

2013

SACE Stage 2
Research Project -
OUTCOME

**[IS ECONOMIC GROWTH IN SHANGHAI
(1995-2012) ASSOCIATED WITH ITS
ENVIRONMENTAL POLLUTION?]**

1498 WORDS

Synthesis (S3)

A clearly identified purpose and specific audience supports the coherent expression of ideas in an appropriate form and context.

A report intended for "Shanghai Municipal Environmental Protection Bureau" (Environment Protection group) and the local community known as the Jingan District in Shanghai.

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1. Introduction

Shanghai has experienced enormous economic growth in the last two decades (, 2012) and I experienced part of this whilst I was growing up in Puxi Shanghai. With the consequent higher incomes, people could afford sophisticated services and infrastructures that have led to higher consumption of energy, and materials. This has led to increased uses of natural resources and accumulation of waste and variable concentration of pollutants – resulting in the degradation of the environment (Panayotou, 1994).

S3 @ A

Clear expression using a sophisticated and subject specific vocabulary. The structure of the introduction is coherent and logical.

There is a correlation between economic growth and environmental pollution in Shanghai between the years I was born and now (1995–2013), and through my primary and secondary research this report will show this to be true.

S1 @ A

Insightful synthesis of knowledge has resulted in a resolution to the research question. A clear answer is detailed in the introduction to be substantiated throughout the rest of the report.

Economic growth is defined as an increase in the amount of goods and services produced per head of the population over a period of time (online Oxford Dictionary) and environmental pollution is defined as the introduction of different harmful pollutants into certain environment that make this environment unhealthy to live in (Haluzan, 2009). According to the research I completed, factors such as rising incomes, economic activity, inputs of energy, material, generation of waste by products and pollutants all contribute to environmental pollution.

S2 @ A
 Insightful and thorough substantiation of key findings about the economic growth in Shanghai using varied sources including government statistics and a survey concluded by the student.

2. The Economic Growth in Shanghai (1995-2012)

There is evidence of economic growth in Shanghai at the domestic level, which is shown by the increased consumer demands in white-goods and infrastructure within local communities (survey, 2013). This is supported by substantial increase in salaries from an average of 2,000 RMB/ month in 1995 to a mean of around 10,000 RMB/ month in 2012

GDP figures, which are a reliable way of demonstrating the output in an economy (Gutierrez et al., 2007), from 1995 to 2012, reflect the real economic growth in Shanghai, as shown in figure1.

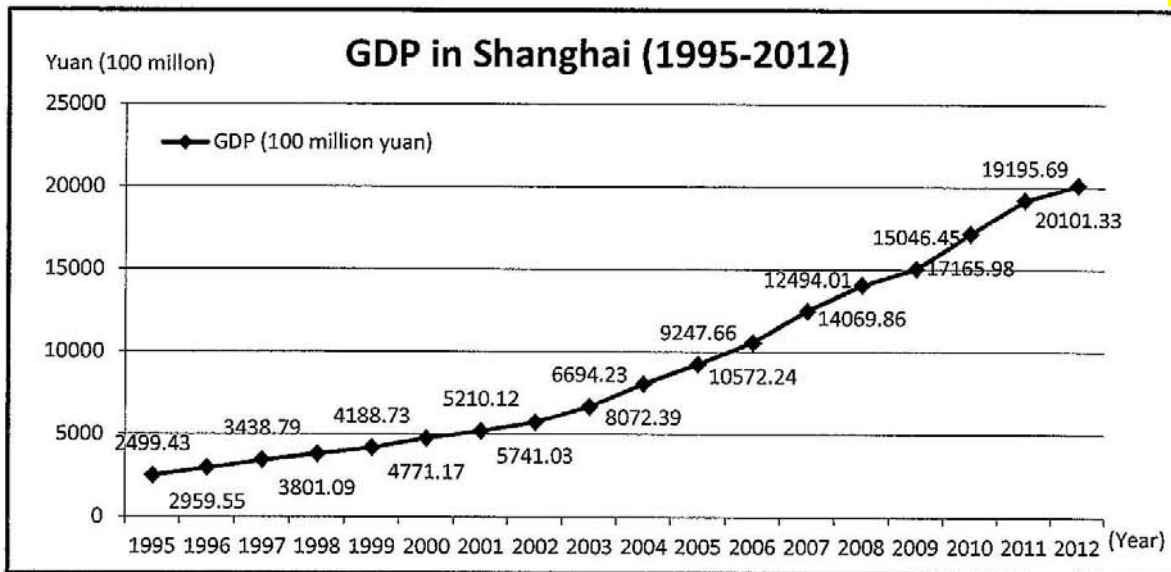


Figure 1: GDP in Shanghai (1995-2012)

