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# The Principle of Integration in International Sustainable Development Law (ISDL) with Reference to the Biological Weapons Convention (BWC)

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**Abstract:** The Biological Weapons Convention (BWC) does not explicitly refer to sustainable development despite the fact that other United Nations (UN) disarmament documents prescribe that international environmental law principles and sustainable development be considered among arms control agreements. This study's objective is to utilize the principle of integration's three components of environmental, economic, and social development, as found in the International Sustainable Development Law (ISDL) from the New Delhi Declaration (Delhi Declaration) of Principles of International Law Relating to Sustainable Development, in order to evaluate whether the BWC contains such components; thereby, making it possible for the BWC to contribute to sustainable development. The methodology of this study is necessarily qualitative, given that it is a socio-legal research that relies on international agreements such as the BWC, declarations, resolutions, plans of implementation, other non-binding documents of the UN, and secondary resources—all of which are analyzed through a document analysis. The results show that the BWC addresses the environment (Article II), prohibits transfers relating to export controls, international trade, and economic development (Article III), while at the same time, covering social development concerns, health, and diseases that make up the international social law (Article X). Since the BWC is found to be capable of contributing to sustainable development, it is concluded that ISDL cannot be restricted to international environmental, economic, and social law, but should be expanded to include international arms control law.

**Keywords:** sustainable development; International Sustainable Development Law (ISDL); Biological Weapons Convention (BWC); arms control

## 1. Introduction

The Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons (in short: the Biological Weapons Convention or BWC) has provisions that address environmental protection, trade, and social development; thereby,

making it possible to promote sustainable development. The enabler towards achieving this is the principle of integration embedded within the 2002 New Delhi Declaration of Principles of International Law Relating to Sustainable Development (in short: the Delhi Declaration of International Sustainable Development Law (ISDL)) [1].

The principle of integration in ISDL has been mostly applied to determine whether international agreements in the area of environmental, trade, human rights, health, and investment laws have all equally applied the three components of sustainable development besides their own scope of work [2–9].

Despite this, there remains the question of whether the principle of integration in ISDL can be similarly applied to an international arms control agreement such as the BWC. Tladi [10] (p. 107) and Weiss [11] (p. 348) both stated that the arms control law is highly integrated and can equally be subscribed to sustainable development. Tladi [10] (p. 107) was critical that ISDL has been merely confined to the application of international environmental, trade and social law simply because it can be extended within international arms control law.

In one study, Rhodes [12] had linked the BWC as a biosecurity international agreement with sustainability. While Rhodes [12] indicated that the BWC does not explicitly incorporate sustainable development within the text of the agreement, she identified elements indicating that the BWC can contribute to sustainable development because it addresses poverty and inequality as fundamental problems, in addition to containing provisions on scientific and technological development, capacity building, biotechnology knowledge transfer, and financial resources for developing countries that are indirect key elements in meeting sustainable development [13]. However, Rhodes [12] did not utilize the principle of integration in ISDL but applied her own criteria to evaluate the BWC in its contribution to sustainable development.

Indeed, there are other United Nations (UN) documents that should be read together with any international arms control agreement such as the BWC. Therefore, this does not preclude the BWC from the goal of sustainable development since the latter may be prescribed by other UN documents. While Rhodes [12] had correctly identified most of the developing countries' concerns, as mentioned earlier within the BWC, issues such as trade and the environment which also constitute an integral part of sustainable development within the BWC have not been fully explored. Therefore, this study has the objective of utilizing the principle of integration from the Delhi Declaration in order to determine whether the BWC has provisions that cover environmental, trade, and social development concerns through components of international environmental, economic, and social law that constitutes ISDL. This study will fill the gap left by Rhodes [12] who merely addressed developing countries' concerns within the BWC, while revealing an incomplete picture of other components of sustainable development.

The following sections provide an overview of the brief history of sustainable development, ISDL, and the methods used for this study, as well as, the results, discussion, and conclusion.

## 2. A Brief History of Sustainable Development

The intersecting and conflicting dilemma between economic interest and environmental conservation, which now form the crux of sustainable development, has had a very long history. This can be traced to the Behring Sea Fur Seals Arbitration [14] (p. 935) involving the United States (US) in its effort to conserve the common natural resources beyond its borders in conjunction with the United Kingdom (UK) that was pursuing its own economic interest. Another distinct arbitral decision, Trail Smelter [15] (p. 194), reflected the conflict between economic activity on the one hand and preserving the environment on the other; whereby, an overwhelming amount of sulfur dioxide from a smelter of lead and zinc in Trail, British Columbia had caused transboundary pollution at the border with the US.

