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International Trade and Green Values

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<p>International trade has grown over the few decades rapidly, and so have the problems that it brings. Environmental degradation is one of the negative aspects of international trade, especially in developing countries. Many economists have analysed the impacts of trade, but their opinions are quite divided. Especially recent years green values have got the public's attention for example in the form of protests. In the Paris Agreement countries have agreed to try to keep the global warming below 2 Celsius, unfortunately it is not going too well. However, all this pressure from the government as well as the public, has forced companies to develop greener alternatives such as green logistics. Still, transportation is responsible for almost quarter of Europe`s greenhouse gas emissions. In this paper is presented various economists' opinions which some are for international trade and some that are against it in its current form. In conclusion is discussed the ethical issues of some of the economist's opinions, the importance of sustainable development and the fact that economists will never fully agree with each other how international trade and its problems should be dealt with. The research method used in this Bachelor`s Thesis is literature review.</p>	
Keywords	International trade, green logistics, developing countries, developed countries, CO ₂ emissions, Greenhouse gas emissions (GHG)

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1 Introduction

I was born in 1994, and in that year the global CO₂ emissions were about 22,7 billion tonnes. In year 2015 the number was already 34,7 billion tonnes. (Armstrong, 2018) As Figure 1 shows us, 20% of these emissions was created by transportation. (Ritchie & Roser, 2019)

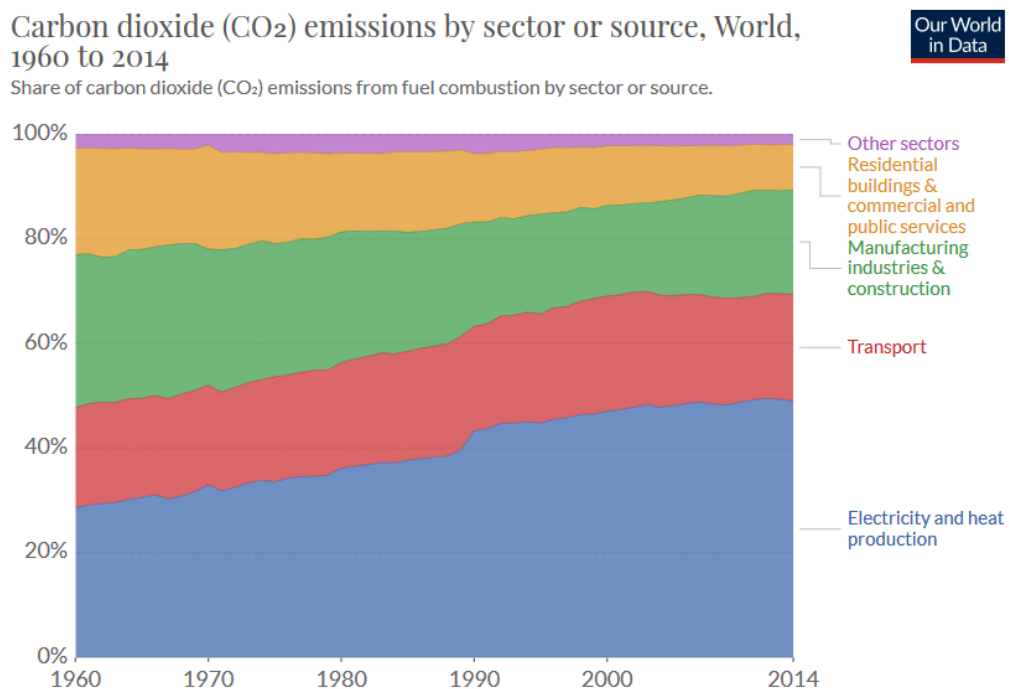


Figure 1 – Carbon dioxide (CO₂) emission by sector (The World Bank, n.d.)

As we can see from these quite alarming numbers, international trade has, unfortunately, a major part in many environmental problems. Global warming is one of the huge challenges in the world right now. When climate is changing it will have serious effects to the environment in which we are living. Besides health impacts that pollution will have, the change will trigger extreme weather conditions, such as storms, droughts, floods and heatwaves. To reduce these extreme effects, UN member states have the Paris Agreement, where they have for example set a target of limiting the average warming. (Ritchie & Roser, 2019)

In the future international trade can be assumed to increase, because of the increasing consumption. In addition, production is concentrating into highly specialized factories.

Usually these factories are located in countries where the environmental legislation is not properly implemented or supervised, in other words developing countries. Influences of international trade can be seen all around the globe. These factors make this extremely important and interesting topic, that everyone should be concerned about.

The goal of this thesis is to give the reader an understanding of the current situation of international trade, its conflicts with clean environment and possible solutions for the future. This thesis has two main parts: a theoretical view and a practical view. In the first section of this paper there are presented multiple different theories that economists have published from different angles and perspectives on international trade. In the second section of this paper is presented transportation and its effects on environment as well as discussion of literature on green logistics.

“Depending on who you listen to, trade is either the great destroyer of communities, the environment and developing countries, or the unblemished saviour of all the above” (IISD, 2013).

