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Glyphosate and Environmental Security in Latin America and the Caribbean

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Executive summary

The reconceptualisation of security in the 21st century, above all due to the inclusion of transboundary problems and threats, has meant that environmental security has become increasingly important because environmental threats present a risk to traditional security. Environmental security considers the protection and sustainable use of the environment and natural resources, as well as the mitigation of risks caused by damages to, and future changes in, the environment. These changes can lead to health problems, the displacement of populations, social changes, and damages to economic productivity, socio-political stability, and the capacity of states to face these challenges. The use of glyphosate in Latin America and the Caribbean, especially in the increasingly industrialised agricultural sector, and in Colombia in the fight against illicit crops, represents a threat to environmental security in the region for three reasons: 1) damage to ecosystems caused by this pesticide, including to biodiversity and water resources; 2) social conflicts that have arisen around glyphosate due to the marginalization of campesinos in the face of large-scale agriculture and monocultures, which have led to violent conflicts between civil society and the public forces, as well as the risks of this substance to human health; and, 3) possible foreign policy problems caused by divergent policies on glyphosate use, both between LAC countries and with their extra-regional allies.

Glyphosate and Environmental Security in Latin America and the Caribbean

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Introduction: Environmental security

In recent decades there has been a reconceptualisation of traditional security and the inclusion of new topics and threats in this field. Traditional security focuses on the need to protect the territory of a political entity through the use —potential or real— of physical coercion. The security of the 21st century has been reconceptualised, both in theory and in practice, to include transboundary problems and threats, such as environmental ones. Therefore, today it is common to hear terms like environmental security, human security, climate security, water security, food security, energy security, and cyber security. The concept of multidimensional security encompasses all these types of security, although it is important to recognise that these conceptualisations

are sometimes complementary and sometimes enter into conflict with each other. Any conceptualisation of security depends, through a process of permanent adaptation, on the geographical spaces, the perceptions of threats, and the actors it incorporates, implying that security —in all its interpretations— is a concept under continuous construction by the actors involved.

The fact that environmental security has been gaining importance in recent years reflects the entry of new threats to the field of security and an increasingly close link between security issues and environmental issues, two areas that were historically isolated from each other. As a concept, environmental security has two central aspects:

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- The protection and sustainable use of the environment and the resources it offers to human beings.
- The mitigation of risks caused by damages to, and future changes in, the environment (Lodgaard, 1992, cited in Græger, 1996).

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Today it is clear that environmental degradation and changes can be understood according to a classic definition of threat: “an action or sequence of events that (1) threatens drastically and over a relatively brief span of time to degrade the quality of life for inhabitants of a state, or (2) threatens to significantly narrow the range of policy choices available to the government of a state” (Ullman, 1983).

Thus, environmental threats affect *traditional* national security to the extent that the central purpose of governments should be to work to advance the security and well-being of their populations, because environmental degradation can lead to conflicts, in the same way that conflicts can cause further environmental degradation (Winnefeld and Morris, 1994).

In addition, environmental threats affect *international security* because the trans-boundary nature of environmental problems implies challenges for governments regarding international cooperation and the need to involve actors like non-governmental organisations (NGOs) and intergovernmental organisations, the scientific community, the private sector, and civil society, in responding to these threats.

Finally, environmental threats are closely related to *human security*, in the sense that the latter has the objectives of safeguarding life, freedoms, integrity, and property; generating and preserving public order and

social peace; and, achieving a situation that allows citizens to have a calm and dignified life, with certain guarantees so that they can develop their private and community activities (Jarrín, 2005).

Environmental security in Latin America and the Caribbean

There is no doubt that the concept of sustainability has become ever more important on the political, economic, and social agendas in recent decades, both globally and in Latin America and the Caribbean (LAC). However, at the same time, environmental problems have become increasingly serious and visible.

Due to its wide climatic variety, the economic and social conditions of poverty and inequality experienced by a large part of its populations, its low adaptive capacity, and its economic model based on agriculture and extractivism, LAC is considered one of the regions most vulnerable to environmental changes.

The dependence of LAC countries on the agricultural sector represents a threat, both currently and in the future, due to its importance in exports and employment in the region: climate change, among other environmental problems, is affecting, and will increasingly affect, the yield of key crops, local and national economies,

and food security in the region (CEPAL, 2nd August 2016). These environmental changes can lead to health problems, displacements and social changes in the most affected areas, and damage to economic productivity, socio-political stability, and the ability of states to face these challenges (O'Toole, 2017). Thus, it is easy

to recognise how environmental change and degradation represent threats to environmental security, traditional national and international security, and human security in LAC.

The securitisation of the environmental field is another key aspect of environmental security in LAC, given that the public forces have an increasingly leading role in environmental man-

agement, with new responsibilities and/or logics applied to their historical responsibilities like defence of the national territory and the fight against crimes, including environmental ones. However, some analysts argue that the problems and social

conflicts that arise from environmental crimes and degradation tend not to be resolved in contexts with a strong participation of the public forces, as this can imply democratic restrictions due to the vertical nature of militarised management and the limitation of spaces for deliberation and debate required by a truly pluralist policy capable of responding to the demands of citizens (Gudynas, 2019). Again, this interrelation demonstrates the links between environmental security, traditional security, and human security.

This Policy Paper focuses on the case of glyphosate and environmental security, in order to identify:

- Trends in how governments throughout LAC use, regulate, and even ban this chemical.
- How this herbicide can pose a threat to environmental security.

Finally, some recommendations are proposed with the objective of avoiding and minimising the negative impacts of glyphosate in the complex panorama of environmental security in LAC.

