

25th EEAC Annual Conference

How to Achieve a Sustainable Europe by 2030

1. Introduction

Reflecting about the implications of Human activities on the environment and the consequences to our species' future has been a long discussed topic in Europe. From Malthusian theory, all the way through the 'Limits to Growth' by the Club of Rome and the Brundtland Report's definition of sustainable development, the limits imposed by the planetary boundaries and intergenerational equity has been the focus of many development discussions [1,2].

Europe has historically been in the forefront of the transition towards a more sustainable world. Such historic leadership is a natural consequence of Europe's early realization that the liveability of its inhabitants is closely related with the preservation of its environment. Nevertheless, the rate at which Europe consumes resources, native and imported, poses a threat to our common future which we have the moral duty to address. Mankind co-inhabited the planet within its limits for over 200 millennia and took us no more than 200 years to fast track our activities and growth so much that currently, the biggest threat to our future success are our activities. We are living in a globalized planet in which information flows rapidly but we still have global challenges to address. The resources are scarce and not equitably distributed amongst countries. The global north development was largely reliant on dirty energy and cheap overseas production but now, while we are trying to progress towards clean development, we also need to close the gap between the global north and global south, based on solutions with a smaller toll on the environment.

2. Sustainable Europe by 2030

Europe's role in the decades to come goes beyond adjusting to the planetary boundaries. The global nature of the challenges ahead requires Europe to be in forefront of new alliances and implementation of solutions at a global scale. There are two major guiding documents showing the way, the UN Sustainable Development Goals and the Paris Agreement on Climate Change [3,4]. Both documents are ambitious on their targets and essential to decrease our impacts and augment our long term chances of avoiding collapse.

Complying the SDG and Paris targets will mean that Europe in 2030 is a continent where life conditions are ideal and that we managed to mitigate risk for ecosystems at large, and the population in particular. We will have a wise land and sea management focus on preservation of our natural resources, the combustion engine is part of history, most energy sources are renewable and sustainable, and the different nations are prepared to deal with the impacts of climate change. People are now less 'material dependent' and more environment friendly in their lives since there is a general acknowledgement that our daily habits and ambitions are optimized for happiness and balance instead of wealth and show off.

3. Three biggest challenges for implementing a sustainable Europe by 2030

a) SDG 13 - Climate Action

Climate change is likely the biggest threat to our common future as earth co-inhabitants. The Paris Agreement, agreed upon by the majority of the nation's representatives, clearly shows the way towards a low carbon future. Nonetheless, with self-imposed national targets and a clear mismatch

between the goal of keeping the average global temperature increase below the 1.5 °C threshold and the willingness to commit to CO₂ emission reductions it's essential for Europe to be more ambitious. Southern Europe in particular, a so-called climate hotspot, will need to endure a changing environment, with higher average temperatures and drier winters, combined with more severe and frequent extremes, which will increase the likelihood of losses, both material and human. Phenomena such as floods and droughts are likely to be recurrent, while many ecosystems are also expected to be affected and coastal regions, where a large share of the population resides, will continue suffering due to sea level rise [5,6].

Climate change will also affect Europe indirectly. By decreasing weather stability, the trend of climate refugees is likely to increase. The unpredictability will also increase the volatility of commodities and other raw materials in international markets [7]. Besides that, the still rudimentary understanding of the physics of some climate related tipping points also adds uncertainty to a system which will require heavy investments [8].

