INTERNATIONAL MARITIME ORGANIZATION

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MARINE ENVIRONMENT PROTECTION COMMITTEE
83rd session
Agenda item 7

MEPC 83/INF.32
31 January 2025
ENGLISH ONLY
Pre-session public release: ☒

# REDUCTION OF GHG EMISSIONS FROM SHIPS

## Why a flat levy should not be adopted by IMO – development of rationale

**Submitted by Angola, Brazil, Chile, China, Colombia, Ecuador, Indonesia, Paraguay, Peru, Kingdom of Saudi Arabia, South Africa and Uruguay**

**SUMMARY**

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|---|---|
| *Executive summary:* | This document presents reasons and explains the negative effects that would be caused by the establishment of an independent universal GHG contribution (levy). |
| *Strategic direction, if applicable:* | 3 |
| *Output:* | 3.2 |
| *Action to be taken:* | Paragraph 45 |
| *Related document:* | MEPC 83/7/30 |


## Introduction

1 To further contribute to the discussions on the development of the basket of candidate mid-term GHG reduction measures, MEPC 82 noted a document containing a consolidated version of possible draft amendments to MARPOL Annex VI on a new chapter 5 on "Regulations on the IMO net-zero framework", based on relevant documents containing proposed draft amendments submitted to ISWG-GHG 17, and reflecting the discussions which took place in the Working Group. As the current proposals are further examined and their impacts assessed, it is possible to streamline the solutions that gather the most political acceptability, technical feasibility and capability of delivering on the levels of ambitions of the *2023 IMO Strategy on reduction of GHG emissions from ships* (2023 IMO GHG Strategy). Also, it is possible to identify measures that should not galvanize efforts and discussions, since they have limited to null capacity of delivering a just and equitable transition in maritime transportation, in a timely manner.

2 According to the 2023 IMO GHG Strategy, a measure/combination of measures should consider the impacts on States, paying particular attention to the needs of developing countries, in particular LDCs and SIDS, as well as assessing aspects such as cost-effectiveness, food security, transport costs, and socio-economic progress and development. Thus, the goal of transitioning the maritime sector to a low-carbon path must ensure that regional inequalities between regions and food insecurity are not exacerbated.

This document aims at discussing a few reasons for concern regarding one specific measure proposed: an independent universal GHG contribution (levy), to be implemented by amendments to MARPOL Annex VI.

3. It is important to highlight that not all co-sponsors are formal supporters of the same basket of measures and this document is not intended to imply any alignment beyond what it explicitly contains – notably, the perception and the understanding that a levy would not deliver a just and equitable transition based on the goals and time frame set by the 2023 IMO GHG Strategy, and that its adoption may trigger negative, economy-wide impacts.

4 As mentioned in document MEPC 83/7/30, there are a few reasons for concerns regarding a levy, which may be briefly described in the following paragraphs.

**A levy would be the costliest measure as a whole**

5 The adoption of a levy would be the costliest of all candidate mid-term GHG reduction measures, in terms of increase in maritime transport costs. In 2024, a study developed by Brazilian Universities USP (University of São Paulo) and UFRJ (Federal University of Rio de Janeiro) in collaboration with company Marsalgado, presented during ISWG GHG 17, calculated the cost-effectiveness of a levy and compared it to flexibility compliance mechanisms (FCM). The study evaluated avoided emissions against the increase in maritime transport costs due to fuel and penalties from 2027 to 2050 and concluded that, while FCM would produce an estimated cost-effectiveness of between 206.05 and 267.79 USD/t$CO_2$, a levy of USD 100/t $CO_2$ would have an estimated total cost of between 402.50 and 507.55 USD per ton of avoided $CO_2$ emissions (https://sciety.org/articles/activity/10.21203/rs.3.rs-4855186/v1). These figures represent the ratio of the present value of added costs to the total avoided emissions from 2027 to 2050. In addition, using multi-criteria decision analysis methodology – considering avoided GHG emissions, cost-effectiveness, delay, smoothness, complexity, and other purpose distributions – the study showed that a levy policy presents more weaknesses than strengths in most stakeholders' scenarios. According to the study, both a levy and a FCM would be effective in reducing emission within the timeline proposed by IMO; however, a levy would be much less cost-effective.

