

**TOWARDS EFFECTIVE REGULATION OF SEA BASED
TRANSBOUNDARY MOVEMENT OF NUCLEAR WASTES.**

**A Project Paper Submitted in Partial Fulfillment of the requirements for the
Master of Laws (LL.M) Degree of the University of Nairobi**

By

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DECLARATION

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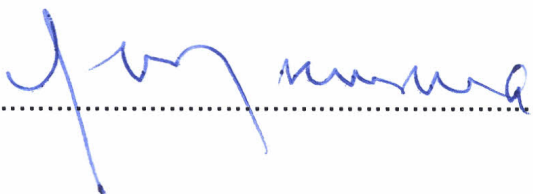
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DEDICATION

This project paper is lovingly and humbly dedicated to my family; my beloved wife Marceline Sande Okumu Ligunya, without whom I would not have the sanity and peace of mind to focus on my writing; my increasingly curious and gentle son Sidney Ngala Ligunya, my indefatigable daughter Tehillah Alice Ligunya, and our yet unborn child Milan Hawi Ligunya. To the entire Okumu and Ligunya families who have become an inextricable part of my core being. My everlasting love to all of you

To the law firm and fraternity of Rachier & Amollo Advocates who have been my family away from home and allowed me the opportunity to carry out my vocation. I thank you.

To all of you, you are mightily blessed and to all others who I may not have specifically mentioned, you are no less important and may the good Lord bless you.



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TABLE OF CASES

1. Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons, ICJ Reports (1996)226, para 29
2. Bosnian Genocide Case, ICJ Reports (2007) para 430
3. Chorzow Factory Case, PCIJ, Ser. A, No. 8/9 (1927), 226
4. Corfu Channel Case, ICJ Reports (1949)1
5. Electronica Sicula (ELSI) Case, I.C.J Rep. 1989, p.15
6. Lac Lanoux Arbitration 24 ILR (1957) 101
7. Gabcikovo Nagymaros Dam Case, ICJ Reports (1997) 7
8. Mox Plant Case(Provisional Measures) ITLOS No. 10, (2001)
9. Nuclear Test Cases, ICJ Reports (1973) 131
10. Trail Smelter Arbitration, 33 AJIL (1939) 182

TABLE OF INTERNATIONAL INSTRUMENTS

1. Charter of the United Nations; UKTS 67 (1946)
2. OECD Convention on Third Party Liability in the Field of Nuclear Energy(**Paris Convention**), 956 UNTS 251 (1960)
3. Convention on Civil Liability for Nuclear Damage (**Vienna Convention**), 2 I.L.M. 727 (1963)
4. Convention on the Carriage of Hazardous and Noxious Substances by Sea 35 KM 1406 (1966)
5. Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircrafts (**Oslo Convention**) 932 UNTS 3 (1972)
6. Stockholm Declaration on the Human Environment, 11 I.L.M. 1416 (1972)
7. International Convention for the Prevention of Pollution from Ships (**MARPOL**) 12 I.L.M. 1319 (1973)
8. International Convention for the Safety of Life at Sea (**SOLAS**) 1184 UNTS 2 (1974)
9. Agreement Supplementary to the Paris Convention of 1960 on Third Party Liability in the Field of Nuclear Materials (**Brussels Convention**) UKTS 44 (1975)
10. Convention on the Physical Protection of Nuclear Materials, 18 I.L.M. 1419 (1979)

11. United Nations Convention on the Law of the Sea, **(UNCLOS)** 21 I.L.M. 1261 (1982)
12. International Convention on Civil Liability for Oil Pollution Damage (**CLC Convention**); 23 I.L.M 177 (1984)
13. Convention on Early Notification of Nuclear Accidents; 25 I.L.M. 1370 (1986)
14. Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (**Basel Convention**) 28 I.L.M. 657 (1989)
15. Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, (**Bamako Convention**) 30 I.L.M. 775 (1991)
16. Convention on Environmental Impact Assessment in a Transboundary Context, 30 I.L.M. (1991)
17. Rio Declaration on Environment and Development, 11 I.L.M. 876 (1992)
18. Convention on Biological Diversity, 31 I.L.M. 822 (1992)
19. Joint Convention on Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 36 I.L.M. 1431 (1997)
20. International Convention on Salvage, IMO/LEG/Conf.7/27
21. Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (**Oil Pollution Fund Convention**) 11 I.L.M. 284 (1972)

22. Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (**SPREP Convention**) 26 I.L.M. 38 (1987)

ABBREVIATIONS

1. **AJIL** American Journal of International Law
2. **CARRICOM** Caribbean Community
3. **EEZ** Exclusive Economic Zone
4. **EURATOM** European Atomic Energy Agency
5. **IAEA** International Atomic Energy Agency
6. **ILC** International Law Commission
7. **ILM** International Legal Materials
8. **IMO** International Maritime Organization
9. **INF** Irradiated Nuclear Fuel
10. **ITLOS** International Tribunal on the Law of the Sea
11. **MARPOL** International Convention for the Prevention of Pollution from Ships
12. **MOX** Mixed Oxide
13. **NPT** Nuclear Non Proliferation Treaty
14. **OECD** Organization for Economic Cooperation and Development
15. **SOLAS** International Convention for the safety of Life at Sea
16. **SPREP** South Pacific Regional Environmental Programme

17. **UNESCO** United Nations Educational, Scientific and Cultural Organization
18. **UNGA** United Nations General Assembly
19. **UNSCEAR** United Nations Scientific Committee on the Effects of Atomic Radiation
20. **UNTS** United Nations Treaty Series

Chapter 1

RESEARCH PROPOSAL

1.0 BACKGROUND

We live in a world that is continuously aware of the risk posed by global warming. Fuel sources that emit carbon dioxide and other green house gases are critically viewed. There is a growing demand to “go-green” in every industry. Carbon trading is a fast growing trade and every country especially in the developed world is being called upon to observe and adhere to the Kyoto Protocol and whatever instrument that will succeed it, be it the Copenhagen Accord or any other instrument. There is also the call to undertake roll back measures to cut back on emissions. This continuous push has led many nations to seek alternative energy sources, such as wind power, solar power and of course nuclear power. The 44th President of America, Mr. Barrack Obama, commenced his term on *inter-alia* the promise to seek alternative sources of fuel that will not contribute to global warming, while reducing America’s reliance on foreign oil. Several nations such as Japan, the United Kingdom, and France all have embraced nuclear power as one key alternative to carbon based fuels. Indeed even North Korea and India keep pushing for their right to develop nuclear power as a source of energy. This new drive to go green raises myriad questions, for instance with regard to obligations under the Nuclear Non Proliferation Treaty (**NPT**). However such issues are outside the scope of this paper. The primary issues that concern this paper are different threats posed by the reliance on nuclear power; it is the reality that utility of nuclear power is attended by production of highly toxic non-biodegradable waste (herein called ultra hazardous materials).

The use of nuclear power other than posing a challenge with regard to non biodegradable waste also comes with grave inherent risks. History is marked by

incidences that have created skeptics and raised a lot of concerns about the safety and ability to properly harness nuclear power. Japan in 1999 witnessed the Tokaimura criticality accident, where three workers received high doses of radiation and another 119 workers received lower doses of radiation in a small Japanese plant preparing fuel for an experimental reactor. The accident was caused by bringing together too much uranium enriched to a relatively high level, causing a "criticality" (a limited uncontrolled nuclear chain reaction) which continued intermittently for 20 hours and resulted in two fatalities.¹ One of the most notable incidences involving radioactive releases was the Chernobyl nuclear accident of 26th April 1986, where there was release of large amounts of radioactivity leading to increased levels of radiation over an extensive area in the former USSR. It necessitated the evacuation of more than 100,000 people from a radius of twenty miles around the plant within 36 hours. 31 people died as a direct result within a few weeks.² These incidences and the fact that radiation poisoning can last in the environment for a long time even spanning years underscore the unique challenges posed by the use of nuclear energy and the fear that it creates among people.