Source: NBSC (2013)

It is clearly evident that the accelerated GDP from 2004 to 2011 would have been caused by high economic activity that includes increased production and consumption (Georgescu-Roegen N., 1971; Meadows et al., 1972).

The economic growth has sped up in Shanghai from 1995 to 2012 as it increased from 2,499.43 to 20,104.33, which is approximately an increase of eight times the GDP of 1995 (NBSC, 2013). This is supported by the 10.3% calculation, which is quite high (China Perspective, 2011).

3. The negative effects of the Economic Growth on Environmental Pollution in Shanghai

The Environmental Kuznets Curve (EKC) (Wang et al., 2006) highlights the relationship between the economic growth and environmental pollution. Specifically, the relationship between the environmental degradation and the economic growth could be described by an inverted U-Shape (Yang et al., 2003). In other words, the economic growth would increase environmental pollution in developing countries (i.e., an economy that is only developed at a basic level). However, there would be a negative association between the economic growth and the pollution in developed nations. That is to say, if an economy has developed to a certain point that contributes to economic growth, it consequently will increase environmental degradation (Yang et al., 2011). It has been established that Shanghai is one of the big cities in China that trade globally in the 1930s (Yaoyao, 2012). It is expected that with economic growth an increase in environmental degradation could be the next projected phenomenon that the government will have to face. This is shown by the GDP growth in Shanghai, which has generated more serious environmental pollution in Shanghai.

S1 @ A
Evidence of insightful and sophisticated key findings comparing pollution in developed and developing countries.

In the two surveys, one of expatriates in Adelaide, previous residents of Shanghai (_____, 2012), and other of local residents currently living in Shanghai (_____, 2012), an analysis of the results (figures 2 and 3) conducted to investigate the relationship between the economic growth and the environmental pollution in Shanghai showed that 91% of the respondents believe that the Huangpu River is much dirtier in 2012 than in 1995. 92% of the respondents think that the air quality in Shanghai is much worse in 2012. Also, 91% and 74% of the respondents living in Shanghai complained about the noise problems and the Green House Effects (GHE) in 2012 as compared to their living conditions in 1995, respectively. 90% of the respondents believed and stated that Economic Growth (e.g., industrial activities) contributed to environmental pollution. More information could have been obtained from this survey, but these results and the report would be useful starting points for anyone who wants to explore these issues further.

S2 @ A
Uses data collected through relevant surveys to substantiate key findings by synthesising the information and graphing the results.