The next significant milestone indicating that economic and environmental concerns require simultaneous consideration was at the United Nations Conference on the Human Environment

(UNCHE) in Stockholm, Sweden in 1972 that produced a non-binding soft law document known as the Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration) [16] that contained twenty-six principles. Principle 13 of the Stockholm Declaration [16] (p. 4) further mentioned that “[s]tates should adopt an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve the environment for the benefit of their population”. The term “integrated” was intended to merge both development and environmental concerns as complementary, with one needing the other.

While environmental concerns started to become more prominent, developing countries that were building their economies after their independence felt that environmental issues should not override their development progress. At the Sixth Special Session in 1974, the United Nations General Assembly (UNGA) adopted the Declaration and an Action Programme on the Establishment of a New International Economic Order (NIEO) [17] that was put forward by developing countries. One of the contentious issues discussed within the ambit of the NIEO included that environmental protection, while a responsibility of all states, should not jeopardize any development endeavors among developing countries [18] (p. 49). It also became evident from the Vietnam War (1955–1975) that wartime environmental damage can be so severe that it led to the drafting of the Convention on the Prohibition of Military and Any Other Hostile Use of Environmental Modification Techniques (the ENMOD Convention); the first international instrument which solely focused on the protection of the environment during wartime [19] (p. 611). The ENMOD Convention would restrict certain techniques used in armed conflict to influence the environment and climate for military and other motives [19] (p. 611).

In 1987, the World Commission on Environment and Development (WCED), headed by Norway’s former Prime Minister, Gro Harlem Brundtland, produced Our Common Future Report which defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [20] (p. 87). “Needs” in Our Common Future Report covered “food, clothing, shelter” and “jobs” that fulfill the “essential needs of the world’s poor” [20] (p. 87). Indeed, the principle of integration also traces its roots from Our Common Future Report: “[e]nvironment and development are not separate challenges; they are inexorably linked” [20] (p. 81).

In 1992, states throughout the world convened in Rio de Janeiro, Brazil, for the United Nations Conference on Environment and Development (UNCED), better known as the Rio Conference or Earth Summit [21]. The soft law and non-binding documents from UNCED relevant to the principle of integration include the Rio Declaration on Environment and Development (Rio Declaration) and Agenda 21 [22,23]. Agenda 21 in Chapter 39 reiterated the need for “further development of international law on sustainable development giving special attention to the delicate balance between environmental and developmental concerns” [23] (p. 1). Agenda 21 further stated the “need to clarify and strengthen the relationship between existing international instruments or agreements in the field of environment and relevant social and economic agreements or instruments, taking into account the special needs of developing states” [23] (p. 1). This illustrates that Agenda 21 called for international environmental agreements, as well as, social and economic agreements that consider the other’s turf without solely focusing on their area of specialization in an effort to be more integrated in meeting sustainable development.

For its part, the Rio Declaration in its Principle 4 mentioned that “to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation” [22] (p. 2). Furthermore, the Rio Declaration addressed the interface of environmental protection and trade promotion through Principle 12, which promotes “a supportive and open international economic system that leads to economic growth and sustainable development” [22] (p. 3). This same principle warns that any policy measures formulated for environmental protection must not “constitute a means of arbitrary or unjustifiable discrimination of a disguised restriction on international trade” [22] (p. 3).

In 1994, the United Nations Division for Sustainable Development produced the Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development [24]. This Report contained nineteen principles and concepts related to the international law of sustainable development taken from the Rio Declaration, Agenda 21, and other environmental agreements [24].

In 2002, the World Summit on Sustainable Development (WSSD) convened in Johannesburg, South Africa, and the Plan of Implementation for the WSSD once again reaffirmed the role of governments in “undertaking concrete actions and measures at all levels and to enhancing international cooperation, taking into account the Rio Principles” [25] (p. 2). In abiding by the Rio Principles, this would “promote the integration of the three components of sustainable development—economic development, social development, and environmental protection—as interdependent and mutually reinforcing pillars” [25] (p. 2).

Ten years later in Rio de Janeiro, Brazil, the UN Conference on Sustainable Development once again convened from 20–22 June 2012 in what is better known as Rio + 20 [26]. Rio + 20 reaffirmed the principles from the Rio Declaration as the basic foundation for international environmental law, Agenda 21, the Johannesburg Plan of Implementation of the WSSD in 2002, and the Johannesburg Declaration on Sustainable Development [26] (p. 3). In summary, all of these international conferences and their resulting documents, especially since 1972, have raised the global discourse and debate on sustainable development over time with their contribution in the legal sphere as ISDL.

