

# **EC367: TRADE AND ENVIRONMENT**

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## **INTRODUCTION**

The global economy has witnessed a huge wave of merging markets over the past decades, creating an increasing amount of bilateral, multilateral and regional trade agreements. The integration of those international markets led to large augmentations in the amount of international trade in the world's economy. Theoretically, those agreements are supposed to take into account the environmental factors and try at the same time, to minimize the impacts on the environment and also shape the agreement around the existing environmental problems. This in part has been at the origin of the flourishing of a field of multidisciplinary research and policy, covering the issues of international trade and the environment. It is true that trade and environment are fundamentally related through multiple and complex links.

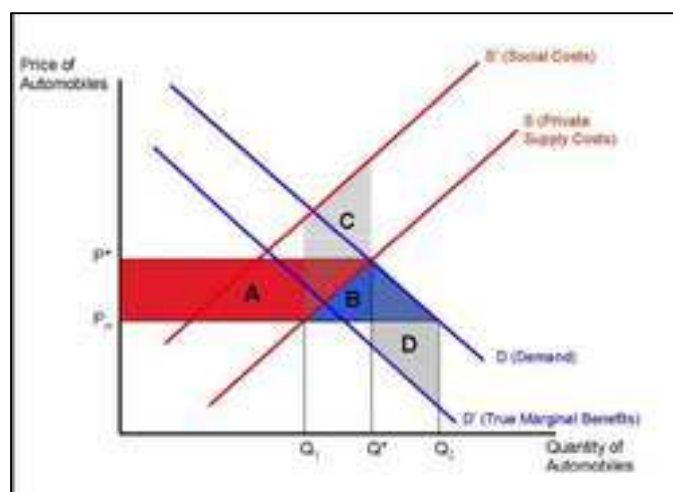
The abundance of trade between different countries sometimes translates an economic growth. This is the reason why the Chinese Communist regime of 1949 took the initiative of opening its economy to internal private enterprise and to external trade in 1978 (Elias Dinopoulos & Paul Segerstrom, 2006). However, Climate change is now a global evidence, which is the reason why governments and businesses are responding to a new consumer preference for ecologically friendly products and a more responsible consumption. Although the need for changes in the world trading system has been highlighted many times during multiple international conferences since the early 1970s and recently with the COP21 in 2015, the environment has encountered deep changes. CO2 emissions have increased by 90%, from 1970 to 2011, each year 26280 species of the fauna and flora disappear, and the melting of the Arctic icing cap is progressing at an alarming speed (International Union for Conservation of Nature, 2012).

With this situation at hand, we will therefore attempt to answer the question of the existence and the strength of a potential direct link between the removal of trade barriers and the environmental degradation. This essay will try to bring an answer through 3 main sections. Firstly, it will introduce the empirical evidences and the effects of trade liberalisation on the environment and vice versa. Secondly, it will also look at the link between economic growth, trade and the environment, with the Kuznets curve. Finally we will conclude on the complementarity of the goals related to the two issues.

## **PART ONE: THE EVIDENCE OF THE LINK BETWEEN TRADE LIBERALISATION AND ENVIRONMENTAL DEGRADATION**

The expansion of the world trading system has raised issues on the relationship between trade and environment. Answering the question of trade being good or damaging for the environment is not an obvious thing. However, we can use economic theory to gauge the gains and losses caused by environmental externalities on trade. It is obvious that some environmental externalities work at the advantages of countries by the presence of natural resources (gold, diamond, oil...) and climates favouring agriculture in some places of the world. However it can also have negative impact on the trading system.

**Figure1: Comparative Advantage and Environmental Externalities**



Source: *The Encyclopaedia of Earth, 2013*

The Ricardian Model of trade uses the concept of comparative advantage and tells us that two countries trading together gain from trade by specialising in the goods for which they have the lowest opportunity cost. However, the model does not consider the environmental factor associated with the production and consumption. Figure 1 represents well the welfare effects of imported goods (here, automobiles), which is generally the case for developing countries.