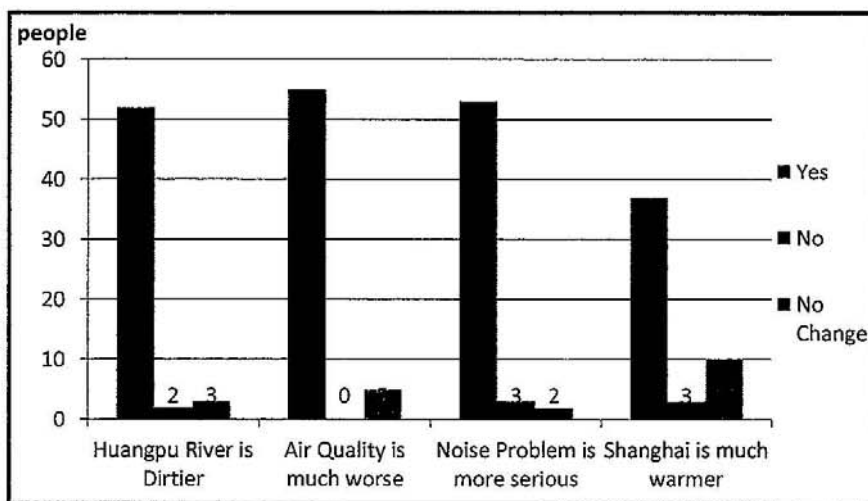


Figure 2: The Environmental Changes from 1995 to 2012

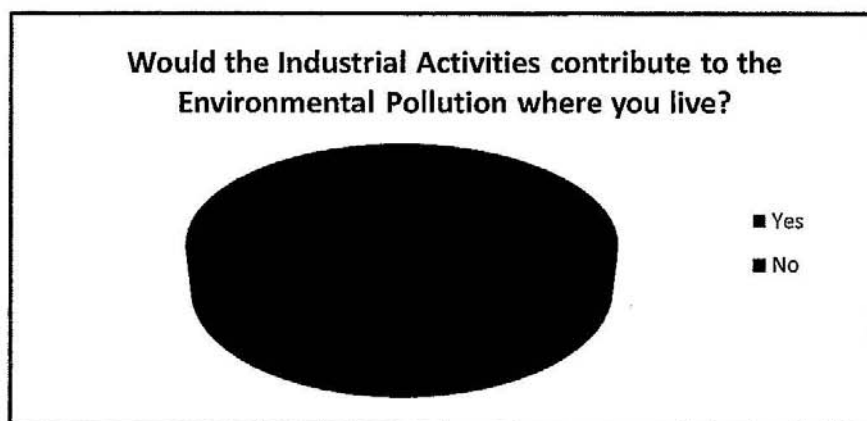


Figure 3: The relationship between Environmental Pollution and Economic Growth

The relationship between economic growth and environmental pollution was described and explained during the interviews (, Feb, Mar, and April, 2013) and his observations over the last 5 years have been very distinctive. As a patriotic Shanghainese, he and his friends have frequently discussed the policies of 'sustainable development' and the conclusions they have reached is that the situation in Shanghai requires urgent attention (, Feb, Mar, April, 2013).

This series of interviews with my father, who has been an active businessman since 1990s and involved with the Shanghai provincial economic development program, provided an in-depth insight into the relationship between economic growth and environmental pollution. However, it must be acknowledged that Environmental improvement can work well with economic growth and environmental pollution. It has been emphasized that there is a strong correlation between incomes and environmental protection (Panayotou, 1974) and, as quoted by Beckerman, **the best way to improve the environment in to become rich** (Beckerman, *Global Economics*, 1998, p. 178). This is supported by the inverted U-Shape relationship between environmental pollution and economic growth as discussed by Kuznets (Kuznets, 1966).

S1 @ A
 More insightful analysis and synthesis of knowledge and ideas to identify and explain the correlation between economic growth and pollution.

S3 @ A

Clear and coherent expression is consistent throughout. Sophisticated use of language relevant to research (e.g. empirical, correlation) is appropriate.

4. The Types of Environmental pollution in Shanghai

Recent news in the China Daily (Palit, 2012), and ABC News (Mar, 2013) is empirical evidence of air and water pollution. Shafi (2005) obtained a correlation between urbanization and air pollution, and the statistical data in one Chinese government publication (NBSC, 2013) has highlighted the trend of people to move to urban areas. The air pollution from the increased population and the amplified industrial and urban activities can be seen in the photographs I took in Shanghai (Jan, 2013). Tourists have witnessed this on entering into many cities in China today (Daw and Halliday, Mar 2013). The rapid agricultural, domestic and industrialization growth has led to different waste products (Shafi, 2005) being dumped in the heavily polluted Huangpu River. Within the last few months, more than 16,000 pigs (Davison, 2013) have been located in the river system in Zhejiang province, which is part of Shanghai's water supply. The government in China's Financial Hub said, "10,570 carcasses had been pulled from its Huangpu River. This was in addition to 5,528 pigs pulled from upstream tributaries" (Davison, 2013). According to Australia's Network News, "The dumping of carcasses is rising because police have started cracking down on the illicit sale of pork products made from dead diseased pigs". Moreover, the city of Shanghai does not have the facilities to dispose properly of the bodies of the unusable pigs (fig 4).

S2 @ A

Insightful substantiation includes reference to empirical data including personal observation experiences of tourists and photographs.

