Title: Country-specific initiatives to reduce global warming improving the redistribution of resources

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Abstract

The aim of the paper is to understand the main causes in the world economies of global warming and other selected impact assessments.

The paper determines the contribution to selected environmental impact of different human behaviors and needs. For such aim, the hybrid multi-regional input output table obtained in EXIOBASE v.3 is used.

Seven categories are taken into account. These are:

- *Transportation*
- *Food consumption*
- *Heating*
- *Waste management*
- *Use of electricity*
- *Consumption of other good*
- *Demand of services*

For each of the 48 countries/regions of the world included in EXIOBASE v3, the GHG emissions are calculated relating to the above subdivision of the final uses. In this way it possible to rank the most urgent measures to undertake in each country. Therefore, a map of hierarchical country-specific initiatives is obtained. Finally, it is determined the cumulative effect of a selection of country-specific initiatives on the world scale.

Introduction

Input-output tables have been used for uncountable different studies. In the last years, more and more applications have concerned environmental analysis. In the last decades, the construction of multi-regional tables[1–3] have also enabled researchers to analyze with better accuracy the effect of consumption, or production, taking into account the hidden impact embodied into imports.

Many analyses have tried to calculate several footprints of national consumptions. Carbon, water, raw materials or waste necessary for the production (or consumption) of goods have been calculated for many countries or regions of the world.

At the same time, many researchers have used input-output tables, together with life cycle databases, to compare the impact of different life styles, diets, or energy productions. These studies have enabled policy-makers, or even simple citizens, to better meditate on their own decisions.

All these analyses make clearer that IOTs are a good tool for environmental-oriented analyses.

This paper continues with this long tradition of analyzing life styles, patterns of consumption or production, in order to determine footprints of nations. However, rather than describing the current state of our societies, a different exercise is implemented. I have built several scenarios with the objective of imaging what could be a just development path for the entire world society.

The objective is that of having a world with an equal distribution of resources. At the same time, it is a fact that the current world population is acting beyond reasonable physical constraints that are triggering alarming effects. Global warming, ecosystems and natural resources depletion, are more and more severe issues to be addressed. Therefore, an equal distributions of resources, constrained by inevitable physical boundaries, should imply that life standards of the population that is better-off cannot be extended as such to everybody. The risk is to have a definitive collapse of the world.

It follows that the only viable path should imply that a part of the population renounce to something to allow other people to improve their condition. Only in this way it may be avoided that a just society does not affect the environment even more.

Having in mind this concept, six scenarios are calculated and for each of them the impact in terms of global warming is determined. The scenarios affect different needs of person, such as food, heating, transportation, electricity and waste treatments. All these scenarios share the common principle of assuring a better condition to poorer population.

For this analysis, the hybrid version of the EXIOBASE v.3 multi-regional supply-use tables (MR-HSUTs) is used[4,5]. The hybrid version accounts tangible products in tonnes, intangible energy products in TJ and services in millions of euro. The hybrid tables are the first multi-regional global tables ever published. Therefore, this type of analysis

Methodology

For the scenario analysis, IOTs are built from the EXIOBASE v.3 MR-HUSTs. A multi-regional hybrid input-output table (MR-IOT) is determined, which will be used to calculate the baseline impact assessment. The MR-HIOT is calculated using a generalization of the Stone's method[6]. It is assumed that by-products will substitute products following the composition mix of the delivered products. In practice, a by-product substitutes domestic and imported products following the fractions shown in the MR-HSUTs, which may include both domestic and imported goods. Rows are aggregated in order to get squared tables.

Six scenarios are built as indicted in Figure 1 and they are run adopting the *demand driven model of Leontief*[7]*.* The scenarios are shaped considering the following underlying ideas:

1. a redistribution of resources requires that each one should get closer to world average values. This means that societies that consume more must give up to part of their consumption so to allow to those below the average to get more;

2. a drastic reduction of product consumption may risk to create conflicts within modern societies. Therefore, a strong reduction is compensate with alternative products that provide the same function but have a smaller environmental impact;

3. the increase of consumption for societies below the world average should encourage the use of cleaner technologies

NAME OF SCENARIO:	WHAT IS:	WHO IS AFFECTED:	RULE:	COMPENSATION RULE:
FOOD consumption	Reduction of consumption of cattle meat	who consumes more than world per-capita average	the consumption is reduced to the world average if the total meat consumption is higher than world average	Consumption of vegetables and oil seed (soy) is increased
	Increasing of food consumption	who consumes less than world per-capita average	the consumption is increased to the world average if the total meat consumption is lower than world average	
ELECTRICITY	Increasing of electricity efficiency	who consumes more than world per-capita average	the consumption is reduced to maximum 15% depending on the distance from world average	
	Reduction of consumption of electricity from fossil fuels	who consumes more than world per-capita average	the consumption of electricity from fossil fuels (or nuclear) is reduced of 10%	Consumption of electricity from wins and sun is increased
	Increasing of electricity consumption	who consumes less than world per-capita average	Consumption of electricity from wind and sun is increased in order to reach world average	
HEATING/COOKING	Incrasing of efficiency	who has a PPP per-capita income higher than world per-capita average	the efficiency is of maximum 20% depending on the distance from world average	
	Replacing part of consumed coal products with natural gas	every regions that have availability of natural gas	reduction of 15% for coal products	natural gas is used as substitute
	Higher efficiency of steam heat and steam is reduced	who has a GDP higher than world average (used PPP)	reduction of 10% of the consumption of heat and steam	
	increasing of heat and steam consumption	who has a GDP lower than world average (used PPP)	increasing of 5% of the consumption of heat and steam	
TRANSPORTATION	Freight transportation is moved from roads to railways	every regions that have railways	reduction of 20%	increase of train transportation
	Railway transportation consumption increased to world average (used PPP)	who is below world average	increase to the world average	
	consumption of fuels is reduced	who consumes more than the world average	the consumption of fuels is reduced to the world average	
	consumption of fuels is increase	who consumes less than the world average	the consumption of fuels is increased of 35% depending on the distance from the world average	
OTHER PRODUCTS	reduced the consumption	who has a PPP per-capita income higher than world per-capita average	consumption is of maximum 30% depending on the distance from world average	
	increased the consumption	who has a PPP per-capita income lower than world per-capita average	consumption is of maximum 20% depending on the distance from world average	
WASTE	improved recycling	all regions		

Figure 1 – Scenarios implemented. Each scenario includes more measures that are described in the second column. The rest of the columns describe the content of each measure.

