

Multilevel Single Use Plastics Governance

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Unsustainable production and consumption patterns of single-use plastics (SUP) are causing worldwide negative environmental and socioeconomic impacts on land-based and marine ecosystems. As a transboundary problem, global governance of plastics includes international agreements and voluntary multi-stakeholder platforms, focused mainly on oceans and marine life. Nevertheless, adaptation and mitigation strategies are required in local territories. National governments and municipalities have approved uneven local policies with inconsistent standards. This entry briefly discusses plastic pollution, global and regional responses, particular emphasis in Latin America, and the regional framework of the Pacific Alliance.

Keywords: plastics governance ; Pacific Alliance ; international environmental law ; regional coordination

1. Introduction

The production of plastics has increased twentyfold since the 1960s^[1], reaching 280 million tons in 2016^[2]. According to recent estimates, 79% of the plastic waste ever produced now sits in landfills, dumps, or the environment, while about 12% has been incinerated and only 9% recycled^[3]. Single-use plastics (SUP) play a critical role because they represent around one-third of the plastic produced^[4]. The end of life (EoL) treatment of SUP is challenging because they are disposable, generally difficult to recycle due to the complexity of chemical additives^[5], and made of low-density plastic polymers. Hence, they float in the oceans^[6], becoming a potential risk for marine organisms^[7]

Costs associated with ocean-based plastic waste lead to losses of 13 USD billion annually because of marine ecosystem damages, including revenue losses to fisheries, the tourism industry, and cleaning up litter on beaches^[8]. On land, improperly discarded plastics exacerbate vulnerability and exposure to natural disasters, blocking drains and waterways, causing floods, and creating habitats for mosquitoes and pests, which increases the contagion rates with vector-borne diseases^[9]. Furthermore, mismanaged waste near inland waterways serves as an input of plastics into rivers and oceans^[10].

Plastic pollution is a transboundary socio-ecological hazard that requires policy coherence. It is necessary to strengthen multilevel governance to guarantee that this complex decision-making process implements adaptation and mitigation strategies to tackle those unsustainable patterns of SUP production and consumption^{[11][12]}. Policy fragmentation across national boundaries limits the potential for a collective response; this is the case of Mexico, Colombia, Chile, Peru, and Ecuador, which as part of a regional economic platform, the Pacific Alliance, have formally adopted in 2019 a resolution for the integral management of SUP. This entry presents a summary of global governance, regional responses in the European Union, and the case of the countries part of the Pacific Alliance.

2. Global Governance of Plastics for Ocean Conservation

The global level comprehends international agreements and platforms established to coordinate multi-stakeholders relations that exceed national borders, mainly marine plastic pollution originating from land and sea sources^[13]. For example, under the United Nations framework, two voluntary global multi-stakeholder platforms interact: the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (1995)^[14] and the Global Partnership on Marine Litter (2012)^[15].

The International Convention for the Prevention of Pollution from Ships (MARPOL) added Annex V for the prevention of pollution by garbage from ships, implementing a complete ban on the disposal of plastic waste in the sea (1988)^[16]. Afterward, the International Maritime Organization (IMO) developed an Action Plan to tackle marine plastic waste from ships (2018)^[17]. In 2019, the IMO and the Food and Agriculture Organization of the United Nations (FAO) consolidated a global project for reducing marine litter from fishing activities, especially fishing gear and plastics, called the GloLitter Partnerships Project^[18]. Other international agreements on marine issues are the Convention on the Prevention of Marine

Pollution by Dumping of Wastes and Other Matter (London Convention)^[19] and the United Nations Convention on the Law of the Sea (UNCLOS)^[20]. The London Convention (1972) and its Protocol (1996) [38] prohibits plastic dumping at sea. Meanwhile, the UNCLOS (1982) establishes principles and general rules considering marine pollution.

In 2019 amendments were approved to the annexes of the Basel Convention^[21] to control and increase the transparency of the transboundary movements of plastic waste. However, plastics can also carry Persistent Organic Pollutants (POPs), causing adverse effects when leached into the ocean or burned in an uncontrolled manner^[22]. For that reason, the Stockholm Convention is an important platform to limit the use of POPs, improving the environmentally sound management of plastics.

