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CLIMATE CHANGE GLOBAL CHALLENGES AND SUSTAINABLE CONSUMPTION

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Abstract

UN development goals and climate change constitute major challenges for the whole mankind.. In this context the authors consider an issue of sustainable consumption in its complexity and suggest ways of how responsible consumers and business can contribute to climate mitigation (the role of relevant control governmental bodies, i.e. Customs is also discussed).

The authors describe the legal base for ecological measures including the UN General Assembly resolution "Transforming our world: the 2030 Agenda for Sustainable Development" and its main goals. The paper also touches upon the issues of renewables as a solution for global warming mitigation.

In authors' opinion, informing consumers on a product through both traditional marks and labels and new types of mark is one of the effective methods to cope with environmental challenges.

The authors also study appearance of new regulatory requirements that they call "ecological and social compliance" or "ecological and social traceability", which means that companies should adopt sustainable practices and integrate sustainability information into their reporting cycle.

To highlight the main idea the following scientific methods were used: analysis, synthesis, comparison, generalization, induction, deduction.

In conclusion the authors state that there is a need for a broad international cooperation, search of optimal and adapted decisions, exchange of information and for an open debate between governments together with an active participation of business and consumers in order to minimize climate changes.

Key words: agenda for sustainable development, climate change, sustainable production and consumption, green and ethical goods, ecological and social compliance, environmental and social traceability, sustainable and responsible marketing.

Introduction[1]

Climate change and sustainable development issues constitute today one of the major challenges for mankind. The environmental matters became an integral part of national and global economies and lead to new activities in the work of the governmental control bodies, including customs.

[1] The paper is prepared by the authors in their capacity as experts and does not necessarily reflect the position of their companies.

For example, such approach is reflected in the fact that besides traditional fiscal and security functions for Customs (drugs, traffic of arms and trafficking in persons) new tasks relating to environment are set: control over imports/exports of waste; preventing smuggling rare animals/birds/ plants; interdiction of imports of polluting machines and equipment; control of various certificates showing conformity with environmental requirements (for goods and machines), etc.

The legal base for such ecological measures come both from national requirements as well as from the decisions made at a global level.

On 25 September 2015, the UN General Assembly adopted a resolution "Transforming our world: the 2030 Agenda for Sustainable Development" which sets goals, tasks and challenges for the whole mankind (UN 2015).

Such Sustainable Development Goals include:

Goal 1. End poverty in all its forms everywhere.

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Goal 3. Ensure healthy lives and promote well-being for all at all ages.

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Goal 5. Achieve gender equality and empower all women and girls.

Goal 6. Ensure availability and sustainable management of water and sanitation for all.

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all.

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

Goal 10. Reduce inequality within and among countries.

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.

Goal 12. Ensure sustainable consumption and production patterns.

Goal 13. Take urgent action to combat climate change and its impacts.

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

It is not by chance, that at least seven of these global challenges directly or indirectly concern environmental problems/climate change. Today it is getting evident that mutual efforts of all governments are required in order if not to stop but at least to mitigate the negative tendency of the climate change and of global warming.

One of the latest studies in this area clearly shows the anthropogenic impact on the planet and on the climate change (Climate Change 2014). Human influence on the climate system is "clear", and recent anthropogenic emissions of greenhouse gases are the highest in history. The study concludes that "recent climate changes have had widespread impacts on human and natural systems".

The forthcoming international conference near Paris in November –December 2015 ("COP21") is supposed to address and to elaborate solutions to climate change problem. This is the meeting of the parties to the UN Framework Convention of Climate Change (UNFCCC), but this time

its objectives are more ambitious: not only to find solutions to reduce greenhouse gas emissions in order to limit global warming to below 2 C but also to ensure mobilization by the developed countries of 100 billion US D per year (from public and private sources) on environmental goals. It is recalled, that the Framework Convention was adopted at the Rio de Janeiro Earth Summit in 1992 and entered into force in 1994 (it has been ratified by 196 states).