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Glyphosate: the most widely used herbicide in the world

Background	<ul style="list-style-type: none"> • Agricultural systems with high intensity and energy consumption find herbicides a useful and practical method for controlling weeds and increasing yields. • Actors in favour of the use of herbicides argue that they have benefits for the environment, because they contribute to a more efficient agricultural model, and for the world's population, because of their contribution to food security. • Glyphosate was introduced by Monsanto in 1974 in the US, but its patent expired in 2000 and today the chemical is sold by various manufacturers, including Bayer and Dow Chemical-Dupont. • Formulas on the market include Roundup, Attila, Balazo, Batalla, Biokil, and Rival.
Glyphosate	<ul style="list-style-type: none"> • Glyphosate is the name of the active ingredient in a non-selective or full-action herbicide, meaning it has the ability to kill all types of plants without discrimination. • Its foliar action (absorption by roots) is internally transported from the point of contact in the plant to other parts, making it effective in various stages of growth. • It has been considered an effective technique for agriculture, not only by local producers but also by companies and government actors with different objectives (Muñoz, 2021, p. 7-9).
Uses of glyphosate	<ul style="list-style-type: none"> • The purpose of glyphosate is to destroy the plants considered weeds, and it is applied in the preparation of monocultures to clean the land or create a drying effect in which it is easier to collect what is sown (Greenpeace México, 20th November 2020). • It is used due to the competition for water, space, light, and nutrients between weeds and the intended crop, because this competition reduces the productivity and quality of the latter. • Most common agricultural uses: maize; cotton; rapeseed; soya beans; beetroot; vegetables; root tubers; cereals; citrus fruits; tropical and stone fruits; nuts; sugar cane. • Non-agricultural uses: land conservation; pastures; aquatic areas; non-food tree crops; paved areas (United States Environmental Protection Agency [EPA], n. d.); and the eradication of illicit crops.

<p>Key facts</p>	<ul style="list-style-type: none"> • The Food and Agriculture Organisation Corporate Statistical Database (FAOSTAT) estimates that between 2004 and 2009, an average of 800,000 tonnes of pesticides were used globally (López and Madrid, 2011, p. 23). • In 2020, global sales of glyphosate reached an estimated US\$7.6 billion, and it is projected that by 2026 they will reach US\$8.9 billion (Research and Markets, 2021). • The US is the country with the largest market, with a figure close to 30.1% of the global total. • Brazil is the country in LAC that buys the most pesticides: in 2018 it invested nearly US\$3.3 billion for soya bean, maize, and cotton crops, followed by Argentina (BBC News Mundo, 20th February 2020).
<p>Bans and restrictions around the world</p>	<ul style="list-style-type: none"> • Bans: Austria (the first country in the European Union to ban glyphosate). Key West, Los Angeles, and Miami in the US. Vancouver and eight of the ten provinces of Canada. Aberdeen and Edinburgh in Scotland. Barcelona, Madrid, and Zaragoza in Spain. Auckland and Christchurch in New Zealand. • Partial restrictions: Malawi, France, Belgium, Italy, the Czech Republic, Denmark, Portugal, and the Netherlands in Europe. Oman, Saudi Arabia, Kuwait, the United Arab Emirates, Bahrain, and Qatar in the Middle East. Vietnam and Sri Lanka in Asia (<i>Semana</i>, 2nd July 2019).

Latin America and the Caribbean: diverse scenarios for the use and regulation of glyphosate

Over the years, glyphosate has been a controversial topic of discussion due to the negative effects it leaves on the environment and human health. However, the challenges, realities, interests, and actors—which differ in each country—are the factors that shape its use and regulation despite the debates that exist in the world today. LAC is an example of this, as it is a diverse scenario in terms of the ways of using this herbicide and of responding to social pressures

and emergencies. Nevertheless, there are some general trends that are summarised in this section.

First, some countries use glyphosate and regulate it according to the indications of the product and its manufacturers, but have no further restrictions at the national level, although there may be restrictions at the sub-national level. This group includes Argentina, Bolivia, Brazil, Chile, Colombia, Panama, and Uruguay.

Second, some countries use glyphosate but do impose restrictions in specific cases. This group includes the following cases:

- *Barbados*: An amendment to the Pesticide Control Bill of 2020 did not ban glyphosate, but instead created a system of licences necessary to purchase this and other pesticides (Barbados Today, 9th December 2020).
- *Belize*: In 2019, the use of glyphosate was restricted in specific cases after campaigns by civil society and eight NGOs based on concerns for biodiversity and human health, as a result of glyphosate residues found in bean and wheat crops, two staple foods in the daily life of the country's population (Vargas, 2019).
- *Costa Rica*: In 2019, the National System of Conservation Areas (Sinac) issued a guideline that bans the use of glyphosate in the country's 11 Protected Wild Areas, as well as in the institution's offices. According to Sinac, the ban was enacted in response to article 50 of the constitution: "the state must ensure the greatest possible well-being for all inhabitants of the country, guarantee and preserve the right of the people to a healthy and ecologically balanced environment, and promote development in harmony with

this" (The Costa Rica News, 16th December 2019).

Third, some countries where glyphosate is used have seen policy proposals for stricter regulations, but said proposals have not become legislation to date, largely due to strong opposition from the agricultural section. This group includes El Salvador, Peru, and Puerto Rico.

Fourth, three countries have been identified in LAC where the use of all products containing glyphosate have been suspended, and/or, where they are in the process of a total ban: Bermuda, Mexico, and Saint Vincent and the Grenadines.

Finally, in some countries there are gaps in the information available about the use and regulation of glyphosate. It is assumed that the use of glyphosate does occur in the following countries, in which the lack of transparency in the available information is noted, as there is no information on the subject on the governments' web pages: Ecuador, French Guyana, Guatemala, Guyana, Honduras, Nicaragua, Paraguay, Suriname, Venezuela, and all of the Caribbean countries not otherwise mentioned.

Below, we consider five case studies that are particularly important for this topic in LAC.

Debate and regulation of the use of glyphosate in Argentinian agriculture

Argentina is considered one of the countries with the highest consumption of agrochemicals to improve agricultural yields. According to 2019 figures, 107 pesticides are used in the country which are banned in other parts of the world because they are considered highly dangerous by the World Health Organisation (WHO) and the UN Food and Agriculture Organisation (FAO). These include Atrazine, Paraquat and Glyphosate —the

most widely used—. Its trade name is Roundup, patented by Bayer and Monsanto, and it is estimated that more than 200 million litres are distributed each year in different regions (Lombardi, 14th November 2019). Despite this panorama, there is no national law that specifically regulates its use and ap-

plication. For this reason, the regulatory standard varies considerably throughout the territory and the control of existing regulations has been deficient.