The global governance of plastics is also visible in various action plans for ocean conservancy led by the United Nations Environment Programme (UNEP). Examples include the Permanent Commission for the South Pacific (CPPS), a regional maritime organization founded in 1952 that acts as the coordinator of the Plan of Action for the Protection of the Marine Environment and Coastal Areas in the Southeast Pacific^[23]. In 1983 the CPPS adopted the Protocol for the Protection of the Southeast Pacific from Land-based Sources of Pollution to tackle solid waste discharge from land-based and sea-based sources^[24].

3. Regional Plastics Governance in the European Union for a Circular Economy

The European Union (EU) is an excellent example of multilevel regional coordination with an unprecedented global impact through its legal standards and market mechanisms^[25]. In 2018 the EU issued the Regional Strategy for Plastic in a Circular Economy. In brief, the measures proposed to implement the strategy were: (a) improve the economics and quality of plastic recycling; (b) curb plastic waste and littering; (c) invest and innovate on circular solutions^[26]. Later on, in 2019, the EU adopted a Directive to reduce the impact of SUP, focused on those products most often found on European beaches, abandoned fishing gear, and oxo-degradable plastics^[27]. In addition, the following guidelines were established: (a) ban on selected SUP for which alternatives exist on the market; (b) measures to reduce consumption and ecolabelling; (c) extended producer responsibility in cases of tobacco filters and fishing gear; and, (d) collection targets for plastic bottles, as well as, the obligation to incorporate recycled plastic in them. The last update of these policies took place in 2020 with the new Circular Economic Action Plan for a cleaner and more competitive Europe, which considers plastics to be one of its main areas of intervention^[28].

4. National and Subnational Plastics Governance

The negative externalities of SUP are addressed mainly by national governments, considering specific products and mostly their end of life^{[29][30]}. There is an erratic approval of uneven local policies with inconsistent standards that could cause systemic illegalities^{[31][32]}. Xanthos and Walker (2017)^[33] analyzed plastic bags and microbeads policies, concluding that in South America, interventions are severely lacking, and research is missing to establish the positive short and long-term impacts of the different measures. In 2018, Schnurr et al.^[34] updated the previous study, showing an increase in the number of strategies implemented in national and subnational governments in South America, especially for plastic bags; however, limited legislative bans exist the rest of SUP. In 2018, the UNEP^[4] delivered a report reviewing plastic bags, single-use plastics, and microplastics national laws in 192 countries. 66% of the countries had adopted some form of legislation for plastic bags, mostly related to a ban on free retail distribution. In the case of single-use plastics, only around 14% of the countries had enacted through law some ban. The situation was even worse in microbeads, in which only 4% of the countries had established legally binding bans. Figure 1 shows a summary of the different policies to tackle SUP according to the life cycle of the product.

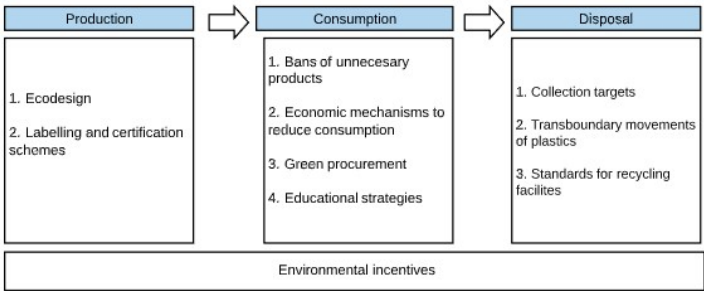


Figure 1. Life cycle approach of environmental

policies in the case of SUP

4.1. Illustrative Case Study: the Regulation of Single-Use Plastics in the Pacific Alliance

The Pacific Alliance (PA) is a regional organism founded in 2011 to pursue its constituents' economic growth and social development, Mexico, Peru, Chile, and Colombia. Ecuador is an observer state that applied in 2019 for full membership^[35]. The PA was established based on a shared political and economic vision to enhance commercial integration and the free movement of goods, services, capital, and persons, focusing on the Asia–Pacific region. In 2018, this regional block was the eighth largest economy worldwide, which represents 40% of the GDP of LAC^[36].