It is expected that the Paris meeting will be the most important (around 40 thousand of participants) and the highest represented environmental forum, which shows the growing concerns and awareness of all countries in the world. The expected solutions will not only be very important; they will be extremely expensive and painful (as shown above) and every person in the world will eventually have to pay for them: directly through taxes or indirectly through higher cost of environmentally friendly services and goods.

But even in case of a favourable scenario of a climate warming mitigation, the price for it will be a decline in the world consumption (Climate Change 2014). Thus, it is estimated that mitigation scenarios will lead to the direct loses in consumption (not including benefits of reduced climate change) to: 1 to 4% (median: 1.7%) in 2030, 2 to 6% (median: 3.4%) in 2050, and 3% to 11% (median: 4.8%) in 2100. In its turn drop in the consumption will lead to slower economic growth (something politicians are not eager to speak about openly).

Hence the importance of being sure that the problem is correctly identified, that the right solutions are found, that suggested measures will bring the expected results and that collected huge sums are not wasted.

If we look at the global environmental problem in a simplified manner, we can identify its following basic components: What we produce? How we produce? What we consume? How we consume? What we do with the waste? Then if we look at what issues are considered today from the point of environment, it will be primarily how goods are produced and how are they recycled.

And consumption-related issues are left unattended. The purpose of this article is to attract attention to such “forgotten” matters.

1. Renewables as a global solution

What might be a solution for global warming mitigation? Renewable sources of energy? We hear about them all the time. “Greenpeace”, for example, considers that renewable types of energy could replace fossil fuels by 2050 (GreenPeace 2015). Using renewables will allow to stabilize the level of CO2 (carbon monoxide) by 2020. Clear technologies will create additional 20 million jobs by 2030. Unfortunately many experts believe that these forecasts are too optimistic and that countries will still depend on the fossil fuels in future but they must be utilised (but ideally) through new carbon friendly or captive technologies. They say that although renewables contributed to 60% of a new power generation in the world in 2014, still fossil fuels provide more than 80% of the world primary energy supply. Not less important is the question on how much such new climate mitigation schemes will cost. According to “Greenpeace” scenario, the cost of the replacement of traditional fuels by renewables will be 1.2 trillion dollars per year.

The question is not only the price, although it looks crazy. The above mentioned study on climate change (Climate Change 2014) shows various scenarios of climate mitigation. In short, the conclusion is the following: in order to achieve the set goal (to limit warming to below 2°C) it is important to ensure the wide availability and dissemination of new mitigation technologies (bioenergy, wind/solar, etc.) . Otherwise mitigation costs can increase substantially depending on the technology considered. Delaying mitigation increases global mitigation costs in the medium to long term perspective. It means that not only new technologies shall be identified (invented) but they shall be “shared” and this might become a separate issue: if the technologies’ owners will be ready to do it (and on what conditions).

2. The other side of renewables

As in case of other proposed solutions it is important to understand all possible benefits and disadvantages of using a specific technology before investing into it.

Let's recall, for example, biofuel. At the beginning of 2000-s biofuel was considered as one of the ways of diminishing dependence on the fossil fuels. And, for example, European Union was planning to increase the share of biofuel up to 10% of the whole motor fuel consumption in its member states by 2020. But it turned out that the cultivation of food crops (from which ethanol/ biofuel is manufactured) is in direct competition with crops for human consumption and that the expansion of ethanol production will, thus, lead to diminishing food supply and to aggravating the problem of hunger in developing countries. As the result, nobody in Europe now speaks about biofuel.

As another example of the hidden problems of new technologies one could note wind energy. In Europe, there is a growing campaign against wind turbines which, in the opinion of some citizens, spoil landscapes and have a negative impact on tourism and also killing migratory birds. According to data provided by opponents of wind farms, at USA the nationwide wind farm mortality estimates are 573 thousand birds and 888 thousand bats per year, i.e. almost 15 birds and 23 bats per turbine. For comparison, similar European estimates: for instance, extrapolating to Germany the findings of Dutch biologists, ornithologists had calculated that annual mortality should be 60 thousand – 100 thousand killed birds per gigawatt of installed wind capacity. For today's Germany, which has 39 gigawatts of wind turbines, this would mean up to 2,34 – 3,9 million dead birds a year.