Image removed due to copyright

In terms of the air pollution, I used the investigative method of personal observation. I chose a bright sunny day without fog to take photographs in Shanghai city during my holiday. According to the image (Figure 5), it is evident that the buildings far away cannot be seen clearly due to the smog created by air pollution (since it is a bright sunny day, there are no concerns about natural fog).



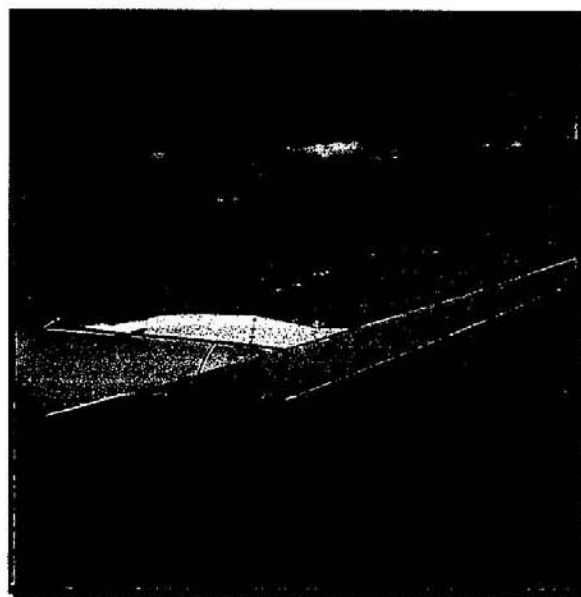
Figure 5: A scene in Shanghai indicating levels of smog at 3 p.m. ([redacted] Jan 3013)

In order to demonstrate the serious problems of air pollution, I came up with the idea of making comparisons. Specifically, I took photographs from the sky when I flew from Shanghai to Australia. From the pictures I have taken (figure 6), the sky in Shanghai is totally grey and nothing on the ground can be seen; while the sky in Adelaide is crystal clear, and everything on the ground (even the small buildings) can be identified clearly. Hence, based on my inductive reasoning, the problems of air pollution have become quite serious in Shanghai.

S1 and 2 @ A
 Comparing photographs provides more thorough substantiation and synthesis of knowledge through inductive reasoning.



At a lower altitude close to Shanghai



At a higher altitude close to Adelaide airport

Figure 6: The Comparison of the aerial views of Shanghai (left) and Adelaide (right)

(Source: [redacted], 2013)

My extensive field excursions provide accurate visuals of the current air pollution in Shanghai that has been confirmed by the survey responses (2012), the interviews ([redacted], 2013) and the newspaper journalist (Palit, 2012). The comparative photographs taken from the Singapore Airlines aeroplane also clearly indicate the degree and effects of pollution.

S 2 @ A
 Substantiation is validated by comparing various research processes and sources of information.

5. Conclusion

While it is easy to conclude that economic growth leads to environmental pollution, this research has provided empirical evidence to answer my Research Question. However, it is important to have a broad perspective and be positively aware of these effects and consequences. As global citizens belonging to "Generation Y", we need to be proactive at a local, national and global level so as to introduce the concepts of 'sustainable development' and 'environmental improvement'. They work hand in hand with economic growth and environmental pollution. In fact, I believe that the environmental Kuznets Curve (Yang,2003), if it is supported by some strategies from the economic growth and development authorities in Shanghai, could assist Shanghai today. Also, it is crucial that individuals realise how their own behaviour contributes to a group effect, and that this should be monitored and sometimes altered to ensure that everyone lives in a healthy and sustainable environment.

S1 @ A

Insightful synthesis of ideas culminates in the conclusion which makes links between global citizenship, individual responsibilities and environmental consequences.