Scenarios are implanted changing the demand vectors, excluding the formation of stocks and the change of inventories, and in some cases the structure of intermediate inputs, according to predefined factors. In Appendix the factors for each scenario are shown. The supply chain mix is left unchanged. This means that a reduction of consumption affect in the same proportion domestic and imported goods. When the change of inputs implies the modification of emissions, this has been taken into account in the model. Then, new emissions have been calculated.

Going more in depth with scenarios, HEATING and OTHER PRODUCTS are applied uniquely to the matrix of final demand. This means that the structure of the economy is unchanged. Therefore, changes are due solely to the different composition of the final demand. Of course, whenever the different consumption mix of the final demand implies a change in the direct emissions of final consumers, this is taken into account.

The scenarios FOOD, ELECTRICITY, TRANSPORTATION and WASTE modifies the structure of the economy, therefore the structure of the economy is different from that of the baseline. The scenarios ELECTRICITY, TRANSPORTATION and WASTE also affect the emissions that are then modified.

Results

In this section we shows the results obtained implementing the scenarios described above. For each scenario we determine the effect on three spheres. The *production* sphere indicates the effect on the productive activities when carrying out the goods demanded. The *consumption* indicates the impact when the product is consumed. Finally the *unregistered waste* indicate the impact of the waste produced by activities, or by final consumers, and that has not been registered by official statistics. In practice, it is the impact due to the degradation of waste that is not treated by official (registered) waste management activities and so may be illegally dumped. The unregistered waste was introduced in EXIOBASE because there was always a difference between supply and the use of waste[8].

FOOD scenario	Production	Consumption	Unregistered waste		Production	Consumption	Unregistered waste
AU	-1.41%	0.00%	0.00%	LU	-0.75%	0.00%	0.00%
AT	-0.54%	0.00%	0.00%	MT	-0.71%	0.00%	0.00%
BE	-1.06%	0.00%	0.00%	MX	-4.48%	0.00%	0.00%
BR	-27.00%	0.00%	0.00%	NL	0.49%	0.00%	0.00%
BG	0.13%	0.00%	0.00%	NO	-0.11%	0.00%	0.00%
CA	-0.60%	0.00%	0.00%	PL	0.18%	0.00%	0.00%
CN	0.26%	0.00%	0.00%	PT	-2.54%	0.00%	0.00%
CY	0.40%	0.00%	0.00%	RO	0.07%	0.00%	0.00%
CZ	0.04%	0.00%	0.00%	RU	-0.84%	0.00%	0.00%
DK	-0.44%	0.00%	0.00%	SK	-0.05%	0.00%	0.00%
EE	-0.74%	0.00%	0.00%	SI	-1.39%	0.00%	0.00%
FI	-1.38%	0.00%	0.00%	ZA	0.19%	0.00%	0.00%
FR	-3.12%	0.00%	0.00%	KR	-0.60%	0.00%	0.00%
DE	-0.05%	0.00%	0.00%	ES	-0.57%	0.00%	0.00%
GR	-1.05%	0.00%	0.00%	SE	-3.79%	0.00%	0.00%
HU	0.24%	0.00%	0.00%	CH	-0.52%	0.00%	0.00%
HR	-0.22%	0.00%	0.00%	TR	2.88%	0.00%	0.00%
IN	0.14%	0.00%	0.00%	GB	-1.59%	0.00%	0.00%
ID	6.64%	0.00%	0.00%	US	-2.42%	0.00%	0.00%
IE	0.87%	0.00%	0.00%	WA	2.23%	0.00%	0.00%
IT	-2.54%	0.00%	0.00%	WL	-8.44%	0.00%	0.00%
JP	0.16%	0.00%	0.00%	WE	-0.06%	0.00%	0.00%
LV	0.25%	0.00%	0.00%	WF	19.30%	0.00%	0.00%
LT	0.21%	0.00%	0.00%	WM	0.98%	0.00%	0.00%
				World	**-0.51%**	**0.00%**	**0.00%**

Figure 2 – FOOD scenario- Variations of GHGs emissions due to implementation of the FOOD Scenario for the EXIOBASE country-regions. Variations are calculated on the total GHGs emissions of the baseline scenario. The first columns shows the effect on production phase, the second on the consumption phase. The third column shows the effect on the emissions generated from the unregistered waste.

Figure 2 shows the variation of impact due to implementation of the FOOD scenario. It can be see that for those countries reducing the cattle meat consumption the impact is lower while for the others is positive. Of course the impact is lower or higher depending, firstly, on the volume changed and, secondly, on the efficiency of the cattle farming systems. On the global scale, the impact of food scenario will reduce the GHGs of 0.51%.

The second scenario implemented is the ELECTRICITY. It can be seen in Figure 3 that the scenario has positive impact on almost all the economies[1]. The scenario affects uniquely the production sphere where the emissions for the production of electricity occur. Countries most positively affected are those that have a considerable reduction of electricity. On the global scale there would a reduction of 3.22% of GHGs emissions, therefore the positive effects are more than negative ones.

[1] Romania's impact looks a bit weird and would need more attention

ELECTRICITY	Production	Consumption	Unregistered waste		Production	Consumption	Unregistered waste
AU	-6.57%	0.00%	0.00%	LU	-2.52%	0.00%	0.00%
AT	-3.04%	0.00%	0.00%	MT	-5.55%	0.00%	0.00%
BE	-2.66%	0.00%	0.00%	MX	-1.21%	0.00%	0.00%
BR	0.22%	0.00%	0.00%	NL	-2.76%	0.00%	0.00%
BG	-4.20%	0.00%	0.00%	NO	-2.34%	0.00%	0.00%
CA	-8.25%	0.00%	0.00%	PL	-0.70%	0.00%	0.00%
CN	-2.14%	0.00%	0.00%	PT	-3.51%	0.00%	0.00%
CY	-3.95%	0.00%	0.00%	RO	1.96%	0.00%	0.00%
CZ	-3.80%	0.00%	0.00%	RU	-1.84%	0.00%	0.00%
DK	-1.59%	0.00%	0.00%	SK	-2.04%	0.00%	0.00%
EE	-5.71%	0.00%	0.00%	SI	-2.89%	0.00%	0.00%
FI	-4.78%	0.00%	0.00%	ZA	-6.46%	0.00%	0.00%
FR	-3.55%	0.00%	0.00%	KR	-2.62%	0.00%	0.00%
DE	-3.96%	0.00%	0.00%	ES	-3.83%	0.00%	0.00%
GR	-3.70%	0.00%	0.00%	SE	-1.78%	0.00%	0.00%
HU	-2.29%	0.00%	0.00%	CH	-3.72%	0.00%	0.00%
HR	-3.06%	0.00%	0.00%	TR	-0.03%	0.00%	0.00%
IN	-0.64%	0.00%	0.00%	GB	-4.11%	0.00%	0.00%
ID	-0.46%	0.00%	0.00%	US	-8.89%	0.00%	0.00%
IE	-3.61%	0.00%	0.00%	WA	-0.67%	0.00%	0.00%
IT	-2.90%	0.00%	0.00%	WL	-0.89%	0.00%	0.00%
JP	-5.53%	0.00%	0.00%	WE	-2.30%	0.00%	0.00%
LV	-0.93%	0.00%	0.00%	WF	-0.66%	0.00%	0.00%
LT	-1.11%	0.00%	0.00%	WM	-4.63%	0.00%	0.00%
				World	**-3.22%**	**0.00%**	**0.00%**