From 1991 to 2013, the volume of phytosanitary products increased sevenfold (from 39.3 million to 281.7 million kg/l) and between 1990 and 2015, the volume of fertilisers increased eightfold (from

300 to 2,441 tonnes). This increase was due to the increase in the percentage of arable land destined for monocultures of genetically modified soya beans through direct seeding (elimination of weeds in the maintenance of the pre-cultivation). The genetically introduced resistance of these seeds, which entered use in the country from 1997-1998, allows the use of phytosanitary products that include glyphosate, achieving efficient weed control, and enhancing crop yields. It is estimated that without the use of herbicides there would be a decrease of between 20 and 30% in the yield of soya bean production, one of the agricultural products with the highest economic returns inside and outside Argentina (Belada, 29th July 2017, p. 14).

However, as previously mentioned, the use of herbicides like glyphosate has not been regulated at the national level in Argentina. Competence for the establishment of regulations on the use of pesticides is shared by the state, provinces, and municipalities, although the only regulations that exist are at the provincial and municipal levels. Nevertheless, authorisation and commercialisation are responsibilities of the state, which does this through two agencies: the National Service of Health and Food Quality (Senasa) and the National Administration for Medicines, Food, and Medical Technology (ANMAT). For its part, Senasa has competence for the registration, trading

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authorisation, suspension, reclassification and/or cancellation of pesticides for use in agriculture, while ANMAT has competence for registration, authorisation, or cancellation at home (OHCHR, 2016, p. 9-10).

According to the regulations, agrochemicals are classified according to their acute toxicity, following the parameters established by the WHO. In Argentina, glyphosate is Class IV (a product that does not normally offer danger) on a scale from I to IV, where IV is the least toxic. This classification must appear on the label of the products containing this substance, as well as general precautionary measures, environmental risks, actions in the case of spills, first aid, and consultations in the case of poisoning, etc. (Blois, 2016, p. 76).

Large parts of civil society have protested against fumigations with glyphosate, with complaints that warn of an increase in diseases among farmers. Given this, one of the responses was, by presidential mandate, the creation of the National Research Commission on Agrochemicals (CNIA) on 16th December 2009. Its purpose includes research, prevention, assistance, and treatment in cases of poisoning or cases which affect, in any way, the health of the population and the environment, as well as investigating reported cases, making recommendations, proposing actions, plans and programmes, and outlining

guidelines for the rational use of agrochemicals (Blois, 2016, p. 78).

It should be noted that municipalities like Gualeguaychú, in the province of Entre Ríos close to the River Uruguay, approved an ordinance that bans the use and commercialisation of glyphosate in the 33,000 hectares under its jurisdiction. It is the twelfth city to adopt a similar measure in Argentina, and the third in that province. Others that have banned it include Bariloche (2010), El Bolsón (2015), Cholila (2015), Lago Puelo (2015), Epuyén (2015) and cities closer to the capital like Rosario (2017) and Rincón (2018), among others (De Ambrosio, 2018).

Brazil and the use of pesticides to boost its crops

The expansion of the use of pesticides in Brazil took off during World War II with the launch of Dichloro Diphenyl Trichloroethane (DDT) on the market. It was considered an effective and inexpensive insecticide for pest control and became popular long before its negative effects on human health and the environment were known. Since then, the massive use of fertilisers and pesticides in Brazilian agriculture, as well as the addition of new cultivation and genetic improvement techniques, characterised the so-called Green Revolution that spread across

the territory. Tax incentives, increased income for farmers, crop yields, and rural credits from the federal government were, and have been, key factors in the increasing use of pesticides (Lima et al., 2021, p. 92-93).

Glyphosate is the best-selling herbicide in Brazil. Its active ingredient first arrived in the 1970s, and farmers were encouraged to adopt a no-till system to transform the country's agricultural processes. Today, Brazil is considered the world leader in this system, as it is used in more than half of the country's 61.7 million hectares of cereal crops, for example. Its use after planting became widespread, especially from the 1990s, with the arrival of genetically modified soya beans, maize, and cotton, which are resistant to the Round-up herbicide, produced by Monsanto and containing glyphosate (AFP, 1st October 2018a).

The world's second largest producer of soya beans, and third in maize, Brazil is more permissive in terms of maximum glyphosate residue limits than other countries as they are not included in the agrotoxic residue control programmes of the National Sanitary Surveillance Agency (Anvisa). This is because, as previously mentioned, this herbicide has allowed the country to adopt a direct seeding system to become competitive in global agricultural markets. It should be noted that in Brazil average consumption can vary from 5 to 19kg per hectare depending on

the region; by way of comparison, it is estimated that the scale of herbicide use in Europe varies from 0 to 2kg (AFP, 3rd September 2018b).

Additionally, Brazil has specific rules for the registration of patents related to new molecules for use as pesticides, which must comply with the procedures established by the federal agencies in charge of granting licences for the production, sale, use, import and export of herbicides (Teixeira et al., 2019, p. 108).

As in most LAC countries, the use of this chemical in Brazil has been controversial due to the risks it represents for life on the planet and for human beings. In 2018, for example, the federal judge of Brasília, Kássio Marques, ordered the suspension of the registration of all products containing glyphosate until the Anvisa concluded the toxicological re-evaluation of the substances. However, the decision was appealed and overturned by the Attorney General of the Union, the body that represents the government judicially (AFP, 3rd September 2018b). This is a panorama that is constantly repeated, despite studies such as that carried out by Public Eye and journalists from Repórter Brasil and Agência Pública, which revealed the presence of 27 pesticides in the drinking water of 1,400 Brazilian towns and warned of the high percentage of glyphosate in the samples taken (Phillips, 26th April 2019).

Glyphosate and the fight against illicit crops in Colombia

The history of glyphosate use in Colombia dates back to the 1970s with the war on drugs and illicit crops. For the first time, between 1978 and 1984, the government of Julio César Turbay, in conjunction with the US, carried out experimental, portable and aerial fumigations with a variety of pesticides like Agent Orange (used by the US in Vietnam with the objective of defoliating the country's forests) and Paraquat (one of the most widely used herbicides in the world, despite its high toxicity) (Moreno, 11th May 2015, p. 3).