The supply curve S considers private costs while the curve S' also encompasses social costs including both private costs and externalities. P\* and Q\* are respectively the domestic price and the domestic production in autarky. When the country opens its economy to world trade, Pw is the world price, which will eventually be the domestic price under a condition of free trade agreement, while Q1 is produced domestically and (Q2 - Q1) is imported, for a total domestic consumption of Q2. The traditional interpretation of the graph is the following:

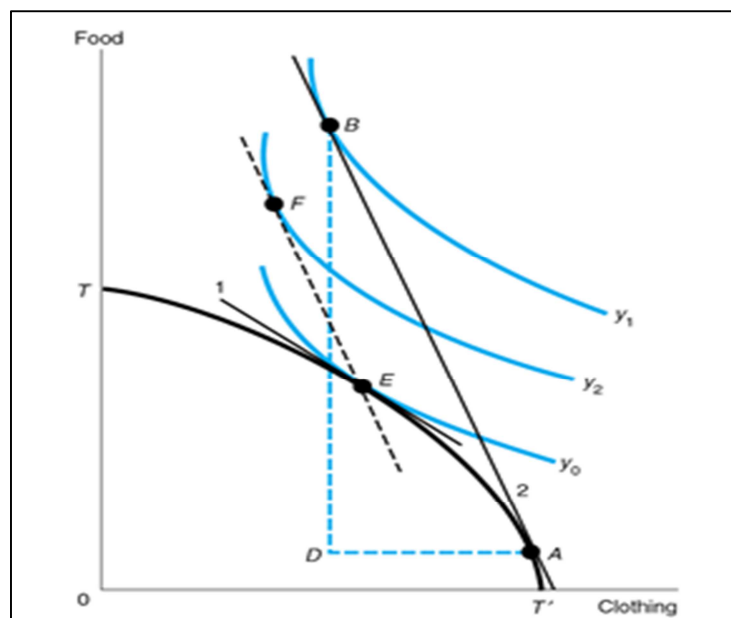
- Domestic producers of cars lose the area A as the prices have decreased
- Domestic consumers gain areas A+B as their welfare has increased
- The net gain from trade is therefore (A+B) - A = B.

However, if we take into account environmental externalities, we can have a different situation. “ If the production of automobiles causes environmental damage, then by lowering production the country gains cross-hatched area C in reduced environmental costs—costs

which are shifted to countries producing cars for export. On the other hand, if environmental damage is associated with the consumption and use of automobiles, lowering the true marginal benefits from consumption, then trade increases the environmental costs of consumption by the shaded area D.”(The Encyclopaedia of Earth, 2013). This observation put into question the concept of overall gains from trade as externalities put now the conditions of the nature and size of the environmental damages.

The positive effects of trade on environment can be gauged through the increase of national wealth. Countries trade to take advantage of their differences, therefore trade between identical countries would have been useless. This is one of the reasons why trade allows countries to specialise in the production of the goods in which they have a comparative advantage, increasing the amount of output by using the same endowment and avoiding wastage; this is what we call Allocative Efficiency (see Figure 2). A country in Autarky can be consuming  $x$  amount of clothing and food at point  $E$  and be very efficient at producing clothing. However, when the country opens its economy to trade, it can start allocating all its resource in the production of Clothing, therefore producing an amount at point  $A$  and import food with the trading partner. In addition to that, we can see that trade restriction tend to decrease to efficiency in the allocation of resources. In the North-South context, some developed countries like the USA produce sugar or rice while its import from other developing countries would have been cheaper and the resources used in the production could have been more efficiently used in the production of other products.

