

Multilevel Single Use Plastics Governance

Subjects: **Environmental Studies**

Contributor: Adriana Abril Ortiz , Andres Martinez-Moscoco , Dolores Sucozhanay , Paul Vanegas

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.

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.

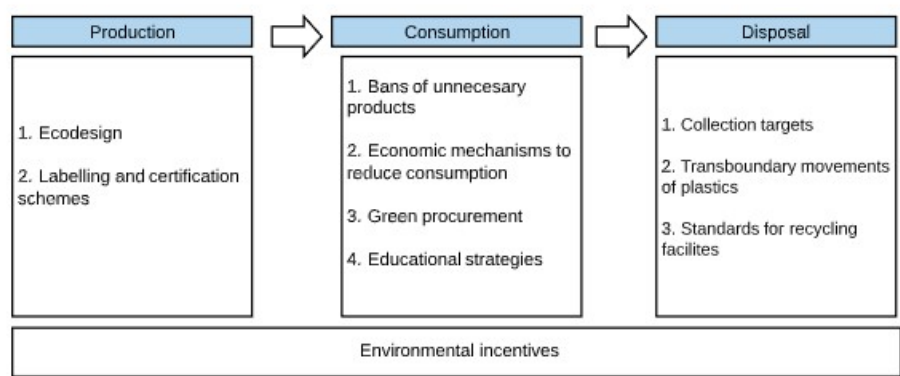


Figure 1. Life cycle approach of

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]}.

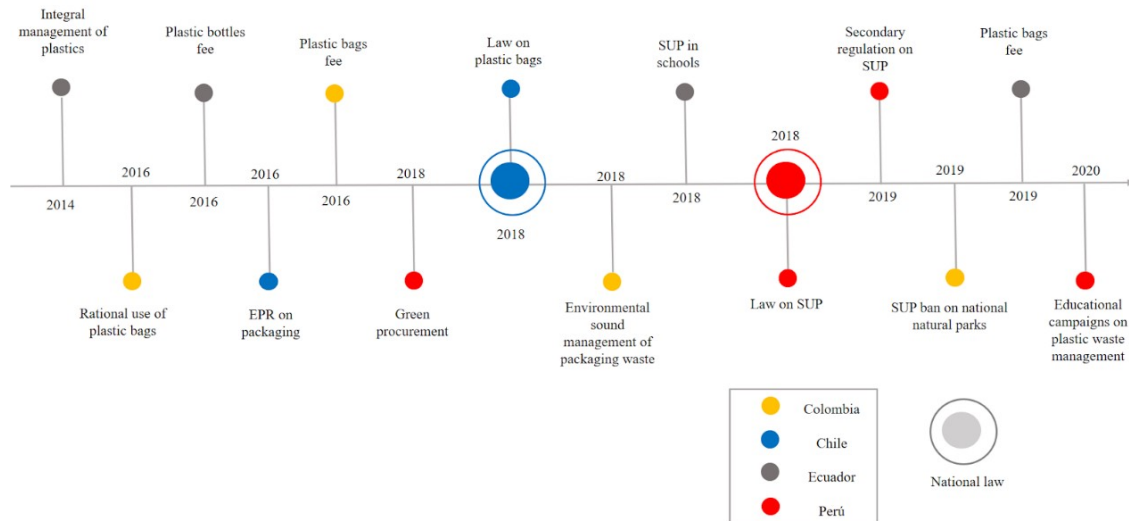


Figure 2. Timeline of the national regulation in the PA. Source: self-elaboration

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.

