Policy Briefings

BASQUE CENTRE FOR CLIMATE CHANGE
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# THE BASQUE ECOLOGICAL DEBT: GLOBAL SOCIO-ECOLOGICAL IMPACTS OF A SMALL OPEN ECONOMY

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Globalisation of the world economy has increased the material and energy flows around the planet, raising the pressure over the environment and the communities that depend on them. Climate Change or natural resource depletion are just some consequences of the increasing pressure on the global environment.

All countries and societies do not share the same responsibility, as they have impacted on the Planet in an unequal manner. Historically, northern industrialised countries have been responsible for major pressures and resource consumption, while developing countries have suffered to a great extent the consequences of these environmental impacts.

In the context of globalisation and environmental degradation, it becomes critical to better understand these links between consumption and production patterns and associated socio-ecological impacts at multiple scales. This study analyses the Ecological Debt(1) of the Basque Country (BC), an example of a northern rich open economy, to illustrate the complex interconnections between the economy and the environment in a globalised world. For doing so, we analyse the social metabolism of the BC, i.e. the energy and material flows linked to the production and consumption activities of the region, in relation to the social and environmental impacts that this physical flows generate worldwide.

## Key Points

- *Globalisation of the world economy has increased the material and energy flows around the planet raising the pressure over the environment. In this context, it becomes critical to better understand the links between current consumption and production patterns and associated socio-ecological impacts at multiple scales.*
- *The energy and material consumption in the Basque Country illustrates the resource dependency and impact of northern open industrialised economies in the Global South, where, paradoxically, resource rich countries are facing serious difficulties to get out of poverty traps.*
- *As the resource availability and waste absorption capacity of the planet are reaching its limits, it becomes more necessary to reduce the resource consumption and pollution of developed countries so that the basic needs of all humans can be met, without dilapidating the environment and hence the possibilities of future generations.*
- *Rich countries should also reduce their resource dependency and ensure that their consumption and production patterns fit to environmental and social standards, not only within their territory, but also abroad, where the commodity frontiers are expanding inexorably to access new resources.*

## The social metabolism of the Basque Country and its resource dependency

The study of the flows of energy and materials between socio-economic systems and the environment allows a better understanding of how human activities depend on the environment as a source of resources and as a sink of waste, and to comprehend the unequal distribution of environmental goods and services among countries. This dependency of socio-economic systems on the environment can be seen as a functional equivalent to biological metabolism, in which economies "eat" raw materials (e.g. fossil fuels ) which are "metabolised" to produce goods and services (e.g. cars ) and "excrete" waste as degraded materials and pollution (e.g. $CO_2$).

In the case of the BC, the analysis of its social metabolism reveals that the Basque economy is highly resource-intensive. In the year 2004, the Total Material Requirement (TMR) (2) reached 108 tons per capita (t/cap). This value was similar to the ones of Finland (109 t/cap) but much higher than most of the other EU countries including Germany (74 t/cap), Spain (50 t/cap) or the UK (35 t/cap).

Only 17% of Basque TMR is obtained within the region, while 83% comes from outside its boundaries: 35% from Spain and 48% from the rest of the world. This external dependence is largely conditioned by the weight of the industrial sector, especially

1. The Ecological Debt can be defined as the debt that has been accumulated by industrialised countries with the Global South through the continued plundering of its natural resources, and the environmental damage related to an unequal trade and an exclusive benefit of the global environment as a sink for waste.
2. Total Material Requirement records the accumulated volume of materials (measured in tones per capita per year) that are extracted from nature for economic activities and takes into account both Direct Material Inputs and Hidden Flows, also known as ecological rucksacks, which are part of the economic activity but they are not used in the production process directly.