### 3. The Principle of Integration in International Sustainable Development Law (ISDL)

In the same year that the WSSD was convened (2002), the International Law Association (ILA) Committee issued the Delhi Declaration as a resolution for the 70th Conference of the ILA held in New Delhi, India, from 2–6 April, 2002 [1]. During the WSSD, the Netherlands raised the appropriateness of the Delhi Declaration in responding to the integration of the three components of sustainable development [24] (p. 1698). This was given in Principle 7 of the Delhi Declaration itself which promotes the principle of integration and interrelationship, particularly in relation to human rights, social, economic, and environmental objectives [1] (p. 6). It is this Principle 7, the principle of integration, which gave its name to ISDL. Segger and Khalfan [2] (p. 103) defined ISDL as an “intersection between the three fields of international economic, environmental, and social law”.

The principle of integration in the Delhi Declaration functions as “a conceptual framework for “integrated thinking” in international law relating to sustainable development, which can guide consideration of other principles” [27] (p. 4). This is to view sustainable development as an objective to be met. This justifies the principle of integration from the Delhi Declaration being subsumed within the confines of sustainable development. This is the view put forth by Sands [28] (pp. 336–347) who stressed that international law in the field of sustainable development “point to a body of principles and rules drawn from traditional approaches, evolutionary rather than revolutionary, contributing incrementally to the law and legal process”. Furthermore, French [29] (p. 52) referred to the Rio Declaration, stressing upon various principles that forms components and leads to sustainable development, as an objective. This view is likewise highlighted by Ellis [30] (p. 643) who regards sustainable development “as an umbrella concept gathering together a range of existing or evolving international legal and political principles”. The idea of integrating separate areas of discipline has its own history. Article 1 of the UN Charter [31] (p. 3) is fundamentally integrative and has the following objective: “[t]o achieve international c[oo]peration in solving international problems of an economic, social, cultural, or humanitarian character” while it envisages the UN as “a centre for harmoni[s]ing the actions of nations in the attainment of these common ends”. Besides the UN Charter, Article 31(3) (c) of the Vienna Convention on the Law of Treaties [32] reiterates the need for a treaty to be interpreted in light “of any relevant rules of international law applicable between the [P]arties.” This would mean that different branches of international law, be it international environmental, international trade, or international social law, should not function disparately on their own. These branches of law should

permit cross-reference in their application and not be “self-contained islands of international law, de-linked from other branches of international law” [33] (pp. 903–907).

Each branch of international law within the ambit of ISDL would cover its own category of issues. In the area of international economic law, the subjects covered include trade in goods and services, financial law, economic integration, international investment law, development law, business regulation, and intellectual property [34] (p. 53). Related international organizations within the scope of international economic law include the World Trade Organization (WTO), Organization of Economic Cooperation and Development (OECD), International Monetary Fund (IMF), the United Nations Conference on Trade and Development (UNCTAD), and the World Bank [34] (p. 54). This would also cover the economic development part of sustainable development. Economic development, as used in the context of this study, refers to “a process that influences growth and restructuring of an economy to enhance the economic well being of a community” [35] (p. 3). Furthermore, one of the major areas of economic development covers “[p]olicies and programs explicitly directed at improving the business climate through specific efforts, business finance, marketing, neighborhood development, business retention and expansion, technology transfer, real estate development and others” [35] (p. 3).

Apart from international economic law, international social law is another branch of law contributing towards ISDL. Issues under international social law include international human rights law, international humanitarian law (law of armed conflict), international health law, international labor law, gender, population, food security, and social development [34] (p. 70). Social development, in this study, refers to:

*“The fulfillment of the basic needs of people and achieving fair distribution of wealth gained as a result of economic growth, development of human resources and expanding the scope of options before the people with emphasis on social justice, equal opportunities and eradication of poverty and illiteracy, taking into consideration that social development is equal to and an integral part of economic development”.* [36] (p. 48)

The BWC itself falls under humanitarian law because it prohibits the use of biological agents and toxins and their means of delivery as a method of warfare that can cause grievous suffering to civilians and military troops. Since international humanitarian law falls within the scope of international social law in ISDL, this in turn would cover the BWC. Concurrently, the BWC is also an arms control agreement, but this is not acknowledged in any of the branches of law encompassing ISDL.

The last component of ISDL is international environmental law, which covers various issues ranging from biodiversity, hazardous waste, the ozone layer, wildlife, fisheries, oil pollution, and biosafety to climate change and numerous other matters. This component of ISDL is, therefore, associated with environmental protection measures. Environmental protection, as understood in this study, refers to the “prevention (avoidance) strategies to protect the environment from future damage or degradation; and control measures to restore and maintain environmental quality” [37] (p. 1). This definition of environmental protection is broad enough to cover the various elements that constitute the environment, as mentioned earlier.