The ornithologists believe that the above estimate is close to the reality, which was revealed in 2012 by a comprehensive evaluation of wind farm mortality by the Spanish ornithological society SEO-BirdLife. In response to a request based on the right to information in environmental matters (Aarhus Convention), SEO has obtained copies of 136 monitoring reports of wind farms (filed without publishing by the Spanish government). Having analysed them, SEO researchers estimated that Spain's 18,000 wind turbines kill on average 6 – 18 million birds and bats a year (Wind Turbines Mortality, 2015).

Apart of the above problems not to forget a technical limitation of renewables: the production of wind turbines and solar panels varies during the day (less wind, no sun, etc.); thus, to ensure the permanent and stable level of the electricity supply they must be supported /compensated by conventional power stations. In the opinion of experts, it means that it is unrealistic to expect the full replacement of fossil fuels by renewables in the near future and, thus, more attention shall be devoted to new technologies allowing the use of fuel and coal with less environmental harm.

3. Good and bad energy

When we speak about future technologies developments an important issue is raised all the time: which technologies or fuels have less impact on the environment. For example, at present it seems that the major emphasis of the discussions is on CO2 (carbon monoxide) mitigation, though other gases are not less or probably even more dangerous for human health and nature. This focus on CO2 in turn evidently leads to calls to use electricity and not fossil fuels. But electricity in many countries (like China or India) comes from coal burning, so one can assume that one shall also distinguish between "good" (from hydro sources) and "bad" (from coal) electricity. If we look more attentively into hydro power, also certain things become less evident. Thus, the construction of hydro dams leads to flooding of significant areas and to local climate change. As an example, one can recall the pride of China - "three gorges hydro complex", which World Bank refused to finance due to unclear environmental consequences of this project.

Probably it means that there is a need in developing more complicated and complex instruments to assess the ecological impact of specific technologies and projects.

It is important not to forget that behind ecological discussions there are also economic interests of companies manufacturing equipment and goods based on traditional or on new technologies. For many companies it is a question of life and death, if their technologies are used or abandoned. If new technologies are to be more expensive, the society must make a decision on their use on the basis of objective facts and with clear understanding of all consequences and not as the result of the selectively chosen information (or from the deformation of market factors, for example, though hidden subsidies).

Another aspect of the ecological impact debate is who is the main polluter? From a sectoral perspective (based on the information from press), it is transport, automobile, diesel.

Within transport sector there has been an ongoing and long term war, on the one hand, between petrol and diesel engines, and, on the other, with electro cars in general. In this fight an emphasis is often made on specific weak points of certain technologies, not allowing to have a balanced evaluation of different technical solutions. In this context in 2014, the UN Economic Commission for Europe (UNECE) even elaborated a special report on diesel engines exhaust, which proves that "dirty" reputation of a diesel does not fully correspond to the reality (Diesel Engines Exhaust, 2015).

Moreover, this report shows that usually specific sectors are responsible for concrete emissions (for example, agriculture accounts for 94% of global emissions of ammonia). It means that every type of human activity "contributes" in its own way to the global pollution. If all chemical substances/ emissions are taken together, the main polluter will be "commercial, institutional and household sector" (on average, 40-60% of all air pollutants /chemical substances) and the road transport will be only the second (20-30%). Thus, one could wonder if politicians and journalists are aware of such statistics. And why the press writes about transport emissions and not from household sector? It might be assumed that for political reasons it is easier to tax cars than houses. Thus, it seems that while solving global problems politicians try not to anger their electorate. So it turns out that global programmes and their focus are "corrected" for political reasons.

4. Consumption and sustainable development

It is interesting to see to what extent consumers are aware of ecological problems and whether they are ready to pay for the protection of environment.

To recall what specific challenges are set by the 2030 Agenda for Sustainable Development in the consumption area (UN 2015).