In an ideal world when a state uses nuclear power, it should thereafter deal with the resultant waste whether by storage of the same or recycling it. If this was the case, then the dangers posed during shipment would be unheard of as there would be no shipment. However the reality on the ground is that due to the inherent hazard of nuclear waste, storage requires specialized facilities and recycling similarly is not only costly but requires special facilities and skill, which is not possessed by every state. The upshot is that whereas a state may use nuclear power, it will then seek to engage another country to recycle the waste or store the same at designated facilities. Several states such as France and the

¹ <http://www.world-nuclear.org/info/inf37.html>

² P. Sands, Principles of International Environmental Law, (2nd Edn, Cambridge University Press, 2003), pg. 908-909

United Kingdom seized the opportunity to develop recycling plants for nuclear waste. The geographical distance between where the waste is produced and where it is to be stored or recycled necessitate the movement from one State to another. Among the key countries involved in the active and large scale shipment of nuclear wastes include Japan, the United Kingdom, France, Germany and United States and some primary transit routes include the South African coast and the Pacific Island coasts. In light of the fact that Kenya is mooting the idea of commencing the use of nuclear power, the challenges that come with such a use would also be relevant in Kenya and enable the Country to make adequate preparations before the intention becomes a reality and to grapple with the challenges of how the waste that would invariably be generated would be handled.

This kind of movement of nuclear waste and materials to and from points that are not necessarily geographically proximate, is what is referred to as transboundary movement of ultra hazardous waste. The transboundary movement of nuclear waste has been done predominantly by rail, road, air and ship.³ The focus of this dissertation however is on transport by sea faring vessels and this will be the primary focus of this paper. The choice is based on the perception that of all the modes of transport, sea transportation raises unique challenges, such as the question of jurisdiction over the ship especially when it is on the high seas; and which also draws the question of liability when multiple parties are involved from the shipping state, the ship operator and charter parties. Discussion will focus on a critical and in-depth analysis of the current international regulatory regime and safeguards, with a view to determining the sufficiency or otherwise of the same especially with regard to interests and concerns of third parties or so called transit states, such as the South Pacific Caribbean states, South Africa, among other Coastal States not directly involved

³ WWW.radwaste.org/transport.htm

or benefitting from the shipment of such wastes. New and vital measures that may be incorporated to see to it that a system of efficient regulation is put in place while ensuring appropriate compensatory aspects are enshrined will be expounded and proposed.

1.1 STATEMENT OF THE PROBLEM

International law has taken huge strides towards the regulation of movement of hazardous materials. Several international and regional conventions exist that govern and regulate transboundary movement of hazardous materials, among them being the Basel convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, and the Bamako Convention on the Ban of the Import into Africa and the Control of Movement and Management of Hazardous Wastes within Africa. The same can be said of the transboundary movement of oil which is also substantively regulated under the International Convention for the Prevention of Pollution from Ships (MARPOL). The same does not hold true with respect to nuclear/ultra hazardous materials. By the term ultrahazardous materials, we are referring to radioactive/nuclear based materials, or as suggested by Duncan E.J. Currie, a definition of ultrahazardous radioactive waste can build upon the definition of harmful substance in Article 2 of MARPOL which means "any substance which, if introduced to the sea, is liable to create hazards to human health, to harm living resources and marine life to damages amenities or to interfere with other legitimate uses of the sea."⁴ The only qualification to this definition for the purpose of this paper is that the substance must be of a radioactive nature.

⁴ Duncan E.J. Currie, "The International Law of Shipments of Ultrahazardous Radioactive Materials; Strategies and Options to Protect the Marine Environment"; Paper Given to South Pacific Workshop on Criminal Law and its Administration in International Environmental Conventions. In Apia, Western Samoa 1998.

There is no concrete and comprehensive regime known to International Law that regulates the transboundary movement of such materials. Indeed the International Atomic Energy Agency (IAEA) has variously construed the ambit of the Basel convention as excluding such materials by dint of Article 1 (3).⁵ The magnitude of the problem is captured in the views of Professor Jon Van Dyke, who observed that..."although the International community has taken some positive steps to address risks created by the movement of ultrahazardous radioactive cargo, important gaps still exist in the legal regime governing these activities...still lacking are agreements regarding salvage responsibilities, liabilities of shippers for damages, obligations to consult regarding the best routes and to provide advance notification to concerned coastal states, the preparation of environmental assessments and contingency planning to handle shore emergencies and salvage responsibilities."⁶ The Professor underscores the gravity of the problem even without touching on other salient areas such as the lack of provision for compensation for economic losses such as would result to tourism and fishing industry of an affected area. As regards salvage, it is not only that the responsibility remains undefined, but also that the technology and means for undertaking salvage for ultrahazardous radioactive materials remains largely undeveloped.

On the other hand some of the developed Nations, particularly those engaged in the shipping of such cargo continue to urge that there is no need to develop any particular or special regime or rules for ultrahazardous cargo, as existing requirements on compensation and safety suffice, whether applied expressly or impliedly. They further cite their belief and business practice that shipping countries are sufficiently liquid or insured to meet any costs that may arise from such transport.

⁵ Prof. Jon M. Van Dyke "*The Need for Further International Action Regarding Safety of Sea Transport of Ultrahazardous Radioactive Materials*" 27 *Ocean Development & International Law* (1998)

⁶Ibid.

The purpose of this paper then is to evaluate the current regime regarding the transboundary movement of ultrahazardous wastes to establish whether or not there is ample provision of safeguards, to protect the interest of export and import states as well as transit states. Indeed a bias must be confessed at this point in favour of transit states. The reason being that these states are placed at risk of collateral damages to multiple interests, without commensurate benefit (if any) from the shipping of ultrahazardous cargoes. Transit states do not orchestrate or control the movement of hazardous materials and are not involved in the contractual negotiations or in the logistical planning for the shipments. While transit states simply and inadvertently happen to be on a designated route, the risk that their position exposes them to is not lessened or mitigated by this fact. They thus face grave peril and risk without commensurate benefit to their economies from the transboundary shipment of nuclear cargo. The plight of these States and the need for redress will be the primary focus of this paper which will seek to establish if there is a need for (certain) improvements to the existing regulatory systems or a need to establish a new system to specifically regulate such transport and if so, with what particular features. In essence to determine the best way forward.

1.2 RESEARCH QUESTIONS

1. How has International law addressed the question of regulating and supervising sea bound transportation of ultra hazardous waste?
2. What are the faults and shortcomings of the current regime regulating transboundary transport of ultra hazardous waste?
3. Is there a need to develop a unitary and comprehensive regime to regulate all or key facets of transboundary movement of ultrahazardous waste? Or in the alternative what modification of the existing regime would suffice?

4. What is the best way forward towards safeguarding interests of all parties/States involved or affected by such activities?