References

1. Plastics Europe. An Analysis of European Plastics Production, Demand and Waste Data; European Association of Plastics Recycling & Recovery Organisations: Brussels, Belgium, 2018.
2. Plastics Europe. An Analysis of European Plastics Production, Demand and Waste Data; European Association of Plastics Recycling & Recovery Organisations: Brussels, Belgium, 2018.
3. Geyer, R.; Jambeck, J.R.; Law, K.L. Production, use, and fate of all plastics ever made. *Sci. Adv.* 2017, 3, e1700782.
4. UNEP. Legal Limits on Single-Use Plastics and Microplastics: A Global Review of National Laws and Regulation. 2018. Available online: https://wedocs.unep.org/bitstream/handle/20.500.11822/27113/plastics_limits.pdf?sequence=1&isAllowed=y (accessed on 13 May 2020).
5. Groh, K.J.; Backhaus, T.; Carney-Almroth, B.; Geueke, B.; Inostroza, P.A.; Lennquist, A.; Muncke, J. Overview of known plastic packaging-associated chemicals and their hazards. *Sci. Total Environ.* 2019, 651, 3253–3268.
6. Carney Almroth, B.; Eggert, H. Marine Plastic Pollution: Sources, Impacts, and Policy Issues. *Rev. Environ. Econ. Policy* 2019, 13, 317–326.
7. Mejía García, A.; Gómez-Oliván, L.M.; Islas-Flores, H.; San Juan-Reyes, N. Historical Findings on Presence of Pollutants in Water Bodies in Latin America and Their Ecotoxicological Impact. In *Pollution of Water Bodies in Latin America*; Springer International Publishing: New York City, NY, USA, 2019; pp. 1–22.
8. UNEP. Valuing Plastics: The Business Case for Measuring, Managing and Disclosing Plastic Use in the Consumer Goods Industry. 2014. Available online: <http://www.gpa.unep.org> (accessed on 16 April 2020).
9. UNEP. Single-Use Plastics: A Roadmap to Sustainability; UN Environment Programme: Nairobi, Kenya, 2018.

10. Lebreton, L.; Andrady, A. Future scenarios of global plastic waste generation and disposal. *Palgrave Commun.* 2019, 5, 1–11.
11. Kooiman, J. Exploring the Concept of Governability. *J. Comp. Policy Anal. Res. Prac.* 2008, 10, 171–190.
12. León, M.; Muñoz, C. Guía para la elaboración de estudios de caso sobre la gobernanza de los recursos naturales. In *Serie Recursos Naturales y Desarrollo*; Naciones Unidas, CEPAL: Santiago, Chile, 2019; Volume 192, Available online: https://repositorio.cepal.org/bitstream/handle/11362/44779/1/S1900715_es.pdf (accessed on 15 May 2020).
13. United Nations. Sustainable Development Goals. 2015. Available online: <https://www.un.org/sustainabledevelopment/oceans/> (accessed on 3 August 2020).
14. UNEP. Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities and Other Activities Relevant to the Process of Amendment of the Lbs Protocol and Its Implementation; United Nations: Siracusa, Italy, 1996.
15. UNEP. Global Partnership on Marine Litter Purpose, Function and Organization; United Nations: Nairobi, Kenya, 2018; pp. 1–8.
16. IMO. International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V (Optional): Garbage. London. 1973. Available online: https://www.ecolex.org/details/treaty/international-convention-for-the-prevention-of-pollution-from-ships-marpol-annex-v-optional-garbage-tre-000989/?q=marpol+v+annexxdate_min=xdate_max= (accessed on 16 March 2020).
17. IMO. Action Plan to Address Marine Plastic Litter from Ships. Available online: <http://www.imo.org/en/MediaCentre/HotTopics/marinelitter/Pages/default.aspx> (accessed on 23 July 2020).
18. IMO; FAO. Global Project Launched to Tackle Plastic Litter from Ships and Fisheries. 2020. Available online: <http://www.imo.org/en/MediaCentre/PressBriefings/Pages/32-GloLitter-signing.aspx> (accessed on 4 August 2020).
19. United Nations. The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention); United Nations: London, UK, 1972.
20. United Nations. United Nations Convention on the Law of the Sea (UNCLOS); United Nations: Bahía Montego, Jamaica, 1982.
21. Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. 1996. Available online: <http://www.imo.org/en/OurWork/Environment/LCLP/Documents/PROTOCOLAmended2006.pdf> (accessed on 17 April 2020).
22. UNEP. Marine Plastic Debris and Microplastics—Global Lessons and Research to Inspire Action and Guide Policy Change; United Nations: Nairobi, Kenya, 2016.

