

It is time for Latin America to revisit its nuclear politics and policies

Es tiempo de que Latinoamérica reconsidere sus políticas y regulaciones nucleares

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An imminent risk

The current escalation of the war in Ukraine following NATO's authorization of the use of ATACMS and Storm Shadow/SCALP missiles by this country, and the Russian response with its hardening of its nuclear doctrine and the use of the intermediate-range hypersonic missile "Oreshnik" against Ukraine, represents a risk for the whole world if the risk is not controlled by the participating countries through diplomacy.

Since the dropping of the first 2 atomic bombs on civilian populations at the end of World War II, the nuclear arsenal in the world has multiplied by 6,500, that means around 13,000 nuclear weapons globally (Xu & Dodt, 2023), and yet the preparation of governments and the civilian population in the face of a nuclear event is very poor, or absent in many cases.

Nowadays, nuclear plants are an alternative for energy production in Latin America. According to Statista (2024), as of May 2024, there were seven nuclear reactors in operation located in Mexico, Brazil and Argentina.

The effects of nuclear attacks and accidents with nuclear plants will affect almost every human being in the planet, since the acute blast and the resulting contamination of the food chain and water, as well as by the climate change that will result (Tomonaga, 2019). As historical context, radioactive contamination of Chernobyl affected 40% of all of Europe, from France to Greece and from Italy to Iceland. It also reached large territories in Asia, from Turkey to China, as well as territories in North Africa and North America (Nesterenko & Yablokov, 2009).

As an example, an accident or a conventional or nuclear attack on the Laguna Verde nuclear plant in Veracruz, Mexico, just 900 km from the border between Mexico and Guatemala, could affect remotely to the Latin American

territories, as happened with the Chernobyl accident. The disasters at the Chernobyl and the Fukushima Daiichi nuclear power plants, have resulted not only in environmental consequences, but in large-scale radioactive contamination of the environment. The contamination of soil and waters with radionuclide, is present until today (Konoplev, 2022).

Effects of nuclear bomb detonation in Latin America

Although it is unlikely that Latin American countries would become directly involved in an open war between NATO and Russia by supporting one bloc or the other, maintaining neutrality in such a scenario could be difficult. Therefore, considering the probability of a strategic nuclear detonation in any Latin American country, or an accident or attack on one of the nuclear plants in the region, is something that should begin to be discussed among the governments of each country in order to seek mechanisms for mutual assistance in the event of a nuclear catastrophe of such magnitude.

As an example, using the NUKEMAP simulator version 2.72 (Wellerstein, 2024), a unique strategic nuclear attack of 100 kilotons on Tegucigalpa, the capital city of Honduras with approximately 1.5 million inhabitants, would result in about half a million instant deaths and another half million with injuries (Figure 1).

Capacities to face the disaster

To develop a response in case of a nuclear attack or accident involves the definition of emergency strategies, medical education, shelter availability, medications and other. The status of such preparation should be studied in the

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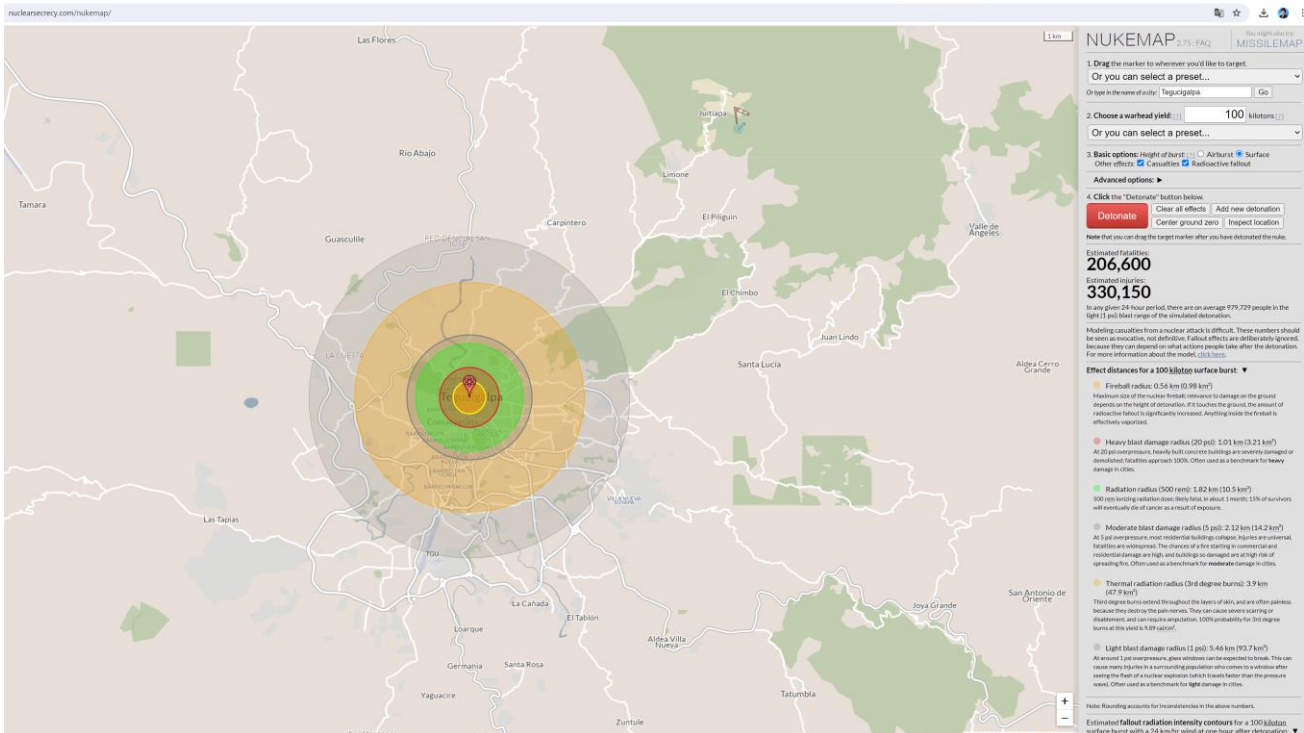