The presidents of the PA States have adopted two joint declarations, one on climate change (2014)^[37] and one on single-use plastics (2019)^[38]; both are soft law instruments. Furthermore, in 2016, the Environment and Green Growth Technical Group of the Pacific Alliance was established to strengthen cooperation on sustainable development by the different environmental national authorities^[39]. Remarkably, the Presidential Declaration on Sustainable Plastic Management showed the shared concern of the States about the increasing generation and accumulation of microplastics and plastic waste in the environment and its negative consequences on health, biodiversity, and the economy^[38].

The PA shows the possibility of policy articulation beyond national borders to face the global problem of SUP in the Latin American arena. The Presidential Declaration on Sustainable Plastic Management of the PA suggests the approval of the following coordinated national policies: (a) plastic bag regulations; (b) prohibition of plastic cutlery and straws in natural and cultural protected areas (particular emphasis on marine ecosystems); (c) research and innovation in the plastic industry; (d) characterization of plastics and the consumers right to have information; and, (e) promotion of substitutes for SUP, as well as educational campaigns^[37].

As a federal state, Mexico has a national law for the prevention and management of waste (2003)^[40], reformed in 2014, which recognizes the shared responsibility of the producer in the case of plastic containers. At a local level, the different subnational governments have approved reforms to reduce the consumption of SUP and prohibit the delivery of plastic bags. Those subnational laws recognize the producer's responsibility for ecodesign, labeling schemes, and collection targets. An interesting case is the Federal District of Mexico City that established a ban on products that contain microplastics, a material that has not received attention in the region (2019)^[41].

Colombia does not have a single normative mechanism to regulate SUP. However, the State has established a national ban on SUP at National Protected Areas (2019)^[42], a national fee on plastic bags (2016)^[43], becoming the first country to introduce this type of economic instrument in the PA, and two other agreements of the Ministry of Environment that regulate the environmental management of packaging (2018)^[44], including plastics, and an older one for the rational use of plastic bags (2016)^[45]. EPR strategies are considered in terms of ecodesign, labeling schemes, and recovering targets in both cases. Governmental statistics show that 71% of Colombian households have reduced the consumption of plastic bags since the national fee was approved; furthermore, the fiscal strategy permitted the State to raise 10.460 million Colombian pesos during the second quarter of 2017^[46]. At the subnational level, two departments, four municipalities, and one district were identified to approve normative measures to reduce the use and consumption of SUP and plastic bags, especially linked with effects on ecotourism^{[47][48][49][50][51][52][53]}. For example, in the case of the coastal District of Santa Marta, the local regulation (2018)^[53] showed data on the prevalence of plastic waste found in some beaches that belong to the Department of Magdalena, from a study done by the INVEMAR, a marine research institute linked with the Ministry of Environment.

Peru adopted national legislation on single-use plastics (2018)^[54] with its corresponding secondary regulatory development (2019)^[55]. That normative measure also establishes a national fee on plastic bags. Declarations from the Ministry of Environment determined a reduction of 30% of plastic bag consumption during 2019^[56]. The latest legal enactment was the national educational campaign on plastic waste management lead by the Ministry of Environment (2020)^[57]. Furthermore, Peru also has a critical development regarding green procurement and restrictions on SUP acquisition in the public sector (2018)^[58]. At the subnational level, legislation was found in regional and municipal governments ^{[59][60][61][62][63]} regarding SUP and following national laws.

Chile has national legislation that prohibits the delivery of single-use plastic bags in the national territory (2018)^[64]. This regulation came after 63 Chilean municipalities established voluntary schemes banning plastic bags, which were first adopted in 2013^[65]. National statistics of public opinion about environmental measures show that 95% of citizens agree with the prohibition of plastic bags^[66]; moreover, declarations from the Ministry of Environment communicate that since the normative was implemented, the delivery of 5.000 million plastic bags has been avoided^[67]. Chile also has national legislation on EPR (2016)^[68] that contemplates packaging as a priority product, considering various strategies to

guarantee the polluter pays principle. Moreover, Chile reformed (2018)^[69] its Penal Code to punish people that pollute national parks or watersheds. Finally, at the subnational level, new normative initiatives are adopted to regulate SUP in general; this is the case of the municipalities of Providencia and Zapallar (2019)^{[70][71]}.