23. Basel Convention. 2020. Plastic Waste Partnership. Available online: <http://www.basel.int/Implementation/Plasticwaste/PlasticWastePartnership/tabid/8096/Default.aspx> (accessed on 4 August 2020).
24. CPPS; UNEP. Action Plan for the Protection of the Marine Environment and Coastal Areas of the Southeast Pacific; Brief Information; United Nations: Lima, Peru, 1997.
25. Bradford, A. The Brussels Effect. NW. U. L. REV. 2012. Available online: https://scholarship.law.columbia.edu/faculty_scholarship/271 (accessed on 18 June 2020).
26. European Commission. Regional Strategy for Plastics in a Circular Economy. Brussels, Belgium. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0028&from=EN> (accessed on 28 June 2020).
27. European Parliament. Directive (EU) 2019/904. Brussels. 2019. Available online: <https://eur-lex.europa.eu/eli/dir/2019/904/oj> (accessed on 1 July 2020).
28. European Commission. Closing the Loop—An EU Action Plan for the Circular Economy; European Commission: Brussels, Kenya, 2015. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614> (accessed on 22 June 2020).
29. Boas, I.; Kloppenburg, S.; Van Leeuwen, J.; Lamers, M. Environmental Mobilities: An Alternative Lens to Global Environmental Governance. *Glob. Environ. Polit.* 2018, 18, 107–126.
30. Calleja, D. Why the “new plastics economy” must be a circular economy. *Field Actions Sci. Rep.* 2019, 22–27.
31. Dauvergne, P. Why is the global governance of plastic failing the oceans? *Glob. Environ. Chang.* 2018, 51, 22–31.
32. Loges, B.; Jakobi, A.P. Not more than the sum of its parts: De-centered norm dynamics and the governance of plastics. *Environ. Polit.* 2019, 15, 1–20.
33. Xanthos, D.; Walker, T.R. International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review. *Mar. Poll. Bull.* 2017, 118, 17–26.
34. Schnurr, R.E.J.; Alboiu, V.; Chaudhary, M.; Corbett, R.A.; Quanz, M.E.; Sankar, K.; Walker, T.R. Reducing marine pollution from single-use plastics (SUPs): A review. *Mar. Poll. Bull.* 2018, 137, 157–171.
35. Pacific Alliance. What is the Pacific Alliance? 2020. Available online: <https://alianzapacifico.net/en/what-is-the-pacific-alliance/> (accessed on 4 August 2020).
36. Pacific Alliance. Pacific Alliance Business and Investment Guide; Ministry of Foreign Affairs: Lima, Peru, 2018.
37. Pacific Alliance. Declaración de los Presidentes de la Alianza del Pacífico en materia de cambio climático en la COP 20/ CMP 10. Diciembre 10 de 2014-Alianza del Pacífico. 2014. Available online: <https://alianzapacifico.net/download/declaracion-en-materia-de-cambio-climatico-cop20-diciembre-10-de-2014/> (accessed on 10 July 2020).

38. Pacific Alliance. Declaración Presidencial de la Alianza del Pacífico sobre la Gestión Sostenible de los Plásticos. Julio 6 de 2019—Alianza del Pacífico. 2019. Available online: <https://alianzapacifico.net/download/declaracionpresidencial-de-la-alianza-del-pacifico-sobre-la-gestion-sostenible-de-los-plasticos/> (accessed on 10 July 2020).
39. Pacific Alliance. The Environment and Green Growth Technical Group. 2020. Available online: <https://alianzapacifico.net/en/technical-group-environment/> (accessed on 4 August 2020).
40. Cámara de Diputados del H. Congreso de la Unión; Ley General para la Prevención y Gestión Integral de los Residuos: Ciudad de México, México, 2003.
41. Ley de Residuos Sólidos del Distrito Federal. Available online: http://www.paot.org.mx/centro/leyes/df/pdf/2019/LEY%20_RESIDUOS%20_SOLIDOS_25_06_2019.pdf (accessed on 29 August 2020).
42. Ministerio de Ambiente y Desarrollo Sostenible. Resolución 1558 por la Cual se Prohíbe el Ingreso de Plásticos de un Solo Uso en las Áreas del Sistema de Parques Nacionales Naturales de Colombia y se Adoptan Otras Disposiciones; Ministerio de Ambiente y Desarrollo Sostenible: Bogotá, Colombia, 2019.
43. Congreso de Colombia. Ley 1819 de 2016-Estatuto Tributario- Impuesto Nacional al consumo de bolsas plásticas; Congreso de Colombia: Bogotá, Colombia, 2016.
44. Ministerio de Ambiente y Desarrollo Sostenible. Resolución 1407 por la cual se reglamenta la gestión ambiental de los residuos de envases y empaques de papel, cartón, plástico, vidrio, metal y se toman otras determinaciones; Ministerio de Ambiente y Desarrollo Sostenible: Bogotá, Colombia, 2018.
45. Ministerio de Ambiente y Desarrollo Sostenible. Resolución 668 por la cual se reglamenta el uso racional de bolsas plásticas y se adoptan otras disposiciones; Ministerio de Ambiente y Desarrollo Sostenible: Bogotá, Colombia, 2016.
46. Cárdenas Plazas, C. ESTUDIO de Conciencia Ambiental: Consumo y Cuidado del Ambiente; Bogotá, D.C., Ed.; 2018. Available online: <http://www.dnp.gov.co> (accessed on 28 March 2020).
47. Departamento de Boyacá Gobernación. Decreto por medio del cual se prohíbe el plástico de un solo uso no biodegradable y el poliestireno expandido en los procesos de contratación en la gobernación de Boyacá; Departamento de Boyacá Gobernación: Boyacá, Colombia, 2019.
48. Municipio La Ceja del Tambo. Decreto por el cual se prohíbe el plástico de un solo uso y el poliestireno expandido en la administración municipal de la Ceja del Tambo. Available online: http://www.andi.com.co/Uploads/DECRETO%20%20026_637176226598704774.PDF (accessed on 28 March 2020).
49. Concejo Municipal de Guatapé. Acuerdo por el cual se implementa la prohibición de poliestireno expandido (EPS) papeles parafinados, pitillos, vasos y mezcladores de plástico y/o polipropileno; Concejo Municipal de Guatapé: Guatapé, Colombia, 2016.
50. Alcaldía Municipal de Iza. Decreto por medio del cual se toman medidas para prohibir el uso del ICOPOR (poliestireno expandido) como empaque o recipiente en la comercialización de alimentos en el municipio de Iza Boyacá; Alcaldía Municipal de Iza: Iza, Colombia, 2019.