The principle of integration is indeed reflected in international environmental agreements containing provisions that fully integrate the three components of ISDL. For example, Article 26 of the Cartagena Protocol on Biosafety (CPB), an international environmental law agreement, addresses the socio-economic considerations of Genetically Modified Organisms (GMOs), whose preamble refers to trade and environmental agreements as being mutually supportive; while Article 2 (5) requires Parties to consider the “expertise, instruments and work undertaken in international forums with competence in the area of risks to human health” [38] (pp. 2–19). Article 4 (1) (f) of the United Nations Framework Convention for Climate Change [39] seeks to “[t]ake climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies” while considering in equal measure the three components of sustainable development. These examples indicate that international environmental agreements do not solely address environmental concerns,

but have also integrated trade and social development concerns beyond their scope of work. These international environmental agreements have extended their reach into other areas, for it has been recognized that environmental concerns cannot be solved without occasionally addressing the problem of social development. This highlights the spirit of sustainable development, which is truly integrated and overarching, in the attempt to simultaneously address a multitude of problems.

#### 4. Methods

This study is qualitative by nature. Numerous international documents have been referred to; e.g., international agreements such as the BWC, other international agreements, soft law documents that are non-binding in nature such as declarations, resolutions, plans of implementation, reports, guidelines, and documents from the Inter Sessional Process (ISP) and Review Conferences of the BWC. “Non-binding” means that states are not obliged to implement these “soft law documents”, as they are more correctly political commitments.

This study further relied on secondary resources that proved useful in providing a background overview of the BWC and ISDL’s principle of integration. These secondary resources were obtained from legal data sources like Heinonline and Lexis Nexis Universe. All primary and secondary resources were subjected to a document analysis. This study analysed the BWC, its ISP and Review Conference documents on themes such as environmental protection, international trade, and social development concerns of developing countries. Provisions of the BWC, ISP, and Review Conference documents of the BWC were examined through a textual analysis to identify terms such as environment, health, diseases, export control, international cooperation, and international organizations that function as a catalyst in enabling the BWC to consider other areas beyond its core focus on security. This would indicate whether the BWC is integrated with other areas beyond its specialization on security to include environmental protection, international trade, and social development forming constituent parts of sustainable development. The BWC’s consideration of other areas besides security is a catalyst for it to form a cooperative relationship with other international agreements and their respective international organizations such as the World Health Organization (WHO) as in health, the CPB for environmental concerns, and international trade of biological agents, toxins, equipment, and their means of delivery associated with the Australia Group and Resolution 1540 of the Security Council of the UN.

#### 5. Results of the Study

After the careful examination of the BWC, it is to be asserted that this agreement contains provisions that cover environmental protection, trade, and social development concerns, which make up the components of ISDL. Below are the findings from the BWC, divided into the themes already mentioned.

##### 5.1. Environmental Protection

###### Disarmament, Arms Control, and the Environment

The BWC is one of those arms control treaties that have paid attention to the environment, as reflected in Article II, which states that “[i]n implementing the provisions of this article all necessary safety precautions shall be observed to protect populations and the environment” [40,41]. “Destruction or diversion for peaceful purposes” from Article II of the BWC is primarily concerned with disarmament [40]. According to Dhanapala [42] (pp. 48–52), disarmament “envisages the physical destruction and elimination of a given weapon system, whereas arms control seeks instead to regulate the conditions of its production and/or use”. “Destruction” in Article II of the BWC [40] implies disarmament, since a Party to the BWC must destroy or divert for peaceful means any biological agents, weapons, equipment, and means of delivery of biological weapons that it possesses no later than nine months after the entry into force of the BWC upon ratification of, or acceding to, the agreement.

Environmental concerns in Article II of the BWC are also compatible with the UN resolution regarding Observance of Environmental Norms in the Drafting and Implementation of Agreements on Disarmament and Arms Control [43] because states ought to consider relevant environmental norms in arms control and disarmament treaties. Environmental norms may refer to principles such as the precautionary approach, the polluters pay principle, common but differentiated responsibilities, equitable utilization of natural resources, intergenerational equity, common concerns of mankind, and sustainable development [44]. However, this UN resolution does not specify which principles are applicable, presumably leaving for states to decide for themselves which principles would be applicable. This Resolution requires that states consider the “advances made in science and technologies to enhance security and facilitate disarmament without adverse impact on the environment or to its effective contribution to the attainment of sustainable development” [43] (p. 3).