Figure 3 - ELECTRICITY scenario- Variations of GHGs emissions due to implementation of the ELECTRICITY Scenario for the EXIOBASE country-regions. Variations are calculated on the total GHGs emissions of the baseline scenario. The first columns shows the effect on production phase, the second on the consumption phase. The third column shows the effect on the emissions generated from the unregistered waste.

The third scenario is the HEATING. This scenario affects both the production and the consumption sphere. On the global scale there is a reduction of 0.36% of GHGs emissions.

HEATING	Production	Consumption	Unregistered waste		Production	Consumption	Unregistered waste
AU	-0.01%	-0.14%	0.00%	LU	-0.03%	-0.72%	0.00%
AT	-0.13%	-0.21%	0.00%	MT	0.00%	0.00%	0.00%
BE	-0.02%	-0.34%	0.00%	MX	0.00%	-0.01%	0.00%
BR	-0.01%	-0.03%	0.00%	NL	-0.06%	-0.63%	0.00%
BG	-0.26%	-0.15%	0.00%	NO	-0.01%	0.00%	0.00%
CA	-0.02%	-0.39%	0.00%	PL	-0.46%	-0.62%	0.00%
CN	-0.11%	-0.15%	0.00%	PT	-0.03%	-0.04%	0.00%
CY	-0.01%	-0.01%	0.00%	RO	-0.64%	-0.18%	0.00%
CZ	-0.58%	-0.38%	0.00%	RU	-1.45%	-0.33%	0.00%
DK	-0.68%	-0.16%	0.00%	SK	-0.38%	-0.25%	0.00%
EE	-0.40%	-0.06%	0.00%	SI	-0.30%	-0.07%	0.00%
FI	-0.48%	-0.01%	0.00%	ZA	-0.05%	-0.11%	0.00%
FR	-0.02%	-0.33%	0.00%	KR	-0.11%	-0.17%	0.00%
DE	-0.23%	-0.45%	0.00%	ES	-0.01%	-0.19%	0.00%
GR	-0.03%	-0.05%	0.00%	SE	-0.29%	-0.01%	0.00%
HU	-0.29%	-0.55%	0.00%	CH	-0.03%	-0.20%	0.00%
HR	-0.19%	-0.24%	0.00%	TR	-0.10%	-0.63%	0.00%
IN	-0.01%	-0.03%	0.00%	GB	-0.03%	-0.53%	0.00%
ID	-0.03%	-0.02%	0.00%	US	-0.03%	-0.40%	0.00%
IE	-0.03%	-0.59%	0.00%	WA	-0.10%	-0.08%	0.00%
IT	-0.08%	-0.48%	0.00%	WL	-0.04%	-0.11%	0.00%
JP	-0.01%	-0.09%	0.00%	WE	-0.40%	-0.19%	0.00%
LV	-0.58%	-0.12%	0.00%	WF	-0.10%	-0.39%	0.00%
LT	-0.46%	-0.15%	0.00%	WM	-0.01%	-0.16%	0.00%
				World	**-0.14%**	**-0.22%**	**0.00%**

Figure 4 – HEATING scenario - variation of GHGs emissions due to implementation of the HEATING Scenario for the EXIOBASE country-regions. Variations are calculated on the total GHGs emissions of the baseline scenario. The first columns shows the effect on production phase, the second on the consumption phase. The third column shows the effect on the emissions generated from the unregistered waste.

The fourth scenario is the transportation. This scenario also affect both the productive and consumption spheres. However, higher effects are in the consumption sphere.

Although there are considerable positive effects in some countries, these are more or less compensated by negative in others. Therefore, on the global scale the reduction of electricity is just 1.35%.

TRANSPORTATION	Production	Consumption	Unregistered waste		Production	Consumption	Unregistered waste
AU	-1.50%	-4.80%	0.00%	LU	-1.09%	-1.41%	0.00%
AT	-1.07%	-1.38%	0.00%	MT	-1.02%	-3.11%	0.00%
BE	-0.66%	-0.48%	0.00%	MX	-1.98%	-5.65%	0.00%
BR	-0.41%	-0.06%	0.00%	NL	-1.33%	-3.67%	0.00%
BG	-0.65%	-0.54%	0.00%	NO	-0.95%	-1.65%	0.00%
CA	-2.70%	-3.57%	0.00%	PL	-0.30%	0.13%	0.00%
CN	0.78%	1.56%	0.00%	PT	-0.65%	-0.84%	0.00%
CY	-1.49%	-3.78%	0.00%	RO	2.51%	2.35%	0.00%
CZ	-0.88%	-0.78%	0.00%	RU	-0.93%	-2.14%	0.00%
DK	-2.39%	-2.62%	0.00%	SK	-0.37%	-0.06%	0.00%
EE	-1.39%	-3.13%	0.00%	SI	-1.43%	-3.93%	0.00%
FI	-1.31%	-2.31%	0.00%	ZA	-0.60%	-0.50%	0.00%
FR	-0.66%	-0.26%	0.00%	KR	-0.45%	-0.55%	0.00%
DE	-1.34%	-2.76%	0.00%	ES	-0.92%	-0.83%	0.00%
GR	-1.52%	-2.74%	0.00%	SE	-1.59%	-4.07%	0.00%
HU	-0.95%	-0.92%	0.00%	CH	-1.68%	-3.41%	0.00%
HR	-0.62%	-1.11%	0.00%	TR	-0.43%	1.48%	0.00%
IN	-0.15%	1.59%	0.00%	GB	-1.01%	-2.45%	0.00%
ID	0.44%	3.85%	0.00%	US	-3.20%	-6.95%	0.00%
IE	-1.61%	-3.92%	0.00%	WA	0.45%	2.45%	0.00%
IT	-0.94%	-0.73%	0.00%	WL	0.16%	1.62%	0.00%
JP	-1.55%	-3.69%	0.00%	WE	0.12%	0.72%	0.00%
LV	-1.27%	-1.50%	0.00%	WF	0.85%	2.71%	0.00%
LT	-0.65%	-0.26%	0.00%	WM	-1.02%	-2.26%	0.00%
				World	**-0.56%**	**-0.79%**	**0.00%**