6 It is paramount to recall that the objective of the measures under negotiation is to reduce GHG emissions from shipping, and the effective way of doing that is by fostering all available solutions/energy sources and technologies by narrowing or closing the price gap. A levy would accomplish that while taxing 100% of emissions; but since even the least emissive solutions imply in some GHG emissions on a well-to-wake basis, the costs end up levelling at a much higher level, with magnified impacts across the economic systems reliant on maritime transportation. This approach risks disproportionately affecting developing nations and industries that rely heavily on affordable shipping, further exacerbating economic inequalities. There are, however, other ways of narrowing or closing the cost gap. Instead of levelling the costs upwards, with the undesirable impacts mentioned in this paper, flexible compliance mechanisms level the costs in a more efficient manner, by making them meet "halfway", at an intermediary point, by disincentivizing high emissions and, at the same time, providing incentives for the uptake of eligible fuels.

**A levy would be the most impactful measure in the short-term**

7 Studies developed so far, such as the one mentioned in paragraph 5 above and even the non-endorsed task 3 of the comprehensive impact assessment (CIA), recognize that a levy would have a larger negative impact on the GDP of most of the countries than any other candidate measure, in the short-term. According to a study developed by

FIPE/USP (University of São Paulo, Brazil), when accounting for substitution effects from price changes in the model, a carbon tax of USD 50/t $CO_2$ would reduce the global real GDP in 0.04%, in a deeply heterogeneous way. When accounting for substitution effects from price changes in the model, the study finds that only a few regions experience positive real GDP impacts, notably Europe (+0.004%), while most suffer negative impacts, especially Eastern Africa (-0.087%), Western Africa (-0.067%) and South and South-Central Africa (-0.049%).[1]

8 Even the never endorsed findings of task 3 in the CIA admitted that levies set to a level that could drive the transition (high levies) would be the most impactful: "[i]n the short run (2030), the real GDP reduction varies from 0.03 to 0.07% with reference to BAULG, depending on the scenario. Scenarios with a high levy price and revenue disbursement have higher impact in the short run, particularly if also a "strive" scenario (scenario 46)". That study also admits that "[t]he time trends in the target variables – as implied in the BAULG, are affected by a forecasting uncertainty which increases over time". Considering that uncertainty, thus, the argument that by 2050 the impacts of a levy are lower is weak and may lead to a fundamentally flawed reading of the likely scenarios. Moreover, the threshold that the flexible compliance mechanisms use to penalize or incentivize each fuel gets increasingly harder to meet, increasing the depth of coverage and incentivizing the transition to zero or near-zero fuels. At the endpoint, the threshold will reach 100% of emission reduction, at which point it will equal itself to the levy level of taxing, becoming indistinguishable from it.

9 The impact represented by the change in GDP is not to be underestimated and cannot be fully apprehended by considering the figures alone, since it will be unequally distributed across sectors and countries. Indeed, they are likely to be severely perceived by people dependent on the sectors as deeply affected. The profound negative effect in the short-term can be partially attributed to the lack of flexibility of the levy proposal, resulting in a sharp increase in costs – a shock. Considering that fuel costs represent approximately one third of total transport costs, the shock would induce abrupt business decisions and disruption. Smoothness in decarbonizing the maritime transport is crucial to provide room for fleet renewal, adoption of new technologies, and time for ship-owners to space out investments, as well as to allow for the gradual adjustment of the most impacted sectors, thereby avoiding sudden price increases. A levy of USD 100/t $CO_2$, for example, would practically double the fuel costs of low sulphur fuel oil (VLSFO) from the very beginning of its implementation.

10 In contrast, FCM would lead to an earlier adoption of new fuels because of the inherent economic incentives of the system. Blended fuels would become more economically feasible sooner, reducing GHG emissions while smoothening the increase in costs, which would reduce the negative impacts on GDP, global exports, and prices, guaranteeing more room for investments and economic predictability. In the meantime, while the next generation fleet is developed, the zero or near zero fuels and technologies shall receive adequate incentive and investments.

**A levy would endanger exports from developing countries**

11 The study by FIPE/USP shows that a levy at a rate of USD 50/t $CO_2$ would cause a 0.20% decrease in global exports, with global south countries being the most negatively affected. South Central Asia (-0,70%), Eastern Africa (-0,67%), South America (-0,60%) and Southern Africa (-0,60%) are expected to suffer the worst effects. This impact would result not only from the distance factor, but also from a heavier impact on carbon-intensive and transport-intensive sectors – such as energy, agriculture, and mining – mainly located in developing countries. Larger levies are likely to produce even larger impacts.