2 International trade and economists’ views

2.1 International trade as a cause for manifestation

Commonly traded items are consumer goods like clothing, capital goods such as machinery and raw materials and food. Obviously, the idea is to trade for the commodities that a nation lacks and exchange it for those of which the nation has a lot (like wood or other natural resources) or those that they can efficiently produce. (Wonnacott, et al., 2020)

Trade in manufactured goods between developed countries and developing countries has increased and has been one of the most prominent developments in the world economy. Many in the North see such trade as a great source of global growth. However, others see it as a competitive threat, since for example the wages in the developing countries are only a fraction of the wages in developed countries. (Golub, 1997)

There are factors that can hold down the productivity in poor countries, even with the increased access to technology and capital mobility. In developing countries there might be poor public infrastructure, low levels of human capital and poor transportation services which will decrease productivity. (Golub, 1997)

Protecting green values and questioning the effects of trade are not new phenomena. On November 30, 1999 a huge number of protestors (estimated at 40 000) surrounded the Washington State Convention and Trade Center in Seattle, Washington, where the members of the World Trade Organization were supposed to have negotiations. (McCallum, 2019) The protestors were from numerous different backgrounds and they had different agendas. Some of them were worried about labor rights in the producing countries, while others were concerned about the polluting activities trade has and its more general effects on the environment, while a third group was just venting its anger at capitalism. And so began the famous Seattle WTO protests, the Battle of Seattle. (Smith, 2014)

Soon, the police were overwhelmed by the number of protestors and their effect on the convention, so they used rubber bullets and teargas to clear the streets. The mayor of Seattle, Paul Schell, designated a 50-block no-protest zone around the WTO meeting site and imposed a curfew for all Seattle residence. (McCallum, 2019)

The protestors' concerns were not stupid at all. Now anyone can order the products from a Chinese company for the cheapest available price from the comfort of her/his sofa and get the product two days from making the order delivered to their doorstep. Unfortunately, local producers as well as the environment will suffer from this. Due to its rapid and intensive industrialization, in parts of China the pollution is especially bad, and the air is barely breathable. (Smith, 2014) However, China will not be the only one suffering. During certain time of year, when air currents travel in specific directions, the pollution will affect Japan and South Korea as well. In Japan the news has already shown pictures of hazy skies over the capital. South Korea has offered to help China, to find solutions on environmental technology to reduce the pollution. (Ryall & Yoo, 2013)

The protest in Seattle wasn't the only one but it set an example for the protests to come. One set that is worth mentioning is the global protest movement organized around the

hashtag FridaysForFuture. This movement began when 15 years old Swedish teenager Greta Thunberg sat every school day in front of the Swedish parliament for three weeks, protesting the lack of action on the climate crisis. In August 2018 FridaysForFuture was "established" and it spread all around the world and many students and adults have been protesting on Fridays outside of their parliaments. (FridaysForFuture, 2020)

2.2 Zero-sum game and cornucopia model

There seems to be two kinds of people: those who believe that there is no problem between international trade and environment and the others who believe that international trade is in fact destroying the environment. When these two argue, the opposite camp is usually able to turn the information inside out and make it useful to their own cause by looking it from another perspective. Interestingly there is even a book written by Björn Lomborg, a Danish statistician, called "Measuring the Real State of the World" where he suggests that most of the environmental deterioration, like resource depletion, global warming and increasing gaps between poor and rich, is only an illusion (Lomborg, 2001). For some people this is easy to believe because humans are wired like that. When we see or feel something unpleasant and someone offers a way out by saying (and showing) it is not true, we tend to believe that pretty fast. (Hornborg, 2003) Also, groups who benefit from exploitation of the environment will gladly believe Lomborg`s arguments. Another book of Lomborg`s is: Cool It: A Sceptics Guide to Global Warming (2007) where he argues that environmental groups are exaggerating the impact that human actions have on environment. According to journalist Howard Friel, Lomborg uses techniques like ignoring evidence that doesn't support his arguments and selective quoting. (Roberts, 2010) Ellen Roberts has written a review of Howard Friel`s book "The Lomborg Deception: Setting the Record Straight About Global Warming" (2010). In her review she gives an example how Lomborg gives misleading information: "One example- the IPCC uses a range of emissions scenarios to predict average global temperature rise. However, Lomborg chooses only the lowest emissions scenario, which predicts 0,6 degrees of warming, and makes no mention of others in his entire work" (Roberts, 2010).

The core idea behind Zero-sum game perspective is that whenever one person or country benefits from something, another person/country always suffers. The average American consumes 330 times more energy than the average Ethiopian shows the statistics. This same gap is shown in other aspects as well like consume of the paper, aluminum and iron. Also, the carbon dioxide emissions in 1990 were only 0,1 tons per capita in India but almost five tons in the United States. Still, as Alf Hornborg points out in his article "Cornucopia or Zero-Sum Game? The epistemology of Sustainability", many people in the North feels that it is their mission to educate people in the South how to live sustainably and how to save the environment. This shows that many people believe that it is ignorance rather than impoverishment that people in the third world countries do not consider the effects their actions have on environment. It can be argued that these people don't have the luxury to care, they just need to survive to the next day. (Hornborg, 2003)

Stephen Bunker`s (Bunker, 1985) study of underdevelopment in the Amazon, is an explicit attempt to connect energy flows and dependency theory. In his study he shows how "extractive" economies are always in disadvantage in their exchange with the "productive" economies of industrialized sectors. The productive economies in the core can count on cumulative development of infrastructure unlike the extractive economies. For extractive countries as the stocks of natural resources become harder to extract as they are depleted, "... an intensification of extraction will tend also to increase costs per unit of extracted resources, instead of yielding the economies of scale associated with intensification in the industrial core" (Hornborg, 2003: 211). So basically, the more there is demand, the more extractive economies produce, but it is not helping the economy to grow since they need to fetch the resources further away. The ever-growing advantageous economies of scale in the developed countries progressively improve their terms of trade which enable the use of the resources from the hinterland. This leads extractive economies to overexploit nature, while in the developed countries the landscape will be protected since it is liberated from the imperative to yield a profit. (Hornborg, 2003)