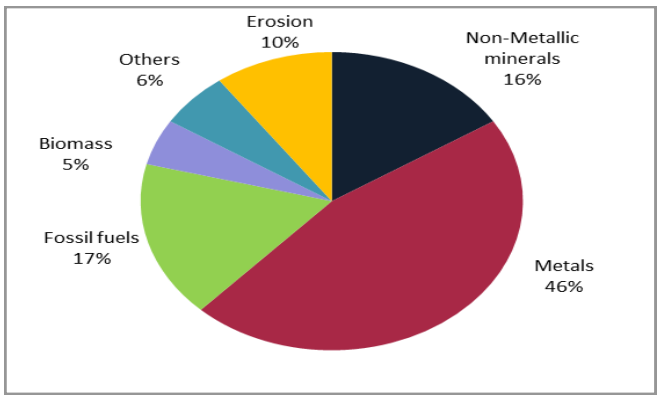


Figure 1: Composition of the Total Material Requirement of the Basque Country

metallurgy. In fact, 46% of the TMR is associated with metal resources that are entirely imported from outside the BC. The Basque economy is also characterised by its energy intensity, being fossil fuels the main energy source and representing 17% of the TMR. The totality of these fossil fuels is imported from other regions, which increases the material dependency of the region. Note that after the decline in the gas extraction in the mid nineties, the Basque primary energy production is currently limited to renewable energy, which covers less than 10% of the total demand. In what follows the origin and impacts associate with these resources are analysed.

## Global socio-ecological impacts of the Basque Country

### Impacts linked to fossil fuels

The imports of oil and gas constitute more than 90% of the Basque energy consumption. This gas and oil comes from countries such as Russia, Iran, Mexico, Nigeria, Trinidad and Tobago or Algeria where the extraction of these resources is causing deforestation, habitat destruction, acid rain, water pollution and emissions of $CO_2$ and other toxic wastes to the atmosphere with serious damages for surrounding ecosystems and communities. To give just an example, it is estimated that in the last half century in the Niger Delta (Nigeria), a source of Basque imports of oil and gas, it has been spilled more than 13 million barrels of oil, equivalent to more than 50 times the Exxon Valdez oil spill incident.

Further, in relation to the use phase of fossil fuels and the emissions of green house gases (GHG), the carbon debt of the BC (measured in terms of historical debt accumulated by $CO_2$ emissions), reached in 2005 an estimated value of 5.348 million €, over 9 % of the GDP.

Oil spill in Niger Delta (source: Sosialistisk Ungdom under Creative Commons)

### Impacts linked to agrofuels

Orangutan rescued from palm plantation in Borneo (source: Karmele Llano)

The BC has also witnessed a rise in the demand of agrofuels including palm oil. In 2010 the imports of palm oil reached a peak of 35,000 tons, 96% coming from Indonesia, the largest oil palm producer in the world. In this tropical country, African palm (*Elaeis guineensis*) plantations are growing inexorably driven by the international demand of food and agrofuel industries. This expansion is causing the destruction of tropical forest in some of the most biodiverse areas of the world putting at risk endemic species like the Borneo Orangutan (*Pongo pygmaeus* ), the eviction of farmer and indigenous communities, and health risks and extreme labour conditions for workers, especially among the most vulnerable social groups such as women and children. Furthermore, the increasing demand for agrofuels is leading to a rise in global food prices threatening the food security of millions of people all over the world. Paradoxically, in Europe and in the BC agrofuels are being promoted to substitute the use of fossil fuels and to reduce GHG emissions, although the expansion of this crop is causing the release of a significant amount of GHGs. With an area of less than 0.1% of the planet, Indonesia contributes to 4% of global GHG emissions due to forest and peat land destruction.

## Impacts linked to metals

Despite the mining tradition of certain regions of the BC, today all metals used in the region are imported from abroad. By volume and impact highlights the imports of tin, nickel and aluminium.

Since 1997, the imports of nickel have also kept growing in the BC, reaching its maximum in 2006 with 30% of the Spanish imports. This nickel comes mainly from Russia, from cities such as Norilsk, which has the biggest nickel deposit of the world. Among the 10 most polluted cities in the world, in Norilsk every year more than 4 million tons of toxic wastes (e.g. copper, led and arsenic) are emitted to the atmosphere, there is not a single tree in 48 km due to acid rain and a life expectancy is below the 46 years.

Huanuni tine mine (Bolivia), declared in environmental emergency in 2009 (Source: Leire Urkidi).

Basque tin imports account for 70% of the Spanish tin imports and 9% of the European Union, and encompass 29% of the TMR of the BC. This tin is mainly used to produce win capsules and is extracted in the Global South, in countries like Bolivia where the Ecological Debt of European Countries goes back to colonial times. Tin is found in nature in very small concentrations (to extract one ton of tin other 6,791 tons of rocks and materials need to be removed) and during the extraction and subsequent smelting process it generates toxic wastes and emissions. In the case of Bolivia, this mining activity is causing the ecological degradation of many watersheds with serious impacts for human health and economic activities like agriculture.