[1] The study has been updated for GTAP 11 and is under review for an international journal.

12 A levy would impose an indistinct increase in costs, causing a disproportional impact on prices of basic products, compared to high added-value products, because of the importance of the freight prices in the total cost of basic goods – which are usually a major part of developing countries exports.

13 It is crucial to underscore that developing countries often exhibit a higher dependence on exports compared to developed countries. Public data from the World Bank shows that many developing nations have higher trade-to-GDP ratios, indicating a greater reliance on international trade for their economic activities. This means that a levy would impose the worst negative impacts on exports from countries that depend the most on them, which could be considered a discriminatory approach affecting regions that face other challenges, such as food security.

**A levy would increase inequalities among and within countries**

14 Three elements overlap with the levy to result in increased inequalities between countries: greater impact on low value-added exports, which are predominantly those exported by developing countries, particularly least developed countries; a reduction in the intensity of traffic in maritime routes in certain geographic areas; and a decline in the competitiveness of developing countries. As an inescapable outcome, developing countries and regions would have their exports reduced, leading to a decrease in GDP and loss of much-needed jobs.

15 The value added, and carbon emissions are asymmetrically distributed along global value chains. Developing countries participating in global value chains generally specialize in low value-added tasks with relatively high carbon emissions (e.g. manufacturing and assembling) and less technological content. Thus, the levy would increase the costs of products mainly exported by developing countries, not only due to the high proportion of logistical costs but also because of the disadvantageous productive specialization.

16 Furthermore, a levy would help widen the technology gap between developed and developing nations. Countries that already possess technology hubs, research infrastructure, and modern ports would be able to develop and implement solutions more quickly. As a result, the comparative advantages previously held by developing countries' trade routes would be sidelined, further reducing international trade for these nations and deepening existing inequalities – quite the opposite of the transition creating a level playing field.

**A levy would be a profoundly regressive measure**

17 A levy would disproportionately impact countries, companies and individuals with fewer resources, putting the heaviest burden on developing countries, exporters, and consumers. (More on the subject: Shapiro, J.S. (2016). Trade Costs, $CO_2$, and the Environment. *American Economic Journal: Economic Policy, 8*, 220-254).[2] The increase in the price of GHG emission -intensive and transport-intensive goods, such as cereals and energy, would hit mostly low-income families, for they spend a high proportion of their budget on these goods (Andersson, J., Atkinson, G., (2020). The Distributional Effects of a Carbon Tax: The Role of Income Inequality. Grantham Research Institute on Climate

[2] More on the subject: Shapiro, J.S. (2016). Trade Costs, $CO_2$, and the Environment. *American Economic Journal*: *Economic Policy*, 8, 220-254.

Change and the Environment).[3] Conversely, high value-added products, which are mostly consumed by middle and upper-income families, would be less affected.

18 On top of that, developing countries are the least equipped to mitigate these impacts, which would require subsidies and investments in sustainable infrastructure, the reorganization of global value chains, and economic diversification. The fiscal impact on these countries, which typically have high debt-to-GDP ratios, could result in even greater economic fragility, perpetuating a vicious cycle of lower GDP, higher debt, and increased poverty and inequality, as well as threatening their energy security – effects that the disbursement of the revenue collected with the levy would not be likely to address.

**A levy would increase global prices**

19 The increase in transportation costs caused by the implementation of a levy would be, in total or in part, passed through to consumers, resulting in an impact on prices. Global price increases could contribute to inflation, particularly in sectors with high exposure to maritime transport, resulting in cascading effects on global value chains, driving inflation, delaying production, and increasing economic vulnerabilities worldwide.

20 The immediate impact of the levy on freight costs would raise the prices of transported goods, contributing to inflation through direct and indirect costs. Higher freight costs would be reflected not only in the prices of directly imported goods (e.g. food, energy and consumer products), but also in higher production costs. Thus, for domestic industries dependent on imported raw materials and intermediate goods, higher input costs would lead to increased production costs, resulting in higher prices to consumers.