Goal 12. Ensure sustainable consumption and production patterns:

12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.

12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle;

12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

-12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.

-12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products.

-12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.

To sum up, the UN sets the goals of rational and efficient use of natural resources, their consumption, informing population and business about it. The only specific and measurable target concerns reducing food waste.

In our opinion, such goal setting foresees rather passive participation of consumers and business in solving ecological challenges. In this case what is the place in this process for the "responsible" consumers and producers?

As an example, we highlight below few areas where consumption and environmental issues could be further linked together.

5. Consumption and climate change

An important issue which seems to be totally left out of the climate change discussions is how sustainable consumption can contribute to climate mitigation. Paradoxically, but food choices of consumers could also contribute to climate mitigation. In April 2014, a report "nitrogen on the table" was released by an UN agency (UNECE). The main focus of the report (Reactive Nitrogen 2015) is on raising awareness of experts and consumers of the dangers of nitrogen emissions for man and climate. The report makes a conclusion that "reducing European consumption of meat and dairy products would make a significant contribution to reducing nitrogen air and water pollution and greenhouse gas emissions". Experts calculated that if all people within the EU would halve their meat and dairy consumption, this would reduce greenhouse gas emissions from agriculture by 25 to 40%, and nitrogen emissions by 40% and release farmland to production of other types of crops (including for biofuel).

Another example, during recent years discussions of food waste have received significant visibility. In 2011, FAO published a report which estimated that about 1.3 billion tons or a third of all food produced for human consumption is wasted (FAO 2011) . Such food waste happens during production phase and along the supply chain at global and regional level. The report shows that in developing countries food is wasted mostly during the earlier stages of the production and supply chain, whereas more food is wasted in the later stage of supply chain, such as consumption in medium and high income countries. On a per-capita basis, consumers in Europe and North America waste food between 95 and 115 kg/year, while this figure in Sub-Saharan Africa and South/Southeast Asia ranges between 6 and 11 kg/year (FAO, 2011).

Usually the food waste problem is raised in the context of combating hunger (see UN Development Goals), but this issue has an important ecological aspect. To recall that the consumption of water resources and land used for the production of uneaten food remains provides a direct impact on environment. Food waste is also a major component of waste going into municipal landfills, a significant source of methane. According to FAO (FAO 2013), food that is produced but not eaten is responsible for adding 3.3 billion tons of greenhouse gases to the planet's atmosphere which means

that food wastage becomes the third top emitter after the United States and China (FAO, 2013). 6. And, of course, it is important not to forget about an economic aspect of this problem. Reducing food waste can increase the efficiency of agriculture in particular in low income countries.

But in real life, very few European consumers (11%) understand that their consumption habits might be an environmental concern. This is one of the conclusions of the EC report "attitudes of European citizens towards environment" published in 2008 which included results of the survey of about 27 thousand persons in 22 EU countries. This report provides interesting information which allows to assess/foresee potential response/reaction of consumers towards global ecological problems: some of its conclusions are reproduced below (Special Eurobarometer 295, 2008).

6. Consumers and environment

European citizens attach great value to the environment. About 80% of respondents replied that environment has a direct influence on their lives. Europeans tend to see environment as a joint responsibility. While 90% agree that the primary responsibility lies with the major polluters, 86% believe that, as individuals, they can play a role in protecting environment in their countries. Major environmental concerns noted by citizens included: climate change (57% of respondents), water pollution, air pollution, man-made accidents (industrial accidents, spills, etc.).

Respondents were presented with a list of various environmental measures and on average around three measures were undertaken by each European citizen. The majority of the survey participants separate their waste (59%), the next popular measure - reducing energy consumption (47%), and then - reducing water use (37%). In general one out of 10 Europeans have done at least one such measure for environmental reasons in the past month.