1.3 HYPOTHESES.

1. That the current state of International law governing the transboundary movement of ultrahazardous waste comprises of disjointed piecemeal provisions in various instruments lacking coherence and effectiveness.
2. That while some fundamental issues are addressed, most fundamental concerns and pertinent regulations are still lacking in international law, and consequently the provisions regulating shipment of radioactive wastes are inadequate to address the needs and concerns of transit States.
3. There is a lack of congruence in the approach of International law to regulating transboundary movement of ultrahazardous wastes and in light of the high levels of attendant risk there is ineluctable need to create a new, unitary and comprehensive regulatory system.

1.4 STATEMENT OF OBJECTIVES

1.4.1. BROAD OBJECTIVE.

To contribute towards the on-going debate on the need for special control focused on ultrahazardous materials particularly on the control of movement from state to state. To provide a platform on which to champion the cause of and raise awareness of concerns of transit states, which despite the lack of economic power deserves to have their interests protected against adverse and undue risk from actions of other States.

1.4.2 SPECIFIC OBJECTIVES

1. To define and discuss the current state of International law relating to the regulations and supervision of transboundary movement of ultra hazardous waste.
2. To elucidate and explore the omissions and lack of legal provision on key issues of concern to all States especially transit States emanating from the shipment of ultrahazardous waste across national borders.
3. To determine whether the issues that need address can be tackled within the current fabric of law or through the creation of a new and comprehensive regulatory regime that fully addresses existing and emergent environmental challenges.
4. To suggest measures and steps that can be taken in order to alleviate the anxiety and worry that attends to this volatile economic activity.

1.5 THEORETICAL FRAMEWORK

Two key tenets of international law remain the doctrine of State Sovereignty and equality. These doctrines posit that all States are equal and they accord each other such recognition. State sovereignty *inter alia* features the recognition that each State enjoys exclusive control over both its resources as well as its territory. The General Assembly of the United Nations in 1962 declared that permanent sovereignty of peoples and nations over their natural wealth is to be respected.⁷

In fact international law posits that States have in accordance with the Charter of the United Nations and the principles of International law, the sovereign right to exploit their own resources pursuant to their own environmental and

⁷ UNGA Res 1803 XVII (1962) see also Article 2 UNGA Res 3281 XXIX (1974)

developmental policies.⁸ A State is able to determine and control activities within its own territory including monitoring what comes into and goes out of it. This power is backed by the establishment of institutions such as the International Court of Justice for the resolution of grievances.

It is here submitted that the theory and ideal of State sovereignty is not realized in practice. The prevalent power differences and economic dependencies of one State on another whittles down the ability and willingness of the weaker State to protest incursions and check the wanton activities of the more dominant State for fear of reprisals and other constraints. Indeed economic might often dictates what is right. Many states accede to demands detrimental to themselves simply because the same are fronted by a strategic trading partner. Springer in his book titled *The International Law of Pollution*, observes in *extenso* that:

Under traditional international law, a state must meet relatively restrictive standards to attempt to invoke the responsibility of another state for polluting activity. Injury must be shown to an interest that the claimant state is legally entitled to protect. ...Politically, environmental issues may not be seen as sufficiently significant to risk jeopardizing the government's interest in promoting cooperative relations in other areas. From a legal perspective rules of reciprocity may discourage a state from criticizing a neighbor for transboundary pollution with moderate impact if it wishes to retain the right to 'protect' similar pollution that may be generated within its borders.⁹

Another factor that whittles down the effective exercise of state sovereignty is the lack of technological capacity to undertake an effective analysis and assessment of the risk posed by the intended shipment of certain cargo. A state

⁸ Principle 2 of The Rio Declaration on Environment and Development, United Nations Conference on Environment and Development, 11 I.L.M. 876 (1992); and Principle 21 of The Stockholm Declaration on the Human Environment, 11 ILM 1416 (1972)

⁹ A. Springer; *"The International Law of Pollution; Protecting the Global Environment in a World of Sovereign States."* As quoted in Martin Dixon & Robert McCorquodale; *Cases & Materials on International Law*; (Oxford University Press, 2003). Pg 462.

of transit may not be sufficiently developed to boast the costly and sophisticated equipment, expertise and technology required to test and evaluate the nature and risk posed by nuclear cargo that is being transported through its territorial waters. This position renders the requirement for notification in most instruments of little practical usage. If a state cannot evaluate and assess the risk posed by an intended shipment, then it cannot be said that there was informed consent based on a clear appreciation of all material facts. It must be remembered that the procedure of notification is intended to achieve a certain purpose and the purpose or mischief must be addressed for the procedure to be valid. This challenge is grappled with in the Rio Declaration in its obligations of common but differentiated responsibility, specifically its requirement for the exchange of scientific and technical knowledge and enhancement of development adaptation, diffusion and transfer of technologies including new and innovative technologies.¹⁰

States of transit are vulnerable due to the limited information that they receive with respect to nuclear shipments. The primary States of dispatch and destination have tended in most instances to relay information to transit states out of comity rather than obligation. This is because as will be seen regulatory instruments tend only to obligate information exchange between the State of origin and that of dispatch. More despised and less acknowledged than the duty to inform is the duty and the need for prior consultation between the exporting State and the State of transit. Justifications of security and lack of a binding rule of international law in this regard are just but a few of the reasons cited for refusal to hold what would be mutually beneficial dialogue. The precipitate result is that a State of transit will at best know of an intended shipment but not the nature of its cargo and at worst it is left groping in the dark.

¹⁰ Supra n. 8 Principle 9

In light of the divergence between theory and practice and in light of the reality of grievous and irreparable harm that would result from an incident involving nuclear shipment, the reliance on State sovereignty to protect the fragile environment and natural resources not to mention human life does not suffice to handle the challenges that are posed by the transboundary movement of hazardous waste. Allen Springer observes that:

*"Scholars have questioned whether the present international legal system is sufficiently developed to resolve the disputes that arise over environmental issues and more generally to provide a constructive, forward looking framework for environmental protection. Reflecting the decentralized nature of the international political context, international law accords to the state a degree of control over human activity within its boundaries that often appears incompatible with effective protection of the biosphere."*¹¹

Developments in international law have witnessed a gradual shift in responsibility from and individual State based responsibility to communal responsibility. Daniel Bodansky observes the gravitation of decision making authority from the national to the international level in *inter alia* international environmental law. He opines that this has mainly been because states have realized that they cannot solve some transnational or global environmental problem through national action, so they agree to collective action by means of reciprocal exchange of promises.¹² This is evident first in international environmental law where resources such as those in the high seas and the high sea themselves are considered *res communis*; that is to say resources that are open to usage by all states.¹³ The principle is that certain resources are so important and shared that their protection cannot be left to the parochial activities of individual State actors but

¹¹ Supra n.9

¹² Daniel Bodansky, "The Legitimacy of International Governance; A Coming Challenge for International Environmental Law" 93 AJIL 596 (1999) pp 596, 603-4, 623-4

¹³ Convention on the Law of the Sea 1982, Art. 87; UN Doc. A/CONF. 62/122; 21 I.L.M 1261(1982)

must entail the collective actions of the entire international community. This is echoed in the concept or doctrine of 'common concern' "whose main impact appears to be that it gives the international community of states both a legitimate interest in resources of global significance and a common responsibility to assist in their sustainable development. ... insofar as states continue to enjoy sovereignty over their own natural resources and the freedom to determine how they will be used, this sovereignty is not unlimited or absolute, but must now be exercised within the confines of (the) global responsibilities.¹⁴ 'The concept of sovereignty therefore does not prevent resource conservation or the treatment of conservation as a common concern to all. It is clear that sovereignty has become pervaded by environmental concerns and is no longer absolute or unfettered'¹⁵. International law on piracy provides a further example in that cognition is taken of the fact that the threat posed by certain activities no matter where they occur is of such a magnitude that the actors are not merely enemies of the people or interests that they attack but they are actually enemies of humanity and are aptly termed *hostis humanis generis*. International law empowers all States through the concept of universal jurisdiction to arrest and prosecute such persons wherever they are found.¹⁶ The development towards collective rather than individual effort is also rooted in the tested principle of espousal of claims by States. The understanding is that an individual may be limited in how far he can go and what forum he can access in the international arena to seek redress and therefore there is a need for his State of nationality to be able to take up and urge his claim where necessary. This has been done in several cases of international repute such as the Electronica Sicula (ELSI) case.¹⁷

¹⁴ P.Birmie, A.Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press), Chpt. 3 Pg 130.