**Figure 2: Home Country Labour specialisation after opening to Trade**

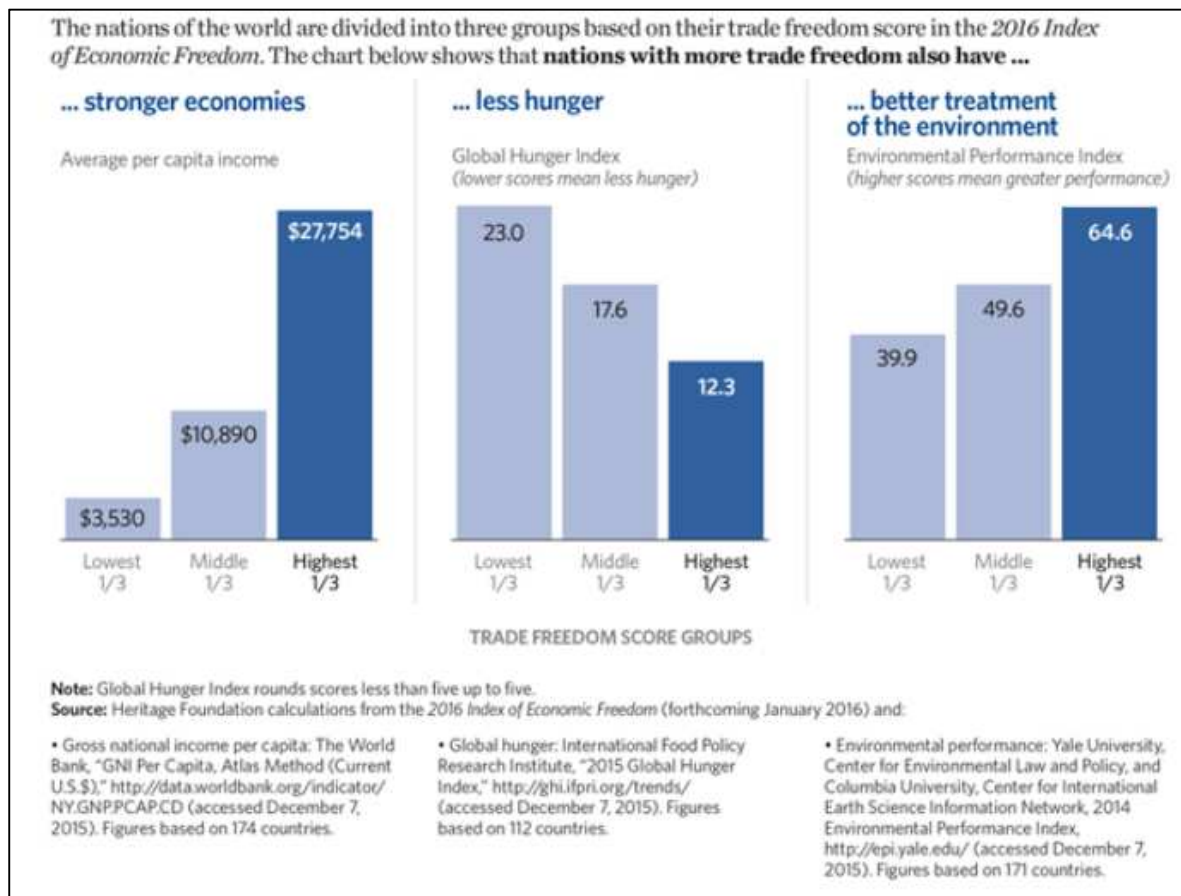


Source: *International Trade Institutions and Policy*, Leyre Gómez-Oliveros Durán, 2014

Moreover trade generates wealth by forcing domestic firms to be exposed to foreign competition, triggering efficiency in the domestic economy. Furthermore, the openness of a

country to foreign investment and technology can bring more efficient methods of production.

**Figure 3: The Major Benefits of Trade**



*Source: 2016 Index of Economic Freedom: Yet More Evidence of Free Trade's Benefits, Bryan Riley and Ambassador Terry Miller, 2016*

Efficiency can therefore be good for the environment, as wastage can be reduced in the process of production and fewer inputs can be used. Also, wealthier people may want a better environmental quality, enabling the poor to escape the cycle of environmental destruction and impoverishment.

The increase of national wealth and economic activity may also lead trade to increase environmental damage, depending on the strength of existing environmental laws, or the wastage of wealthier populations. The 3 main means by which trade can be harmful to the environment are:

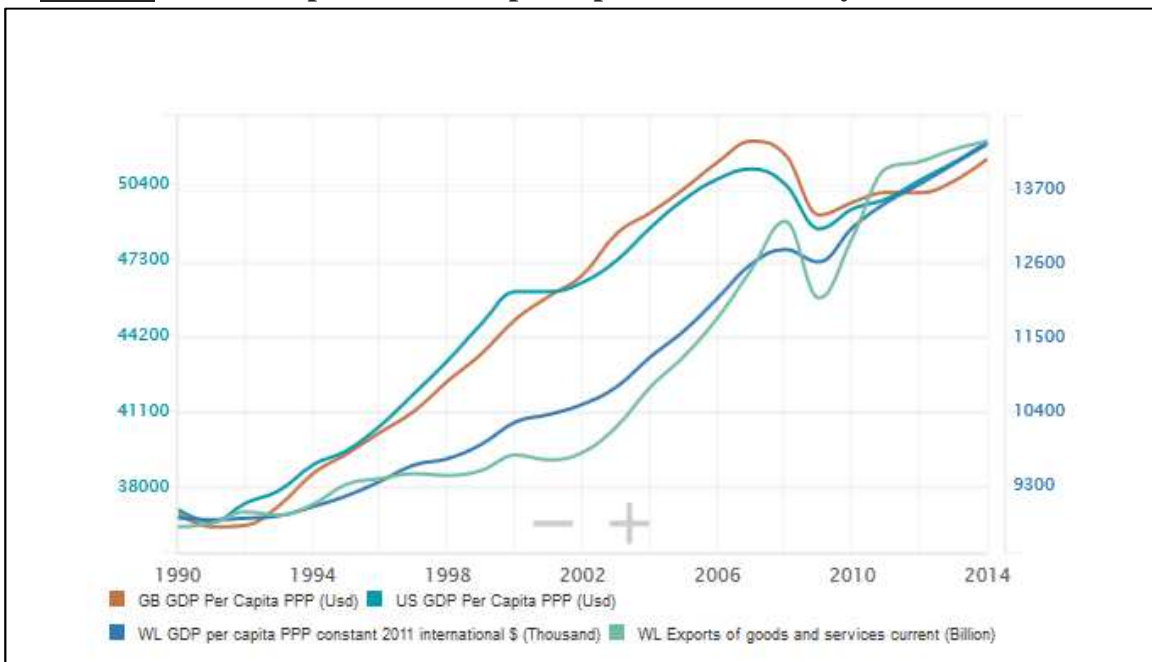
- **The Scale factor:** Trade can amplify some existing problems such as weak environmental policy in some countries
- **The income effect:** The quantity of greenhouse gases and toxin produced by countries with high GDP per capita is extremely high compared to households in developing countries.
- **Pollution haven effect:** it arises from the competitive aspect of trade. Polluting industries tend to implement themselves in countries with relatively low environmental regulation in order to avoid the cost of good environmental regulations in countries with higher standards.

In a North-South trade context, trade between high and low standard countries can lead to a manufacturing relocation from northern countries to dodge environmental concession costs. This creates a weakening pressure on the environmental regulations of those countries in order to magnetise business investment. In addition to that, direct negative effects on environment may also occur when trade is made in high risk wastes, illicit drugs and domestically prohibited product, which jeopardise the existence of certain animal species. And finally, “the proper timing or strangling of liberalising trade and investment regimes is crucial in order to avoid a host of negative development effects.”<sup>(1)</sup>