During the government of César Gaviria, the strategy of glyphosate fumigations began in the country in 1993, in the department of Huila, establishing 10 regulations that sought to protect areas with human and animal populations, and for the special management of areas like water sources and urban zones with schools or spaces for social recreation (Moreno, 11 de mayo de 2015, p. 12). Against this background, Plan Colombia, during the government of Andrés Pastrana, marked one peak of glyphosate fumigations. Despite mobilisations and warnings about the illegality and illegitimacy of this policy, it is estimated that between 1999 and 2014, 1,562,000 hectares of coca alone were fumigated,

an unprecedented figure in the country (Moreno, 2020, p. 6).

The government of Álvaro Uribe was recognised for strengthening aerial eradication strategies in Colombia. It also introduced ground spraying operations that led to diplomatic disputes with Ecuador, which complained to the Colombian government about these operations in the border zones between the two countries. During this time, social protests against glyphosate also intensified, and in 2006, around 8,000 campesinos from the departments of Nariño, Meta and Putumayo mobilised against the fumigations undertaken in the framework of Plan Colombia (*El Espectador*, 17th May 2015).

In 2015, during the presidential term of Juan Manuel Santos, Colombia responded positively to the study conducted by the WHO which indicated that glyphosate and other herbicides are carcinogenic to humans. For this reason, the Minister of Health, Alejandro Gaviria, issued a decision that recommended the cessation of the use of glyphosate, and in October of that year aerial spraying was suspended

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throughout the national territory by virtue of the precautionary principle. Similarly, glyphosate was reclassified by the National Environmental Licencing Agency, which indicated the potential for serious and irreversible damage (Moreno, 2020, p. 8).

From 2017, under ruling T-236, the National Narcotics Council defined the resumption of the Programme for the Eradication of Illicit Crops with Glyphosate (PECIG), taking into account the available scientific and technical evidence on the minimisation of risks to health and to the environment, the public policy of the fourth point of the Final Agreement for the Termination of the Conflict and the Construction of a Stable and Lasting Peace, the design of a continuous risk assessment model, and the implementation of an automatic review scheme for decisions regarding aerial spraying with glyphosate, among other considerations (Corte Constitucional de Colombia, 2020).

Although aerial spraying has since been reactivated, in 2021 the Fifth Commission of the Senate held a debate in which an opposition bill to ban glyphosate fumigations was discussed, a proposal that, in the end, was unsuccessful. Decree 330 of 2021 remains in force in regulating the control of the risks of glyphosate use in the eradication of illicit crops by aerial fumigations.

Mexico and the road to banning glyphosate



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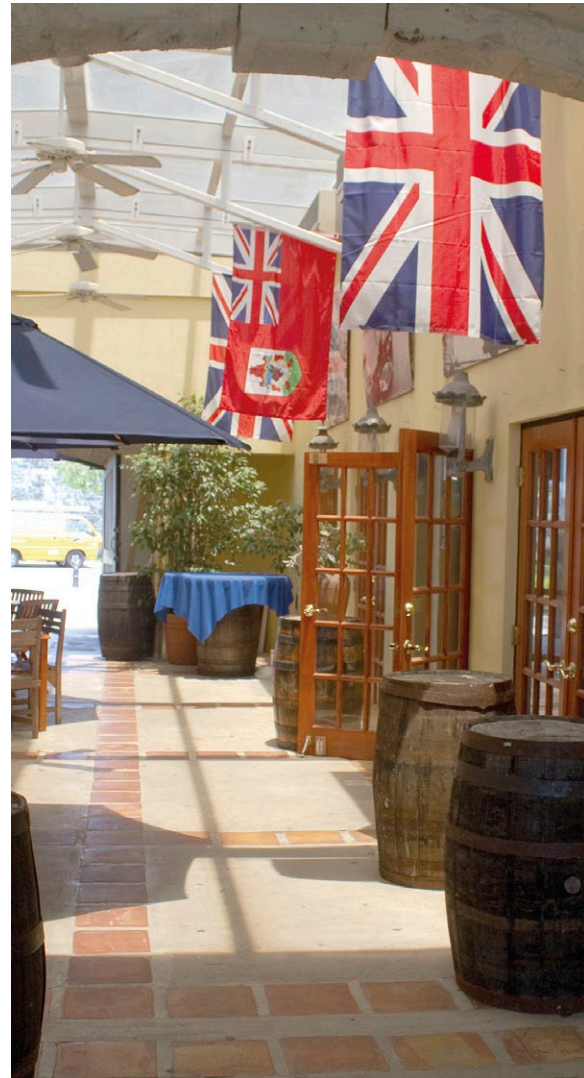
While many countries in LAC have seen proposals to end the indiscriminate use of glyphosate and other pesticides, Mexico is the first country in the region that, by Presidential Decree in December 2020, has ordered a total ban on glyphosate by 2024,

as well as a ban on transgenic maize, in a bid to establish a more sustainable model of agriculture and put into practice the *precautionary principle*:

Given the scientific evidence of the toxicity of glyphosate, which demonstrates the impacts on human health and the environment, Mexico is moving firmly towards the gradual reduction of the use of glyphosate, until achieving its total ban in 2024, and promoting a safer and healthier agri-food system that is more respectful of the environment. In this sense, the critical path for the gradual reduction of the herbicide with alternative methods is refined (Secretaría de Medio Ambiente y Recursos Naturales de México, 20th August 2020).

This decision was motivated, to a large extent, by pressure from civil society which presented evidence related to the damage this herbicide causes to the land and biodiversity. For example, the inhabitants of the municipality of Campeche, in the south of the country, reported that between 2011 and 2012 more than 70% of beekeepers' bees had died, and that the collapse of the bee population coincided with the arrival of Monsanto to their territory. The Mexican case demonstrates the conflicts that often arise between promoters of monocultures and large-scale agriculture, and the indigenous groups fighting to defend their ancestral practices (De Miguel, 12th January 2021).

Bermuda and Saint Vincent and the Grenadines: total suspension of glyphosate use



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In 2018, after the civil lawsuit against Monsanto in the US, in which the plaintiff successfully argued that the glyphosate in the herbicide Roundup was responsible for his terminal cancer, the governments of these two Caribbean countries suspended the import of all herbicides containing this substance.