The opposite to the Zero-sum game model is the Cornucopia model, which is the worldview that declares that the rich North is completely innocent regarding environmental problems and poverty in the South. A good example of this comes from

an essay of Swedish economist Marian Radetzki (Radetzki, 1992). Mr. Radetzki highlights that the worst environmental destruction is seen in the poor countries, not that much in the richer countries. From this, he makes a conclusion that environmental quality improves as the economy grows. In the wealthier countries people are more willing to pay for a clean environment and environmental policies in these countries encourage the development of new environmental technologies. Because growth and technological development make it possible to invest, for example, in plantations instead of cutting down rain forests, and in aquaculture instead of depleting wild fish stocks, Mr. Radetzki argues that there is unlimited potential for sustainable growth. Mr. Radetzki seems to think that the economic activity and its environmental consequences will appear in the same place geographically. Mr. Hornborg suggests that maybe the environmental consequences of growth have been shifted to another country and for this reason developed countries can enjoy clean nature and pure air. It seems that Mr. Radetzki suggests that the solution to the environmental problems is that everybody in the world would become rich. Unless, he suggests that developed countries would shift all the pollution to third world countries and keep on growing. (Hornborg, 2003)

In his article, Mr. Hornborg wants to show how naïve he thinks Mr. Radetzki is with his idea of everyone becoming wealthy and he writes the following: "Mathis Wackernagel and his colleagues have estimated that if all the people in the world were to reach the same standard of living as that is in the richest countries, they would require three additional Earths" (Wackernagel and Rees 1996: Wackernagel et. Al. 1997). After reading this argument one might ask, what does he mean by "the richest countries"? The argument is quite inadequate because there is no definition provided which or how many countries belong to this "richest countries" group. (Hornborg, 2003)

2.3 Waste dumping

Even if Mr. Radetzki wouldn't be the one suggesting dumping the waste to underdeveloped countries, Lawrence Summers is. He wrote a memo (Summers, 1992), published by The Economist in 1992, where he basically argued why it is a good thing to dump all the waste from "clean" countries to "dirty" countries. Among other things, he argued that it would be best to pollute the countries, where the productivity is the

lowest, because the foregone earnings would also be minimal. The second suggestion he has, is that wealthy people in high-income countries, would be willing to pay for a clean environment. Which means, they would be willing to pay to underdeveloped countries to take their pollution. This would lead, according to Summers, to "welfare-enhancing" trade, because the poor people would get money out of this trade and their standard of living would increase. Of course, their health would be compromised by the pollution, but at least they could buy nice things before getting ill. His third argument is a bit different than the first two. He says that overall costs of pollution would be reduced if the pollution would be distributed equally. So, the pollution would be transferred to the "clean" developed countries from the "dirty" underdeveloped countries. Then also these "under-polluted" countries would have some of the pollution, but not too much to effect severely to the human health or to the environment. (Swaney, 1994)

James A. Swaney discusses in his article "So What`s Wrong with Dumping on Africa?" that does Summers think that if worker exposures to toxic waste in poor countries and fall ill, the costs would be lower than in richer countries. He also supports his argument by stating that in underdeveloped countries the health care and behavior-modifying information is likely in short supply as well. Swaney argues that Summers thinks exactly like that since Summers`s argument is that costs are lower in less developed countries because life expectancy is short. Brutally said, Summers thinks it doesn`t matter if rich countries dump their waste in poor countries because the people who live there will be dead before the health issues from the polluting waste occur. Swaney says "... life expectancy should not be considered an exogenous variable" (Swaney, 1994: 5). He means that developed countries should help underdeveloped countries to reduce their mortality, for example infant deaths, not use the fact of short life expectancy as an excuse or a justification to dump the toxic waste there. Swaney argues that the people whose health is at risk and whose environment will be ruined, have no part in the negotiations or the compensation. (Swaney, 1994) He says, "A political elite negotiates and receives compensation – that is where the buck stops, but the pollution is passed out to the powerless poor" (Swaney, 1994: 7).

Swaney writes that if less developed countries would get good compensation, human health would not be threatened and if they would be well-informed, and these countries would want to exchange environmental quality for income, such trade should probably

be made. He also writes that the minute the pollution in question threatens the important ecosystem in these countries, the trade should be blocked, and global agreements should be taken in to action. (Swaney, 1994)

One possible way to minimize the negative effects of the pollution shifting is to hold exporting companies responsible for the outcomes in the less developed country where they want to do business, says Swaney. He also says, that this kind of trade would be possible when pollution damages are not transboundary or long-lived, so Swaney thinks that a universal ban may be ill-advised. (Swaney, 1994)

2.4 The Prebisch-Singer Thesis

The Prebisch-Singer Thesis implies that the gains from trade will continue to be distributed unfairly and unequally between nations. Also, inequality of per capita income between nations exporting mainly primary products and nations exporting mainly manufactures will be increased, rather than reduced, by the growth of trade. Already by the time of World War II the belief that agricultural countries had better reason to be pessimistic about their economic prospect than industrial ones gained ground. (Toye & Toye, 2003)

Exporters who relied on agricultural raw materials and products, suffered a lot from the depression of the 1930s. "The problem was that, during the war, a number of underdeveloped countries had run export surpluses that they subsequently wished to use to import capital goods for development. In the interval, the prices of capital goods had risen, so the export surpluses were worth less in terms of imports than they had been when they were earned" (Toye & Toye, 2003: 447). Singer did not doubt whether gains of trade existed, but his question was the fairness of the distribution of those benefits between the countries that traded. He wondered, was there "un-equalizing" growth between countries because of trade? (Toye & Toye, 2003)

Singer argued that developed countries benefit when manufacturing technology advances because then these countries can produce more which will increase workers' salaries. However developed countries will also gain from minor advances in primary

commodity production technology as it leads to lower raw material prices. As consumers of manufactures and as producers of primary products, the underdeveloped countries have the worst of both worlds. (Toye & Toye, 2003)