Figure 5 – TRANSPORTATION scenario - Variations of GHGs emissions due to implementation of the TRANSPORTATION Scenario for the EXIOBASE country-regions. Variations are calculated on the total GHGs emissions of the baseline scenario. The first columns shows the effect on production phase, the second on the consumption phase. The third column shows the effect on the emissions generated from the unregistered waste.

The fifth scenario implies a flat reduction of consumption for richer countries and an increase for poorer countries. Figure 6 shows the variations of GHGs for each country and for the entire world when the scenario is implemented. The effects can be also observed in in the unregistered waste part. The positive effect lie in the range between zero and 3.63%. Also in this case the positive effects are compensated with negative effects in the countries that would be better off. On the global scale there would be a reduction of GHGs emissions of 0.34%.

OTHER GOODS	Production	Consumption	Unregistered waste		Production	Consumption	Unregistered waste
AU	-2.00%	0.00%	-0.06%	LU	-3.63%	0.00%	0.00%
AT	-1.40%	0.00%	-0.01%	MT	-0.23%	0.00%	-2.57%
BE	-1.42%	0.00%	0.00%	MX	-0.39%	0.00%	-0.06%
BR	-0.16%	0.00%	-0.02%	NL	-1.74%	0.00%	0.00%
BG	-0.30%	0.00%	-0.02%	NO	-2.30%	0.00%	-0.01%
CA	-1.88%	0.00%	-0.05%	PL	-0.47%	0.00%	-0.01%
CN	-0.03%	0.00%	-0.02%	PT	-0.79%	0.00%	-0.01%
CY	-0.09%	0.00%	0.00%	RO	-0.27%	0.00%	-0.01%
CZ	-0.52%	0.00%	0.00%	RU	-0.58%	0.00%	-0.01%
DK	-0.77%	0.00%	0.00%	SK	-0.71%	0.00%	-0.06%
EE	-0.22%	0.00%	0.00%	SI	-0.71%	0.00%	0.00%
FI	-1.28%	0.00%	-0.03%	ZA	-0.18%	0.00%	-0.03%
FR	-1.43%	0.00%	0.00%	KR	-0.48%	0.00%	-0.01%
DE	-1.78%	0.00%	0.00%	ES	-0.88%	0.00%	-0.09%
GR	-0.54%	0.00%	0.00%	SE	-1.54%	0.00%	-0.06%
HU	-0.49%	0.00%	0.00%	CH	-1.39%	0.00%	0.00%
HR	-0.30%	0.00%	0.00%	TR	-0.36%	0.00%	-0.01%
IN	1.06%	0.00%	0.00%	GB	-1.28%	0.00%	0.00%
ID	0.26%	0.00%	-0.09%	US	-1.20%	0.00%	-0.01%
IE	-0.71%	0.00%	0.00%	WA	0.67%	0.00%	-0.01%
IT	-1.36%	0.00%	0.00%	WL	-0.13%	0.00%	-0.09%
JP	-0.83%	0.00%	0.00%	WE	-0.03%	0.00%	-0.01%
LV	-0.34%	0.00%	-0.01%	WF	1.34%	0.00%	0.00%
LT	-0.52%	0.00%	-0.10%	WM	-0.14%	0.00%	-0.01%
				World	**-0.32%**	**0.00%**	**-0.02%**

Figure 6 – OTHER GOODS scenario - Variations of GHGs emissions due to implementation of the OTHER GOODS scenario for the EXIOBASE country-regions. Variations are calculated on the total GHGs emissions of the baseline scenario. The first columns shows the effect on production phase, the second on the consumption phase. The third column shows the effect on the emissions generated from the unregistered waste.

The last scenario is the waste scenario. Here it is assumed an increase of the recycling of material for all the countries and a residual minimal part not recyclable is incinerated. Only plastic, which is a material that is not easily recyclable, is incinerated for the 40%. It must be said that it is assumed that a country uses its existing technology to treat the waste. When the waste treatment is not implemented in the country according to the EXIOBASE MR-HSUTs, it is assumed that the German technology is implemented.

The effect on the production sphere are for some countries positive and for some countries negative. The reason for negative effects can be many. A country that use landfills may have lower GHGs emissions respect to a path that includes incineration, mainly if the incineration does not have a coproduction of electricity and heat. Indeed, a landfilled material, such as plastics, release only a little part of its carbon content, while if incinerated releases all of it. Therefore, the total GHGs emissions may increase. Another reason can be that a country imports products from a country that use cleaner productions while its own recycling activities may be dirtier.

The effect on the global of a waste scenario is negligible, indeed the GHGs emissions shrink of only 0.28%. However, this value does not give the whole picture. Indeed to better include all the effects of a waste scenario, it should be considered also the waste treatment of stock addition. This is done in Figure 8. Indeed, a lot of materials produced in an accounting period is accumulated at the end of the accounting period, for example in building, roads, railways, furniture, etc. If we consider that these materials will be treated according the percentages of the waste scenarios, there would be a reduction of GHGs of 31% on the global scale.