This UN resolution is indeed soft law defined as rules not binding on states since it does not belong to any accepted sources of international law, but is a political or moral commitment undertaken by states [45] (p. 84). Furthermore, Shelton [46] (p. 71) indicated that a soft law document can contain principles, norms, standards, or statements related to state conduct. A closer examination of this UN resolution demonstrate that it has clout as it reiterates legal rules binding as treaties, in this case, for existing arms control agreements to observe environmental norms in the form of principles already described [43]. Moreover, this UN resolution restates legal rules binding as treaties by also referring to previous agreements and as the outcome of UNCED [43] (p. 1). In this regard, the UN resolution is a non-binding instrument that supplements a binding arms control agreement such as the BWC. Since the BWC came into being in 1972 [40] when environmental consciousness was starting to surface among arms control agreements, incorporation of principles of international environmental law, when it became more evident that biological warfare could cause profound damages to the environment, would be best done through a resolution. This saves time and further circumvents the need to undergo a long process to negotiate amendments to the BWC. Indeed, this UN resolution is setting a trend among states to adopt environmental norms regardless of the views of dissenters, while “persuading those who have little or no relevant state practice to acquiesce in the development of the norm[s]” [46] (p. 77).

Furthermore, at the Meeting on Military Activities and the Environment in Linköping in 1995, under the auspices of the United Nations Environment Programme (UNEP), it was conceded that military activities during peacetime would affect the environment; therefore, some of the principles of the Rio Declaration such as sustainable development, the precautionary approach, an environmental impact assessment, and the “polluters pay” principle ought to be considered as well [47] (pp. 9–10). UNEP also emphasized that “[i]nternational conventions and protocols in the field of environment also provides principles and guidelines in which the military sector could find environmental norms applicable to it as appropriate” [47] (p. 10). A few scholars and the United Nations Office of Disarmament Affairs (UNODA) have indicated that in cases of manufacturing, storing, testing, training exercises, the establishment of military bases, deployment, scraping, and destruction of these weapons during the disarmament process also carry impact on the environment during peacetime military activities [48] (p. 1), [49] (p. 2), [50], [51] (p. 6). Despite the BWC making it illegal for states to develop and produce biological weapons for inhumane intentions, some rogue states in anticipation and readiness for biological warfare, such as the former Soviet Union as indicated below, still embark to develop, produce, test, and stockpile biological weapons during peacetime causing damage to the environment.

UNEP envisages many forms of environmental damage caused by the development, production, testing, and disarmament of biological weapons [47]. This includes soil contamination, groundwater pollution, air pollution, harm to or destruction of flora, fauna, their habitats, and the destruction of landscapes [47] (pp. 3–4). The accidental release of anthrax at Sverdlovsk in the Soviet Union back in 1979 that claimed seventy lives illustrates the danger posed by air pollution, and this was attributed to the failure by maintenance personnel to replace a critical filter in a vent where anthrax

was released [52] (p. 6). This occurred when the former Soviet Union embarked on producing and manufacturing a particular biological weapon [52]. Another form of air pollution emerged from the former Soviet Union's field testing of smallpox on Vozrozhdeniye Island, which occurred in July 1971 when a research ship carrying a female technician responsible for taking plankton samples from the Aral Sea came within 15 kilometers of the said island and drove into a plume of smallpox being released at the time [53] (pp. 20–21). The former Soviet Union also tested other forms of biological agents on Vozrozhdeniye Island, whereby, some were genetically modified [54] (p. 79), [55] (p. 8) to cause soil contamination.

In this regard, UNEP has cautioned military activities during peacetime by asserting the need “[t]o reduce or mitigate the harmful effects of military activities on the environment and to encourage a positive role for the military sector in environmental protection” [56] (p. 16). Furthermore, UNEP tried to “[p]romote laws and policies that encourage consideration, in designing new weapons and military equipment, of their environmental effects throughout their life cycle, *i.e.*, in their production, transport, use and disposal” [56] (p. 16).

## 5.2. Social Development Concerns

### 5.2.1. Incorporating Good Practices from the Convention on Biological Diversity (CBD) and the Cartagena Protocol on Biosafety (CPB) for Social Development Concerns

A closer examination of the BWC indicates that Article X (1) promotes “the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes”. This is the catalyst that has prompted developing countries to propose the transfer of technology in order to promote peaceful uses of biotechnology for agriculture and medicine [57] (p. 122). Therefore, developing countries have raised the relevance of the CBD, Agenda 21, the Rio Declaration, and the then on-going negotiations of the CPB in 1996–1997 [57] (p. 122). Developing countries have asserted that Chapter 16 of Agenda 21 ought to focus on environmentally sound management of biotechnology covering the usage of biotechnology to increase food, feed, raw materials, and for better health care and protection of the environment [23], [57] (p. 122). The CBD provisions relevant to the peaceful uses of microbiology and biotechnology include the following: Article 5 on cooperation, Article 12 on research and training, access to the transfer of technology in Article 16, exchange of information in Article 17, and technical and scientific cooperation in Article 18 [57] (p. 122). Nevertheless, in 1996, developed countries at the 4th Review Conference of the BWC, led by the European Union (EU), asserted that the BWC forum should not digress from its own work and avoid duplication of work among other international organizations. This led to the Final Declaration that merely acknowledges the significant steps in the biological field taken by UNCED with the adoption of Agenda 21, the Rio Declaration, and the CBD complementing the work of the BWC [57] (p. 123), [58].