Raul Prebisch was an UN director who developed dependency theory. He uses the word "peripheral countries" for underdeveloped nations and the word "core countries" for the developed nations. The main idea behind dependency theory is that peripheral countries are dependent on core countries and they have little to no resources to boost their own development. Peripheral countries produce the raw materials, which are transported to core countries who will manufacture the product and sell it at a much higher price. Some of these products are going back to the peripheral countries that provided the raw materials in the first place. Dependency theory also states that the core countries provide for example medical aid to the peripheral countries, for example in case of earthquakes, which increases the dependency that the underdeveloped countries have. (Bell, et al., 2014). This point also applies more generally to all forms of aid. In article "Correcting Globalisation in Health: Transnational Entitlements versus the Ethical Imperative of Reducing Aid-Dependency" (Ooms & Hammonds, 2008) writers Gorik Ooms and Rachel Hammonds says "... foreign assistance can take the form of economic colonization, whereby, for example, donor countries obtain favourable conditions for exporting mineral resources from a recipient country in return for much needed assistance in fighting deadly epidemics" (Ooms & Hammonds, 2008: 155).

2.5 Marxian economics

Marxian economics is based on the work of Karl Marx, who was a 19th century economist and philosopher. A central source for Marxian economics is Karl Marx's work, a book called "Das Kapital", which was published in 1867. In "Das Kapital" he explains his point of view of the capitalist system. He argues that in the capitalist system workers are not paid enough for the work they do and that they are being exploited by the ruling classes. His theory focuses on the role of labour in the development of an economy. He argued that when population and specialization of the work force would grow it would push the wages down. (Liberto, 2020)

Opposed to Marxian economics is neoclassical economics. The core idea behind neoclassical economics is that the free market and only a little or no government control will lead to a better society and will automatically benefit people. (Liberto, 2020) Neoclassical theory "implies that free international trade is governed by comparative advantages, determined on the basis of resource endowments, and is mutually beneficial for all participating countries" (Liidakis, 2000). Neoclassical theory has similarities with the cornucopia model, since also in neoclassical theory it is commonly thought that free trade and economic growth will have a positive impact on environment protection. Also, the idea that countries would use trade regulations for environmental protection is usually rejected, since it is seen that domestic policy is a better way to tackle the problems and to protect the environment. Privatization of property rights is suggested as a policy for tackling the global environmental problem, because the well-defined private property rights in the North prevent over-exploitation, whereas ill-defined property rights in the South, leads to over extraction of resources in those countries. (Liidakis, 2000)

As was already explained earlier in this chapter, some economists believe that low growth in less developed countries implies a low level of environmental protection and greater environmental degradation. And because of that, they believe that there is a correlation between economic growth and environmental protection. It is argued that extensive subsistence and rapid population growth in less developed countries lead for example to soil erosion and rapid deforestation.

In his article George Liidakis argues that when the market mechanism does not know how to use externalities, for example having excessive production of a product, it will have an impact indirectly on the environment as well. (Liidakis, 2000) Marx on the other hand, believed in a zero-sum game. He said that only few would benefit from capitalism and that the poor working class would always be exploited by the richer. Marx said that government should have regulations and by using them, make sure that everyone would benefit from economic decisions. (Liberto, 2020)

Karl Marx did not regard private ownership of natural resources as a source of value since value for him is materialized labour. Marx divided ground-rent into two different types: differential rent (DR) and absolute rent (AR). Marx states that differential rent

concerns more favourable location or varying levels of fertility of land and it is independent of the form of land ownership. Absolute rent is derived from the fact that agricultural products are sold at prices that are almost their value which exceeds their price of production. "Contrary to the neoclassical approach, which considers ground-rent as a compensation to a "factor of production" and a determining factor for the prices of primary products... the Marxian one, considers ground-rent as being essentially determined by the prices of primary commodities, namely as a determined variable" (Liodakis, 2000: 58).

According to Liodakis, usage of differential rent might raise distributional issues but "only absolute rent can have an upward push effect, and thus may reduce or eliminate some competitive advantages in trade" (Liodakis, 2000: 69). He says that in cases where private property coincides with the primary producer or capital, ground-rent may form a motive for the expansion of production and thus for the intensive use of natural resources. "In this sense the determination and appropriation of rent for land or natural resources used in producing internationally traded goods will significantly affect the extraction of resources and hence the environmental problem" (Liodakis, 2000: 69). Mr. Liodakis argues that because rent is not preventing an overuse of resources, quite the opposite, it is important that rent is not privately appropriated. (Liodakis, 2000)

Liodakis argues that high standards of living, competitive growth and the specific development pattern in the developed capitalist countries are all mainly the reasons for the global environmental problem. He also points out that even though already in the past developed countries have been taking advantage of the underdeveloped countries, today there are many examples that show that similar activities are happening, for example in the form of forestry operations. Only now, instead of governments, TNCs (transnational corporations) are responsible for the exploitation. According to Liodakis the rapid environmental degradation and the aggravation of the ecological crisis is mostly the result of fast industrialization. Liodakis argues that resource depletion is a result of the competitive growth of production, capitalist property rights, the goal of capitalist production in producing and the alienation of immediate producers from their means of production. All these are also playing a huge role in environmental degradation. Liodakis says "I have argued before that it is not comparative but rather absolute advantage which rules international trade, and that the structure of absolute advantages, and hence

specialization patterns, can only be marginally, not fundamentally, changed by exchange rate movements or state intervention in general" (Liodakis, 2000: 68). He emphasises the importance of the theory of international trade and the debate on trade advantages in the environmental problem's discussion. (Liodakis, 2000).