(1498 Words)

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Stage 2 Research Project B Performance Standards

	Planning	Development	Synthesis	Evaluation
	Assessment Type 1: Folio		Assessment Type 2: Research Outcome	
				Assessment Type 3: Evaluation
A	<p>P1 Thorough consideration and refinement of a research question.</p> <p>P2 Thorough planning of research processes that are highly appropriate to the research question.</p>	<p>D1 Thorough and highly resourceful development of the research.</p> <p>D2 In-depth analysis of information and exploration of ideas to develop the research.</p> <p>D3 Highly effective development of knowledge and skills specific to the research question.</p> <p>D4 Thorough and informed understanding and development of one or more capabilities.</p>	<p>S1 Insightful synthesis of knowledge, skills, and ideas to produce a resolution to the research question.</p> <p>S2 Insightful and thorough substantiation of key findings relevant to the research outcome.</p> <p>S3 Clear and coherent expression of ideas.</p>	<p>E1 Insightful evaluation of the research processes used, specific to the research question.</p> <p>E2 Critical evaluation of decisions made in response to challenges and/or opportunities specific to the research processes used.</p> <p>E3 Insightful evaluation of the quality of the research outcome</p>
B	<p>P1 Consideration and some refinement of a research question.</p> <p>P2 Considered planning of research processes that are appropriate to the research question.</p>	<p>D1 Considered and mostly resourceful development of the research.</p> <p>D2 Some complexity in analysis of information and exploration of ideas to develop the research.</p> <p>D3 Effective development of knowledge and skills specific to the research question.</p> <p>D4 Informed understanding and development of one or more capabilities.</p>	<p>S1 Considered synthesis of knowledge, skills, and ideas to produce a resolution to the research question.</p> <p>S2 Substantiation of most key findings relevant to the research outcome.</p> <p>S3 Mostly clear and coherent expression of ideas.</p>	<p>E1 Considered evaluation of the research processes used, specific to the research question.</p> <p>E2 Some complexity in evaluation of decisions made in response to challenges and/or opportunities specific to the research processes used.</p> <p>E3 Considered evaluation of the quality of the research outcome</p>
C	<p>P1 Some consideration of a research question, but little evidence of refinement.</p> <p>P2 Satisfactory planning of research processes that are appropriate to the research question.</p>	<p>D1 Satisfactory development of the research.</p> <p>D2 Satisfactory analysis of information and exploration of ideas to develop the research.</p> <p>D3 Satisfactory development of knowledge and skills specific to the research question.</p> <p>D4 Satisfactory understanding and development of one or more capabilities.</p>	<p>S1 Satisfactory synthesis of knowledge, skills, and ideas to produce a resolution to the research question.</p> <p>S2 Substantiation of some key findings relevant to the research outcome.</p> <p>S3 Generally clear expression of ideas.</p>	<p>E1 Recount with some evaluation of the research processes used.</p> <p>E2 Some evaluation, with mostly description of decisions made in response to challenges and/or opportunities specific to the research processes used.</p> <p>E3 Satisfactory evaluation of the quality of the research outcome</p>
D	<p>P1 Basic consideration and identification of a broad research question.</p> <p>P2 Partial planning of research processes that may be appropriate to the research question.</p>	<p>D1 Development of some aspects of the research.</p> <p>D2 Collection rather than analysis of information, with some superficial description of an idea to develop the research.</p> <p>D3 Superficial development of some knowledge and skills specific to the research question.</p> <p>D4 Basic understanding and development of one or more capabilities</p>	<p>S1 Basic use of information and ideas to produce a resolution to the research question.</p> <p>S2 Basic explanation of ideas related to the research outcome.</p> <p>S3 Basic expression of ideas.</p>	<p>E1 Superficial description of the research processes used.</p> <p>E2 Basic description of decisions made in response to challenges and/or opportunities specific to the research processes used.</p> <p>E3 Superficial evaluation of the quality of the research outcome</p>
E	<p>P1 Attempted consideration and identification of an area for research.</p> <p>P2 Attempted planning of an aspect of the research process.</p>	<p>D1 Attempted development of an aspect of the research.</p> <p>D2 Attempted collection of basic information, with some partial description of an idea.</p> <p>D3 Attempted development of one or more skills that may be related to the research question.</p> <p>D4 Attempted understanding and development of one or more capabilities.</p>	<p>S1 Attempted use of an idea to produce a resolution to the research question.</p> <p>S2 Limited explanation of an idea or an aspect of the research outcome.</p> <p>S3 Attempted expression of ideas.</p>	<p>E1 Attempted description of the research process used.</p> <p>E2 Attempted description of decisions made in response to a challenge and/or opportunity specific to the research processes used.</p> <p>E3 Attempted evaluation of the quality of the research outcome</p>