Regulatory agencies and the Ministries of Health, Senior Citizens and Environment (Bermuda), and Agriculture (Saint Vincent and the Grenadines) made this decision because glyphosate is an aggravating factor in a panorama of the vulnerability of ecosystems to climate

Glyphosate and threats to environmental security in Latin America and the Caribbean

Considering the general panorama of LAC and the case studies presented, it is clear that this is a complex problem that arises from the different challenges, realities, interests, and actors in each country. However, there are common threads across the region in terms of the positions of the different countries regarding glyphosate. Based on these, the following categories of threats to environmental securities are identified, while taking into account the differences between countries.

The first category of threats to environmental security is, logically, those which involve the environment itself and the damages to ecosystems caused by the use of glyphosate.

There are ever more scientific studies that show that various species of weeds attacked by glyphosate now demonstrate resistance to the herbicide. This fact not only has consequences for the agricultural sector and the provision of key foods for LAC, by affecting crops and increasing production costs due to the need for even more herbicides and controls, but also causes damage and imbalances in affected ecosystems and alters biodiversity in its areas of use. This happens, for

change and biodiversity loss, and its impacts on human health (Government of Saint Vincent and the Grenadines, s. f.; Sarich, 19th October 2021).

It is important to highlight that, regarding the use of this herbicide, both countries have put into practice the *precautionary principle*, and prioritised the environmental and social threats of glyphosate over the economic interests of the agricultural sector. Additionally, the governments have emphasised the innovative nature of their decisions and their role as regional leaders in this issue. The two countries have convened broad consultation processes

with all stakeholders involved, in order to assess possible future scenarios for the use of glyphosate in specific cases within their territories.

Regulatory agencies and the Ministries of Health, Senior Citizens and Environment (Bermuda), and Agriculture (Saint Vincent and the Grenadines) made this decision because glyphosate is an aggravating factor in a panorama of the vulnerability of ecosystems to climate change and biodiversity loss, and its impacts on human health (Government of Saint Vincent and the Grenadines, s. f.; Sarich, 19th October 2021).

example, by destroying other species of wild flora which function as refuge and food for many insect species, reducing the populations of the latter and natural capacity for pest control. Glyphosate has also been shown to be “mildly toxic to wild birds (like quail and ducks), some amphibians, fish, and aquatic invertebrates” (Greenpeace México, 25th November 2020).

Moreover, due to its continuous use over recent decades, glyphosate residues continue to accumulate in soils, water sources, and the entire agri-food system, which suggests that these environmental impacts may become chronic (Konkel, 18th March 2019; van Bruggen et al., 18th October 2021). Added to this is the fact that ecosystems and the dispersion of chemicals do not respect the national borders imposed by humans. As already mentioned, environmental threats are transboundary. This was seen in the case study of Colombia and the fact that its glyphosate use provoked diplomatic disputes with Ecuador. A similar problem also exists within countries. For example, studies in Belize have shown the phenomenon of “pesticide drift”, and how samples of glyphosate are found in areas of special environmental protection in which the use of said chemical is banned (Kaiser, 2011).

The second category of threats to environmental security relates to the social conflicts that arise around glyphosate,

which are closely related to environmental damage, human security, and the well-being of the inhabitants of affected areas.

The dependence on the agricultural sector of LAC countries raises questions about the trend towards large-scale agriculture and the prevalence of monocultures, which generally lead to the use of glyphosate. These practices have led to the expropriation of the lands of campesinos, soil erosion that means the land is not reusable by campesinos in the short- to medium-term, and the lack of job creation given the industrial nature of this type of agriculture (Agencia de Noticias Univalle, 5th September 2015). Likewise, this type of agriculture is not compatible with the ancestral and traditional processes and knowledge of the ethnic groups across the region. This can result in forced displacement, lack of access to safe drinking water, and threaten the food security of large parts of the populations, thus putting at risk their human security. For all of the above, by sustaining large-scale agricultural activities, glyphosate can represent an environmental factor that aggravates social conflicts in the countries and areas where

Due to its continuous use over recent decades, glyphosate residues continue to accumulate in soils, water sources, and the entire agri-food system, which suggests that these environmental impacts may become chronic.

it is used. The case studies showed that there have been protests by civil society against glyphosate. These protests often occur in the context of broader social grievances, for example, against neoliberal economic models.

Civil society resistance to this agricultural model is usually met by the governments of LAC with interventions by the

public forces, which can lead to violent conflicts between protestors and the agents of the state. One example is the agrarian strike in Colombia in 2013, in which campesinos, truck drivers, miners, and urban populations like students, teachers, health workers, and trade unions participated, among others. According to the human rights offices that accompanied the protests and blockades that occurred throughout both rural and urban Colombia, in less than one

month there was a regrettable balance of 660 cases of human rights violations, 485 people injured by the violent assaults of the public forces against protestors, and 12 campesinos were killed in the midst of the confrontations (Mesa Nacional Agropecuaria y Popular de Interlocución

y Acuerdo, 7th September 2015). These events demonstrate how the securitisation of the environmental sphere and the participation of the public forces can cause or aggravate conflicts. There are great asymmetries in the power relations between the defenders of the environment, the public forces—as agents of the state—, and the private actors involved, like the companies that produce, promote or purchase glyphosate, and agricultural unions and lobbies.

Perhaps the second threat in this category is the one that has received the most attention regionally and globally: the threat of glyphosate to human health. As mentioned in the case of Colombia, in 2015 a study by the WHO concluded that glyphosate is a carcinogenic substance. In emblematic lawsuits in the US against Monsanto, the company that originally developed glyphosate, the courts have determined that glyphosate was “a significant factor” in the development of cancers like non-Hodgkin’s lymphoma (BBC News Mundo, 20th March 2019). A review of news sources reveals that these events received the attention of many actors across LAC, including both government and opposition politicians, and NGOs and civil society actors. Monsanto is now part of the German conglomerate Bayer, which denies that glyphosate affects the development of cancers, but at the same time, has created a fund of more than US\$1 billion to cover future lawsuits (Greenpeace

In emblematic lawsuits in the US against Monsanto, the company that originally developed glyphosate, the courts have determined that glyphosate was “a significant factor” in the development of cancers like non-Hodgkin’s lymphoma (BBC News Mundo, 20th March 2019).

