data in relation to EKC
- Relationship between income economic growth and environmental pollution
- Shanghai government needs to look at sustainable growth uses of EKC
- Develop strategies with long term benefits

Evaluation of Sources:

Reliable, relevant and accurate.

Source: Science Direct and Economic Survey of Europe 2003, Available at:

<http://www.sciencedirect.com/science/article/pii/S0305750X96000320>

<http://www.sciencedirect.com/science/article/pii/S092180099700178X>

http://staging.unece.org/fileadmin/DAM/ead/pub/032/032_c2.pdf

Research Process:

I attempted to find journal articles about the environmental Kuznets curve (EKC). I searched Google Scholar and found some in the Science Direct.

Excerpt from Science Direct: <http://www.sciencedirect.com/science/article/pii/S0305750X96000320> (1996)

There are benefits of the EKC, but there is a serious concern as the Shanghai government does not have accurate information of environmental pollution. The results of the EKC could be used by government for their selective use of data to support global trade and economic growth.

2. Personally, this is quite dangerous as the forecasts of this data are used by many organizations. This can be misleading. The other fact is if the forecast for 2025, the SO₂ emissions will increase, in fact it will be double or triple this.

3. The likelihood of countries to misuse this information for their own economic benefit is dangerous.

D4

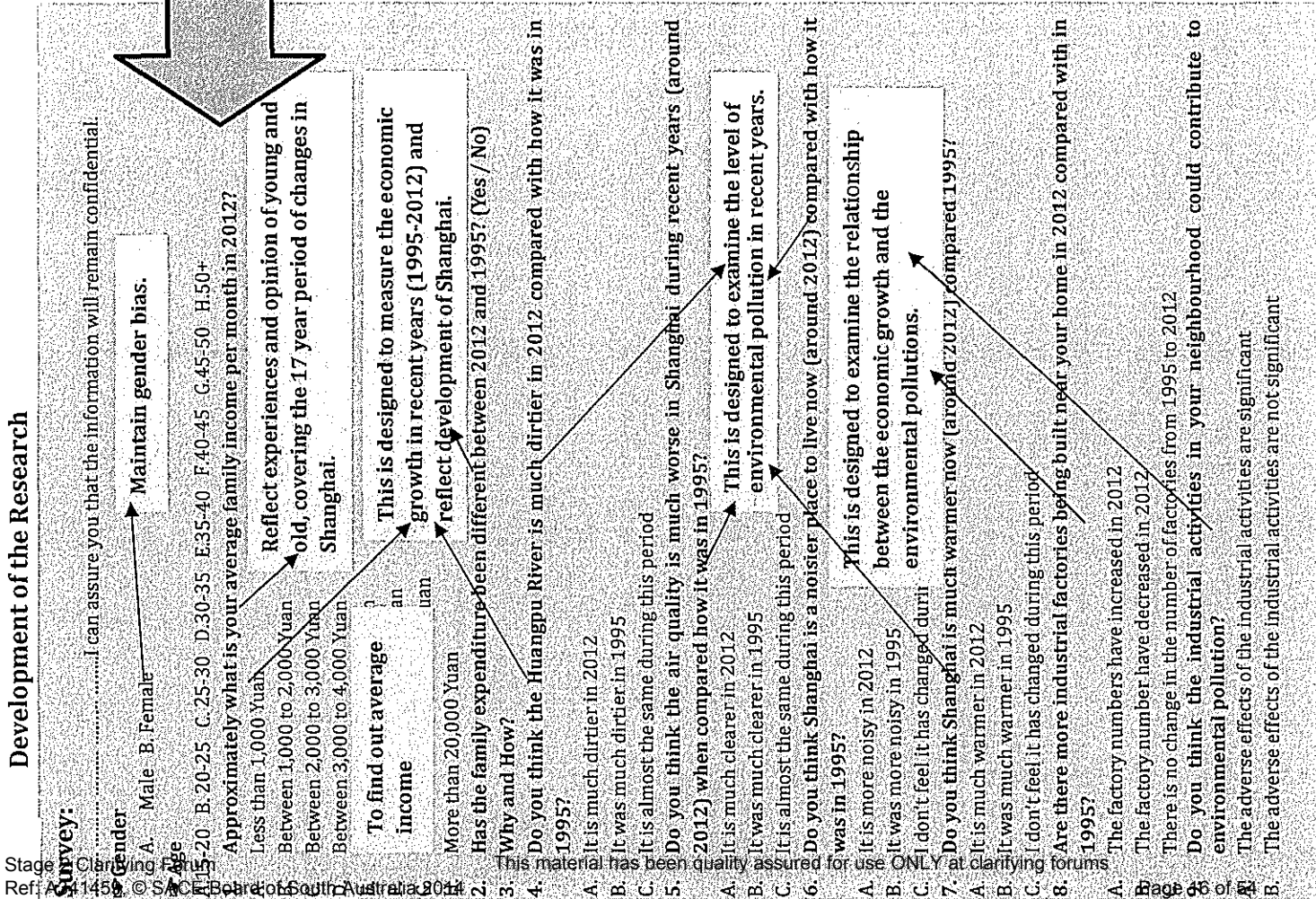
Excerpt from Science Direct:

<http://www.sciencedirect.com/science/article/pii/S092180099700178X> (1998)

Economic growth and emissions: reconsidering the empirical basis of environmental Kuznets curves

Recent empirical research indicates that certain types of emissions follow an inverted-U or environmental Kuznets curve (EKC) as income grows. This regularity has been interpreted as a possible de-linking of economic growth and patterns of certain pollutants for developed economies. In this paper, we consider some statistical evidence that the inverted-U relationship does not hold for specific individual countries in resource economy analysis of emissions (CO₂, NO_x and SO₂ in Germany). It is found that the time patterns of these emissions correlate positively with economic growth and that emission reductions may have been achieved as a result of structural and technological changes in the economy. 'Sustainable growth' is defined as the rate of economic growth that does not lead to growth in emissions. Its rate is calculated for each type of emission and country, based on estimated parameter values. The resulting indicators reflect a balance between the positive influence of growth and negative influence of structural change and technological progress on emission levels.

Development of the Research



Distribute 70 questionnaires. 40 to people living in Shanghai, 20 to people living in Adelaide who have migrated from Shanghai, 10 did not reply, gave verbal answers.

Source: surveys (60 respondents living in Shanghai)

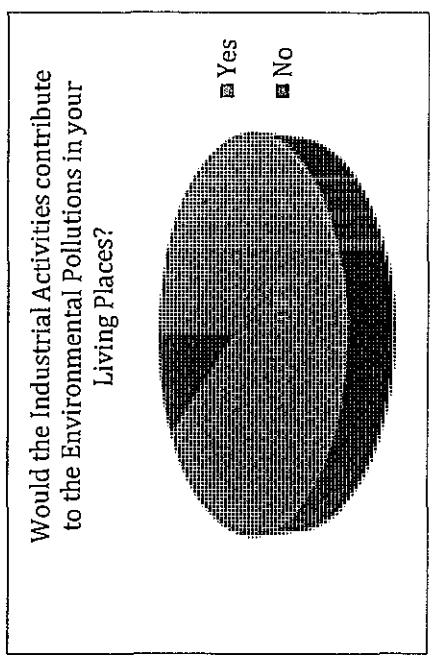
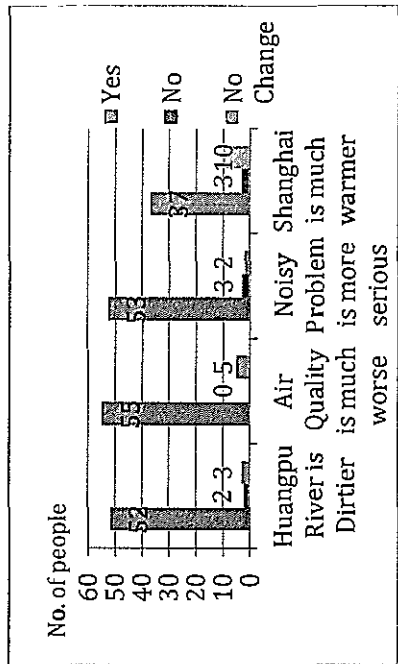
Research Process: I intended to find the relationship between economic growth and environmental pollution. I wanted to know the opinions and feelings of the ordinary people. Hence, I designed this survey. According to my findings, many citizens have expressed that they have experienced the problem of environmental pollution from 1995 to 2012 as the economy has grown.

- Key Findings:**
- Locals experiencing daily exposure to air, water, waste pollution
 - This data correlates with my secondary sources
 - Confirmation of the river and air pollution from summary data
 - There is a relationship between salary incomes and family expenditure
 - With urbanization, population density in Shanghai increased which led to various environmental pollution
 - Neighbourhoods experiencing domestic pollution
 - Increased industrial activities led to changes in environment

Analysis of Information and Exploration of Ideas

According to the findings, nearly 90% (54 respondents) of the families living in Shanghai have income levels higher than 5,000 RMB, which is substantially different from their income levels in 1995, which for most of them was only 2,000 RMB. They think that their family expenditure also increased due to their salary increases. With high density population and increased expenditure in Shanghai today – it is likely to cause an imbalance in society and environment.