**A levy would negatively affect food security**

21 The impact of a levy would be especially negative on food items. The study by FIPE/USP reckoned that global food import prices may increase by 0.22 p.p due to the implementation of a levy of USD 50/t $CO_2$. Wheat, corn, soybeans, and palm oil, for example, are commodities shipped in bulk, and the impact of a levy on their final cost would be immediate.

22 In addition, due to their nature as essential goods, agricultural products have very low or inelastic price elasticity of demand, meaning that price increases do not result in a proportional decrease in the quantity demanded. Consequently, developing countries that depend on food imports and low-income families may have less access to agricultural products, exacerbating food insecurity. Other than the direct impacts on food prices, a levy would threaten food security also through its impacts on GDP and inequality within countries.

23 It is crucial to note that the regions that would be affected the harder by a levy are precisely those that suffer the most from food insecurity. In Eastern Africa, for example, reckoned to have a decrease of (-0.087%) in the GDP (paragraph 7), 73.7% of the population is unable to afford a healthy diet. Similar effects would be seen in Middle Africa (78.7%), Western Africa (69.3%) and Southern Africa (61.6%).

[3] Andersson, J., Atkinson, G., (2020). The Distributional Effects of a Carbon Tax: The Role of Income Inequality. Grantham Research Institute on Climate Change and the Environment.

**A levy would be a tax on distance**

24 The levy proposal would magnify the impact of one key factor: distance. That means that, all other conditions being equal, geography would determine comparative advantages on maritime transportation. Simply put, the proportion of the increase on prices would be determined by geography. The farther the route, the heavier would be the burden – despite any consideration of economic capability and/or social impact on each country.[4] (More on the subject: Wu, Y., Wen, K., & Zou, X. (2022). Impacts of Shipping Carbon Tax on Dry Bulk Shipping Costs and Maritime Trades—The Case of China. *Journal of Marine Science and Engineering*, *10*(8), 1105).

25 Countries farther from importing consumers would significantly lose competitiveness compared to those closer – even if they use fuels that are more efficient and invest in technology. Even the best technology cannot negate the fundamental costs associated with long travel times, the need for additional handling, and the complexities of managing more extended supply chains. Although distance is already an important factor on maritime transportation as is, a levy would artificially and arbitrary amplify it, to the detriment of developing regions.

26 Landlocked developing countries (LLDCs) are particularly vulnerable, as they already face high transportation costs due to geographical constraints. Higher transportation costs would severely impact LLDCs. Since they rely on long, indirect routes for most of their imports and exports, any increase in transportation costs can disproportionately increase the prices of goods, further burdening both consumers and businesses. Inflationary pressures caused by rising transportation costs would hit LLDCs harder than other regions, as the impact would be felt across both the cost of imported goods and the cost of exports, leading to reduced market access and economic growth and exacerbating poverty and inequality.

**A levy would result in a less connected world**

27 A levy is a fundamentally divisive proposal in at least two ways. Firstly, it cannot achieve consensus at IMO, for some countries face legal barriers to adopt and apply it, while others have already assessed the negative impacts it is likely to cause as intolerable. The aftermath of a convoluted decision could be one of regulatory confusion, resulting in less-efficient hauls and even higher prices, leading to disruptions and delays. Source materials from distant regions would become more expensive and difficult, affecting supply chains.

28 Secondly, a levy would push companies and countries to look for closer alternatives, regardless of efficiency or environmental considerations, and fragmenting global supply chains, which are intricately interconnected and rely on the movement of goods across borders with minimal disruptions. By inducing shorter supply chains, a levy would lead to less global trade and more regionalized trade systems, diminishing the global interconnectedness that facilitates efficient commerce. By adopting a levy, the Organization would be making the world less united.

29 A levy would also discourage foreign direct investment, since companies would be more reluctant to establish operations in distant regions due to the increased logistical cost. As countries become more focused on regional trade and self-sufficiency, global trade flows and international cooperation would be likely to diminish, widening economic disparities.

[4] More on the subject: Wu, Y., Wen, K., & Zou, X. (2022). Impacts of Shipping Carbon Tax on Dry Bulk Shipping Costs and Maritime Trades - The Case of China. *Journal of Marine Science and Engineering*, 10(8), 1105

Ultimately, a less connected world could lead to slower economic growth, decreased innovation, and greater global inequality. Potential implications in peace and security are not to be neglected.