¹⁵ Ibid pg. 192

¹⁶ Supra n.13, Arts. 100, 101 and 105

¹⁷ I.C.J Rep. 1989, p.15

Whereas the espousal of claims is premised on the limitations placed on individual persons by rules of international law, and whereas it is acknowledged that there may not be similar restrictions placed on states by international law, it is proposed that given the interlinked and multifaceted nature of the environment and environmental problems, and the grave, catastrophic and even sometimes irreparable consequences that would attend some incidences, there is need for collective effort and response to emergent issues. It is observed that a state acting and left to its own parochial efforts and guided by its claims of sovereignty may not be the best way avenue to safeguard the environment and the resources therein particularly shared or transnational resources.

It may be said that the international community has come to realize the necessity and vitality of collective responses to certain challenges and that such an approach promises greater benefit. It is here submitted that the nature of the threat and the risk posed by the transboundary movement of ultra hazardous waste on the environment, natural resources marine and otherwise, as well as to human health warrant measures being taken beyond the parameters of allowing individual States to protect the marine resources by virtue of their territorial sovereignty and proximity to the resource concerned. The lack of definite and compulsory channels of information exchange, the competing interests between various States and the clandestine approach that has historically attended shipment of hazardous materials coupled with its grave inherent risk negate the wisdom of allowing sparse and uncoordinated regulatory efforts to prevail and necessitates the need for a joint approach to regulation and control. It is necessary that the same thought that informs concepts such as *res communis*, universal jurisdiction and espousal of claims be incorporated into the efforts to regulate shipment of nuclear waste and thereby go beyond the safety net of State sovereignty as the primary way of protecting marine resources. Indeed what is being suggested is that State sovereignty must take a back seat to joint or communal sovereignty of the international community with respect to protection of interests during trans-boundary shipment of nuclear waste. The

international community should then be able to interject and mitigate even in issues that would traditionally be considered as within the realm of internal affairs of individual States and resources within the realm of territorial sovereignty if it is clear that the intervention would help curb potential grievous harm that would affect the wider community of States and their interests. It is submitted that trans-boundary movement of nuclear waste demands such novel approach and this may be effected through various mechanisms, including the establishment of an international ombudsman to coordinate regulatory activities and even espouse the claims of individual States where they claim to have been victimized but unable to investigate and prove their case due to technical or economic constraints. This sought of approach would create a more level playing field where protection and conservation are the central agenda despite economic differences and where environmental concerns can be tackled without undue burden on already strained states and their limited resources.

1.6 JUSTIFICATION

The lack of a clear and comprehensive regulatory regime for the transport of ultrahazardous materials, addressing the activity in all relevant facets of safeguards, supervision, compensation and overall redress mechanisms compel the writing of this paper. It is vital and critical that an effective balance be established between interest of third party transit States to resource protection and sovereignty on the one hand and interests of states of import and export to carry on business on the other hand. This paper will therefore seek to shed light on otherwise grey areas that have long remained in unjustifiable uncertainty, in a bid to determine the most efficient and effective way by which such a hazardous albeit necessary activity may be undertaken.

Published materials addressing the issues addressed in this paper are limited, with the result that much reliance and reference will be placed on unpublished materials and sources.

1.7 METHOD OF STUDY

The paper will focus principally on descriptive and explanatory research, relying on printed work, unpublished works and published materials in textbooks, statutes, International law instruments and the internet.

The data will thus be sourced from libraries and document centres.

1.8 LITERATURE REVIEW

Richard Herr's article titled '*Environment Protection in the South Pacific*' focuses on the effectiveness of the environmental protection regime in the South Pacific and evaluates its effectiveness.¹⁸ It looks at the challenges facing the South Pacific as it attempts to ensure regional environmental protection. To this end the writer analysis the Conventions established under the South Pacific Regional Environmental Programme (SPREP) to articulate the effectiveness or otherwise of the same. It will be relevant in the formulation of possible responses to the problems of regulating transport of radioactive materials. It however only addresses the unique issues relating to the South Pacific rather than generally. It does prescribe some measures that are applicable globally but others that are

¹⁸ Richard Herr (2002), "*Environment Protection in the South Pacific: The Effectiveness of SPREP and its Conventions*," in Olav. Schram Stokke and Oystein B. Thommessen (eds.), *Yearbook of International Co-operation on Environment and Development 2002/2003* (London; Earthscan Publication) Pg 41 – 49.

limited to the circumstances prevalent in the South Pacific. It is these general issues not addressed by the article that will be focused upon.

In his book, "Principles of International Environmental Law"¹⁹, specifically in chapters 12 and 13, Philippe Sands discusses Hazardous substances, including the regulation of radioactive materials, under which he discusses nuclear safety as well as the legal regime regulating transportation of nuclear materials. Of importance are paragraphs on border co-operation and emergency notification. The material in this book will serve to show the difference in regulation of hazardous materials from ultrahazardous/nuclear materials. It will also contribute towards the formative chapters of this project paper, especially on the challenges posed by use of nuclear power and handling of nuclear waste.

"International Law and the Environment"²⁰, written by Patricia Birnie, Alan Boyle and Catherine Redgwell, is another book of fundamental significance to this project paper. This book looks at various thematic issues relevant to the discourse herein. These include state responsibility in reducing and minimizing harm caused by activities within their jurisdiction; nuclear energy and the environment, where the focus is on the pros and cons of nuclear energy and the approach taken in international law towards regulation of its usage. The book also critically looks at the shortfalls in the current laws and instruments in this field. The immense relevance of the book to this paper cannot therefore be over emphasized.

¹⁹ Philippe Sands, Principles of International Environmental Law, (Cambridge University Press, 2003, 2nd Edn).

²⁰ P.Birnie, A.Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press), Chpt. 3 Pg 153

Daniel Bodansky in his article titled the '*Legitimacy of International Governance*²¹, looks at an emergent problem being the legitimacy of international environmental law and that of its enforcement agencies, in a world where decision making is gravitating from the national to the international level. He highlights among other things the key question as to whether international law in its current state is well equipped to handle the sheer scale and magnitude of the challenges facing the environment. His main focus however is on whether there is ample provision to ensure that the requisite legitimacy accompanies the decision making roles played by multinational organizations. In this last respect the paper differs from the scope of the current paper while still contributing to the legitimization of the theoretical framework proposed herein.