Ecuador does not have one national legislation on SUP. However, there is a national fee on plastic bags (2019)^[72], a national agreement to decrease the consumption of SUP in public and private schools (2018)^[73], a deposit–refund system for plastic bottles made of polyethylene terephthalate (2016)^[74], and a national regulation developed by the Ministry of Environment that tends to regulate the life cycle of plastics considering the application of EPR, in terms of ecodesign, labeling schemes, collection targets, and environmental incentives (2014)^[75]. In addition, Ecuador has various local normative measures; for now, three provinces and eight municipalities have adopted restrictions on SUP, with particular emphasis on plastic bags and straws^{[76][77][78][79][80][81][82][83]}. The case of the Galapagos Islands is of particular interest, considering that although humans do not inhabit 97% of its territory, plastic waste is visible^[84] because it comes from nearby fishing regions, South and Central American coastlines, in particular, northern Peru and southern Ecuador^[85]. Therefore, in 2015^[86], the subnational government established a local normative and an action plan to reduce the consumption of SUP. As a result, statistics from the Ecuadorian government show that the consumption of plastic bags in the Galapagos has plummeted down since 2015^[87]; in 2014, 75.71% of households in Galapagos used to consume plastic bags, but since 2015 the percentage of households is less than the 30%, being 7.20% in 2018^{[88][89]}.

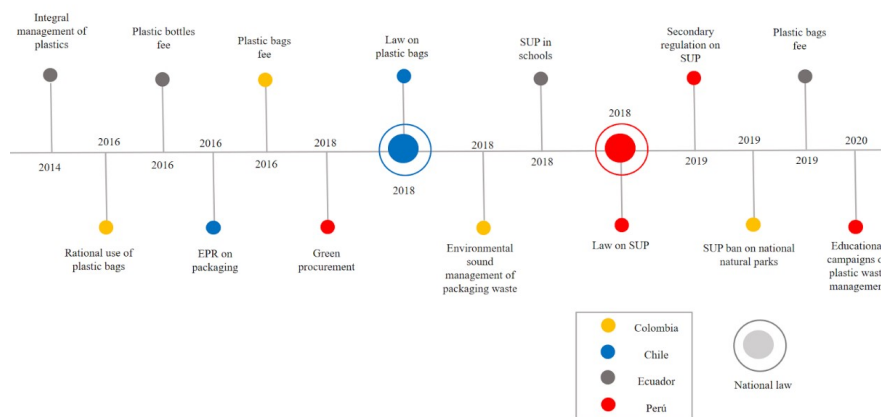


Figure 2. Timeline of the national regulation in the PA. Source: self-elaboration

The Declaration of the Ministries of Environment from the Pacific Alliance (2016) countries and the conformation of the Environment and Green Growth Technical Group shows the willingness of this regional platform to achieve international environmental cooperation. However, national and subnational initiatives face challenges because plastic products are part of global value chains through international trade^[90]. Moreover, the diverse normative responses (Figure 2), not regionally coordinated, cause multiple standards that could lead to illegalities. As a result, SUP is prohibited only within local borders when this problem is transboundary and requires policy coordination.

5. Conclusion

There are diverse subnational initiatives in the PA countries to prohibit, in their territories, the delivery of plastic bags and SUP in general. It demonstrates the public recognition of the necessity to change the current production and consumption patterns. Nevertheless, scientific studies in local areas are still needed to identify the actual impacts of plastics along their life cycle and the best strategies to tackle the problems. Moreover, local responses are not articulated from a national perspective, except for Chile (plastic bags) and Peru (SUP), which can generate scattered standards to deal with a problem that exceeds human borders. Consequently, national regulatory proposals should consider integral life-cycle approaches to regulate a product that is part of international value chains, causing differentiated consequences for developing countries, considering low recycling rates and limited waste collection and sorting systems.

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