It is fundamental to find continent scale solutions in three main domains, i) scientific understanding of climate dynamics, ii) GHG emission reductions and carbon sink solutions, and iii) climate adaptation. Climate change science is of utmost importance to better understand where we are and where we are heading as well as in developing potential solutions. One of the key areas in which Europe should thrive to be more independent is data acquisition e.g. by investing in expanding its networks, inland, offshore and above the surface. Continental scale incentives to GHG emission reductions (e.g. carbon taxes, subsidies to communities maintaining ecosystem services such as GHG mitigation, clean energy policies, a working European clean energy marketplace) but also severe restrictions to the exploitation and use of fossil fuels and polluting technologies (e.g. combustion based transport, production and importation of meat). This change to greener technology also means that we need to stop outsourcing most of the production that fulfills our needs to places where environmental compliance is less rigid. Last but not least, we know that even if we stop emitting GHG to the atmosphere immediately, the inertia of the Earth system would cause climate change consequences to be felt over decades which means that it's inevitable to invest in adaptation[9]. Climate change adaptation is a necessary but difficult investment to make, many measures are cost intensive and not well accepted by the population, thus not very attractive to politicians. While successful actions require a broad range of experts working together, across silos and with the local authorities and population, to ensure that each solution is adequate in scale and applicability to the expected impacts over a certain area. It is commonly said that most climate change impacts are felt through water and so the use of *Integrated Water Resource Management* principles together with thorough regionalized risk evaluation are definitely proprietary.

Over the last decade China became a case study for their accelerated transition towards cleaner energy sources (e.g. solar PV technology) and climate change adaptation (e.g. sponge cities projects). These investments quickly placed China in the lead towards a new paradigm and this is proving to be a strategic benefit. Europe should learn from such examples and get rid the last century dependencies (e.g. coal and oil exploitation and use) as soon as possible and move, once again, to the lead position regarding pushing our species forward [10].

b) SDG 14 - Life below water

Oceans, seas, coastal areas and their resources have an important role in human well-being, social and economic development worldwide. Coastal zones are more densely populated than the hinterland and exhibit higher rates of population growth and urbanization.

Ocean resources are limited, both in space and abundance, and the pressure on the maritime environment resulting from the expansion of existing uses and the rise of new ones, the adverse impacts of climate change (ocean acidification, the rising of the sea level), overfishing and marine pollution are jeopardizing the sustainability of our oceans [11,12].

The integrated marine policies (IMP) that Europe has been promoting brought back the vision of oceans as an important development vector [13–16]. Nonetheless, a great part of this policies address the need to explore the economic and social advantages, leaving the environmental and holistic concerns for long term sustainability of our marine resources and ecosystems behind. Being part of the 2030 agenda, with the SDG 14 (Life below water), oceans are one of the biggest challenges for the years to come.

A wise and integrated maritime spatial planning (MSP) is the first step to safeguard ocean sustainability. MSP is a helpful tool, given the guidelines to organize and allocate the maritime space [17–20]. There are a lot of different approaches to it, some more focus on the economic and social development (Soft sustainability) and others focus on the environmental sustainability of the marine resources (Hard sustainability) [21,22]. The maritime space has no physical boundaries and marine ecosystems are not fixed, whereby our conservations efforts must be shared in a global scale and they must be a priority in MSP. The establishment of marine protected areas (MPA's) is essential to preserve the marine biodiversity. The definition of a network of MPA's is a difficult task, due to the characteristics of the marine environment and due to the high number of activities that occur there. The scientific knowledge acquired by research institutions and universities will be valuably for this mission.

Stimulating advancement through a Blue economy is the way forward, since "*a sustainable ocean economy emerges when economic activity is balance with the long term capacity of ocean ecosystems to support this activity and remain resilient and healthy*"[23]. There is a need for a common understanding of the blue economy and a clear framework for sustainability, in order to ensure that every country follows the same guiding lines [24]. The establishment of blue funds and new types of financing will booster the Blue economy, giving investors a chance to develop innovative projects.

Marine litter will also be a challenge to accomplish marine sustainability. This is a complex problem on a global scale and with intergenerational impacts. According to the United Nations, about 80 % of all litter at sea originates on land, and only 20% are related to maritime activities [25]. Plastics, particularly microplastics, pose a threat to marine organisms (birds, fish, turtles, mammals, zooplankton, mesozooplankton), especially due to the risk of ingestion. Despite all the work done to raise awareness for this problem, we still use a lot of plastic in our daily lives. Controlling and reducing the production and consumption of plastics is fundamental to reduce marine pollution. To this end, it is important to know and disseminate information and data in order to inform consumers, making them aware of the problem and the need to avoid plastics, and especially products containing plastic microspheres, namely hygiene and cosmetics[26]. Optimizing the fight against marine pollution by plastic debris and minimizing its adverse effects is an emerging need.