A special part of the report is devoted to a relationship between environmental intentions and actions (Special Eurobarometer 295, 2008). When asked if they would be ready to buy environmentally friendly products (if they were more expensive than normal products), almost ¾ agreed that they would be willing to do it, while ¼ of consumers indicated not willing to change their habits. These intentions seem to be very encouraging but, unfortunately, further replies showed that in reality only 17% of respondents actually bought a product labelled with an environmental label during the last month. The report makes a conclusion that environmentally friendly attitudes do not necessarily lead to environmentally friendly actions and that financial considerations and the amount and quality of environmental information might also play a role in this issue.

7. Informing consumers and their awareness

Besides informing consumers on a product through traditional marks and labels, new types of marks (including on ecological and social issues) continue to appear (ESCAP 2011).

Thus, energy-efficiency labelling schemes are now most common means of transmitting environmental information in all the countries. At the same time various labels may also be used, for example, to communicate other information regarding: how a product has been produced in terms of life-cycle impact and its environmental friendliness (e.g. eco-labels); fair payment for growers ("fair trade" labels); and how the emissions are generated during the transport of a product ("food miles"). These standards are rather controversial and can be rather trade-restrictive. The impact of transportation in the trade of goods has resulted in the introduction of so-called "food miles" which informs consumers about the actual distance various items have to be transported to reach the retail store. The idea is that the greater the distance, the higher (logically) will be the GHG emissions related to transportation. However, critics of the concept have pointed out that transportation is only one aspect of the carbon footprint of a particular product and when emissions over the whole life cycle of the product are taken into account, the total "carbon footprint" of a product may be actually lower when produced at greater distance from the retail store.

For example, it was found that based on the life cycle analysis, cut roses grown in Kenya for the British market were 5.8 times more carbon-efficient than Dutch greenhouse flowers, even after accounting for emissions caused by air freight. With regard to carbon disclosure through labelling, a number of countries (such as Japan, the Republic of Korea, Thailand) have already adopted carbon footprinting programmes on a voluntary or mandatory (trial) basis (ESCAP 2011).

An important issue: if consumers look at "green labels" and understand them? As an example, here are the results of the survey on the welfare of farmed animals at EU (Eurobarometer 2005). The survey shows that only 20% of consumers can identify products sourced from "animal welfare friendly production systems"; 23% - check such information "some of the time" and one third never did it. At the same time, according to the same report, consumers care about animals and even ready to pay higher prices in exchange for better animal treatment (57%) and 11% of respondents even ready to go for a price increase. Probably besides providing information, it is necessary also to explain what it is about to help consumers make informed decisions.

Another aspect of promoting "green and ethical" goods is ensuring consumers' confidence in them. To achieve it, it is necessary to fight with unfair use of allegedly "green products" (the so-called phenomena of "green washing", when normal goods become "green" through the misleading advertising of consumers). For example, studies show that introducing into the name of a good or in its publicity the word "green" creates a positive ecological image (totally unjustified) of such product among consumers.

To illustrate the scale of the problem in the framework of an OECD study (OECD 2013), information was collected on 544 ELIS (environmental labelling and information schemes) introduced between 1970 and 2012 in 197 countries. Nevertheless, it is almost certain that this data base does not contain data on all schemes and labels existing in the world. What one could be sure is that there is a general continuous confusion on an international level on the compatibility and comparability of these mechanisms (i.e. which scheme covers what and if this label is equivalent to a national label, etc.).

It means that in practical terms there is a challenge to protect consumers from falsified green products; to support the fair manufacturers of genuine environmental friendly goods; and at the same time to ensure a control over companies that abuse green labelling. More precisely this issue (about labelling and misleading publicity) was considered by authors in a separate article (Customs Scientific Journal "CUSTOMS", No. 1, 2014).

Stricter and more active actions are required from governments as well. New rules and regulations on misleading green and social labelling shall be introduced. In international trade, customs can assume controls on the abusive green labelling as a part of their activities on the protection of the registered brands and labels.

7. Environmentally responsible consumers

Today a lot is being said about ecological decisions of consumers. Companies seek to understand how to make their business more "sustainable". Major brands say they are keen to build trust in their products by becoming more environmentally and ethically conscious but they are prepared to invest only if they can be sure that it will add to their competiveness.