## **PART TWO: THE LINK BETWEEN ECONOMIC GROWTH, TRADE AND THE ENVIRONMENT**

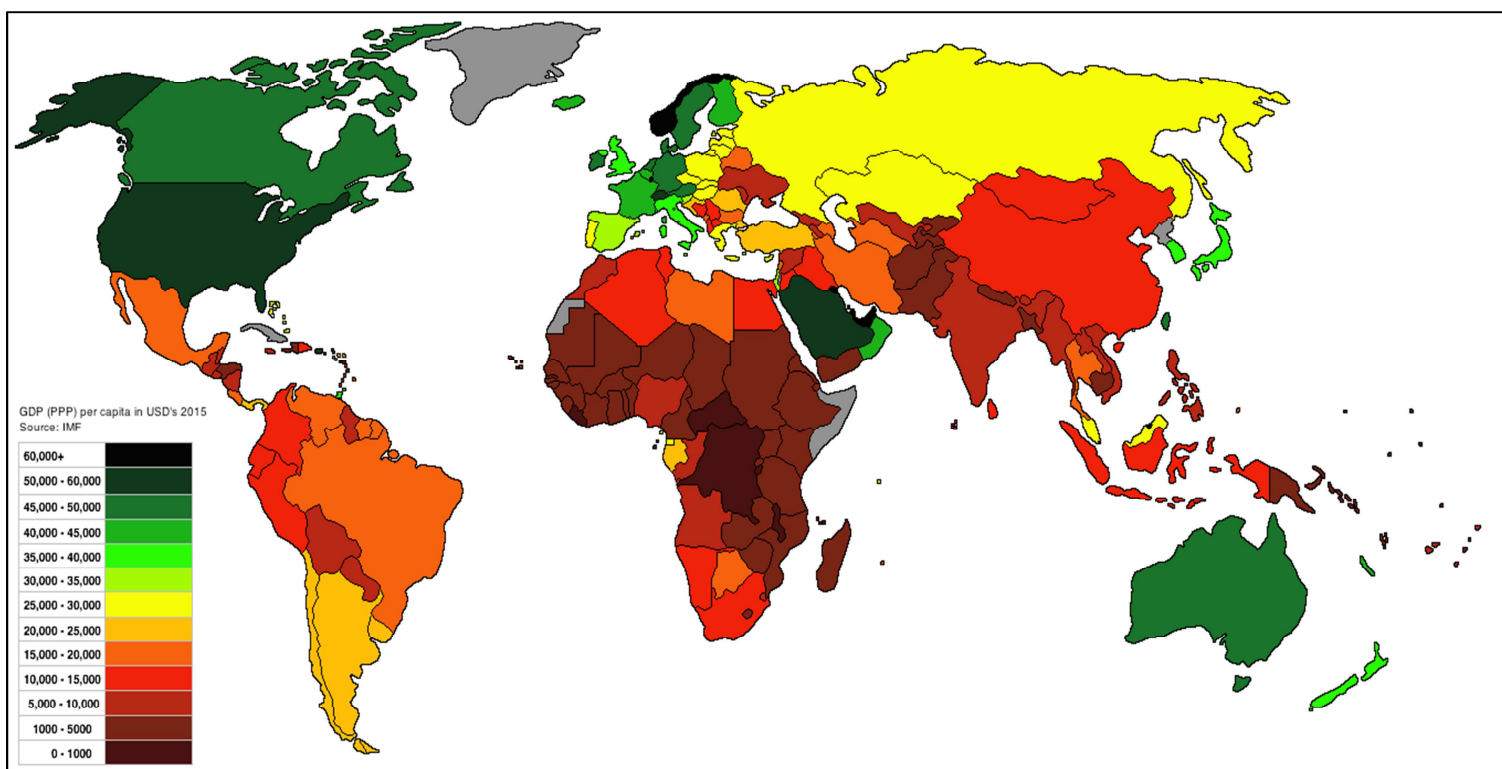
Although the direct causal linkage between trade and economic growth is ambiguous, the link between the two features is still obvious and international trade, as a major factor of openness, has largely contributed to economic growth. There are various ways including import and export, labor specialization that helped the increase of productivity and the increase of the earnings of exporting countries. Some national economies are even completely dependent on the earnings of their exports, which is the case of oil-producing countries. This shows one of the multiple ways by which trade and economic growth are related. Graphically as we can see, Figure 4 shows us the same pattern of growth between World Export and the GDP per Capita. There is a synchronization of their increases and decreases, whether they are very small or large.

**Figure 4: World Export and GDP per capita PPP over the years**



Source: *ieconomics.com*

**Figure 5: Repartition of GDP (PPP) Per Capita across the World**



Source: *International Monetary Fund data resource*

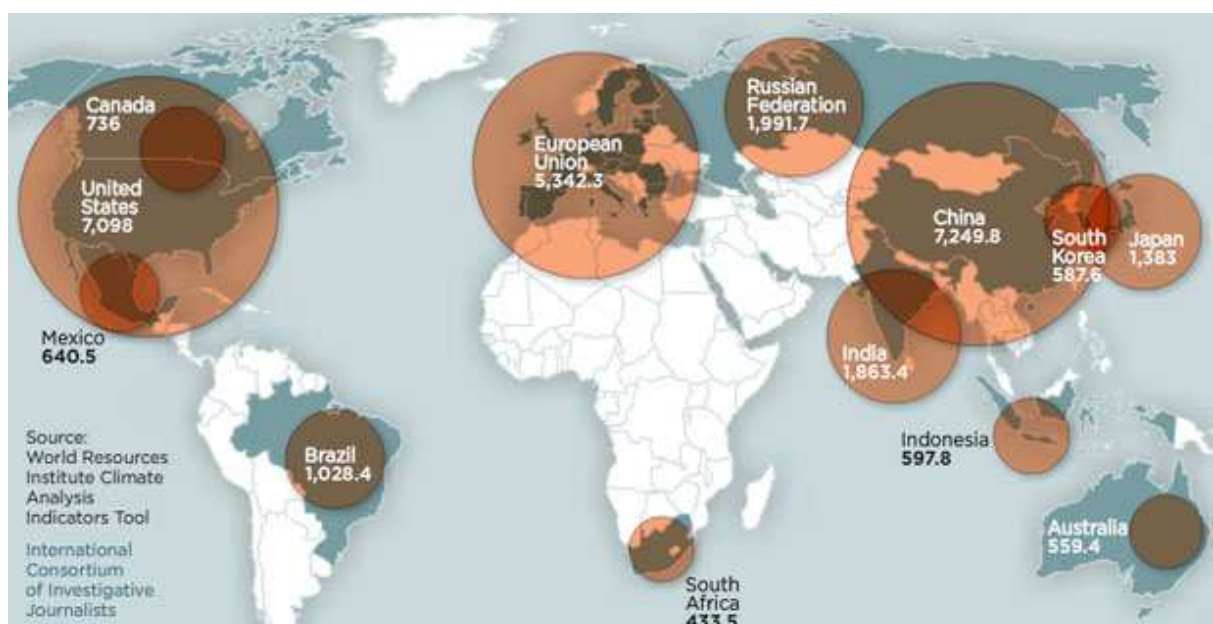
On a more global scale, the emission of greenhouse gases produced by the human activity is mainly composed of Carbon Dioxide (CO<sub>2</sub>, caused by deforestation), Methane (CH<sub>4</sub>: caused by waste management and use of energy), Nitrous Oxide (N<sub>2</sub>O: caused by fertilizer use) and Fluorinated gases (F-gases: caused by industrial processes).