51. Congreso de Colombia. LEY 1973 por medio de la cual se regula y prohíbe el ingreso, comercialización y uso debolsas y otros materiales plásticos en el departamento Archipiélago de San Andrés, Providencia y Santa Catalina e Islas menores que lo componen, y se dictan otras disposiciones; Congreso de Colombia: Bogotá, Colombia, 2019.
52. Concejo Municipal Urrao. Acuerdo Municipal 010 por medio del cual se prohíbe la utilización de poliestirenoexpandido (Icopor), papeles parafinados, pitillos, vasos y mezcladores de plástico de un solo uso, en actividades decomercialización de alimentos, preparados y se dictan otras disposiciones en el municipio de Urrao; Concejo Municipal Urrao: Urrao, Colombia, 2019.
53. Departamento Administrativo Distrital de Sostenibilidad Ambiental. Resolución 1017 por medio de la cual se adoptan medidas de control para la prohibición de la utilización de plástico e icopor de un solo uso, en el distrito turístico, cultural e histórico de Santa Marta; Departamento Administrativo Distrital de Sostenibilidad Ambiental: Santa Marta, Colombia, 2018.
54. Congreso de la República. Ley N° 30884 que regula el plástico de un solo uso y los recipientes o envases descartables; Congreso de la República: Lima, Peru, 2018.
55. Presidencia de la República. Reglamento de la Ley que regula el plástico de un solo uso y los recipientes o envases descartables; Presidencia de la República: Lima, Peru, 2019.
56. Ministerio del Ambiente (MINAM). MINAM: Desde Este Viernes se Prohíbe la Fabricación de Cañitas dePlástico. 2019. Available online: <https://www.gob.pe/institucion/minam/noticias/71200-minam-desde-esteviernes-se-prohibe-la-fabricacion-de-canitas-de-plastico> (accessed on 7 September 2020).
57. MINAM. Lineamientos para el desarrollo de acciones de comunicación, educación, capacitación y sensibilización sobre el consumo responsable y la producción sostenible de los bienes de plástico y la gestión integral de sus residuos; Ministerio del Ambiente: Lima, Peru, 2020.
58. MINAM. Decreto Supremo que aprueba la reducción del plástico de un solo uso y promueve el consumo responsable del plástico en las entidades del Poder Ejecutivo; Ministerio del Ambiente: Lima, Peru, 2018.
59. Municipalidad de Ancón. Ordenanza que regula y prohíbe en el distrito de Ancón el uso del plástico y los recipientesy envases descartables; Municipalidad de Ancón: Ancón, Peru, 2019.
60. . Gobierno Regional de Ayacucho. Ordenanza para la “Disminución progresiva del uso de plástico de un solo uso y los recipientes o envases descartables, para la protección y cuidado del medio ambiente y los ecosistemas en la Región Ayacucho”; Gobierno Regional de Ayacucho: Ayacucho, Peru, 2019.
61. Municipalidad de la Victoria. Ordenanza que establece disposiciones para la disminución progresiva del plásticode un solo uso y los recipientes o envases descartables en el distrito de La Victoria; Municipalidad de la Victoria:La Victoria, Peru, 2019.
62. Consejo de la Municipalidad Distrital de Magdalena del Mar. Ordenanza que promueve la disminución progresivadel uso y distribución de productos plásticos de un solo uso y poliestireno expandido (tecnopor) en el distrito; Consejo de la Municipalidad Distrital de Magdalena del Mar: Magdalena del Mar, Peru, 2017.