WASTE	Production	Consumption	Unregistered waste		Production	Consumption	Unregistered waste
AU	1.00%	0.00%	-0.20%	LU	10.06%	0.00%	-0.01%
AT	-9.09%	0.00%	-0.02%	MT	-50.37%	0.00%	-10.22%
BE	5.05%	0.00%	-0.01%	MX	-19.10%	0.00%	-0.28%
BR	-27.39%	0.00%	-0.08%	NL	6.13%	0.00%	-0.01%
BG	-7.52%	0.00%	-0.09%	NO	-2.04%	0.00%	-0.03%
CA	-4.04%	0.00%	-0.16%	PL	-0.37%	0.00%	-0.04%
CN	-14.10%	0.00%	-0.08%	PT	-14.14%	0.00%	-0.05%
CY	31.78%	0.00%	0.00%	RO	-31.55%	0.00%	-0.04%
CZ	-5.66%	0.00%	-0.01%	RU	76.36%	0.00%	-0.02%
DK	11.69%	0.00%	0.00%	SK	-7.28%	0.00%	-0.25%
EE	4.11%	0.00%	0.00%	SI	-6.14%	0.00%	-0.02%
FI	-0.72%	0.00%	-0.11%	ZA	2.88%	0.00%	-0.14%
FR	0.57%	0.00%	0.00%	KR	-6.71%	0.00%	-0.03%
DE	-4.67%	0.00%	-0.01%	ES	1.61%	0.00%	-0.35%
GR	-1.02%	0.00%	0.00%	SE	7.31%	0.00%	-0.20%
HU	-9.01%	0.00%	-0.01%	CH	2.13%	0.00%	-0.01%
HR	-12.52%	0.00%	-0.01%	TR	-22.57%	0.00%	-0.03%
IN	-35.81%	0.00%	-0.04%	GB	0.93%	0.00%	-0.01%
ID	-65.74%	0.00%	-0.48%	US	-9.44%	0.00%	-0.04%
IE	32.20%	0.00%	-0.01%	WA	95.41%	0.00%	-0.06%
IT	-107.86%	0.00%	-0.01%	WL	-1.70%	0.00%	-0.41%
JP	-6.11%	0.00%	-0.01%	WE	1.97%	0.00%	-0.05%
LV	60.14%	0.00%	-0.05%	WF	0.47%	0.00%	-0.04%
LT	98.56%	0.00%	-0.44%	WM	2.21%	0.00%	-0.03%
				World	**0.20%**	**0.00%**	**-0.08%**

Figure 7 – WASTE Scenario - Variations of GHGs emissions due to implementation of the OTHER GOODS scenario for the EXIOBASE country-regions. Variations are calculated on the total GHGs emissions of the baseline scenario. The first columns shows the effect on production phase, the second on the consumption phase. The third column shows the effect on the emissions generated from the unregistered waste.

waste treatement of stock addition					
	Variation	Note:		Variation	Note:
AT	104.87%	already positive impact	**JP**	238.68%	already positive impact
AU	52.21%	already positive impact	**KR**	-144.87%	
BE	207.49%	already positive impact	**LT**	4300.98%	
BG	1116.13%	already positive impact	**LU**	-0.07%	already positive impact
BR	329.11%	already positive impact	**LV**	2967.76%	
CA	-1090.28%		**MT**	-4033.25%	
CH	35.41%	already positive impact	**MX**	757.44%	already positive impact
CN	-101.94%		**NL**	53.44%	already positive impact
CY	21209.10%		**NO**	-343.85%	
CZ	103.65%	already positive impact	**PL**	241.56%	already positive impact
DE	10.02%	already positive impact	**PT**	-191.11%	
DK	-99.03%		**RO**	66.96%	already positive impact
EE	209.26%	already positive impact	**RU**	-4561.45%	already positive impact
ES	-2203.01%		**SE**	317.07%	already positive impact
FI	517.91%	already positive impact	**SI**	202.88%	already positive impact
FR	297.00%	already positive impact	**SK**	91.39%	already positive impact
GB	170.11%	already positive impact	**TR**	-325.75%	
GR	-4600.74%	already positive impact	**US**	216.86%	already positive impact
HR	-353.55%		**WA**	-98.63%	
HU	604.00%	already positive impact	**WE**	-109.64%	
ID	48.46%	already positive impact	**WF**	-115.54%	
IE	562.85%		**WL**	-102.51%	
IN	61.48%	already positive impact	**WM**	-96.97%	
IT	-512.13%		**ZA**	11.70%	already positive impact
			World	-99.91%	
			Total world GHGs emissions	**-31.26%**	

Figure 8 – WASTE Scenario - Variations of GHGs emissions due to implementation of the WASTE scenario for the treatment of new stock addition in the accounting period. Variation indicate the effect of the WASTE scenario respect to the situation where new stock are treated following the observed waste management mix. Last row indicate the effect on the total GHGs emissions, considering what shown in Figure 7.

Discussions

In this paper it has been tried an imagination exercise hypothesizing a better redistribution of resources within the whole human population without an increase of GHGs emissions. From the methodological perspective, the use of MR-HSUTs has made this task possible. Of course, there is wide room for improvement in the methodology. For example a feasible improvement could be that of considering the effect on the world trade as consequences of each scenarios. Production boundaries could be introduced, so as price mechanisms.

However, this simple exercise leads to some interesting considerations.

Firstly, it is hard to give a hierarchical order for the adoption of the presented measures. In the choice of priorities, ethical issues should be considered and this goes beyond the aim of the paper. Surely it can be said that a WASTE scenario should be have a high value from an environmental perspective because, on one hand, implies a substantial reduction of GHGs emissions and, on the other hand, have low probability of generating conflicts within countries because no one have to renounce to anything.

Moving to more methodological aspects, it can be said that physical tables help the implementation of redistribution scenarios. Indeed, it is easy to quantify the availability of a country and then how much should be redistributed, without the need of prices or PPP-factors[2]. Implementing the above exercise, difficulties were found when dealing with flows accounted in monetary units. The EXIOBASE MR-HSUTs account services in euros, for example service of railroad transportation. Without complementary information, the amount of euro of service does not give information on the coverage of the service, on the infrastructural differences between countries and so on. Therefore, in future effort should be put in order to include services with other units that may provide more exhaustive information.

Another consideration is that higher reduction in ‘cleaner and richer’ countries is necessary if the ‘poorer’ countries use ‘dirtier’ technologies. Often ‘poorer’ countries use dirtier technology as can be observed in EXIOBASE. Therefore, an increase of the production overcompensate the positive effect of a reduction of consumption in ‘richer’ countries. In future attention should be put for trying to export ‘cleaner’ technologies to expanding economies.