The compilation of "Cases and Materials on International Law²²" by Martin Dixon and Robert McCorquodale is relevant to this paper primarily on its compilation of articles on environmental theories. One such article is that by Springer on the International Law of Pollution.²³ This article highlights the challenge facing the attempts to protect the environment, in a world where state sovereignty is paramount and where states are eager to accommodate each other in economic interest even to the detriment of environmental protection. He also looks at the challenge of treaty based protection, in that treaties rely on consensus and good will, and in very contentious matters both may be hard to come by. He therefore focuses on the difficulties that the current regime create for any meaningful endeavor seeking to put the environment first and ahead of state and economic interests. This paper is fundamental to the theoretical framework and indeed will

²¹ D.Bodansky; "*The Legitimacy of International Governanace: A Coming Challenge for International Environmental Law.*"93 AJIL No. 3 (Jul. 1999) Pg 596-624

²² M.Dixon & R. McCorquodale, Cases & Materials on International Law, 4th Edn, Oxford University Press, 2003.

²³ A.Springer; "*The International Law of Pollution-Protecting the Global Environment in a World of Sovereign States.*" In Martin Dixon & Robert McCorquodale, Cases & Materials in International Law; (4th Edn, Oxford Univ. Press), Pg 461-462.

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²³ A.Springer; "*The International Law of Pollution-Protecting the Global Environment in a World of Sovereign States.*" In Martin Dixon & Robert McCorquodale, Cases & Materials in International Law; (4th Edn, Oxford Univ. Press), Pg 461-462.

be crucial to the analysis of the current state of international law regulating radioactive wastes in the subsequent chapters.

Reference will be made to various unpublished works and the following are such unpublished works.

In a paper presented at an advanced training in Environmental Law for Ugandan Judges, Professor Francis Situma discusses the provisions of various international conventions on hazardous wastes and how they regulate the trade and dealing in such wastes²⁴. He also samples national initiatives undertaken by Countries such as Nigeria in response to past incidents. It will offer an opportunity to contrast the elaborate nature of provisions on hazardous wastes, and the lack of similar clarity with respect to ultrahazardous materials.

Duncan Currie's paper, *The International Law of Shipments of Ultrahazardous Radioactive Materials; Strategies and Options to Protect the Marine Environment*;²⁵ discusses the various strategies that can be employed towards protecting the marine environment from the risks associated with the shipment of ultrahazardous materials. It also raises and discusses relevant and important principles of International law as well as case law that justify and ground such measures as discussed in the paper. It also discusses the various institutions\bodies such as the IAEA and the International Maritime organization

²⁴ Prof. Francis D.P. Situma (2007), "*International Regime on Hazardous Wastes and Chemicals and Their Impacts: International and National Responses*"; Paper Presented at the Advanced Training in Environmental Law for Ugandans Judges at Ranch on the Lake Country Resort, Entebbe, Uganda, 10-12-2007.

²⁵ Duncan E.J. Currie, "*The International Law of Shipments of Ultrahazardous Radioactive Materials ; Strategies and Options to Protect the Marine Environment*"; Paper given to South Pacific Workshop on Criminal Law and its Administration in International Environmental Conventions. In Apia, Western Samoa 1998.

(IMO) and their approach and contribution towards regulation of shipments of ultrahazardous materials. While fundamentally germane to our discussion, it will also differ from the same in so far as Currie's paper focuses primarily on the South Pacific and suggestions on how to better address the challenges facing the region. We will take a more global look at the problem and offer solutions that can apply across board *mutatis mutandis*.

Reference will be made to two papers by Professor Dyke, the first on *The Need for Further International Action Regarding Safety of Sea Transport of Ultrahazardous Radioactive Materials*.²⁶ It broadly highlights the major developments of International Law regulating shipment of ultrahazardous materials, and areas still in need of attention. The major issues addressed include the various areas such as salvage and cleanup responsibilities that remain largely obscure in international law and that demand immediate redress if effectiveness of regulation is to be achieved. It will be of key contribution in the discussion of proposals on the way forward. The point of departure between Professor Dyke's paper and the current one is the focus in the current paper on remedies that will benefit not just all States but more particularly address the plight and concerns of transit States.

The second article is a presentation of a critical analysis of the steps taken in international law to regulate shipment of ultrahazardous materials; it focuses on the safety concerns that various States have, looking at the current state of affairs at the international level in terms of safety and disaster preparedness; relevant and applicable principles of international law, such as import

²⁶ Prof. Jon. M. Van Dyke, "The Need for Further International Action Regarding safety of Sea Transport of Ultrahazardous Radioactive Materials",

assessment, duty to consult and prior notification. It will inform our analysis of the current state of relevant international law.²⁷

A report prepared and presented by Azrul Abdullah highlighting and summarizing the main papers proffered at the Conference by various contributors provides relevant material²⁸. The report included an overview of hazards that attend to transportation of ultrahazardous cargo by sea, the various environmental concerns of third party transit States and a critical focus on the Japanese perspective / policy on ultra hazardous cargo, including the challenges that they face in undertaking transportation of such cargo. It contributes but a stepping stone to the discussion about the hazards that attend the transportation of hazardous materials to the various states concerned. It however does not go far enough to address the issues raised by transit states such the issues of salvage and liability regimes as will be discussed here. A different perspective is also taken by looking at the Japanese policy, which is an exporters perspective, while we will primarily focus on the perspective of transit states and their concerns.

Reliance will be made to the numerous treaties and instruments on related topics, including regional and international conventions.

²⁷ Prof. Jon M. Van Dyke, *"The Legal Regime Governing Sea Transport of Ultrahazardous Radioactive Materials"*. Paper Presented at the SEAPOL Conference in Bangkok, Thailand in March 2001.

²⁸ Azrul Abdullah; *"Report on the Conference of 'Carriage of Ultrahazardous Radioactive Cargo by Sea; ' Implications and Responses October 1999"*;

1.9 SUMMARY OF PROPOSED CHAPTERS

CHAPTER 2:- **The Right of Innocent Passage versus The Right to Protect Coastal Environments from Potential and Actual Harm.**

The Chapter will discuss the conflicting positions adopted by shipping states on the one hand and transit states on the other, with regard to shipment of nuclear wastes. It will shed light on the cause of the conflict, the positions taken by the different sides, the approach of international law in addressing this issue and a critical analysis of the law and its effectiveness in this respect.

CHAPTER 3: **Liability, Compensation and Damages in the Event of a Nuclear Accident.**

The primary theme of this chapter will be to answer the question in the event of an incident involving nuclear waste in shipment, what remedial measures and redress exist in the current regime of international law? We will discuss the nature and effectiveness of liability regimes and their sufficiency or otherwise as the case may be.

CHAPTER 4:- **Proposals for an Integrated Regulation of Nuclear Waste Shipment.**

The crux of this chapter will be to render proposals geared towards reforming and ameliorating the international laws and rules in the field of transboundary movement of nuclear waste. In doing so, proposals will be made towards ensuring safe and better regulation of the shipment of nuclear waste on the one hand, and proposals towards effective redress and remedy in the event of an accident or incident involving nuclear waste during shipment.

CHAPTER 5:**CONCLUSIONS**

This chapter will render the concluding arguments on the issues made throughout the paper and offer recommendations for the work and actions to be undertaken towards creating a more equitable system on transboundary shipment of nuclear waste.

CHAPTER TWO

THE RIGHT OF INNOCENT PASSAGE VERSUS THE RIGHT TO PROTECT COASTAL ENVIRONMENTS FROM POTENTIAL AND ACTUAL HARM

2.0 Background

The issues to be discussed herein emanate from the varied interests of the various state actors. In particular it is the contrast between the interest of transit states to protect their marine resources from risks that threaten to destroy them on the one hand, and the interest of shipping states to exercise their unfettered right to innocent passage through territorial waters of another state.