**A levy would delay action to reduce GHG emissions from shipping**

30 The implementation of a levy would likely require the negotiation of a new specific convention, which could take longer than the time frame defined in the 2023 IMO GHG Strategy. This new time-consuming process would divert attention from direct emissions reduction efforts and already existing global climate frameworks. The long period between negotiating a new convention for the implementation of the levy, or determining the adjustments, conditions, exceptions and necessary caveats for its possible adoption as an amendment to MARPOL Annex VI would likely delay the transition and would ultimately lead to irreversible lost opportunities. In addition to that, several countries would face constitutional or domestic legal hindrances to adopting an international levy, for considerations of fiscal sovereignty or others. If such a measure was to be adopted under IMO, a country in this situation would need to pursue internal processes to assess the feasibility of implementing it. It is unrealistic to assume that this path would not mean political difficulties that would represent at least a considerable delay in the implementation of the economic measure. Hence, a levy would not provide a quick and effective solution to the matter at hand, but rather create a new political bottleneck, hindering urgent action to reduce GHG emissions from shipping.

31 Moreover, to be implemented, a levy would likely require complex administrative mechanisms capable of ensuring its consistent enforcement across borders. Monitoring compliance, verifying payments on various transportation routes, and handling disputes would all require significant resources and time. This lengthy administrative process could also divert attention from more immediate and effective solutions, such as the use of existing fuels and technologies that could reduce emissions.

**A levy would not be a stable, efficient source of revenues**

32 Even after a long period of negotiating its implementation, a levy would not result in an immediate, stable and efficient source of revenues. In fact, revenue disbursement from a levy would not be automatic and would depend on extremely complex collection of data in ports and customs checkpoints, requiring extensive monitoring and enforcement. Hence, the cost of the bureaucracy required would demand a great part of the potential revenue generated, reducing the overall efficiency of the candidate measure.

33 Furthermore, a levy cannot be both a stable source of revenue and a measure designed to drive transition at the same time. The demand for freight is extremely price sensitive. With higher transportation costs imposed by a levy set at the necessary level to drive transition, consumers and companies would promptly seek less costly alternatives. This reduced demand would affect the demand for freight, reducing the revenue generated. This would consequently severely limit the capability of a levy to: i) address negative impacts caused by the levy itself, and ii) all the other potential destinations that could benefit from such revenues.

34 The available literature also points out that revenue redistribution can help reduce distributional effects but can lead to increased emissions from compensated households and increase the complexity of the mechanism.[5] (Semet, R. Coordinating Social Equity and

[5] Semet, R. Coordinating Social Equity and Emissions: Challenges in Carbon Tax Policy. *Energy Policy* 2024, 185, 113954. https: 704//doi.org/10.1016/j.enpol.2023.113954.

Emissions: Challenges in Carbon Tax Policy. *Energy Policy* 2024, 185, 113954. https: 704//doi.org/10.1016/j.enpol.2023.113954). Finally, as emissions decrease over time, there is a risk that policymakers might face perverse incentives to maintain carbon emissions to sustain tax revenues.[6] (Wang, R.; Moreno-Cruz, J.; Caldeira, K. Will the Use of a Carbon Tax for Revenue Generation Produce an Incentive to Continue Carbon Emissions? *Environmental Research Letters* 2017, 12, 064001.). In summary, a levy would not be efficient in addressing its own negative impacts, being thus incapable of building political consensus.

**A levy risks being used as a proxy for the lack of climate financing that developed countries are legally responsible to provide – but never delivered**

35 The 2023 IMO GHG Strategy does not exist in a vacuum (resolution MEPC.377(80), paragraph 1.6.1). Rather, it was created as part of the global action which has agreed multilateral, legally binding rules under the United Nations Framework Convention on Climate Change (UNFCCC) and its Paris Agreement. Among the basic principles of this regime, it is crucial to highlight the principle of common but differentiated responsibilities (CBDR). This principle acknowledges that, while all countries share the responsibility to address climate change, the level and type of responsibility differ based on countries' historical contributions to GHG emissions and their current capacities to act.

36 Developed countries and historical polluters have, thus, specific, legally binding obligations under the climate regime, among which to provide financial resources, including for the transfer of technology and capacity-building, needed by the developing countries to mitigate and adapt to climate change, as well as to avert, minimize and address loss and damage. This obligation encompasses technology investments, capacity-building and transfers for the energy transition, including in the maritime sector.