Conclusions

The paper presents a simple exercise where it is hypothesized a just society where there is a better redistribution of resources, so that poorer countries could be better off. I firmly believe that a task of the researcher is also that of contributing to improve the general wellness of the population and give more foundations to the discussions on certain issues.

The exercise has been possible thanks to the EXIOBASE MR-HSUTs that are an optimal tool for these types of analyses. Without this tool this analysis could not be done, therefore this is the first time that such an exercise is implemented with this detail and accuracy.

The ultimate aim of the paper is also that of showing the potentialities of MR-HSUTs, now available for all the interested researchers and policy-makers. This is just the beginning.

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Appendix

In this section are shown the factors used for implementing the scenarios.

Food scenario factors			
	Cattle farming	Processing vegetable oils and fats	Cultivation of vegetables, fruit, nuts
AT	0.402	1.172	1.031
AU	0.406	1.026	1.026
BE	0.362	1.143	1.090
BG	1.000	1.000	1.000
BR	0.142	1.319	1.306
CA	0.594	0.000	1.034
CH	0.255	1.123	1.060
CN	1.154	1.000	1.000
CY	1.000	1.000	1.000
CZ	0.877	1.005	1.005
DE	0.745	1.038	1.008
DK	0.411	1.087	1.020
EE	0.613	1.020	1.021
ES	0.678	1.015	1.024
FI	0.264	1.061	1.054
FR	0.337	1.485	1.057
GB	0.407	1.081	1.045
GR	0.369	1.019	1.042
HR	0.775	1.016	1.013
HU	1.000	1.000	1.000
ID	1.928	1.000	1.000
IE	1.000	1.000	1.000
IN	1.000	1.110	1.028
IT	0.300	1.076	1.036
JP	1.000	1.000	1.000
KR	0.715	1.031	1.013
LT	1.000	1.000	1.000
LU	0.321	1.108	1.055
LV	1.000	1.000	1.000
MT	0.497	1.208	1.026
MX	0.436	1.039	1.084
NL	0.929	1.013	1.004
NO	0.463	1.019	1.020
PL	1.000	1.000	1.000
PT	0.454	1.062	1.046
RO	0.947	1.002	1.001
RU	0.427	1.117	1.023
SE	0.221	1.106	1.079
SI	0.443	1.813	1.037
SK	0.877	1.005	1.004
TR	2.175	1.000	1.000
US	0.239	1.168	1.110
WA	1.417	1.000	1.000
WE	0.782	0.000	1.011
WF	2.037	1.000	1.000
WL	0.438	1.147	1.041
WM	1.374	1.000	1.000
ZA	1.000	1.000	1.000

Electricity scenario factors												
	Electricity from:											
	biomass and waste	coal	solar thermal	gas	hydro	Geothermal	nuclear	tide, wave, ocean	petroleum and other oil derivatives	solar photovoltaic	wind	nec
AT	1	0.795165	1	0.795165	1	1	1	1	0.7951654	1.650198	1.650198	1
AU	1	0.84071	1	0.84071	1	1	1	1	0.8407101	4.183508	4.183508	1
BE	1	0.785129	1	0.785129	1	1	1	1	0.785129	1.584174	1.584174	1
BG	1	0.853289	1	0.853289	1	1	1	1	0.8532894	3.978215	3.978215	1
BR	1	1	1	1	1	1	1	1	1	1	93.85387	1
CA	1	0.540162	1	0.540162	1	1	1	1	0.5401624	1.837657	1.837657	1
CH	1	0.59327	1	0.59327	1	1	1	1	0.59327	1.333193	1.333193	1
CN	1	1	1	1	1	1	1	1	1	20.65767	20.65767	1
CY	1	1	1	1	1	1	1	1	0.8688149	4.612683	4.612683	1
CZ	1	0.842115	1	0.842115	1	1	1	1	0.8421152	2.80555	2.80555	1
DE	1	0.836938	1	0.836938	1	1	1	1	0.8369382	1.492198	1.492198	1
DK	1	0.836565	1	0.836565	1	1	1	1	0.8365646	1.18968	1.18968	1
EE	1	0.866915	1	0.866915	1	1	1	1	0.8669146	1	4.221909	1
ES	1	0.827579	1	0.827579	1	1	1	1	0.8275791	1.240041	1.240041	1
FI	1	0.666348	1	0.666348	1	1	1	1	0.6663482	3.260418	3.260418	1
FR	1	0.338253	1	0.338253	1	1	1	1	0.3382534	1.125592	1.125592	1
GB	1	0.850305	1	0.850305	1	1	1	1	0.850305	2.404938	2.404938	1
GR	1	0.86086	1	0.86086	1	1	1	1	0.8608603	2.31108	2.31108	1
HR	1	0.859968	1	0.859968	1	1	1	1	0.8599681	1	3.766758	1
HU	1	0.852406	1	0.852406	1	1	1	1	0.8524059	3.206997	3.206997	1
ID	1	1	1	1	1	1	1	1	1	374802.6	1	1
IE	1	0.851867	1	0.851867	1	1	1	1	0.8518671	1	1.454762	1
IN	1	1	1	1	1	1	1	1	1	162.5275	162.5275	1
IT	1	0.866653	1	0.866653	1	1	1	1	0.8666532	1.857828	1.857828	1
JP	1	0.841572	1	0.841572	1	1	1	1	0.841572	8.778128	8.778128	1
KR	1	0.865125	1	0.865125	1	1	1	1	0.8651255	19.09289	19.09289	1
LT	1	1	1	1	1	1	1	1	1	1	1.467045	1
LU	1	0.850332	1	0.850332	1	1	1	1	0.8503322	1.42408	1.42408	1
LV	1	1	1	1	1	1	1	1	1	1	2.416746	1
MT	1	1	1	1	1	1	1	1	0.8691237	27.32715	1	1
MX	1	1	1	1	1	1	1	1	1	62.27713	62.27713	1
NL	1	0.864494	1	0.864494	1	1	1	1	0.8644944	2.173323	2.173323	1
NO	1	0	1	0	1	1	1	1	0	1	1	1
PL	1	1	1	1	1	1	1	1	1	1	5.673147	1
PT	1	0.847529	1	0.847529	1	1	1	1	0.847529	1.230886	1.230886	1
RO	1	1	1	1	1	1	1	1	1	19.75115	19.75115	1
RU	1	0.87109	1	0.87109	1	1	1	1	0.8710904	1	2397.714	1
SE	1	0	1	0	1	1	0.879397	1	0	1	1	1
SI	1	0.821506	1	0.821506	1	1	1	1	0.8215055	9.373889	1	1
SK	1	0.858245	1	0.858245	1	1	1	1	0.8582446	3.036637	3.036637	1
TR	1	1	1	1	1	1	1	1	1	1	16.59465	1
US	1	0.755739	1	0.755739	1	1	1	1	0.7557391	2.96872	2.96872	1
WA	1	1	1	1	1	1	1	1	1	727.883	727.883	1
WE	1	0.865563	1	0.865563	1	1	1	1	0.8655633	27.71013	27.71013	1
WF	1	1	1	1	1	1	1	1	1	2458.206	2458.206	1
WL	1	1	1	1	1	1	1	1	1	349.2242	349.2242	1
WM	1	0.872095	1	0.872095	1	1	1	1	0.8720948	44.01542	44.01542	1
ZA	1	0.87898	1	1	1	1	1	1	0.8789803	148.6046	148.6046	1