2.1 The Right of Innocent Passage

Shipping nations rely on the international law on the right of innocent passage to justify their right to ferry nuclear waste through the territories of transit states uninterrupted. This right is well elaborated in the 1982 Convention on the Law of the Sea, in Articles 17 through to 32²⁹. The provisions state that subject to the Convention, all States whether landlocked or coastal enjoy the right of innocent passage through the territorial sea.³⁰ Passage is defined to mean navigation through the territorial sea for the purpose of: traversing that sea without entering internal waters or calling at a port facility outside internal waters; or proceeding to or from internal waters or a call at such port facility.³¹

²⁹ Convention on the Law of the Sea 21 ILM, 1261(1982), Arts 17-32

³⁰ Ibid, Art 17

³¹ Ibid, Art.18(1)

Innocent passage on the other hand is defined to be 'innocent so long as it is not prejudicial to the peace, good order or security of the coastal State'³². The Convention then proceeds to lay down the various acts that would deprive a passage of its innocent character³³. What is noteworthy is that the nature or character of the Cargo in question is not one of those criteria upon which innocence is to be adjudged.

Shipping nations have relied on this right to justify the passage of vessels ferrying nuclear wastes through territorial waters without any special conditions. They demand the same treatment and conditions as other less perilous cargo would be entitled to under international law. Their interests were espoused in the joint statement of the USA and the then USSR after the enactment of the 1982 UNCLOS. They stated in the relevant part that:

1. *The relevant rules of international law governing innocent passage of ships in the territorial sea are as stated in the 1982 United Nations Convention on the Law of the Sea, particularly Part II, Section 3.*
2. *All ships, including warships, regardless of cargo, armament or means of propulsion, enjoy the right of innocent passage through the territorial sea in accordance with international law, for which neither prior notification nor authorization is required*
3. *Article 19 of the Convention of 1982 sets out in paragraph 2 an exhaustive list of activities that would render passage not innocent. A ship passing through the territorial sea that does not engage in any of those activities is in innocent passage.*
4. *A coastal state which questions whether the particular passage of a ship through its territorial sea is innocent shall inform the ship of the reason why it questions the innocence of the passage, and provide the ship an opportunity to clarify its intention or correct its conduct in a reasonably short period of time.*

...

³² Ibid, Art.19(1)

³³ Ibid, Art.19(2)

6. *Such laws and regulations of the coastal State may not have the practical effect of denying or impairing the exercise of the right of innocent passage as set forth in Article 24 of the Convention of 1982.*³⁴

This statement by far exemplified the views of shipping states, more importantly of the right to legislate accorded to transit States under Article 21 of the Convention. Their position is that there is no obligation to seek prior notification or authorization, in so far as the vessel does not commit any of the prohibited acts. On the other hand, they also deny the right of transit states to take any pre-emptive action but rather require that any breach be tackled by way of availing information and allowing reasonable time for correction if necessary. This does not sit well with transit states that may be at risk of grave harm from the cargo being ferried, in the event of an accident.

2.2 The Right to Protect Marine Resources

On the other hand transit states argue for their right to protect themselves, their territories and resources from the potential harm posed by the transboundary movement of nuclear wastes. The interests of transit states are captured in the internationally recognized right of permanent sovereignty over natural resources, as a sub-right to the right of territorial sovereignty. The gist of the right was captured in 1962 through the United Nations General Assembly Resolution 1803 (XVII) on permanent sovereignty over Natural Resources³⁵.

The Resolution declared, inter-alia, that the right of peoples and nations to permanent sovereignty over their natural wealth and resources must be exercised in the interest of the state concerned and that the exploration, development and disposition of such resources should be in conformity with the

³⁴ D. J. Harris, Cases Materials on International Law, (London Street & Maxwell. 5 edn; 1998), pg. 405

³⁵ UN Doc. A/RES/1803(1962)

rules and conditions which the peoples and nations freely consider to be necessary or desirable with regard to the authorization, restriction or prohibition of such activities³⁶. The Resolution declared that violation of the rights of peoples and nations to sovereignty over their natural wealth and resources is contrary to the spirit and principles of the United Nations Charter and hinders the development of International Co-operation and Maintenance of people³⁷. The same right is now expressed in the 1972 UNESCO Convention for the Protection of World Natural Heritage³⁸ and under the 1992 UN Convention on Biological Diversity³⁹.

It is in recognition and protection of this right and their entitlement under Article 21 of UNCLOS that transit states insist on prior notification, as well as the need to be actively consulted and engaged when nuclear wastes are to transit through their waters. The positive enforcement of resources protection it can be argued would entitle transit states to know what goes through their waters, especially given the potential irreparable harm that may result in the event of an incident involving such cargo. They assert that the list in Article 19(2) is not conclusive or exclusive, or in the alternative that the same is qualified by the powers enshrined in Article 21 of the same convention.

2.3 International Law Regulating Shipment of Nuclear Wastes

International Law on waste has focused primarily on the permissibility and regulation of international movement and trade in waste⁴⁰. What international law seeks to do is not to prohibit a dangerous activity, but rather to answer the

³⁶ As reported in Prof. F.D.P Situma, "Concepts and Principles of Environmental Management" Paper Presented at the Lawyers Symposium on Environmental Law and Practice in Kenya, held at Merica Hotel Nakuru, April 10-12 2006.

³⁷ Ibid para 7.

³⁸ 1037 U.N.T.S 151, Article 6

³⁹ 31 ILM 822, (1992) Art. 3

⁴⁰ Philippe Sands; Principles of International Environmental Law (Cambridge, 2nd Edn ,2003,) Pg. 69

question how can that activity be done with minimal risk or harm being occasioned? The approach then can be summarized in the concept of due diligence. International law requires that a state act with regard to various standards and precautions as it carries out risk prone activities. The obligation of diligent control and regulation commences if there is actual and serious harm likely to recur and also when there is a known risk to other states. The risk need not be scientifically determinable, in line with the precautionary principle.⁴¹

Aptly stated, 'due diligence...is not intended to guarantee that significant harm be totally prevented, if it is not possible to do so.'⁴² This principle was reiterated albeit in different circumstances in the *Bosnian Genocide Case*, where the Court observed that:

*"A state does not incur responsibility simply because the desired result is not achieved; responsibility is however incurred if the state failed to take all measures to prevent genocide which were within its power and which might have contributed to prevent the genocide."*⁴³

In this respect, due diligence therefore requires first 'the introduction of policies, legislation and administrative controls applicable to public and private conduct which are capable of preventing or minimizing the risk of transboundary harm to other states or the global environment and it can be expressed as the conduct expected of a good government'⁴⁴. Secondly it entails an evolving standard of technology and regulation. This is commonly expressed by reference to the use of the 'best available technology', 'best practicable means', or 'best environmental practices'. This means standards of due diligence change as

⁴¹ P.Birnie, A.Boyle, & Redgwell, *International Law & the Environment*, (3rd Edn, Oxford University Press), Chpt. 3 Pg 153

⁴² ILC Report (2001) GAOR A/56/10, 391-2, para 7.

⁴³ ICJ Reports (2007) para 430

⁴⁴ ILC Report (2001) GAOR A/56/10, 393-5, paras (10)-(17)

technology changes and a State is required to use the best practicable means at their disposal and in accordance with their capabilities.⁴⁵

The underlying principle in international law on the regulation of hazardous and ultrahazardous activities seems to be to let states do what they seek to do, but take reasonable measures to reduce or eliminate attendant risk. However at no point it has been argued would the duty of due diligence rise so high as to render an activity unlawful.⁴⁶ The foregoing notwithstanding, international law lacks a comprehensive regime to govern the transboundary movement of nuclear waste. Indeed a study of the global scene evinces several piecemeal efforts of a global and regional nature addressing particular elements with regard to nuclear waste transport.