37 In this context, the financing that developed countries should provide in the climate regime under the UNFCCC and its Paris Agreement should be enough to guarantee the decarbonization of the maritime sector. Nonetheless, developed countries have consistently fallen short of fulfilling their responsibilities to finance climate action. In 2012, during COP15, developed countries committed to mobilize USD 100 billion annually by 2020 – a sum that has never been delivered. In 2024, during COP29, discussions around the new collective quantified goal (NCQG) demonstrated the lack of ambition of developed countries with regard to providing the necessary funds for swift climate action worldwide.

38 The implementation of a levy in the Organization to finance the decarbonization of the maritime sector and to provide financing for SIDS and LDCs would risk serving as a proxy to the legal obligations of developed countries to finance mitigation and adaptation actions. Ultimately, a levy would result in an unequal sharing of the costs of the energy transition, where developing countries bear the greatest burden, contradicting the CBDR principle.

**A levy would have potential environmental hidden costs**

39 In fact, from a holistic perspective a flat levy on emissions from shipping might end up hurting the international community's environmental goals, by promoting relatively less

[6] Wang, R.; Moreno-Cruz, J.; Caldeira, K. Will the Use of a Carbon Tax for Revenue Generation Produce an Incentive to Continue Carbon Emissions? *Environmental Research Letters* 2017, 12, 064001. https://doi.org/10.1088/1748-9326/aa6e8a.

efficient transport modes, such as road and air transport, and by preventing more efficiently produced goods and sustainable technologies to spread across all markets.

40 Higher prices in maritime transportation caused by a levy can encourage companies to shift from shipping goods via maritime routes to road or air transport – both significantly more polluting. (More on the subject: Hummels, D. (2007). Transportation Costs and International Trade in the Second Era of Globalization. *Journal of Economic Perspectives*, 21(3), 131-154.).[7] This shift would increase the overall carbon footprint of global trade, making it harder for the international community to meet its emission reduction targets. This scenario becomes more plausible when considering the lack of flexibility of the levy mechanism. While smoother measures to decarbonize the maritime sector would encourage the earlier adoption of new fuels because of cost advantages, a levy does not allow shipowners to gradually invest and adapt.

41 In addition, the trade diversion caused by a levy would also disrupt sustainable supply chains that depend on maritime transportation. Such shifts could also discourage global markets from integrating sustainable practices into their value chains, resulting in a less efficient integration of green technologies and sustainable goods in new markets, making it more difficult for developing countries to have access to green technologies. This would ultimately hinder technological advancement from reaching its potential, thus affecting the global transition to a low-carbon economy.

**A levy is not needed to meet the 2023 IMO GHG Strategy**

42 A levy is not needed for the fleet to meet the levels of ambitions in the 2023 IMO GHG Strategy. As extensively analysed by USP and UFRJ, as well as other stakeholders, flexibility compliance mechanisms (FCM) are effective in reducing emissions within the timeline proposed by IMO – and much more cost-effective than a levy.

43 Flexibility mechanisms provide a regulatory and financial framework that stimulates the market to replace fuels more rapidly than a levy would, replacing "geography" with "efficiency" as the defining factor of contribution. Calculated by the GHG fuel intensity (GFI), the efficiency of each ship results from a series of choices from the ship-owners, that are presented with three main sets of incentives (pooling/trading, banking, and rewards) and more gradual cost increases. This would continuously encourage the adoption of more sustainable fuels, while providing room for fleet renewal and organized investments.

44 By putting a price on carbon and rewarding low-emission technologies, flexibility mechanisms foster innovation and investment in eligible fuels. Additionally, they allow for tailored solutions that reflect regional circumstances and economic capacities, reducing the risk of disproportionately burdening developing countries. Unlike a levy, which imposes a flat cost based on geography, flexibility mechanisms promote a gradual, efficient shift by aligning economic incentives with environmental goals, making the energy transition more equitable and less globally impactful.

**Action requested of the Committee**

45 The Committee is invited to note the information provided in this document.

[7] More on the subject: Hummels, D. (2007). Transportation Costs and International Trade in the Second Era of Globalization. *Journal of Economic Perspectives*, 21(3), 131-154.