Electricity scenario factors											
	Anthracite	BKB/Peat Briquettes	Coking Coal	Coke Oven Coke	Natural gas	Natural Gas Liquids	Kerosene	Lignite/Brown Coal	Other Bituminous Coal	Peat	Steam and hot water supply services
AT	0	0.7714551	0	0.771455	0.914105	0	0	0.771455128	0.77145513	0.771455	0.9
AU	0	0.7653894	0	0	0.9005	0	0	0	0	0	0.9
BE	0.7762438	0.7762438	0	0.776244	0.918345	0	0	0	0	0	0.9
BG	0.8227617	0.8227617	0	0	1.305613	0	0	0.822761691	0.82276169	0	0.9
BR	0	0	0	0	1.073446	0	0	0	0	0	0.9
CA	0	0	0	0	0.912094	0	0	0.77504535	0	0	0.9
CH	0	0	0	0	0.8884	0	0	0	0.75415378	0	0.9
CN	0	0	0	0.830561	1.302112	0	0	0	0.83056138	0	0.9
CY	0	0	0	0	0	0	0	0.949457927	0	0	0.9
CZ	0	0.7993272	0	0.799327	0.979022	0	0	0.799327198	0.7993272	0	0.9
DE	0.7752983	0.7752983	0	0.775298	0.919591	0	0	0	0.77529834	0	0.9
DK	0	0.7721172	0	0	0.90847	0	0	0	0	0	0.9
EE	0	0.8078645	0	0	0.981316	0	0	0	0.80786445	0	0.9
ES	0.7902954	0	0	0.790295	0.93379	0	0	0	0.79029539	0	0.9
FI	0	0	0	0	0.954915	0	0	0	0.77831669	0.778317	0.9
FR	0	0	0	0	0.922854	0	0	0	0.78283747	0	0.9
GB	0	0	0	0.786509	0.92841	0	0	0	0.78650858	0	0.9
GR	0	0	0	0	0.959267	0	0	0.798890368	0	0	0.9
HR	0	0	0	0	0.957084	0	0	0.811722365	0	0	0.9
HU	0	0.808462	0	0	0.956386	0	0	0.80846197	0.80846197	0	0.9
ID	0	0.85	0	0	4.097057	0	0	0	0	0	1.05
IE	0.7754263	0.7754263	0	0	1.020849	0	0	0.775426254	0.77542625	0.775426	0.9
IN	0	0.85	0.85	0	1.09089	0	0	0	0.85	0	1.05
IT	0	0	0	0	0.925282	0	0	0	0.78610773	0	0.9
JP	0	0	0	0	0.925886	0	0	0	0	0	0.9
KR	0	0	0	0	0.936744	0	0	0	0	0	0.9
LT	0	0.8086954	0	0	1.004452	0	0	0.808695425	0.80869543	0.808695	0.9
LU	0	0.68	0	0	0.800338	0	0	0	0	0	0.9
LV	0	0	0	0	0.99579	0	0	0	0.81368063	0.813681	0.9
MT	0	0	0	0	0	0	0	0	0	0	0.9
MX	0	0	0	0	0.966087	0	0	0	0	0	0.9
NL	0.7697337	0	0	0	0.905795	0	0	0	0	0	0.9
NO	0	0	0	0	0.866344	0	0	0	0	0	0.9
PL	0	0	0	0.809527	1.205409	0	0	0.809527316	0.80952732	0	0.9
PT	0	0	0	0	0.942943	0	0	0	0	0	0.9
RO	0	0	0	0	0.96203	0	0	0.816708418	0	0.816708	0.9
RU	0	0.8092644	0	0.809264	0.957662	0	0	0.809264434	0.80926443	0.809264	0.9
SE	0	0	0	0	0.909224	0	0	0	0	0	0.9
SI	0	0	0	0	0.939539	0	0	0	0	0	0.9
SK	0	0.8043785	0	0.804379	0.952184	0	0	0.804378508	0.80437851	0	0.9
TR	0	0	0.817057	0	1.098285	0	0	0.817056909	0.81705691	0	0.9
US	0	0	0	0	0.895188	0.760632773	0	0	0	0	0.9
WA	0.85	0.85	0.85	0	1.054586	0	0	0.85	0.85	0	1.05
WE	0.8313025	0.8313025	0	0	0.99031	0	0	0.83130245	0.83130245	0.831302	0.9
WF	0	0	0	0	1.423862	0	0	0	0.85	0.85	1.05
WL	0	0	0	0	0.99199	0	0	0	0.82711923	0	0.9
WM	0	0	0	0	0.966534	0	0	0	0.8210528	0	0.9
ZA	0.9737448	0	0	0	0	0	0	0	0.97374482	0	0.9