63. Municipalidad Metropolitana de Lima. Declaran de prioritario interés institucional el uso responsable del plástico en todos los órganos, empresas municipales y organismos descentralizados de la Municipalidad Metropolitana de Lima, y dictan diversas disposiciones; Municipalidad Metropolitana de Lima: Lima, Peru, 2020.
64. Ministerio del Ambiente. Ley núm. 21.100 prohíbe la entrega de bolsas plásticas de comercio en todo el territorio nacional; Ministerio del Ambiente: Santiago de Chile, Chile, 2018.
65. Amenábar Cristi, M.; Holzapfel, C.; Nehls, M.; De Veer, D.; Gonzalez, C.; Holtmann, G.; Thiel, M. The rise and demise of plastic shopping bags in Chile—Broad and informal coalition supporting ban as a first step to reduce single-use plastics. *Ocean Coast. Manag.* 2020, 187, 105079.
66. Ministerio del Medio Ambiente. Resultados Encuesta Nacional de Medioambiente; Ministerio del Medio Ambiente: Santiago de Chile, Chile, 2018.
67. Ministerio del Medio Ambiente. Ministra Schmidt Recuerda Que Hoy Parte La Prohibición De Entrega De Bolsas Plásticas En El Pequeño Comercio. Available online: <https://mma.gob.cl/ministra-schmidt-recuerda-que-hoyparte-la-prohibicion-de-entrega-de-bolsas-plasticas-en-el-pequeno-comercio/> (accessed on 7 September 2020).
68. Ministerio del Ambiente. ley núm. 20.920 establece marco para la gestión de residuos, la responsabilidad extendida del productor y fomento al reciclaje; Ministerio del Ambiente. ley núm: Santiago de Chile, Chile, 2016.
69. Ministerio de Bienes Nacionales. ley núm. 21.123. Modifica el código penal y tipifica como falta el ensuciar, arrojar o abandonar basura, materiales o desechos de cualquier índole en playas, riberas de ríos o de lagos, parques nacionales, reservas nacionales, monumentos naturales o en otras áreas de conservación de la biodiversidad declaradas bajo protección oficial; Ministerio de Bienes Nacionales: Santiago de Chile, Chile, 2018.
70. Municipio de la Providencia. Ordenanza sobre plásticos de un solo uso en la comuna de Providencia; Municipio de la Providencia: Santiago de Chile, Chile, 2019.
71. Municipio de Zapallar. Ordenanza que regula plásticos de un solo uso y obligaciones en materia de sustentabilidad para el comercio en la comuna de Zapallar; Municipio de Zapallar: Zapallar, Chile, 2019.
72. . Asamblea Nacional. Ley de Régimen Tributario Interno-Capítulo II ICE para las fundas plásticas; Asamblea Nacional: Quito, Ecuador, 2019.
73. Ministerio de Educación. Acuerdo Ministerial 97. Regulación sobre la utilización de plásticos en el sistema educativo; Ministerio de Educación: Quito, Ecuador, 2019.
74. Asamblea Nacional. Ley de Régimen Tributario Interno. Impuesto redimible a las botellas plásticas no retornables; Asamblea Nacional: Quito, Ecuador, 2016.
75. Ministerio del Ambiente. Acuerdo Ministerial 19. Políticas para gestión integral de plásticos en el Ecuador; Ministerio del Ambiente: Quito, Ecuador, 2014.