In the area of marketing there is a significant knowledge on how to encourage customers to consume more, but there far less understanding about what motivates them to make choices oriented towards environmental and ethical issues, especially during times of a prolonged period of economic austerity.

The research conducted in the UK by YouGov company shows that the economic downturn has not prevented people's desire to minimise their impact on the environment and to continue purchasing ethical products (Guardian 2014) . From the study it is also clear is that it is possible to influence and to change the consumers' behaviour. Thus the research shows that basic

environmentally friendly actions, such as switching off unused lights, recycling of waste, washing at 40 degrees or lower are now deeply ingrained among consumers. For example, virtually all of respondents of those over 16 years old undertake at least one environmental or ethical action regularly.

But the de-facto the global scale and complexity of the issues that are being faced, especially around climate change, makes many individuals feel powerless and therefore reduces their belief that their own behaviour can make a meaningful difference. Only 47% of respondents s believe that their individual efforts to limit their own impact on climate change are worthwhile. The research further shows that 40% of UK adults think that pollution from other countries makes their efforts irrelevant.

This study as other recent studies shows that consumers are not prepared to pay a big premium for more ethical goods and services. Moreover, more comprehensive or expensive purchases and behavioural changes such as installing solar panels, buying electric vehicles, travelling by train (instead of more "environmentally dirty" aircraft) remain beyond the means or desires of the majority.

One issue is paramount (Guardian 2014). The starting point shall be that quality remains the main factor influencing the choice regardless of whether a product or service is ethical. Also purchasing decisions depend on the availability of ethical choices, with 69% of UK adults (93% of GNM's audience) keen to buy ethical clothing if it was more widely stocked.

What the research shows clearly is that while there are a few areas where there are similarities in ethical behaviour among a broad range of consumers, in the majority of cases there are no simple solutions and that companies need to take a nuanced and tailored approach to their clients.

One important common ground identified. Waste has become an issue that even sceptics can embrace. There is also increased demand for more transparency and accountability from companies.

8. Responsible consumer or responsible business?

The sustainable consumption issues, we believe, shall be wider discussed not only with consumers but also with manufacturing companies with a view for them not only "promoting sustainable production" (as called upon by UN) but also from the point of promoting by companies sustainable lifestyles and consumption habits, a not wasting the resources.

For example, is it "sustainable" to dispose of an electric appliance because it is cheaper to buy a new one than to repair the old? We feel that more rational (and thus, sustainable) personal consumption by a population might lead to less use in resources and to less waste. But in turn it might lead to less demand for new products and to lower economic output. It is bad for an economy? So is it better to produce more goods (sometimes, not really required) at a higher price (due to more expensive "ecology friendly" technologies), and then to spend more money on recycling more waste (as the result of throwing old goods) and, thus, at the end to have wider negative anthropogenic impact on the nature?

According to the French Association of operators of mobile phones, consumers change on average phones every 18 months and computers – 4.5 years (GEO 2012). In 75% of cases the replaced gadget is still working. The manufacturing companies claim that new models are more complicated and have wider functions. According to the same Association, in practice the majority of consumers use at best only 10% of the technological or advertised capacities of a mobile phone or of a computer.

What does it mean from the point of ecology? According to various estimates, from 40 million to 90 million pieces of electronic products go to waste every year. About 70-80% of the collected "electronic waste" (or 300-350 thousand tons in physical volume) goes to developing countries, where the products disassembled to recuperate precious metals from scrap. Researchers forecast that the volume of such waste will increase by 2020 in China and South Africa by 200-400% and in India by 500%. Thus these countries are turning into a huge electronic dump. In our opinion, this is a good example of a "non sustainable" consumption.

How to address this issue? We believe that both consumers and manufactures should contribute to it together with government agencies (i.e. Customs) by controlling, for example, transboundary movement of waste.