The BWC also derived valuable lessons from the CBD and CPB concerning their initiative on the clearing-house mechanisms [59] (pp. 8–10). The existing Implementation Support Unit (ISU), formed in the aftermath of the 6th Review Conference of the BWC, has expanded its role and now acts as a clearing-house mechanism; taking its cue from the CBD and CPB in facilitating communication of partnerships for sources of cooperation and assistance among States [60] (p. 8). This abides by the Non-Aligned Movement's (NAM) request for an appropriate mechanism to facilitate the transfer and exchange of materials, as well as, scientific and technological information on the use of bacteriological (biological) and toxin agents for peaceful purposes.

### 5.2.2. The Biological Weapons Convention and the World Health Organization (WHO)

This study also found that the issue of health matters within the scope of international social law in the BWC, as reflected in its collaboration with the WHO through Article X (1) which encourages Parties to the BWC “to cooperate in contributing individually or together with other States or international



organizations to the further development and application of scientific discoveries in the field of bacteriology (biology) for prevention of disease [ . . . ]” [40]. It is obvious that the WHO’s role complements the BWC in terms of disease surveillance detection, diagnosis, and containment of diseases; whether naturally occurring or deliberately inflicted, based on the ISP of 2009 [60] (p. 4).

Indeed, the ISP of 2009 specifically focused on the implementation of Article X (1) of the BWC, and underlined the need for Parties to develop effective infrastructure for disease surveillance, detection, diagnosis, and containment by means of effective surveillance systems for collecting and analyzing data from various sources [60] (p. 5). An effective infrastructure for disease surveillance would require epidemiological response capabilities, the necessary regulatory framework, and capacity to treat diseases such as having diagnostic equipment, vaccines, and medicines [60] (pp. 5–6). As the BWC has stressed disease surveillance, diagnosis, and detection, its cooperation with the WHO also considers the “International Health Regulations 2005 important for building the capacity to prevent, protect against, control and respond to the international spread of disease” [60] (p. 6).

Cooperation between the WHO and the BWC was further reflected in the area of biosafety and biosecurity. The ISP of 2008 focused on “national, regional and international measures to improve biosafety and biosecurity, including laboratory safety and security of pathogens and toxins”, thus emphasizing the role of the WHO in providing guidance and standards of biosafety and biosecurity through its manual “Biorisk Management: Laboratory Biosecurity Guidance” [61] (p. 5), [63] for the simple reason that this is WHO’s turf, not BWC’s. This Guidance emphasizes the physical biosecurity of a building, personnel management as adequately qualified and without a criminal background, and ensuring that their mental state of health is sound [62]. Besides this, information security is concerned with the accountability of pathogens and those handling them by requiring storage of information in secured databases and log books, which is also highlighted by the Guidance document [62]. Additionally, the secure transportation of pathogens, domestically and internationally, and the training of laboratory personnel to handle emergencies and catastrophes constitute the features of an integrated biorisk management for laboratory biosecurity [62]. Another WHO document in relation to laboratory biosecurity include the WHO’s Laboratory Biosafety Manual on safe practices to be enforced to prevent the unintentional release of biological agents and toxins [63].

### 5.3. International Trade Considerations of the BWC

The relevant provision dealing with international trade for biological agents, toxins, equipment, and means of delivery is reflected in Article III of the BWC that deals with export control [64]. Export control is defined as “the legal provisions and administrative system allowing governments to authorize or not certain exports”—normally to safeguard a country’s national security, for foreign policy purposes, and protecting human rights [64] (p. 3). Specifically, Article III of the BWC mentions that “[e]ach State Party to this Convention undertakes not to transfer to any recipient whatsoever, directly or indirectly, and not in any way assist, encourage, or induce any state, group of states or international organizations to manufacture or otherwise acquire any of the agents, toxins, weapons, equipment, or means of delivery [ . . . ]” [40]. This provision has been intended for Parties to the BWC in order to introduce a national law in the form of export control to restrain the trade of biological agents, toxins, weapons, equipment, or the means of delivery; especially to hostile states with illicit biological weapons programs, or even to terrorists.