Transportation scenario factors							
	Biodiesels	Biogasoline	Motor Gasoline	Other land transportation services	Railway transportation services	Kerosene	Kerosene Type Jet Fuel
AT	0.5730928	0.57309278	0.573093	0.8	1	0.85	0.85
AU	0.2141761	0.214176064	0.214176	0.8	1	0.85	0.85
BE	0.7159625	0.715962523	0.715963	0.8	1	0.85	0.85
BG	0.7557254	1	0.755725	0.8	1	0.85	0.85
BR	0.9774599	0.977459923	0.97746	0.8	1	0.85	0.85
CA	0.1582366	0.158236568	0.158237	0.8	1.36729582	0.85	0.85
CH	0.3907226	0.39072263	0.390723	0.8	1	0.85	0.85
CN	2.2436235	2.24362349	2.243623	0.8	1.31986841	0.85	0.85
CY	0.4018054	1	0.401805	0.8	1	0.85	0.85
CZ	0.7666423	0.766642335	0.766642	0.8	1	0.85	0.85
DE	0.5014493	0.501449327	0.501449	0.8	1	0.85	0.85
DK	0.4075725	0.407572464	0.407572	0.8	1	0.85	0.85
EE	0.2562013	1	0.256201	0.8	1	0.85	0.85
ES	0.7470134	0.747013445	0.747013	0.8	1	0.85	0.85
FI	0.4122332	0.412233207	0.412233	0.8	1	0.85	0.85
FR	0.9157658	0.915765797	0.915766	0.8	1	0.85	0.85
GB	0.5597279	0.559727893	0.559728	0.8	1	0.85	0.85
GR	0.4344496	1	0.43445	0.8	1	0.85	0.85
HR	0.7879575	0.787957474	0.787957	0.8	1	0.85	0.85
HU	0.818057	0.818056986	0.818057	0.8	1	0.85	0.85
ID	1.6338578	1	1.633858	0.8	1.44568145	0.85	0.85
IE	0.3185373	0.318537325	0.318537	0.8	1	0.85	0.85
IN	2.5948129	2.594812895	2.594813	0.8	1.30836216	0.85	0.85
IT	0.7973435	0.797343533	0.797344	0.8	1	0.85	0.85
JP	1	1	0.425001	0.8	1	0.85	0.85
KR	0.8137529	1	0.813753	0.8	1	0.85	0.85
LT	0.9105617	0.910561669	0.910562	0.8	1	0.85	0.85
LU	0.1758932	0.175893206	0.175893	0.8	1	0.85	0.85
LV	0.5904036	0.590403596	0.590404	0.8	1	0.85	0.85
MT	0.1612328	1	0.161233	0.8	1	0.85	0.85
MX	0.5092861	1	0.509286	0.8	1.5	0.85	0.85
NL	0.3299644	0.329964429	0.329964	0.8	1	0.85	0.85
NO	0.3738192	0.373819201	0.373819	0.8	1	0.85	0.85
PL	1.0493449	1.04934492	1.049345	0.8	1	0.85	0.85
PT	0.793836	1	0.793836	0.8	1	0.85	0.85
RO	2.2033437	2.203343706	2.203344	0.8	1	0.85	0.85
RU	0.5660235	1	0.566024	0.8	1	0.85	0.85
SE	0.3237767	0.323776696	0.323777	0.8	1	0.85	0.85
SI	0.3586183	0.358618319	0.358618	0.8	1	0.85	0.85
SK	0.9663821	0.96638214	0.966382	0.8	1	0.85	0.85
TR	2.4798275	2.479827478	2.479827	0.8	1	0.85	0.85
US	0.1146611	0.11466111	0.114661	0.8	1.39387313	0.85	0.85
WA	2.3173484	2.317348427	2.317348	0.8	1.25613858	0.85	0.85
WE	1.3393014	1	1.339301	0.8	1.13179074	0.85	0.85
WF	2.5206256	1	2.520626	0.8	1.36836658	0.85	0.85
WL	1.406839	1.406838996	1.406839	0.8	1.05388693	0.85	0.85
WM	0.6936987	1	0.693699	0.8	1.05669422	0.85	0.85
ZA	0.8605341	1	0.860534	0.8	1	0.85	0.85

Other goods scenario factors / part A

	Textiles (17)	Wearing apparel; furs (18)	Leather and leather products (19)	Wood and products	Paper and paper products	Printed matter and recorded media (22)	Plastics; basic	Chemicals nec	Rubber and plastic products (25)	Glass and glass products	Ceramic goods	Other non-metallic mineral products	Basic iron and steel products thereof	Precious metals
AT	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314
AU	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421
BE	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703
BG	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909
BR	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228
CA	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353
CH	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391
CN	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202
CY	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082
CZ	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962
DE	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849
DK	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612
EE	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507
ES	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253
FI	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767
FR	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631
GB	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828
GR	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105
HR	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264
HU	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872
ID	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379
IE	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871
IN	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898
IT	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043
JP	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508
KR	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894
LT	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233
LU	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
LV	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104
MT	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115
MX	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795
NL	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938
NO	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568
PL	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961
PT	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225
RO	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804
RU	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445
SE	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203
SI	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551
SK	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866
TR	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724
US	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094
WA	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853
WE	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655
WF	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
WL	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453
WM	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558
ZA	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558

Other goods scenario factors / part B														
	Aluminium and aluminium products	Lead; zinc and tin and products thereof	Copper products	Other non-ferrous metal products	Foundry work services	Fabricated metal products; except machinery and equipment (28)	Machinery and equipment n.e.c. (29)	Office machinery and computers (30)	Electrical machinery and apparatus n.e.c. (31)	Radio and communication equipment and apparatus (32)	Medical; precision and optical instruments	Motor vehicles; trailers and semi-trailers (34)	Other transport equipment (35)	Furniture; other manufactured goods n.e.c. (36)
AT	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314	0.879314
AU	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421	0.867421
BE	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703	0.888703
BG	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909	0.979909
BR	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228	0.982228
CA	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353	0.886353
CH	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391	0.845391
CN	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202	0.995202
CY	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082	0.949082
CZ	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962	0.933962
DE	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849	0.886849
DK	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612	0.880612
EE	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507	0.9507
ES	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253	0.916253
FI	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767	0.892767
FR	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631	0.901631
GB	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828	0.908828
GR	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105	0.933105
HR	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264	0.958264
HU	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872	0.951872
ID	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379	1.023379
IE	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871	0.8871
IN	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898	1.135898
IT	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043	0.908043
JP	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508	0.909508
KR	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894	0.927894
LT	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233	0.95233
LU	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
LV	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104	0.962104
MT	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115	0.935115
MX	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795	0.976795
NL	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938	0.875938
NO	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568	0.810568
PL	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961	0.953961
PT	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225	0.938225
RO	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804	0.96804
RU	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445	0.953445
SE	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203	0.88203
SI	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551	0.932551
SK	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866	0.943866
TR	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724	0.968724
US	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094	0.858094
WA	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853	1.101853
WE	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655	0.996655
WF	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
WL	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453	0.988453
WM	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558	0.976558
ZA	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558	0.989558