Probably it is time to suggest introducing a new concept of "sustainable and responsible marketing". In our opinion, such concept shall include the responsibility of a company not only to environmentally and socially trace its products (which very few companies are doing now) but also to avoid manufacturing and placing on the market products which are excessively resources intensive from the point of production and or final disposal or have a very short life vis-a-vis resources needed to manufacture and to distribute them. And in this case a new indicator – "anticipated life expectancy of a product" will be required to help change the mentality of manufacturers and consumers from disposal to long term use and sustainable consumption of products and resources.

9. Ecological and social compliance/ecological and social traceability

In our opinion, an open dialogue with business is possible and required as creating a positive green image has already became a part of the marketing strategies of many companies.

The business's concern with regard to environment can be seen inter-alia in the appearance of new regulatory requirements which we call "ecological and social compliance". The basic term "compliance" is used to describe the management and control functions of a company to fulfil rules and regulations set by control bodies (the non respect of such requirements can lead to legal, financial and other sanctions from regulators and eventually to financial and image losses).

Today we note the expansion of areas where companies see reputation challenges; thus the "compliance" sphere is expanding. The areas where companies feel the potential image losses include, first of all, environmental and social issues, for example, the environmental friendliness of the applied technologies, use of children's labour at plants (thus, such accusations were made against companies Nike and Reebok).

A special aspect of the compliance is how to show and to prove that requirements are met and that declarations/claims correspond to the reality. It means a process/mechanism is required that the authors call "ecological and social traceability".

To recall that the 2030 Agenda for Sustainable Development (sub point 12.6) recommends "companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle". Probably, there is a need not only to report "sustainable information" but also be able to prove it. In this context the suggested by authors "ecological and social traceability" of environmental and ethical claims might become one of the reporting and controlling tools (more precisely this concept was elaborated by authors in a separate publication (Traceability in the context of corporate social responsibility, 2013).

To show the importance of "compliance" let's recall the recent scandal (September 2015) with the German autoproducer Volkswagen cheating with the environmental performance of its diesel engines shows that companies are now working under the pressure of ecological indicators which became a part of their competivness efforts (not to mention billions of dollars for the company to pay for this cheating). Here is the price of "non-compliance"!

From the point of civil society it means that probably new verification measures are required to assess old and new technologies as theoretically similar type of cheating can be in any area where old and new technical solutions are competing not on market terms but more and more often on purely environmental grounds.

The problem is often aggravated by the fact that old technologies and traditional types of energy/fuels are usually taxed and new technologies are often subsidized thus making it difficult to understand to what extent new decisions re really competitive. To make it totally confused for economists, the fossil fuels in developing countries are often subsidized (to support the population).

For example, in developed market economies taxes constitute from 50 to 90% of retail prices for petrol and diesel fuel. At the same time, in France the same diesel fuel used for heating of houses will cost 1/3 less (due to lower taxation). If you have such 30% alleged "efficiency marge", how one could choose the most efficient type of heating for your house?

It is not by chance that the 2030 Agenda for Sustainable Development (Goal 12.8 sub point-12.c) calls on countries to "rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions…".

10. Ecology as a barrier to trade

Business (in particular, large companies) is already seriously considering potential climate change measures on their activities (Financial Times, 2015). One of the proposals to be discussed at Paris is an introduction of "carbon pricing", but already around 440 big companies are using such calculations internally to assess their "carbon footprint" (CO2 emissions relating to an activity of a person or of a company: as the result of travelling by car or by air; manufacturing goods, etc.). If the carbon footprint logic (to recall another earlier example- "food miles") will be actually introduced it might impact the current international division of labour. If it is cheaper to produce in China, it is evident where an importer places its order. But if you add to this price the "carbon footprint", then such ecological factors might overweight the initial cost based on purely market terms.

Such approach ("carbon footprint") was used in a study by ESCAP (ESCAP 2011) and it revealed that China, Indonesia and Vietnam import commodities that are produced overseas with lower emissions (because of cleaner technologies) than if they were produced locally, while the reverse situation is true for Bangladesh, India and Thailand. With regard to exports, similar analysis shows that Bangladesh, China, India, Indonesia, Thailand and Viet Nam export commodities which are produced with more emissions than in the destination countries. At the same time Japan, Korea and EU (15 countries) export clean production. To express these findings in a plain language, it means that if you want to purchase environmentally friendly goods then buy products made at Japan, Korea, EU. There is no need to explain what such potential marketing campaign will mean for the majority of Asian exporters.