Like discussed previously also Liodakis points out the uneven development between countries. He states that especially in the Southern countries uneven development will lead to an over extraction of resources. Because of the poverty the less developed countries' only competitive advantage is the commodity price which can be driven down only by lowering salaries or overexploiting nature. Also, regions, sectors or subsistence family farming all struggle for economic survival because of very low income and this might lead to quantitative expansion of production, which of course has negative effects on nature. Like discussed previously, also Liodakis points out the possibility of a discharge of waste from the former to the latter, meaning for example that developed countries are switching their polluting industries to the underdeveloped countries, thereby aggravating the degradation of the natural and social environment of these regions. (Liodakis, 2000)

2.6 Freedom of choosing production location

In his paper "Shifting sources and uses of profits: sustaining US financialization with global value chains" (2008) William Milberg argues that since companies can choose where to produce their product, it has brought lower input costs to leading firms. These firms can increase or at least maintain cost mark-ups and economy-wide profit share, even when the product price stays domestically the same, because of the expansion of global value chains. There has been a lot of financial implications that the source of profits has changed to foreign input markets from domestic product markets, argues Milberg. According to Milberg, there are three ways how a company can maintain or raise its mark-up cover costs: raise productivity, raise the price of the product, or by lowering input prices. (Milberg, 2009)

In the 1980s there was an increasing habit by firms to break up their process of producing goods and services. Firms were dividing the process to different locations

based on markets, costs, politics and logistics. However, Milberg writes that it was in the 1990s when US companies realised that managing the global supply chain is an important strategic asset. (Milberg, 2009)

Static and dynamic are the two types of welfare gains according to orthodox theories of offshoring. "In the static version, offshoring results from new possibilities for a more refined division of labour, the result of technological change (in particular the internet) that lowers the cost and raises the efficiency of managing a global supply chain" (Milberg, 2009: 429) says Milberg. The other, dynamic version is "self-feeding" process (Figure 2). The idea is that when a company produces with low costs, the end-product will also cost less and the customer will buy more, this allows companies to benefit economies of scale. (Milberg, 2009).

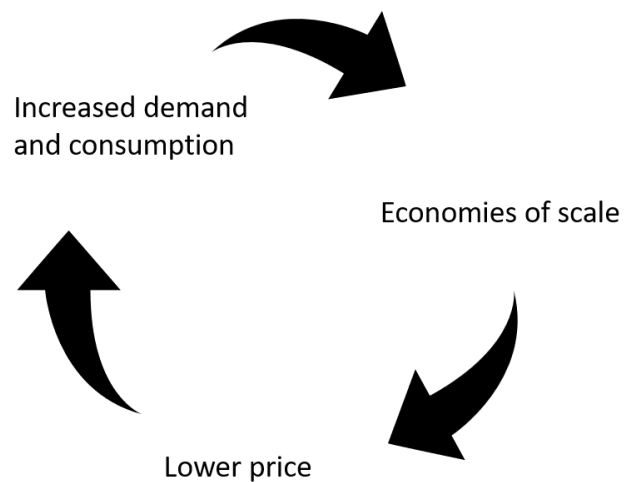


Figure 2 – Illustration of dynamic model gains

According to Milberg, the dynamic version is the one that shows better the benefits of offshoring and that the fact is that companies need less investments when they move production process (goods and services) offshore. (Milberg, 2009)

3 Transportation – the largest emission creator

Almost a quarter of Europe`s greenhouse gas emissions (GHG) is caused by transportation. (European Commission, n.d.) Sea transportation causes less GHG emissions than any other industrial transportation method, but it is also the slowest way to move goods. As shown in Figure 3, road transportation causes most of the greenhouse gas emissions (72%) in transportation. (European Environment Agency, 2019) In 1994 United Nations Framework Convention on Climate Change (UNFCCC) came into force. After this, emissions have in some parts of the world been decreasing, like in Europe. In some other parts, such as China and India, emissions have increased. Unfortunately, even in those parts of the world where CO₂ emissions are decreasing in other sectors, those from transport have still been increasing. (Santos, 2017)

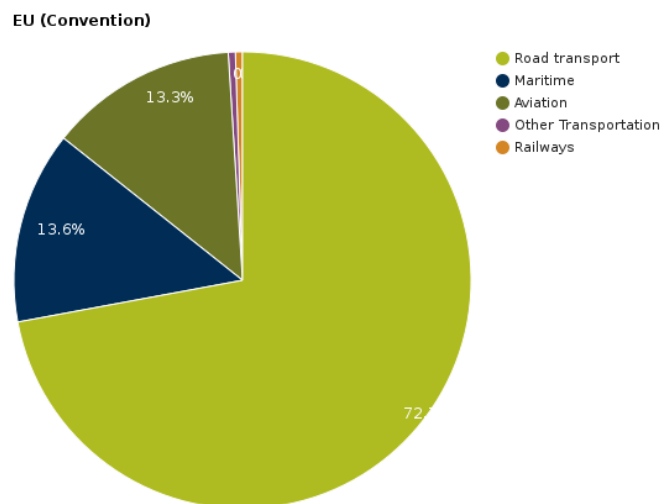


Figure 3 – EU (Convention) Share of transport greenhouse gas emission (European Environment Agency, 2019)