Furthermore, the ISP process of 2007 was explicitly clear that Parties to the BWC ought to impose export or import control measures. Parties to the BWC were urged to develop controls on transfers (both internally or externally) for biological agents, toxins, and equipment so as to secure a chain of custody between authorized people and facilities through the issuance of licenses upon review of an application in order to determine whether it is a good dual use for genuine peaceful activities or one with the potential for abuse [65] (p. 8). Besides this, there is also the need for Parties in their export control law to draw up a list of relevant agents, toxins, and equipment that are of dual use nature to be referred to the licensing authorities to determine whether any of these items can be potentially

misused [65] (p. 8). The export control law would also have to cover re-exports, transshipment, and transit of any biological agents or toxins, equipment, or means of delivery transported by rail, road, air, waterway, or by sea [65] (p. 8). Parties to the BWC are also encouraged to set up an automatic computer notification system documenting the particulars of the sender and receiver in the form of a database to enable the detection of any suspicious transaction of illicit smuggling of biological agents, toxins, and equipment.

#### *5.4. Competing Priorities between Export Control Measures and Social Development Concerns in the BWC*

The imposition of export controls in Article III of the BWC indicates competing priorities with Article X(2) that relates to social and economic development [40]. Specifically, Article X(2) of the BWC asserts that the “Convention shall be implemented in a manner designed to avoid hampering the economic or technological development of States Parties [ . . . ] or international cooperation in the field of peaceful bacteriological (biological) activities [ . . . ]” [40]. In a meeting in October 1995, NAM developing countries emphasized that the peaceful use of biotechnology was crucial to their health and agricultural sectors, while there should not be any restrictions barring the transfer of materials, equipment, and technology; thereby, hinting at export controls by the BWC [66].

Developing countries have perceived the implementation of export controls as secondary because they have more pressing issues to address such as poverty, food, medical care, shelter, and sustaining fragile environments. Wright [67] (p. 472) reiterated that “[t]he problems of disease and famine in these developing countries are just as devastating as those that might be caused by biological warfare and far more immediate.” For instance, Gould [68] (p. 171) emphasized that South Africa has more pressing needs to tackle such as secure access to food, improved health services, access to affordable medicine, as well as, clean water. For South Africa, diseases deliberately caused by biological warfare and bioterrorism are not uppermost, while communicable diseases associated with poverty and underdevelopment such as human immunodeficiency syndrome (HIV/AIDS), tuberculosis (TB), and malaria are their main priorities [68] (p. 175).

Other African countries view biotechnology as having great potential “to improve health and agriculture, save lives, reverse environmental degradation, conserve bio-diversity, and stimulate economic development” [69] (p. 1). According to Wright [67] (p. 472), as far as developing countries are concerned, “[e]xpanding resources on arms control and disarmament is seen as a luxury of the rich”. Furthermore, given the speculative nature of biological warfare and bioterrorism, developing countries do not perceive the necessity to allocate a large budget and devote much time of policy-making to this menace since issues of economic development are their main priority.

In particular, NAM countries have been insistent that developed countries transfer their knowledge and technology “in building defences against new and emerging diseases and developing national capacity for responding to biological threats through detection, containment and decontamination” [70] (p. 3). At the BWC’s Meeting of Experts in 2013, NAM underlined the need to identify and address their requirements in terms of equipment, materials, scientific and technological information, mobilize financial resources, and facilitate the development of human resources in the context of using bacteriological and toxin agents for peaceful purposes; especially in detecting and responding to infectious disease outbreaks, whether naturally, accidentally, or deliberately [70].

Moreover, the NAM hardliners have attacked the Australia Group, an exclusive group of mostly developed countries that have created an informal international arrangement relating to the licensing of transfer of biological agents, toxins, and equipment and determining whether these could be transferred to other countries on the grounds that they may not be suspected of any illicit biological weapons programs [71] (p. 28). The Australia Group has a list of pathogens, toxins, and equipment that are of dual use nature, as well as, the sharing of intelligence concerning the activities of proliferators for they do not want this information to be divulged to errant states of the BWC [72] (p. 11), [73] (p. 25). Thus, Iran, India, Pakistan, and China have used NAM as a vehicle to voice their displeasure at the

informal arrangement of barring transfers by the Australia Group since these countries are suspected of pursuing biological weapons development contrary to the BWC [72] (p. 10).