Previously, we have seen that economic growth and trade are closely related and Figure 5 enable us to see that most of the countries with High levels of GDP per capita are in the Northern hemisphere while poorer countries are more concentrated on the Southern Hemisphere and in Asia. However, the repartition of Greenhouse Gases (GHG) emissions



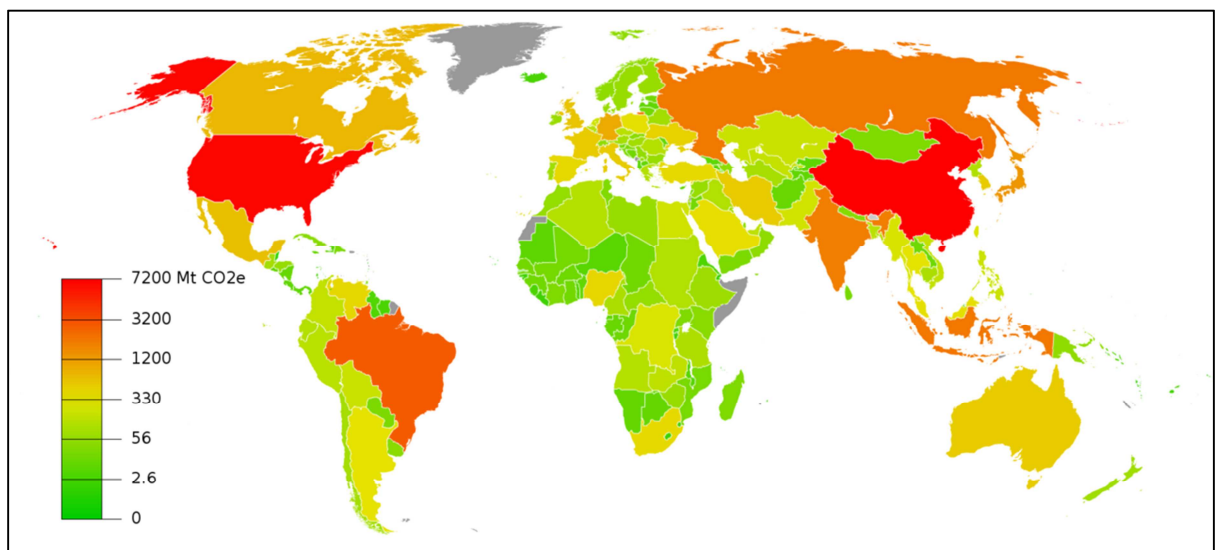
across the world allows us to see that the bigger emitters of CO<sub>2</sub> and toxic gases for the environment are in the North (see Figure 6 and 7). In 2011, the US has emitted by itself more than 7 million tons of CO<sub>2</sub> and the European Union more than 5 million, which represent respectively 16% and 10% of the world emission of GHG. The contrasting country is China which has a relatively low GDP per capita, but although, is the top emitter of GHG with 28% of the world emission. With those observations, we can definitely see a link between environmental degradation and economic development and there seems to be a positive correlation between the two features.