There are two obstacles which have prevented reductions particularly in transport but also GHG emissions in general: the high cost of clean technologies in transportation and lack of or incomplete international agreements. There have been efforts to make global deals, first of them being the Kyoto Protocol in 2005. From the beginning it was known to have a limited impact, since it required actions only from the developed countries. As

utopic as the attempt to convince all the countries of the world to unite forces and reduce GHG emissions first appeared, the second attempt to a global deal was made in December 2015, the Paris Agreement. Unlike the Kyoto Protocol, The Paris Agreement commits also developing countries. The commitment is to keep global warming below 2 °C and targeting 1,5 °C. According to the agreement, developing countries will receive financial support from the developed countries to help them with adaptation. The agreement also requires that all Parties report regularly on their efforts to reduce their emissions as well as their current emission state. President Trump announced in June 2017, that the US will withdraw from the Paris Agreement. This is of course a huge set back since US is one of the countries with highest emissions per capita and the second emitter in absolute terms. However, "the Paris Agreement can be seen as a triumph of political will." (Santos, 2017)

The other barrier is the cost of clean technologies in transportation. However, normally, if demand would be higher, manufactures would need to produce more, and this would ultimately reduce the production costs via economies of scale. "As the momentum builds, the costs of buying and operating alternative vehicles, such as electronic vehicles, could decrease rapidly, changing things radically." (Santos, 2017)

3.1 Transportation methods

The four most commonly used transportation methods are road, air, rail and marine. Since 1970, the greenhouse gas emissions from the transport sector have more than doubled and around 80% of this increase has come from road vehicles. (Sims, et al., 2014) As noted above, transportation is the largest emission creator and it is expected to grow at a fast rate, which will create problems in efforts to reduce emissions and meet the goal of the Paris Agreement. (Wang & Ge, 2019) Not only transporting goods makes the greenhouse gases rise, but also transporting people. One reason for the increasing transport trend is social and cultural factors. The demand for transport grows when population grows and changes. Also, when personal income levels rise, for example motorized vehicles becomes more common in every household. (Sims, et al., 2014) However, a major factor encouraging the transportation of both people and goods has been the relatively low price of oil.

In the Arctic region shipping traffic is probably going to increase in the next decades. Because of the melting ice, increasing number of ships are using these routes, mainly the Northwest Passage north of Canada and the Northeast Passage north Russia that includes the Northern Sea Route. (Transport and Environment, 2020) The ice in the Arctic is melting and becoming thinner because of the global warming and soon this will allow the use of this route all year round. Now, the routes are mainly only used during summer. There are numerous risks in using these routes for transportation. When the vessels using the heavy fuel oil (HFO) uses the Arctic route, there is a high risk to the marine life, if this oil would spill. HFO is extremely toxic and studies show that "... the long-term impacts of an Arctic spill demonstrate oil can remain within the affected area for more than a decade, impacting growth and reproductive rates of various species." (Transport and Environment, 2020) On top of this, the residents of the Arctic region depend on marine resources. They use marine resources as a source for clothing and to support their limited commercial hunting, fishing and ecotourism activities, not to mention as a primary food source. (Transport and Environment, 2020)

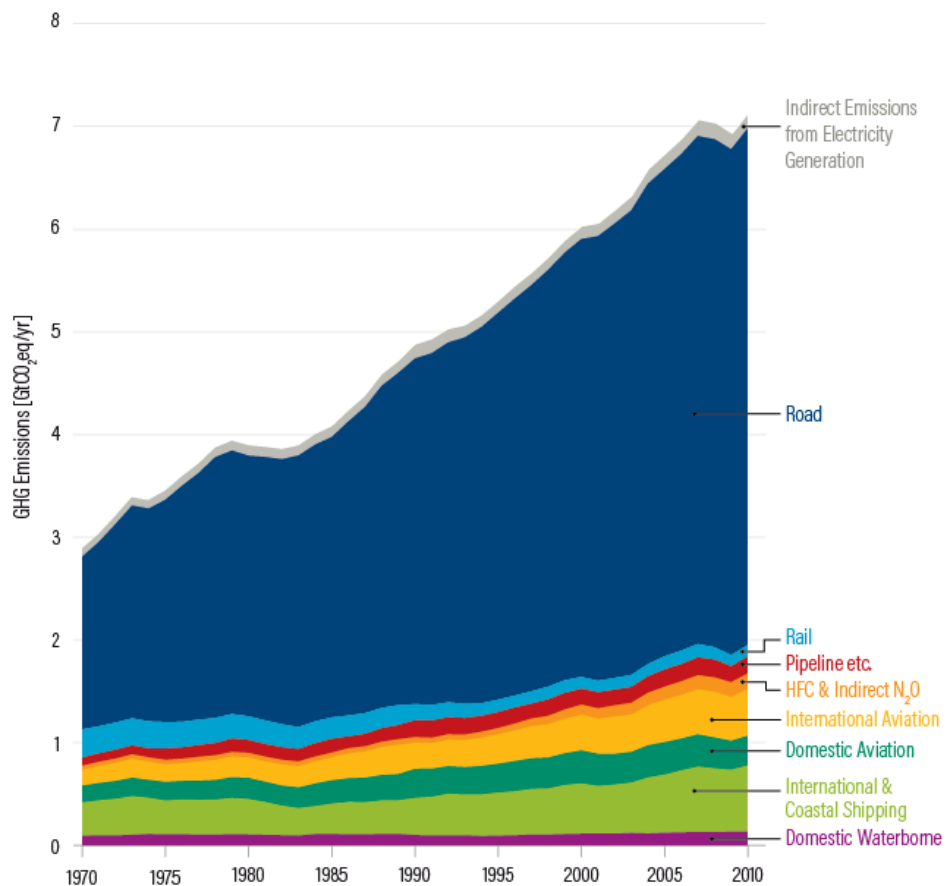
If the Northern Sea route would be commonly used for transporting goods "experts say it could reduce the travel distance from East Asia to Europe from the 21,000 kilometres (13,000 miles) it takes to go via the Suez Canal, to 12,800 kilometres (8000 miles). This would cut transit time by 10 to 15 days." (The Guardian, 2018)