c) SDG 12 - Responsible Consumption and Production

Responsible consumption is the cornerstone of a brighter and more sustainable future as most of our impact on the environment is a direct consequence of our over-exploitation of resources, in Europe and overseas. The very concept of consuming less and better is unfortunately undermined by the metrics we use to measure the success of nations [27]. Currently, most countries are rated by two main unsustainable metrics, their production measured by their GDP, and their budgetary deficit, which threaten the capacity of states to ensure public and non profitable services such as monitoring and investing in maintaining common resources[28]. *Ipsso facto*, the ideal country on the eyes of its peers is a country that produces as much as possible and in which non economic assets (e.g. air quality, nature preservation) and not safeguarded. Mass production and overexploitation have institutional advantages which slows down the transition to greener and less intensive methods of production. On the upside, EU environmental legislation is progressing in the opposite direction which is contradictory to say the least.

Europe's attempt to establish intercontinental trade agreements such as the TTIP and CETA has also raised a lot of concerns in terms of environmental compliance [29,30]. Under the general goal

of easing transatlantic transactions, these partnership proposals would facilitate the by-passing of environmental and public health regulations while contributing to, once again, increase unsustainable mass productions of goods. The way forward should not favor less regulated global trade treaties and “growing economies”, it should favor “local” solutions and “developed economies” where growth is seen more as a liability than an objective and the only economic growth enforced is the one that is based on a more sustainable economy (e.g. sustainable food production, green energy, etc. To move towards more consumption responsible societies the economic metrics should be revised, replacing the GDP by more holistic indicators (e.g. Sustainable Development Index and the Human Development Index).

Looking ahead in terms of technological trends we can expect people to start having more free time as continuous automation and equipment efficiency will likely increase the redundancies in many professions [31]. It is now time to start discussing how this paradigm shift can be prepared so we can i) avoid major unemployment and a consequent social crisis with a heavy toll on environment, ii) how we can catalyze all this manpower and creativity towards protecting the environment instead of increasing even more unsustainable and overconsumption live patterns.

It's impossible to talk about consumption without mentioning the consumer. To shape consumer behaviors the investments should be mostly done in education. It's important to transmit a mindset shift to future generation can re-focus their objectives and strive for happiness and fulfillment instead of ownership. Supporting transition movements, the so-called 'share economy' and alternative education for sustainability should be enforced across Europe. The future generation role models must be achievers who managed to shift paradigms towards a better common future and not shallow, growth 'marketeers'.

In conclusion, the way forward passes by aligning the 'two Europes', the one in which growth is king and production, consumption and trade are to be maximized and the one that enforces the transition to a better environment. This transition will likely need much more than 13 years but it must start now.

4. Actions with immediate effect to support the transition towards a Sustainable Europe by 2030

The priority actions to move towards a more sustainable Europe by 2030 are the following:

Climate change response

- Allocate more resources to climate science;
- Enforce and support the transition to a carbon free economy;
- Incentivize local adaptation, with the main focus on water management and extreme event preparedness;

Life below water

- Invest in better Integrated Maritime Spatial Planning (MSP) and reinforce the creation of networks of Marine Protection Areas (MPA);
- Support sustainable blue economy ventures;
- Control and reduce production and consumption of plastics to decrease maritime pollution;

Responsible consumption and production

- Replace unsustainable economic metrics such as the GDP by more sustainable ones such as the SDI and HDI;
- Start thinking about life alternatives to less work intensive future which focus on environmental good practices and societal advantages;
- Invest in better education towards sustainable development.

Disclaimer

The reflection about how should a sustainable Europe look like in 2030 is a challenging but very rewarding exercise. The analysis made was not exhaustive but focused on three areas that we believe are proprietary to reach our common goals. This prioritization should not be seen as exclusive as many other areas of development are also important pieces of the puzzle. Moreover, the majority of the suggestions require cross silo approaches that go beyond sectoral improvements.

The importance of finding consensus is as important as the need to foster discussions. Achieving a more sustainable Europe is incompatible with some common practices and *bau* ways of thinking which will likely require drastic but necessary changes.

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