Despite the NAM's position regarding export controls, the UNSC Resolution 1540 under Chapter VII of the UN Charter passed in 2004 made it mandatory for all states to refrain from supporting non-state actors attempting to develop, acquire, transport, transfer, or use nuclear, chemical, or biological weapons by implementing effective national laws, increasing physical protection measures, border control, and enforcement efforts through international cooperation to prevent trafficking and brokering of such items in compliance with international law [74]. In effect, no states are excluded from implementation under Resolution 1540 despite their grievances towards export controls. Subsequent to 1540, Resolution 1977 was adopted in 2011, extending the mandate of the 1540 Committee monitoring the implementation of Resolution 1540 among states for another ten-year period, from 2011 to 2021 [75]. Thus, Resolution 1540 complements the work of the BWC because it focuses on bioterrorism by non-state actors, while the BWC concentrates on states and biological warfare.

Failure by developed countries to transfer knowledge and technology on grounds of security due to fear of misuse of biotechnology is perceived as a trade barrier by developing countries [76]. Singer and Daar [77] (p. 23) have cautioned that "the world must not let legitimate concerns about biosecurity undermine the promotion and use of biotechnologies for human development", while "[i]nternational laws and rules that inhibit investment and growth in these technologies because of security concerns therefore could jeopardize these future benefits".

For instance, Enemark [71] (p. 29) had highlighted that the imposition of export controls has an impact on humanitarian concerns over health, as exemplified by the United Nations Special Commission (UNSCOM) in Iraq which imposed biotechnology restrictions on the country even when a WHO report from 1996 reportedly showed that health conditions deteriorated at an alarming rate because of such restrictions. While the international community genuinely had legitimate concerns over Iraq's development of biological weapons for malicious intentions, thereby raising security concerns, this went overboard to the extent that it prevented the Iraqi people from obtaining adequate medical care because of restrictions over equipment, vaccines, and other medical supplies to the point of raising humanitarian concerns.

This being the case, if the Australia Group wishes to impose export controls, not all NAM countries should be targeted except for a selected few with proven evidence of pursuing biological weapons. Otherwise, this will only end up depriving other NAM states with legitimate intention of acquiring the necessary know-how in order to pursue their own biotechnological development and/or diversify their medical industries.

## 6. Discussion

This study has shown that the BWC has fulfilled three components of sustainable development, namely: environmental protection, economic, and social development through Article II, Article III, and Article X, respectfully [40]. The implication here is that the BWC can be regarded as integrative even though the BWC itself does not directly refer to sustainable development, as indicated by Rhodes [12]. Going back to Tladi's [10] assertion earlier in this study that international arms control law can equally subscribe to sustainable development, this study has found evidence that by examining the provisions of Article II, Article III, and Article X [40] based on the principle of integration in ISDL, the BWC can embrace sustainable development. While the BWC independently, on its own, already contains features of sustainable development, this has been reinforced by the supplementary UN resolution Observance of Environmental Norms in the Drafting and Implementation of Agreements on Disarmament and Arms Control [43] and the UNEP document from the Meeting on Military Activities and the Environment [47] in Linköping in 1995, which recommends states to adopt environmental norms within disarmament and arms control agreements, and to consider prior agreements and those as the outcome of UNCED contributing to the objective of sustainable development. This shows that the BWC must be interpreted in a wider context of other soft law documents pertaining to

disarmament and arms control rather than being read solely on its own if it were to steer towards the goal of sustainable development.

While the BWC, being part of international humanitarian law, falls within the international social law of ISDL, its position in international arms control law is not acknowledged within the branches of ISDL. By virtue that the BWC is also an international arms control agreement, this study raised the possibility that ISDL should consider other branches of international law besides international environmental law, international trade law, and international social law that can similarly subscribe to sustainable development. Therefore, this study agrees with Tladi's [10] aforementioned assertion that as it stands, ISDL has excluded other branches of international law. Based on this study, it was suggested that some changes be made to the ISDL definition so as to capture other branches of international law that equally embrace sustainable development, such as the BWC in the international arms control law.

## 7. Conclusions

This study set out to apply the principle of integration in ISDL within the BWC so as to determine whether this international agreement contains components of sustainable development; namely, environmental protection, economic, and social development concerns. This has been a benchmark in evaluating the extent to which provisions of the BWC can steer their way towards the goal of sustainable development in international law. The findings are also significant because prior to this, the BWC (an international arms control agreement that never explicitly made sustainable development as its goal) actually fulfills all components of sustainable development when evaluated against the principle of integration. Moreover, the BWC's goal of sustainable development has to be evaluated in the broader context of other soft law UN documents, as mentioned in the discussion section, which call for the BWC to consider sustainable development besides its core feature in preventing hostile use in biology. Since sustainable development has become an important goal worldwide that just about every international organization and government strive to achieve, this study certainly met that goal by benchmarking the BWC against the principle of integration in ISDL.

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