Transport emissions mostly come from wealthy countries, in terms of geography. In comparison: USA 1728.75 MtCO_{2e}, Finland 10.8 MtCO_{2e} and Myanmar 7.16 MtCO_{2e}. In 2014 countries with the largest transportation emissions, which together contributed 53% of global transport emission, were United States, China, Russia, India, Brazil, Japan, Canada, Germany, Mexico and Iran. (Wang & Ge, 2019)

Most scenarios show that transport-related energy consumption will continue to increase, and oil comprises the largest share through 2050. In order to meet the goal stated in the Paris Agreement: limiting the global temperature increase to below 2 degrees Celsius, transport's reliance on fossil fuels needs to change radically. Crucial for a liveable future would be to get to zero-emission transport but it requires significant improvements, for example in vehicle efficiency, addressing clean fuels and rethinking

how we move people and goods. Already there is widespread use of electric buses in China and Chile. (Wang & Ge, 2019)

Where do transport emissions come from?



Source: IPCC


 WORLD RESOURCES INSTITUTE

Figure 4 – Where do transport emissions come from? (Wang & Ge, 2019)

In Figure 4 is shown how much GHG emissions different transportation methods create.

3.2 Brundtland Report

Already in 1987, the World Commission on Environment and Development (WCED) released the Brundtland Report, also called "Our Common Future". This report introduced the concept of sustainable development and gave ideas of how it could be

achieved. WCED tried to understand the interconnections between economic growth, social equity and environmental degradation. In 1983, when concern surrounding global warming and ozone depletion with raising the standard of living in all countries was increasing, the UN General Assembly convened the WCED with an international group of environmental experts as well as civil servants and politicians. The WCED was tasked to propose long-term solutions for how to have sustainable development and how to bring it to the 21st century. Even though the Brundtland Report had a lot of topics such as population and human resources, species and ecosystem, food security and energy, the report is usually cited for its definition of sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." As already established in other chapters as well, also the Brundtland Report stated that the greater environmental impact of an individual born was in a developed country rather than in developing country, even though some of the highest population growth would be among third world countries. (Jarvie, n.d.) After this report, "sustainable development" is increasingly referred in literature.

3.3 Green Logistics

Three core parts in green logistics are: environment, society and economy. Green logistics try to change the transport chain so it would be as environmentally friendly as possible and that it would strain the environment as little as possible. Companies can implement green logistics and develop more environmentally friendly products and services by taking into account the environmental aspects of educational activities, by reducing load on the environment caused by own operations and by recycling and sorting and by reducing power consumption at all levels to name a few. (Logistiikan Maailma, n.d.)

Green values and issues had a significant boost in political and economic arenas in 1987, when the World Commission on Environment and Development Report named environmental sustainability as a goal for international action. The transportation industry was realised to be a major reason for the environmental issues, because of its infrastructures and flows. (Rodrigue, et al., 2020)

The performance of logistics, like logistics quality and competence, logistics infrastructure, etc., positively influences international trade, studies show. The logistics industry is a challenging industry, since it needs to meet customer demands efficiently through organizing, planning and controlling the flow of goods and services throughout the whole journey. Also, the functions of logistics have a lot to cover, such as storage, packaging, material handling and of course the transportation. Poor logistics affects the environment negatively, as it will cause pollution, noise, waste and massive amounts of greenhouse gas emissions, as established earlier. However, if logistics are handled with effective and efficient green supply chain management and green logistics principles, researchers have found out that it can influence positively companies' environmental, economic and social performance. (Wang, et al., 2018)

The pressure to meet the requirements in the Paris Agreement have forced the researchers to focus on sustainable development and green logistics, which includes for example green transportation, green distribution, reverse logistics, green procurement and green supply chain design and controlling. "Green logistics practices could efficiently decrease the negative environmental impact and maintain or improve cost reduction, energy conservation, and competitiveness." Of course, government regulations are also a big factor in favouring green logistics. For example, many European Union member countries have regulations and policies on green packaging to reduce the packaging waste and the pollution that comes from packaging. Many countries (especially developed) have regulations, such as Restriction of Hazardous Substances (RoHS), to protect the lives and health of humans, animals, plants and the ecological environment by restricting or prohibiting the access to products from outside regions. (Wang, et al., 2018)

It is not easy or even feasible for companies to switch to green logistics just like that. It takes time as well as tremendous resources which will increase costs. For some smaller companies this can be extremely hard. However, there is the need to change, since companies are under pressure from different regulations, stakeholders as well as customers who demand environmentally friendly products. Companies need to implement green logistics practices, such as green packaging and green transportation as well as obtaining ISO14000 certification to mitigate the harm to the environment and promote their environmental and social performance. (Wang, et al., 2018)

Governments should issue efficient and effective environmental regulations which would create a good base and environment for the development of green logistics. The focus should especially be on licencing systems and standards, since these could reduce significantly carbon emissions. Governments should also help companies to achieve these goals by other supportive policies, like decreased taxation or subsidies "... to guide enterprises to implement green logistics practices during the early stages of environmental policy implementation." (Wang, et al., 2018)

3.4 Re-shoring manufacturing

Re-shoring means that companies have moved some of their manufacturing parts back to their home countries. According to study that was conducted by Hamid Moradlou et.al. (2015) the main reason for re-shoring was lead-time reduction. Other reasons were logistics cost reduction, quality improvement, better communication in the supply chain and customer satisfaction according to the interviews they conducted. All of these factors are also "...the vital elements for the businesses serving the domestic market in the UK" (Moradlou, et al., 2017: 226). Firms competing in a market where customer demands are highly unpredictable needs to have good and effective communication between all supply chain members because these firms need to be more responsive to the customer demand changes. (Moradlou, et al., 2017)