México, 25th November 2020). The consensus in the media is usually that the evidence on the impacts of human health is not conclusive, although it is important to note that studies by the European Parliament and Greenpeace Spain have found that many investigations that conclude that glyphosate is not harmful to human health have been prepared based on studies by Monsanto to itself, and therefore have an obvious bias (Greenpeace México, 25th November 2020; Hessler, 25th June 2020). Again, this shows the power asymmetries between the actors involved in the glyphosate problem, and as in the case of threats to the environment, it is likely that this threat to human security will increase over time.

The third category of threats to environmental security relates to potential foreign policy problems caused by the divergent positions and policies on glyphosate in LAC countries. As shown, there is a trend in certain parts of the world towards strong restrictions and/or complete bans on glyphosate. An important case is that of the European Union (EU), which currently allows glyphosate until 15th December 2022 and is undertaking a broad consultation process with the participation of civil society, the scientific community, government agencies of its member states, and other relevant actors, regarding the renewal, or not, of the permission to continue using this herbicide. However, some EU member states

have taken bilateral decisions to restrict and/or ban glyphosate in their national territories, and the EU has voiced its opposition to aerial fumigations in Colombia in particular, reaffirming its commitment to other methods of eradicating illicit crops (European Commission, n. d.; European Parliament, 22nd June 2021). Given that the EU is one of the international actors that supports and finances the Peace Agreements in Colombia, the use of glyphosate—in this case, specifically through aerial fumigation—represents a threat to the maintenance of good diplomatic relations.

Of course, the US is another key actor in the Colombian case, and it also has a leading role in hemispheric relations in the Americas. Regarding glyphosate, the US takes a contrary position to that of the EU, and there are no federal restrictions on its use; in fact, the US is a country that has historically shown close relations between governments and the representatives and interests of the agricultural sector. However, as previously mentioned, certain states and cities in the country have taken the bilateral decision to restrict glyphosate use. Moreover, the Biden administration has indicated that there were failures in the latest review of glyphosate under his predecessor Trump, for failing to assess its impacts on endangered species and pollinating insects, for example (Stancil, 20th May 2021), and in September 2021, the US House of Representatives

approved a bill that prohibits US funding for aerial fumigations of glyphosate in Colombia, thus isolating the current Colombian government from one of its most important international allies, especially in the field of security. In the case of Mexico, the US government has suggested that Mexico's transition to a glyphosate ban may result in disruptions to trade between the two countries (Gillam, 16th February 2021), showing the continued primacy of the corporate interests of the agricultural sector over the environmental, social, and cultural interests of the populations affected by glyphosate.

Finally, the environmental field has traditionally been an area of cooperation for regionalisation projects in LAC. Of the various projects that have been developed—each one marked by different ideologies and subregional configurations—Unasur was one of the blocs with the greatest number of member states in the South American subcontinent, and it developed discursive lines on sustainable development, the need to protect biodiversity and ecosystems, and the prevention of soil degradation, among other environmental issues (Vera *et al.*, 2020). It is particularly notable that the South American Defence Council of Unasur established the protection of biodiversity as a key objective (O'Toole,

2017), demonstrating the concept of environmental security in practice. Other regionalisation projects, like the Association of Caribbean States, the Caribbean Community (Caricom), the Central American Commission for Environment and Development of the Central American Integration System, and the Amazon Cooperation Treaty Organisation have also highlighted the importance of biodiversity and the fragility of ecosystems in their respective subregions.

However, in contrast to some integration projects in other parts of the world, like the EU, these projects have not established binding mechanisms, institutions or practices for their member states, and their environmental protection discourses tend to remain purely rhetorical. A review of the web pages of the projects mentioned shows that they have not advanced common positions or policies on glyphosate. Therefore, it is clear that these projects have generally been unable or uninterested in influencing the divergent policies and methods of using glyphosate of their member states. In the future, the increasingly serious impacts of glyphosate predicted for ecosystems and human life and health mean that this lack of regional coordination and cooperation increases the risk of environmental conflicts for all the reasons mentioned.

Recommendations

Considering what has been shown in this Policy Paper, the following recommendations are proposed:

The countries of the LAC region stand out for having some of the largest quantities of natural resources in the world, a reason that should motivate the governments of the region to seek sustainable alternatives to guarantee their protection. Scientific evidence has shown that glyphosate not only has negative impacts on human health, but also on the environment and its ecosystems, and that its effects are accumulating over time and will become increasingly visible in the future.

Decision-making based on scientific evidence and the application of the *precautionary principle* justify the restrictions and bans that have been implemented in LAC to date. Despite the advantages derived from monocultures and large-scale agriculture, which should certainly be evaluated and taken into account, the states of the region should not always give priority to the economic interests of the agricultural sector over the environmental and social impacts for affected populations.

As highlighted in the case of Mexico, the banning of glyphosate has been

motivated by its adverse effect on animal populations like bees, as it is a toxic component for their reproduction. To this extent, LAC should promote alternatives such as increasing the diversity of crops and their rotation, grazing, or the manual or mechanical removal of weeds, as these are ecologically friendly techniques that can lead to a more sustainable model of agriculture that is safer for human health.

To the extent that laws and studies related to glyphosate often progress more slowly than they should, the governments of LAC must ensure constant scientific evaluation and regulation of products containing this herbicide, based on studies commissioned and published by the competent public authorities, and not by the agrochemical industry.

The use of glyphosate in agriculture must be the result of a process of dialogue and consensus between government authorities, civil society, and the private actors involved. Likewise, all information related to this matter must be public and transparent.

To complement the previous recommendations, each regionalisation project in LAC must also develop joint mechanisms to evaluate the evidence on glyphosate, in order to establish a common position of the member states

regarding this herbicide and avoid possible diplomatic disputes and/or environmental conflicts in the future. At the same time, this would have benefits for the region in terms of its political identity, its participation in global environmental governance, and its relationships with extra-regional actors.

The role of the public forces in environmental management represents both an opportunity and a challenge regarding glyphosate and environmental

security. On the one hand, these actors usually have extensive resources and technical knowledge, as in the case of Colombia and the fight against illicit crops, which can contribute to effective environmental management and the integration of environmental security into comprehensive security strategies. On the other hand, their participation cannot result in the marginalisation of the populations affected by glyphosate and their legitimate complaints to governments.