'The result is a patchwork of international regulations the applicability of which depends upon the nature and characteristics of a particular substance and the location of the activity which is manufacturing them or using them...Harmonized rules establishing high standards of human and environmental protection are necessary but do not yet exist generally'⁴⁷.

It would appear and in fact is the case that the level of applicability of rules and the level of protection is contingent on where one look. So that that there might be greater protection and applicability in the developed world than in the third world. This is despite the fact that the level of risk exposure may tend to increase in the converse, with greater risk shouldered by developing/emerging economies than the industrialized world.

There are therefore various ways by which international law sets out to meet the stated objective of permitting and regulating economic activities regardless of their potential hazard: and it is these that we must now highlight.

⁴⁵ P.Birnie, A.Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press, Chpt. 3) Pg 149

⁴⁶ Ibid p.152

⁴⁷ Philippe Sands; Principles of International Environmental Law (Cambridge, 2nd Edn ,2003,) Pg. 619

2.3.1 The UNCLOS Balance

The conflict that plays out in UNCLOS, with respect to transboundary movement of radioactive waste, pits the right of innocent passage and the duty to protect the marine environment. The reason is that there is clear cognition of the doctrine of innocent passage under Article 17, which states that all ships are to enjoy the right of innocent passage through the territorial sea. Article 19(i) goes on to describe innocent passage as "innocent so long as it is not prejudicial to the peace good order or security of the coastal state." Indeed the passage of ships carrying radioactive materials has been taken to enjoy such rights, over oceans believed to be *communis omnium naturali jure* (open to all men by the operation of natural law). The counter dialectic within the same instrument is enshrined in Article 192, which sets out the general obligation of states to protect the marine environment and Article 194 which delineates the measures that a state may take to protect its environment. Article 194 (1) is of particular importance as it states that States shall take...all measures consistent with this convention that are necessary to prevent, reduce or control pollution of the marine environment from any source...'.⁴⁸

The fact that UNCLOS recognizes the right of States to exercise innocent passage through territorial waters of other States, coupled by the fact that the limitations to the said right do not expressly and indeed arguably cover nuclear shipments, has bolstered the claim by shippers that coastal States violate international law when they try to deter such shipments⁴⁸. Coastal States on the other hand continually cite the duty to protect the marine environment as the key reason and basis upon which their protest is based, and that such shipments cannot be said to be innocent given the colossal inherent risks.

⁴⁸ For *Limitations on the right of innocent passage in UNCLOS* See The United Nations Convention on the Law of the Sea 1982, Article 19(2); UN Doc. A/CONF 62/122; (1982) 21 I.L.M 1261

The 1982 UNCLOS seems to anticipate this problem and offers what could be termed a compromise, albeit a failed one as will be expounded shortly. Suffice it to say that in a bid to create a balance between the need to protect the interests of Coastal Nations and those of shipping States, UNCLOS provides in Article 22 for the right of Coastal States to create special sea lanes for the transit of ships exercising the right of innocent passage. Article 22(2) deals with ships carrying inherently dangerous or noxious substances and allows coastal states to limit these ships to the special designated sea lanes. Article 21 bolsters transit states by empowering them to adopt laws and regulations on innocent passage covering a raft of issues including the protection of the environment of the coastal state and prevention, reduction and control of pollution.

In this respect then UNCLOS purports to uphold both conflicting interests although this balance and measure is deemed as inadequate by Coastal States for numerous reasons as will now be discussed.

2.3.1.1 Analysis of the UNCLOS Balance

The Law of the Sea Convention proposes a solution that grossly underestimates the potential damage that would result from an incident involving radioactive cargo. If such an accident occurred, especially within territorial waters of a State of transit, the damage that would result would far outstrip the designated sea lane areas, possibly obliterating the environment, fishing and tourism industries not to mention the possible property damage and life loss. In the event that the marine environment and resources comprise the economic mainstay of a coastal State, then the potential harm would be crippling. It is posited that despite the reimbursement via applicable laws, on damage liability, such as through the

polluter pays principle, the resultant damage would still be catastrophic if not irreparable⁴⁹.

The compromise in UNCLOS is arguably a failed one because of inadequate safety precautions on the part of shipping States. Those supporting the prevalence of the right of innocent passage and the implementation of sea lanes, cite the safety record of the transportation of radioactive materials, in that to date no significant radioactive accident has occurred involving the oceanic shipment of radioactive materials. While it may be true that no major catastrophes have been witnessed yet, the warning signs are clearly there in terms of the several notable incidents, such as the continued hijacking of ships along the Somali Coast, which forebodes of danger should a nuclear ship be hijacked. In February 1998, members of Greenpeace successfully boarded the Pacific Teal and Pacific Pintail Ships while entering the Panama Canal carrying radioactive cargo. The cargo could have created up to 60 nuclear warheads and the boarding demonstrated that such ships were not secure or free from terrorist attacks.⁵⁰ Also in November 1997 the MSC Carla carrying 330 casks of radioactive cesium was split in two during a storm off the Azores. The casks were however fortunately left intact with no leakage of their content.⁵¹ All these point to clear alert messages and one must not wait for a significant incidence to trigger the implementation of necessary and competent safeguard measures and mechanisms. Instead states must put in place measures by way of legislation, administrative and monitoring systems that would ready them to deal with an incident involving nuclear waste during shipment. It also calls for collaboration and sharing of information and experiences openly between states in a bid to bolster their capacities to respond promptly and effectively to emergencies.

⁴⁹ Lawrence Marin, 'Oceanic Transportation of Radioactive Materials' *The Conflict Between the Law of the Sea Right of Innocent passage and Duty to the Marine Environment* 13 Fla.J.Intl L. (2000-2001) pg. 361

⁵⁰ Ibid.

⁵¹ Ibid

The ease with which shipment data can be forged is not addressed under UNCLOS. The result is that the anxiety of Coastal States about cargo being ferried remains unappeased and leads several States to deny innocent passage unless fully assured that the cargo in question has actually been properly examined and authorized for shipping.

2.3.2 Requirements of Advance Notification, Prior Informed Consent and Prior Consultation

The obligation of states to cooperate through notification, consultation and negotiation permeates the 1992 Rio Declaration on Environment and Development. It was also well articulated in the *Lac Lanoux Arbitration*⁵² and in various other treaties including the 1991 Convention on Transboundary EIA⁵³. International law as seen in *inter alia* the 1992 Rio Declaration on the Environment and Development recognizes as a general principle of law, that states have a duty to cooperate in mitigating transboundary environmental risks and emergencies, through notification, consultation, negotiation and in appropriate cases, environmental impact assessment.⁵⁴ This was reiterated in the judgment of the International Tribunal on the Law of the Sea (ITLOS) in the *Mox Plant Case*, in which it was observed that:

"The duty to cooperate is a fundamental principle in the prevention of pollution of the marine environment under part XII of the Convention and general international law and that rights arise therefrom which the

⁵² 24 ILR (1957) 101

⁵³ P. Birnie, A. Boyle, & Redgwell, *International Law & the Environment*, (3rd Edn, Oxford University Press), Chpt. 3 Pg 176

⁵⁴ *Ibid*, pg. 137

*Tribunal may consider appropriate to preserve under Article 290 of the Convention*⁵⁵

The failure to notify and to cooperate may therefore be considered as absence of due diligence and therefore enforceable.