According to Moradlou et al. there are factors that can help the company to be more responsive: Information technology (IT) solutions, manufacturing equipment and human factors. IT solutions help companies to plan and communicate between the suppliers as well as give real-time information about their businesses, and are a tool for decision making in supply chain management: "... the absence of IT as one of the three enablers of responsiveness can lead to poor communication and lack of integration and transparency." (Moradlou, et al., 2017: 227) There are two parts in human factors: training and educating the workforce (Backhouse & Burns, 1999) and availability of the workforce (Duclos, et al., 2003). Currently the lack of skills in the UK is the problem that the re-shoring companies are facing (Bailey & De Propris, 2014). Another factor that is taken increasingly into account when making the decision of offshoring, is the risk of intellectual properties being exposed to foreign market (Tate, et al., 2014) and if this

risk is considered to be too high, the company is probably not going to abroad. About the last factor, manufacturing equipment Moradlou et.al say: "The last factor to be considered is re-configurability of the manufacturing equipment to meet the customer demand and shorten production lead-time" (Moradlou, et al., 2017: 228).

Even though reshoring is a valid option for many companies, Western multinational companies are still targeting for example India, because it is considered to be a low-cost country (Moradlou, et al., 2017). Because customers today are demanding for higher levels of products customizations, manufacturing industries are facing difficulties since they have to deal with shorter lifecycles (Moradlou, et al., 2017). Also, to this problem the answer could be reshoring at least parts of the operations required for producing products with shorter lifecycle because the changes in product and customer demands will be much easier to manage (Moradlou, et al., 2017).

It is very normal for people that goods and services move around the world just in a few days. Not many know where their products have been assembled or how it was produced. Everyone is relying that the process will go smoothly. But like we have seen in the past few months there are matters that can cause huge damage to global supply chain, for example a pandemic. Coronavirus has caused a lot of troubles to different companies, entrepreneurs, governments, stock exchange and of course to humans. Reshoring would be one possible solution to ensure that in cases like pandemic, the factory will keep running and consumers can have their products on time.

However, if we look at the bright side: many countries have reported better air quality or water that is no longer cloudy and dirty. According to scientists at Columbia University there has been a 5-10 percent drop in the CO₂ emissions in New York in one week, as traffic levels fell 35 percent (Ball, 2020) It is yet to be seen how much this pandemic has influenced the world, but probably also the greenhouse gas emissions have reduced. People are not driving with their cars and airplanes are staying on the ground, since no one is allowed to travel anywhere, and many countries have closed their borders.

In recent years, there has been other major incidents which have forced companies to take supply chain management more seriously, such as the tsunami in Japan, the eruption of the volcano in Iceland and of course trade wars. Still, various studies show

that most companies don't have efficient and broad supply chain management. During coronavirus, companies have problems and delays receiving materials from their suppliers. Associate Professor Katri Kauppi from Aalto University predicts "In the future, companies will no doubt invest in technology, closer cooperation and more detailed mapping of supply chains to improve transparency further down the supply chain." (Kauppi, 2020).

Kauppi also says that the structure of supply chains might change after the epidemic. Right now, many companies have outsourced their production to one large supplier to save on costs. According to Kauppi, in the future it is likely that distributing purchases between several suppliers and having larger reserve stocks will become more common. Companies will also select suppliers from different parts of the world and the importance of local suppliers and local collaboration will further increase in the future. (Kauppi, 2020).

4 Conclusion

Many writers from the journals that are presented in this thesis, seems to think that it is nearly impossible to have complete equality between trading countries, especially between developed and developing countries. Zero-sum game presented the ideology that someone will always suffer, when another one benefits. On the other hand, some economists strongly believe that trade between nations is a good thing, according to them it will help the environment and the people. Sure thing is, that there is no easy answer to the problems that international trade causes and probably economists will never fully agree what should be done. Because of this it is quite easy to understand why it is hard for countries to implement new international trade regulations. There are so many contradictory opinions from the experts, and many countries chooses to follow those which are most convenient for their economy. This could be one reason why the decisions for the benefit of the environment are made slowly.

Some of the theories have huge ethical issues. The solution to international trade and environment degradation cannot possible be that the pollution is shifted to poorer countries. Although Mr. Swaney wrote in his article that one solution could be that companies have to pay to the country where they are polluting some amount of money,

so they can keep their factories there. However, money doesn't repair human health and it cannot magically make pollution disappear. One ethical issue is that lots of the goods that people in the developed countries are using, are still manufactured in developing countries. This way the negative effects of production (noise, pollution, emission from transportation) will stay in the developing country, even when the people living in that country will not use the product that has been produced there. This will also increase the CO₂ emissions of these countries and so they are seen as the biggest cause for the bad emission situation in the world, even though the emissions are created because the Western people have ordered the products. One solution for this could be re-shoring. Like explained in chapter 3.4 re-shoring has benefits for companies, but it could also help to even the pollution that comes from production and transportation.

Luckily there are global movements as well as agreements that forces companies and politicians to promote and use green alternatives. The Paris Agreement and its requirements have forced the researchers to focus on green logistics. Sustainable development is critical, so that environment can handle the international trade, but it also has positive effects on companies. Like said in chapter 3.3 governments should issue efficient and effective environmental regulations which would create a good base and environment for the development of green logistics.

Coronavirus has shown that the recovery of the environment commences rapidly if it is given a chance. Hopefully this fact will give the boost that is needed to implement new laws that will protect the environment even when international trade continues to prosper.

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