**Figure 6: World Emission of CO<sub>2</sub> across the world (in millions of Tons)**



Source: *Emissions Intensity, dimsumandfriedrice, 2011*

**Figure 7: World Greenhouse Gas Emissions**

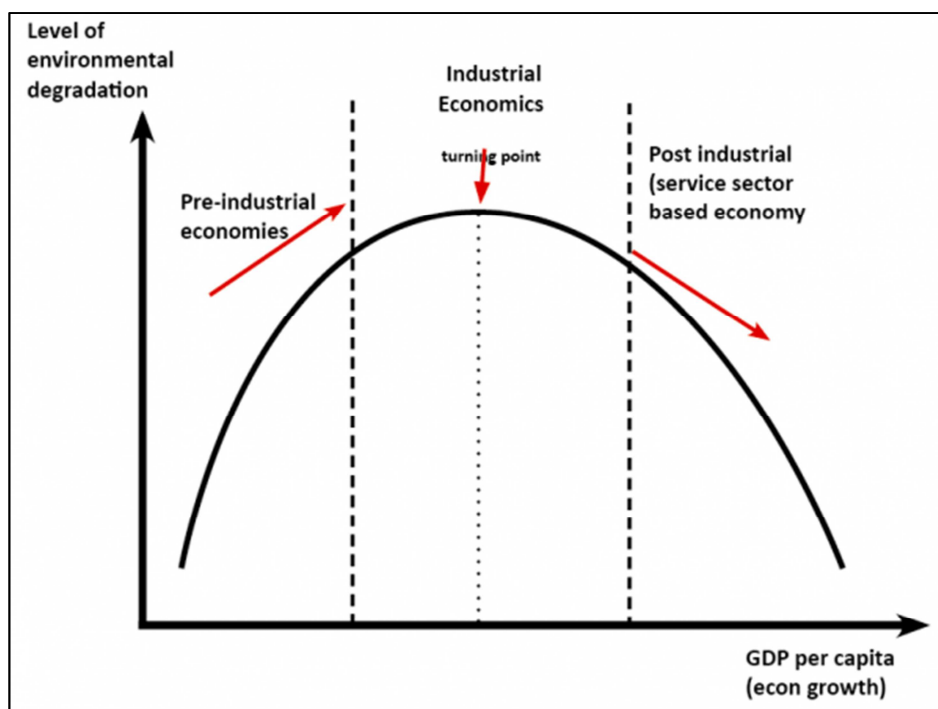


Source: CAIT Climate Data Explorer, 2005

The evidence of the effects of trade on the environment is complex and mixed. The integration of economies, also known as globalisation plays a major role in the worldwide environmental degradation. In particular, in developing countries that serves as a garbage dump for the developed world pollution. The supposition that trade liberalisation and economic growth are good for the environment is often made. The risk related to that issue is that the policies aiming to increase economic growth and trade liberalisation may be supported with little regard to the consequences on the environment.

Although the assumptions of the increase of economic inequality and per capita income were made in the 1950s by Kuznets, it is in the 1990s that the empirical studies on the link between economic growth and environmental pollution spread. One of the most important studies was certainly the work of Grossman and Krueger on the potential impacts of the NAFTA, which introduced and popularised what we call the Environmental Kuznets Curve (EKC), named after Kuznets (see figure 8). The EKC is a speculated relationship between a certain number of environmental degradation indicators and income per capita. It explains that in the early stage of economic growth represented as “pre-industrial economies” on the graph, pollution increases, but there exists a turning point at a certain level of GDP per capita beyond which the inverse of the phenomenon occurs, such that at high levels of GDP, economic growth actually leads to environmental improvement.