Application of Knowledge and Skills



Development of the Research Application of Knowledge and Skills

Analysis of Information and Exploration of Ideas

Interviews:

Me: Dad, do you remember our family income during the year of 1995 when I was born? Is that substantially different from our household income currently?
 Dad: ha-ha, yes, our family income has changed a lot from 1995. May be you do not remember. During that time, some household equipment (e.g., TV, bridge) was considered as luxury products, and not all families in Shanghai are able to purchase them. This is because the income level during that time is quite low. Let me take an example, our family have around 4,000 Yuan per month in around 1995, but now – you see – your mother could individually earn over 10 thousands Yuan during the year of 2012. Our living standard has also changed substantially.

Me: Yes, that's right! The economic in Shanghai situation has developed a lot and we have benefited a lot from this growth. But, dad, don't you think our living place is much worse these years? You see, we have never seen the crystal sky for such a long time. Do you think the environment has changed a lot from 1995 when I was born to 2012?

Dad: You are right, dear! It is quite a pity! We have environments being polluted during these 10 years. You see, in 1995, the air is quite clear in Shanghai, making the living standard quite high. Maybe you could not remember how clear the Huangpu River is in the year of 1990s. We could even go fishing there, ha-ha! But, during the recent years, many household and factories have poured their dirty water into the river, making it quite smelly. In addition, you see, many people living in other small cities have rushed into Shanghai; they purchased cars here, making our place quite noisy and the air pollutions are getting even serious!

Me: That's really a problem in environmental pollution, right? Dad, I am not quite familiar with the production processes in the companies, but I have heard that the increases of the heavy industries are associated with this environmental pollution. Is that right?

Dad: Yes, dear, you are right! I also think so! Actually, the environmental protection law in China is not very strict. Many factories would like to have some "conveniences", and they could like to save costs. Hence, most of them would not consider the "sustainable" developments. They only pursue short term profits! This may due to their lack of concepts in environmental protection and green issues.

Me: Could you describe some issues in the production of the industry that might have some serve influences on the environments, dad?

Dad: Okay! The first problem might be the water pollutions. You see, many factories need to pour their wastes into the river, making the river much dirtier. Also, there are land and air pollutions, since all the solid wastes from the industries are required to be buried or burned. In addition, there are many waste gases that are needed to be released into the air, and the factories are quite noisy!

Me: Do you think if there could be any methods to reduce the environmental pollution caused by these unsustainable processes in the industry? Could the companies or the governments make any efforts to improve our environments?

Dad: Yes, of course! It is quite an urgent problem that is required to be addressed. For governments, I think there should be some laws being put forwards. For companies, I think "sustainable" concepts and social responsibilities are quite essential!

- ① The respondent's opinion is supported by the other resources.
- I consider this to be reliable information as my father experienced all these as a business man.
- The simple fact that my mother's income has increased justifies economic growth in domestic terms and this can infer similarities on a national level.

- ② Confirmation of environmental pollution and urbanization which are a key factor in my Research Project.
- Visual memories cannot be forgotten, so I consider these to be credible to my Research Project.

- ③ A predictable outcome showing greed resulting from accelerated, unchecked environmental pollution.
- Insufficient awareness and education by governments to protect Shanghai from environmental pollution.
- Sustainable development is crucial for a cleaner "Shanghai".

- ④ A result of industrialization, is that human greed has led to pollution.

- ⑤ This is a great incentive for me to be pro-active and create awareness with my community in Shanghai.

D4

Source: Interviews (my father)

Research Process:

My father is a business man; he was born in Shanghai and is quite familiar with everything in this city. As he is a business man who knows many economic policies and has experienced the economic developments in Shanghai. I intended to interview him, because he has been involved in the economic growth of industry for over 20 years.

Key Findings:

- Correlation of personal experiences of economic growth and environmental pollution with publications
- Domestic use of Huangpu River for fishing by locals and unable to do these activities today
- Reflection of feelings of local Shanghainese people
- Relate to citizenship

Evaluation of Source:

Reliable – As father was involved

The survey and interview results complement each other in relationship to economic growth and environmental pollution in Shanghai. It confirms the economic growth over 10 years. This is probably due to the unsustainable development pattern in the industries with few strict government laws.