References

- AFP. (1st October 2018a). El glifosato, la poción milagrosa de las megacosechas de Brasil. <https://www.france24.com/es/20181001-el-glifosato-la-pocion-milagrosa-de-las-megacosechas-de-brasil>.
- AFP. (3rd September 2018b). Justicia brasileña revoca la medida que prohibía el glifosato. <https://www.france24.com/es/20180903-justicia-brasilena-revoca-la-medida-que-prohibia-el-glifosato>.
- Agencia de Noticias Univalle. (5th September 2015). Impactos ambientales de los monocultivos. <https://www.univalle.edu.co/medio-ambiente/impactos-ambientales-de-los-monocultivos>.
- Barbados Today. (9th December 2020). *License needed for pesticide purchases – Minister Weir*. <https://barbadostoday.bb/2020/12/09/licence-needed-for-pesticide-purchases-minister-weir/>.
- BBC News Mundo. (20th March 2019). Glifosato: un jurado de EE. UU. determina que el herbicida más usado en el mundo fue un “factor sustancial” en un caso de cáncer. <https://www.bbc.com/mundo/noticias-47645376>.
- BBC News Mundo. (20th February 2020). Las empresas que ganan millones vendiendo pesticidas peligrosos al mundo en desarrollo (y qué país de América Latina es líder mundial en su uso). <https://www.bbc.com/mundo/noticias-51575375.amp>.
- Belada, A. P. (28th July 2017). *Regulación de los agroquímicos en la Argentina: hacia una ley general de presupuestos mínimos regulatorios*. Universidad de San Andrés. <https://repositorio.udes.edu.ar/jspui/bitstream/10908/15623/1/%5BP%5D%5BW%5D%20T.%20G.%20Abo.%20Paz%20Belada,%20Alejandro.pdf>.
- Blois, M. P. (2016). Ciencia y glifosato: interpelando órdenes. Una investigación en la prensa en el contexto argentino. *Cuadernos de Antropología Social*, 73-93. <https://www.redalyc.org/pdf/1809/180948645007.pdf>.
- CEPAL. (2nd August 2016). *Cambio climático amenaza la base de la seguridad alimentaria de América Latina y el Caribe: el sector agrícola*. <https://www.cepal.org/es/comunicados/cambio-climatico-amenaza-la-base-la-seguridad-alimentaria-america-latina-caribe-sector>.
- Corte Constitucional de Colombia. (16th December 2020). Presidente de la Corte Constitucional explica los lineamientos dispuestos por esta corporación para reanudar la aspersión aérea de cultivos de uso ilícito con glifosato. <https://www.corteconstitucional.gov.co/noticia.php?Presidente-de-la-Corte-Constitucional-explica-los-lineamientos-dispuestos-por-esta-corporaci%C3%B3n-para-reanudar-la-aspersi%C3%B3n-a%C3%A9rea-de>

- cultivos-de-uso-il%C3%ADcito-con-glifosato-9033.
- De Ambrosio, M. (27th April 2018). Doce ciudades en Argentina ya prohíben el glifosato - América Latina y el Caribe. <https://www.scidev.net/america-latina/news/doce-ciudades-en-argentina-ya-prohiben-el-glifosato/>.
- De Miguel, T. (12th January 2021). México prohíbe el glifosato para frenar sus efectos nocivos en la salud. <https://elpais.com/mexico/2021-01-12/mexico-prohibe-el-glifosato-para-frenar-sus-efectos-nocivos-en-la-salud.html>.
- European Commission. (n. d.). *Status of glyphosate in the EU*. https://ec.europa.eu/food/plants/pesticides/approval-active-substances/renewal-approval/glyphosate_en.
- European Parliament. (22nd June 2021). *Parliamentary Questions. Question reference: E-002196/2021*. https://www.europarl.europa.eu/doceo/document/E-9-2021-002196-ASW_EN.html.
- Gillam, C. (16th February 2021). Revealed: Monsanto owner and US officials pressured Mexico to drop glyphosate ban. <https://www.theguardian.com/business/2021/feb/16/revealed-monsanto-mexico-us-glyphosate-ban>.
- Government of Saint Vincent and the Grenadines. (n. d.). Saint Vincent And The Grenadines To Benefit From CBF. <https://www.gov.vc/index.php/media-center/950-saint-vincent-and-the-grenadines-to-benefit-from-cbf>.
- Græger, N. (1996). *Environmental Security? Journal of Peace Research*, 33(1), 109-116.
- Greenpeace México. (25th November 2020). Glifosato: herbicida peligroso para nuestra salud. <https://www.greenpeace.org/mexico/blog/9205/glifosato-herbicida-agente-cancerigeno/>.
- Gudynas, E. (2019). Mercadería y militarización: La naturaleza en la política ambiental de Duque. In H. D. Correa (Ed.), *El aprendizaje del embrujo. Finge la paz, reinventa la guerra, privatiza lo público. Balance del primer año de gobierno de Iván Duque* (264-269). <https://pares.com.co/wp-content/uploads/2019/09/427429422-A-Prendi-Zde-Lem-Brujo-f.pdf>.
- Hessler, U. (25th June 2020). *What's driving Europe's stance on glyphosate*. <https://www.dw.com/en/whats-driving-europes-stance-on-glyphosate/a-53924882>.
- Jarrín, O. (2005). Políticas Públicas de Seguridad Ciudadana. In O. Jarrín (Coor.), *Políticas públicas de seguridad ciudadana y proyecto de ley de seguridad y convivencia ciudadana*. Quito: FLACSO Ecuador - Fundación Grupo Esquel - ILDIS-FES.
- Kaiser, K. (2011). Preliminary Study of Pesticide Drift into the Maya Mountain Protected Areas of Belize. *Bulletin of Environmental Contamination and Toxicology*, 86(1), 56-59. DOI: <https://dx.doi.org/10.1007%2Fs00128-010-0167-x>.