**Figure 8: the Kuznets Environmental Curve**

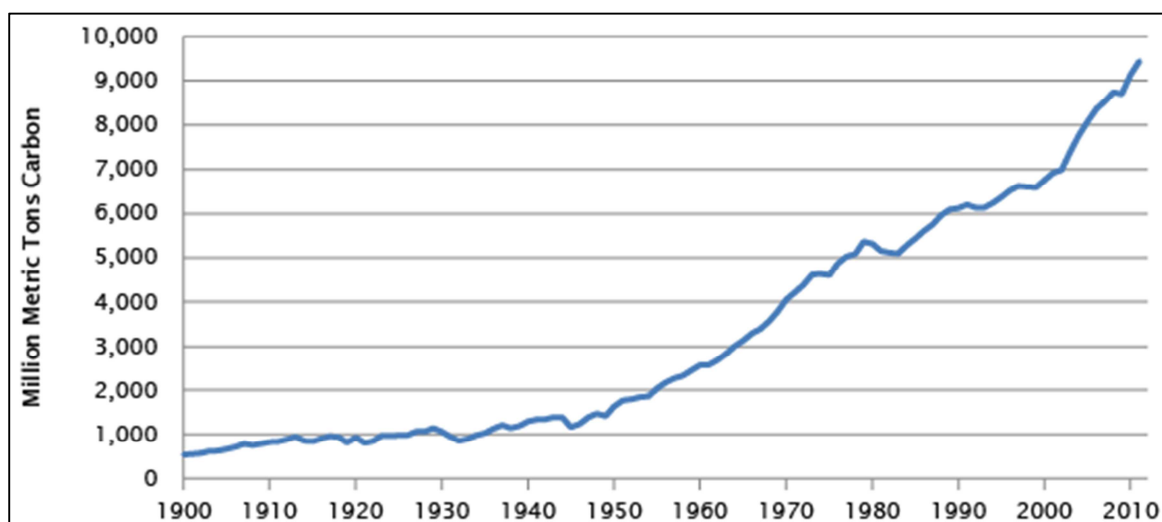




Source: *Economics Help, Tejvan Pettinger, 2015.*

This theory brings scepticism and questioning around the hypothesis it presents because, if we have a look at the World Carbon Emissions from Fossil-fuels from the last 111 years (Figure 9) we do not see any improvement in the emissions of GHG and any environmental improvement. It is even the opposite: we can see on the graph that the amount of Carbon emitted in the world has known a faster growth from the 1950s until the more recent years. This put into question the hypothesis of the Environmental Kuznets Curve and its veracity.

**Figure 9: Global Carbon Emissions from Fossil-fuels 1900-2011**



Source: *Global Greenhouse Gas Emissions Data, United States Environmental Protection Agency*

### **PART THREE: THE POLICY IMPLICATION OF THE LINK BETWEEN TRADE AND ENVIRONMENT**

Fundamentally, trade and the environment are related due to all the economic activities based on the environment. Environment is also the basis for all basic inputs as well as the energy necessary for their process (minerals and metals, fauna and flora).

However, at another level, environment and trade symbolise two different sections of international law. International environmental law is incorporated in various multilateral and regional environmental agreements as well as national regulations. It characterises how the structure of economic activities of a country should be structured. As for Trade law, it is incorporated in the World Trade Organization (WTO) structures as well as regional trade agreements. It defines how domestic laws and policies in a country should be made, especially in areas such as investment policy, environmental protection, and intellectual property rights. Therefore, the interaction between the two distinct systems of law is unescapable.

“International policies on trade and on environment have always intersected. The earliest multilateral environmental agreement (MEA), the Convention for the Protection of Birds Useful to Agriculture, signed in 1902, utilized an import ban as an environmental instrument. The earliest multilateral trade agreement to pursue trade liberalization, the convention for the Abolition of import and Export Prohibitions and Restrictions, signed in 1927, contained an exception for trade restrictions imposed for the protection of public health and the protection of animals and plants against diseases and against extinction.”<sup>(2)</sup>

As a consequence, trade liberalization is neither necessarily good nor bad for the environment. The effects on the environment in fact “depend on the extent to which environment and trade goals can be made complementary and mutually supportive. A positive outcome requires appropriate supporting economic and environmental policies.”<sup>(3)</sup>

## CONCLUSION

In the attempt to determine the existence and strength of the link between the removal of trade barriers and environmental degradation, a certain number of features have been highlighted. On the effects of one feature on the other, we can see that the environmental externalities can have positive and negative effects on trade. On the one hand, natural resources in the environment are the primary cause of trade. Nevertheless, environmental externalities can cause losses in the trading system with the cost of environmental damages at the production or consumption level. Through the consideration of national wealth, we have also seen that trade has also positive and negative effects on the environment with the allocative efficiency, the competitive efficiency, but with also the pollution havens, the scale effect and the income effect. In its complexity, the relationship between trade and environment brought us to also consider economic growth in the equation through the comparison of world export and the GDP (PPP) per capita, following the same patterns of growth. The Kuznets curve has also allow us to consider the theory of improvement in the environmental situation with the development of economies, even though the facts and results over the years put a question mark on this hypothesis. And finally, we also considered the linkage of the different policies put in place to protect trade and the environment, and noticed the inevitable interaction. It would also be interesting to study the link between the abundance of migration flows in a country triggered by the liberalisation of trade as well as the environmental degradation. As we know, the world population is growing rapidly, and the

environmental situation is degrading also. Analysing the linkage between those two features could have given us more insight into the problem.

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