76. Concejo Cantonal de Zaruma. Ordenanza para regular el comercio, distribución y entrega de productos plásticos de un solo uso, concretamente de sorbetes plásticos y fundas plásticas tipo camiseta, en el cantón Zaruma; Concejo Cantonal de Zaruma: Zaruma, Ecuador, 2019.
77. Concejo Cantonal de Guayaquil. Ordenanza para regular la fabricación, el comercio de cualquier tipo, distribución y entrega de productos plásticos de un solo uso y específicamente de sorbetes plásticos, envases, tarrinas, cubiertos, vasos, tazas de plástico y de foam y de fundas plásticas tipo camiseta, inclusive oxibiodegradables, en el cantón Guayaquil; Concejo Cantonal de Guayaquil: Guayaquil, Ecuador, 2018.
78. Consejo Metropolitano de Quito. Resolución No. C 009-2019; Consejo Metropolitano de Quito: Quito, Ecuador, 2019.
79. Consejo Provincial del Azuay. Ordenanza provincial de política pública ambiental, para la regulación de plástico de un solo uso en la provincia del Azuay; Consejo Provincial del Azuay: Cuenca, Ecuador, 2019.
80. Concejo Cantonal de Piñas. Ordenanza para regular el comercio, distribución, entrega, fabricación y uso de sorbetes plásticos en el cantón Piñas; Concejo Cantonal de Piñas: Piñas, Ecuador, 2019
81. Concejo Cantonal de Manabí. Ordenanza reformativa a la ordenanza que regula el desarrollo ambiental en el cantón Portoviejo e incorpora el título innumerado denominado "De la regulación, fabricación, comercio, distribución y/o expendio de productos plásticos de un solo uso y específicamente de sorbetes plásticos, envases, tarrinas, cubiertos, vasos y fundas plásticas de tipo camisetas, inclusive oxibiodegradables y envases de foam, en la ciudad de Portoviejo; Concejo Cantonal de Manabí: Portoviejo, Ecuador, 2019
82. Concejo Cantonal de Samborondón. Ordenanza para regular el comercio, distribución y entrega de cualquier tipo de productos plásticos de un solo uso y específicamente de sorbetes plásticos, envases, tarrinas, cubiertos, vasos, tazas de plástico y de foam y fundas plásticas tipo camiseta, inclusive oxobiodegradables, en el cantón Samborondón; Concejo Cantonal de Samborondón: Samborondón, Ecuador, 2019.
83. Consejo Provincial de Manabí. Ordenanza provincial para reducir el consumo de productos plásticos y de poliestireno expandido de un solo uso en la provincia de Manabí; Consejo Provincial de Manabí: Portoviejo, Ecuador, 2018.
84. Zambrano-Monserrate, M.A.; Ruano, M.A. Estimating the damage cost of plastic waste in Galapagos Islands: A contingent valuation approach. *Mar. Policy* 2020, 117, 103933.
85. Van Seville, E.; Delandmeter, P.; Schofield, A.J. Basin-scale sources and pathways of microplastic that end up in the Galápagos Archipelago. *Ocean Sci.* 2019, 15, 1341–1349.
86. Consejo del Régimen Especial de Galápagos. Ordenanza provincial que promueve el consumo responsable mediante la regulación de la comercialización y distribución de productos plásticos desechables y envases desechables de poliestireno expandido (espumafón, espuma flexible, estereofón) en las Islas Galápagos; Consejo del Régimen Especial de Galápagos: Puerto Baquerizo Moreno, Ecuador, 2015.

87. INEC. Información Ambiental en Hogares; Gobierno del Ecuador: Quito, Ecuador, 2016.
88. INEC. Información Ambiental En Hogares. 2017. Available online:
https://www.ecuadorencifras.gob.ec/documentos/web-inec/Encuestas_Ambientales/Hogares/Hogares_2017/RESULTADOS_MOD_AMBIENTAL_ENEMDU_2017.pdf
(accessed on 15 March 2020).
89. INEC. Información Ambiental En Hogares. 2018. Available online:
https://www.ecuadorencifras.gob.ec/documentos/web-inec/Encuestas_Ambientales/Hogares/Hogares_2018/Presentacion_Ambiental_hogares_2018_24_12.pdf
(accessed on 17 March 2020).
90. OECD. Extended Producer Responsibility Guidance for efficient waste management. In Guidance for EfficientWaste Management; OSD Publishing: Paris, France, 2016

Retrieved from <https://encyclopedia.pub/entry/history/show/27827>