- Konkel, E. (18th March 2019). *What's the world's most widely used herbicide doing to tiny critters?* <https://www.ehn.org/monsanto-glyphosate-impacts-wildlife-2631750527.html>.
- Lima, I.B., Boechat, I., & Gücker, B. (2021). Glyphosate in Brazil: use, aquatic contamination, environmental effects, and health hazards. *Cuaderno de Geografía*, 31, 90-115. DOI: <https://dx.doi.org/10.5752/p.2318-2962.2021v31nesp1p90>.
- Lombardi, V. (14th November 2019). Glifosato y arsénico, un dúo peligroso. <https://www.unsam.edu.ar/tss/glifosato-y-arsenico-una-dupla-peligrosa/>.
- López, N. S., & Madrid, M. L. A. (2011). *Herbicida Glifosato: usos, toxicidad y regulación*, vol. XIII. <https://www.ciad.mx/archivos/reduceriesgos/Herbicida%20glifosato.pdf>
- Mesa Nacional Agropecuaria y Popular de Interlocución y Acuerdo. (7th September 2015). Gran Paro Nacional Agrario Colombiano. <https://www.mpd.org/sites/default/files/131024-paro-agrario-completo.pdf>.
- Moreno, M. M. (11th May 2015). *Memoria histórica de las fumigaciones (1978-2015)*. <http://www.indepaz.org.co/wp-content/uploads/2018/08/Memoria-historica-de-las-fumigaciones.pdf>.
- Moreno, M.M. (2020). *Historia de la aspersión de químicos por parte del Estado colombiano 1978-2021*. http://www.indepaz.org.co/wp-content/uploads/2021/03/Memoria_de_las_fumigaciones_colombianas_1978-2021.pdf.
- Muñoz, F. R. (2021). *El herbicida glifosato y sus alternativas*. https://conacyt.mx/cibiogem/images/cibiogem/Documentos-recopilatorios-relevantes/El_herbicida_glifosato_y_sus_alternativas_UNA.pdf.
- O'Toole, G. (2017). *Environmental Security in Latin America*. New York: Routledge.
- OHCHR. (2016). *Agrotóxicos, evaluación de riesgos, salud y alimentos. Informe sobre el cuestionario de las relatorías especiales del derecho a la alimentación, derechos humanos, sustancias y desechos peligrosos de la ONU*. <https://www.ohchr.org/Documents/Issues/ToxicWaste/PesticidesRtoFood/Argentina.pdf>.
- Phillips, D. (26th April 2019). Brazil finds worrying levels of pesticides in water of 1400 towns. <https://www.theguardian.com/world/2019/apr/26/brazil-finds-worrying-levels-of-pesticides-in-water-of-1400-towns>.
- El Espectador*. (17th May 2015). La enredada historia del glifosato. <https://www.elespectador.com/politica/la-enredada-historia-del-glifosato-article-561075/>.
- Research and Markets. (2021). *Glyphosate, Global Market Trajectory & Analytics*. https://www.researchandmarkets.com/reports/1946781/glyphosate-global_market_trajectory_and.

- Sarich, C. (19th October 2021). *Bermuda Suspends Glyphosate-Ridden Roundup Indefinitely*. <https://naturalsociety.com/bermuda-suspends-glyphosate-ridden-roundup-indefinitely/>.
- Secretaría de Medio Ambiente y Recursos Naturales de México. (20th August 2020). Por qué decir NO al glifosato. <https://www.gob.mx/semarnat/articulos/por-que-decir-no-al-glifosato?idiom=es>.
- Semana. (2nd July 2019). Los países que le han dicho «No» al glifosato. <https://www.semana.com/impacto/articulo/los-paises-que-le-han-dicho-no-al-glifosato/44787/>.
- Stancil, K. (20th May 2021). EPA Admits to Faulty Glyphosate Review Under Trump but Still Won't Take It Off U.S. Market. <https://www.ecowatch.com/epa-glyphosate-roundup-trump-biden-2653049045.html>.
- Teixeira, D., de Paula, R. L., & Napolitano, H. (2019). *Legislação e Normatização para o Glifosato no Brasil*. http://ojs.rpqsenai.org.br/index.php/rpq_n1/article/view/487/468.
- The Costa Rica News. (16th December 2019). Costa Rica Prohibits Use of Glyphosate in Its Protected Wild Areas. <https://thecostaricanews.com/costa-rica-prohibits-use-of-glyphosate-in-its-protected-wild-areas/>.
- Ullman, R. H. (1983). Redefining Security. *International Security*, 8(1), 129-153.
- United States Environmental Protection Agency [EPA]. (n. d.). *Glyphosate*. <https://www.epa.gov/ingredients-used-pesticide-products/glyphosate>.
- Van Bruggen, A. H. C, Finckh, M. R., He, M., Ritsema, C. J., Harkes, P., Knuth, D., & Giessen, V. (18th October 2021). Indirect Effects of the Herbicide Glyphosate on Plant, Animal and Human Health Through its Effects on Microbial Communities. *Frontiers in Environmental Science*. DOI : <https://doi.org/10.3389/fenvs.2021.763917>.
- Vargas, M. (2019). Roundup and All Glyphosate Formulations are NOW Restricted-Use. <https://www.breakingbelizenews.com/2019/06/05/roundup-and-all-glyphosate-formulations-are-now-restricted-use/>
- Vera, D., Prieto, P., & Garzón, D. (2020). De Unasur a Prosur: Una gobernanza ambiental reducida y un legado de desaciertos para la Amazonia. In E. Pastrana Buelvas & N. Stopfer (Eds.), *Gobernanza multinivel de la Amazonia*. Bogotá: Fundación Konrad Adenauer & ESAP.
- Winnefeld, J. A., & Morris, M. E. (1994). *Where Environmental Concerns and Security Strategies Meet*. California: RAND

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Explanation of the network:

The Latin American Environmental Security Network aims to produce knowledge in the academic field and opinion pieces on the threats, risks and challenges facing environmental security in Latin America and the Caribbean through various case studies. To achieve the above, it has created spaces for dialogue with civil society organizations, academia, economic actors and decision makers from the public sector, to dialogue, raise awareness and seek consensus on the need to give relevance and priority to the threats it presents. the region in environmental matters. Thus, through the preparation of papers (policy and working) and books, it is proposed to collect the study work of the network on specific cases to make the main problems visible and propose recommendations to provide inputs to decision makers in both the public and private sectors. to respond and mitigate the threats that endanger environmental security in its different dimensions in Latin America and the Caribbean.

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