Another important source of ecological debt for the BC is the import of aluminium. Only in 2010, these imports reached 66.000 tons. In this case, in addition to the direct impacts of the extraction process, the damages related with the aluminium production have to do with the energy resources required in its transformation: according to the World Watch Institute, 2% of global energy use is consumed by this activity. To satisfy this energy demand hydroelectric dams are being constructed in countries like Mozambique and Brazil, origin of Basque imports, damaging tropical forests, flooding protected areas and forcing the relocation of thousands of families, many of them indigenous communities strongly attached to their lands.

Construction of Barra Grande Dam in Brazil (Source: International Rivers under Creative Commons).

## Impacts of other economic activities abroad

In addition to the impacts derived from the above mentioned imports, there are also other economic activities of Basque companies that are impacting on the environment abroad. For instance, after the depletion of fish stocks in the Atlantic, nowadays most of the fish catches of the Basque fleet takes place in other oceans. In 2004, half of these fish catches corresponded to tuna stocks in the Indian Ocean.

In the last decades, Basque companies have also dedicated over 60.000 million euro to Direct Foreign Investment, 85% in the financial and energy sectors. Among the activities of these sectors with significant impacts on the environment highlights investments on mining, agro-business, oil extraction and hydropower plants (e.g Barra Grande in Brazil). These activities derive in tax revenues for Basque authorities but also lead to land misappropriation and contamination and depletion of water reservoirs, damage biodiversity hotspots in pristine areas and cause the violation of human rights.

## Conclusions:

The Basque social metabolism is an example of the high resource dependency of northern industrialised economies. This resource dependency is largely satisfied with resources that are imported from the Global South, where, paradoxically, resource rich countries have serious difficulties to get out of poverty traps and suffer the liabilities, socio-ecological impacts of consumption and production patterns of rich countries.

As it is illustrated for the BC, the economic prosperity of the so called developed world is linked to an increasing use of resources and pollution (e.g. $CO_2$ emissions) which generates social and environmental impacts worldwide. With a world popula-

tion of over 7,000 million inhabitants and new emergent economies like China, Brazil or India increasing their demand for resources, the patterns of Northern economies become even more unsustainable. The world is reaching its limits in terms of resources availability and waste absorption. As these resources become scarcer, the commodity frontiers are expanding to new territories and the amount of resources needed to obtain the same amount of energy and other kinds of materials is growing, increasing the impact over the environment. For instance, due to the decline in oil-fields, non conventional resources (e.g. shale gas or tar sands) are being exploited, which requires more effort to maintain the same energy production and with higher environmental impacts.

Satisfying all human needs while preserving the environment, which is essential for supporting life on Earth, requires a profound transformation in the commercial and human relations between rich countries and those who, despite having greater resources, have been impoverished. Rich economies should fit to environmental and social standards, not only within their territory, but also abroad, where the commodity frontiers are expanding inexorably to access new resources. Rich economies should also limit their aspirations of continuous growth so that the basic needs of all humans can be met, without dilapidating the environment and hence the possibilities of future generations.

The opportunities to improve the current situation in the BC are multiple: instead of promoting the use of agrofuels that are leading to severe impacts in Indonesia and other parts of the world, renewable energies could be promoted which could also became an important source of employment; energy demand could be reduced by promoting public transport and a better planning of the territory; unnecessary consumption could be avoided and material intensive products with high ecological rucksacks (e.g. tin capsules) could be replaced with less harmful materials; the principles of reducing, reusing and recycling materials could help to decrease waste generation and resource dependency and local production (e.g. agriculture products) could be supported to avoid the transport of large quantities of resources all over the world. The challenges are huge but the efforts towards a more sustainable society are unavoidable if we want to avoid the collapse of the planet, the house that sustains the livelihoods of all species, human and non-human, now and in the future.

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## Further information:

The extended version of this research project will be available at: Urkidi, L., Garmendia, E. (eds.) 2013. Deuda Ecológica Vasca: implicaciones sociales y ambientales en el Sur. UPV-EHU editorial service. *In press*.

A documentary of the research project is available under the title “Euskal Herria: the Hidden debt” at http://vimeo.com/44976310

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