Figure 1. Effect of a nuclear bomb of 100 kilotons detonated in Tegucigalpa, capital of Honduras according to the NUKEMAP simulator by Wellerstein (<https://nuclearsecrecy.com/nukemap/>).

region. On the other hand, the social response should also be evaluated when preparing mitigation plans. Currently, the Central American health systems are struggling to deliver basic care to the population, and managing a nuclear disaster seem out of their capacity (Florian, 2024).

Current national and regional policies

In a preliminary review, the Latin American countries lack local rules and public policy about nuclear weapons. The nuclear shelter policy is not known by the public, and that resource is only the first step that a country must take to protect its population.

The participation of the region in the regulation of nuclear weapons has been limited to being signatories of the Treaty of Tlatelolco, the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, as well as the Treaty on the Prohibition of Nuclear Weapons (TPAN). Both represent complex guidelines with instruments and organizations that control the use of nuclear energy and force powers to recognize that the subscribing countries are territories free of nuclear weapons.

Current institutional framework is limited to the Agency for the Prohibition of nuclear weapons in Latin America and the Caribbean (OPANAL), whose purpose is the promotion of nuclear education, disarmament and non-proliferation. The subscription to the International Atomic Energy Agency (IAEA) provides technical assistance to allocate atomic energy for peaceful purposes, international security and meeting the Sustainable Development Goals.

Many might not know that the region receives technical assistance because of the European Union Action Plan on

Chemical, Biological, Radiological and Nuclear Security, with the aim of replicating instruments to eliminate the risks of terrorist groups having access to biological, chemical, radiological and nuclear materials (BQRN) in any territory. This initiative has been expanded to include the Latin American region, but the efforts the efforts must be greater.

The Latin American countries have shown interest to help build a world free of nuclear threats, but at the same time, the most of countries demonstrate a lack of interest in complying with the guidelines, protocols and standards contained in international treaties. This is shown by the fact that those regulations have not been incorporated into domestic legislation nor in the public policies of each State, nor as an institutional framework with a coercive effect that prevents and sanctions threats of this nature.

It is important to note that some countries in the region, such as the Republic of Honduras, have incorporated a Directorate General of Radiological Safety into their government's organizational structure, specifically within the Ministry of Energy (SEN). This Directorate was established by the Executive Agreement 006-2016. Its legal instruments include the Law on Nuclear Activities and Radiological Safety, Decree 195-2009 and its general regulation, Agreement 073-2019, along with specific regulations such as those for the authorization of radioactive installations, the safe transport of radioactive materials, the management of radioactive waste, and the physical protection of nuclear and radioactive materials.

The Directorate General of Radiological Safety develops technical cooperation projects with the IAEA, related to nuclear applications in the fields of health, safety, and radiological protection, in compliance with international

regulations. The issue of nuclear material for diagnostic or research purposes is something else to research about in Latin America. Nuclear warfare and nuclear accidents are topics open for further studies about the region.

Conflicts of interests

None.

Ethical approval

Exempt.

Declaration on IA use

The authors declare that artificial intelligence was not used to prepare this manuscript.

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