Summary and concluding remarks

1) It seems that at this moment policy makers and civil society are overwhelmed with the huge volume of patchy and confusing (as shown in the paper) ecological data. Not to mention if we are confident that we have reliable information to analyse and monitor the above problems?

2) There is lack of comprehensive and balanced overview/analysis of the climate change issue from various points such as: main causes of the problem, its major components, principal polluters (causes of pollution), careful evaluation of existing and of new technologies (with their positive and negative consequences), etc.

This paper doesn't intend in any way to question new technologies or approaches; its aim is to show that even most environmentally friendly (at the first glance) decisions, nevertheless, deserve a comprehensive analysis because, as a rule, they require serious financial investments and can often have hidden consequences, including for ecology. Besides it is necessary to have a clear understanding of the real price of new technologies and, if it is necessary, to subsidize directly their introduction, but not to manipulate with an alleged efficiency built on hidden taxes.

3) We also believe that today the role of business and especially of consumers in addressing environmental challenges is strongly underestimated. We feel that business can and has to take more active and responsible position not only from the point of application of sustainable production patterns, but also in advancing sustainable consumption and habits to diminish the negative anthropogenic impact on environment. We call such approach "sustainable and responsible

marketing". And to control such responsible behaviour of companies the mechanism of obligatory and voluntary requirements ("ecological and social compliance") can be used, as well as related to it "ecological and social traceability" of statements/claims of companies. Governments shall take a more active position in this area by supporting the responsible business and combating those who are "green washing" conventional goods and services. In trade such control functions (as well as other ecologically related tasks mentioned in this paper) may be entrusted to customs as a part of their routine counterfeiting and similar responsibilities.

In this regard we see the need to recommend to companies (at the first stage – to large and transnational) to have the reporting systems not only allowing to reflect the efficient use of resources, but, if necessary, to trace and to demonstrate "ecological and social compliance".

"Sustainable and responsible marketing" has to build an awareness among consumers and give them the chance to choose goods which are manufactured with an optimal use of resources, can be recycled without harm for the nature and will be used realistically long enough.

4) From the point of consumers, in our opinion, it is necessary to recognize that to solve global environmental challenges it is not sufficient "that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature" (as suggested by UN). It is not enough also to reduce the food waste and loss and to diminish the volume of waste in general. These are half way actions. New serious measures directly addressed to consumers are required.

5) We shall honestly admit that the global economy can't continue to develop at the same rate, as in the past, if the goal is set to stop the process of global warming. In other words, the sustainable consumption today shall mean more rational and moderate (and most likely - reduced) consumption not only of energy and water, but also of all other products / goods, and has to lead eventually to "sustainable management and efficient use of natural resources".

It means also that for transition to more "sustainable consumption and production patterns" it is necessary not only to strengthen scientific and technological capacity of countries (as the UN Resolution requires), but above all, to change the mentality and habits of consumers. The purpose of such work is an education and creation of a wide layer of really "responsible consumers".

The appearance of a critical mass of such consumers will cause a demand for "ecological and ethical" goods and will lead to new environmentally-friendly habits. It is necessary that it should become a fashion and be considered as a model consumption to use goods for long time, and not to throw them out every year. Ideally, on this basis we suppose a reasonable balance between demand and production will be found.

6) How is it possible to reach the goals set above? To start from, there is a need for a broad international cooperation, search of optimal and adapted decisions, exchange of information and for an open debate between governments together with an active participation of business and civil society, involving consumers, and all the citizens of the planet.

One could recall in this content the famous phrase of Charles Darwin: "It is not the strongest of the species that survives, nor the most intelligent that survives, it is the one that is most adaptable to change ". In other words, to survive we should think/behave globally and reasonably.

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