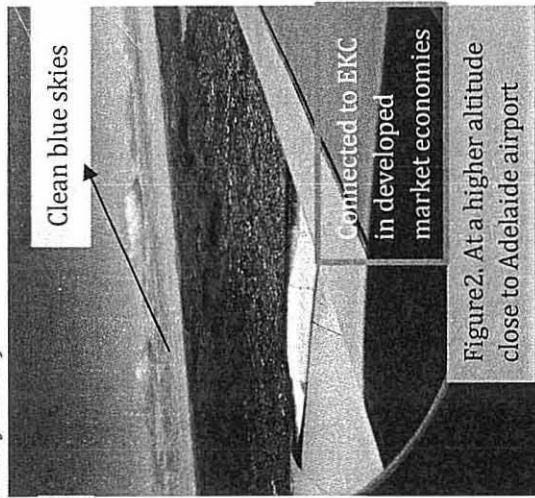
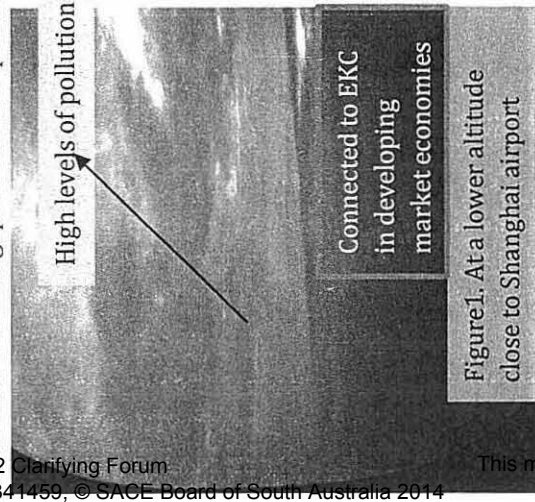
"Sustainable" development is quite important for companies, and governments. They need to take steps in making laws regarding this situation.

Development of the Research

Analysis of Information and Exploration of Ideas

Application of Knowledge and Skills

Aerial view from Singapore Airlines plane (January 2013)



Capability Development

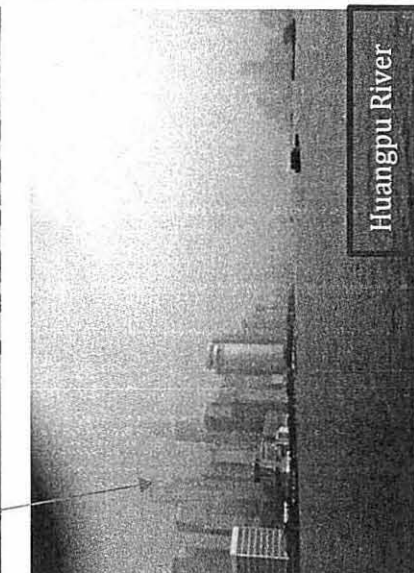
D4

After completing my research project I have a greater awareness of the challenge continued economic growth is for environmental pollution. I want to be able to continue making people more aware of the growing environmental pollution in Shanghai. In my interview with my father I learnt more about the responsibility of business to the local Shanghainese citizens. The continued environmental pollution means that local citizens can not fish in the Huangpu River. The government should do more to regulate the industries that are causing the pollution.

These two pictures were taken by me when I flew from Shanghai to Australia. In the former picture, it could be seen that the sky in Shanghai city is quite grey, where the air pollution is quite serious. In the latter picture, however, it is apparent that the sky in Australia is quite clear. Hence, it does indicate some air problems in Shanghai with its economic developments in the last few years.

These photographs clearly show the high level of smog on a predicted sunny day in Shanghai. This haze lingers for weeks creating respiratory diseases.

This picture was taken by me on a sunny day. It is clearly evident that the air quality is quite low, where buildings about 15 meters away from me could not be seen clearly.



I searched the internet for earlier photographs of Shanghai – but could not find any. This could be because the government would not have released any of these.

These photographs are clear indications that prove the existence of environmental pollution, that was stated by respondents in survey and businessmen I interviewed.

Source: observations (Field Excursion in Shanghai), (personal photographs)
Research Process: I intended to do some primary research by observing. I took pictures in Shanghai city and travelling.
Key Findings: Evidence of serious pollution in Shanghai and the low visibility resulting from the pollution haze. Indicates strong relationship with survey interviewees and EKC.

Using photographs that I took provides credibility of the current situation (January 2013) in Shanghai.