The rule on advance notification and prior informed consent as facets of the duty to cooperate and specifically as relates to transboundary shipment of radioactive waste, is obscure, and contentious. This is partly because no agreement has ever been reached in international law on detailed rules on the subject, and the existent formulations fall short of explicitly requiring consultation and negotiation with other states.⁵⁶ State practice evinces a requirement to notify and consult neighbours where there is serious or appreciable transboundary risk, in order to allow them to ensure reasonable regard for their rights and legitimate interests⁵⁷. On notification, it is noted that one of the results of the Chernobyl disaster was the opening for signature of the 1986 Convention on Early Notification of a Nuclear Accident which imposed a duty to notify other states likely to be affected by transboundary releases of 'radiological safety significance'.⁵⁸ What is however unclear is at what point a release acquires radiological safety significance. There is a deliberate avoidance of objective definition leaving substantial discretion to states where incidents occur.⁵⁹

The problem is that on the one hand you have coastal/transit states clamoring for their right. They assert that given the risk they shoulder, and the added fact that they enjoy little (if any) benefit from such shipment, it is imperative that they must be notified prior to any radioactive shipment traversing their waters.

⁵⁵ Mox Plant Case(Provisional Measures) ITLOS No. 10, (2001) para 82

⁵⁶ Supra n.53, Pg. 176

⁵⁷ Supra n.53, pg. 513

⁵⁸ Philippe Sands; Principles of International Environmental Law (Cambridge, 2nd Edn ,2003,) Pg. 514

⁵⁹ Ibid

They also assert their customary right to territorial sovereignty as entitling them to determine access to their territorial waters, and to make such determination premised on a candid disclosure of all pertinent and relevant information.

On the other hand, we find the shipping states that prefer to give prior notification and to receive consent but only from the state of destination. They argue that to seek prior consent of transit states, to consult with them and to notify them in advance, would only serve to jeopardize the security of the vessels. Further that to impose such an obligation especially on consent would be tantamount to according transit states a veto power, over the exercise of the right of innocent passage. Such a veto they posit would be a violation of the customary right of innocent passage for peaceful purposes. The issue on advance notification, prior informed consent as well as prior consultation finds ventilation in several regards.

The 1980 Convention on the Physical Protection of Nuclear Materials provides that:

*"The State Party responsible for receiving assurances that the nuclear material will be protected at the levels described... shall identify and inform in advance States which the nuclear materials is expected to transit...."*⁶⁰

This convention recognizes the duty to adhere to advance notification and tasks the shipping state to identify transit states.

The other convention that also directly addresses the same issue, is the Bamako Convention.⁶¹ This convention modeled and styled in the mould of the Basel Convention, was designed to tackle the challenge of transboundary movement of hazardous waste within the perceived uniqueness of challenges facing the

⁶⁰ The 1980 Convention on the Physical Protection of Nuclear Materials. Art 4(5);IAEA Doc.INFCIRC/274/Rev.1

⁶¹ Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, (**Bamako Convention**) 30 I.L.M. 775 (1991)

African continent. It differs from its predecessor the Basel Convention in that while the scope of the latter convention is stated to exclude materials/waste of a radioactive nature, the former one expressly provides that it applies to radioactive waste. In seeking to protect transit and other states with regard to shipment of radioactive waste, the Convention bans the import of hazardous waste for any reason into Africa from non-contracting parties and tasks all parties to use all legal and administrative measures to ensure the ban is realized.⁶² With respect to the issue of consent and prior notification, the Convention prescribes that the state of export is not to allow transboundary movement until it receives written consent from the state of import⁶³. The state of export is in the same breathe duty bound not to commence shipment until it has received the written consent from the state of transit. The Bamako Convention not only requires advance notification to transit states but allows them a period of 60 days within which they can consent to transboundary shipment of radioactive wastes with or without conditions deny permission for the movement or request additional information.⁶⁴

To enhance and facilitate the realization of the requirements of prior informed consent and prior consultation Article 6(6) provides for shipment specific notifications, no matter how regular and similar the shipments are and the nature of the notification is also provided for.⁶⁵ This ensures that each State is well informed on the cargo being shipped, in keeping with the fact that without information and proper disclosure consent can hardly be said to be informed.

Within the rules of the European Union, the concerns relating to the transboundary shipment of ultra hazardous waste have not been lost. The European Union has sought to address the same via the regulations of the European Atomic Energy Agency (EURATOM). Through these regulations, the

⁶² Ibid, General Obligations

⁶³ Ibid Art.6(3)

⁶⁴ Ibid Art. 6(4)

⁶⁵ Ibid Annex IVA

Union has set up a system of supervision and control of shipments of waste which takes into account the need to preserve protect and improve the quality of the environment. The regulations apply to shipments of waste, both within and into or out of the European Union (EU), to waste transported between member states but routed through one or more third countries, and to waste transported between member states but routed through one or more third countries, and to waste transported between third countries but routed through one or more member states.⁶⁶

One such regulation addressing the issues of notification and consent, is Regulation (EC) NO. 259/93⁶⁷ which sets up a system of prior authorization for the shipment of waste. It creates a duty on the notifier to apply for authorization to the competent authorities of dispatch, transit or destination⁶⁸.

To this extent the interest and rights of transit and destination states to notification are catered for. The Regulation also prohibits any shipment prior to consent being obtained.

A related and similar proviso is to be found in Council Directive 92/3/EURATOM of 1992.⁶⁹ The directive which seeks to supervise and control shipments of radioactive waste within the European Community, like the previously discussed regulation, behooves an intending shipper to submit an application for authorization to the states of destination as well as transit through the competent authorities of the state of origin.⁷⁰ Unlike the Bamako Convention, a state can send one application in respect of more than one shipment provided the radioactive waste concerned is of similar nature and

⁶⁶ <http://www.europa.eu/legislation-summaries/environment/waste-management>

⁶⁷ Ibid Regulation (EC) NO. 259/93

⁶⁸ Ibid

⁶⁹ Council Directive 92/3/Euratom, on the supervision and control of shipments of radioactive waste of the community) 3rd February 1992). ⁶⁹ <http://www.europa.eu/legislation-summaries/environment/waste-management>

⁷⁰ Ibid, Art. 4

involves the same competent authorities is of the same physical, chemical and radioactive characteristics⁷¹. The competent authorities of the states of destination and transit must within two months after receipt of an application notify the competent authority of the country of origin of their approval with or without conditions or their denial of approval with reasons.⁷² An interesting factor is that whereas the regional instruments such as the Bamako Convention and the above mentioned regulations provide specifically for notification and consent of transit states, the same cannot be said of some instruments of intended global applicability.

A case in point is the 1997 Joint Convention⁷³ which places a specific duty on a state of origin to ensure that the advanced notification of a state of destination is effected and that prior informed consent of the same is obtained before the commencement of transboundary shipment.⁷⁴ However and in stark contrast in dealing with transit states, rather than providing for their right to notification and consent, it stipulates that movement through these states occurs subject to the relevant international obligations governing the mode of transport applied. In this respect the convention treats transit states as second rate citizens.

The 1989 Basel Convention⁷⁵ however does directly tackle the issue, and provides expressly for the prior notification, as well as the right to consent or deny authorization by transit states. The Convention prescribes 60 days within which a transit state has to exercise its right. A state of export is bound not to allow transboundary shipment to commence before receipt of a written consent

⁷¹ Ibid, Art 5

⁷² Ibid Art 6

⁷³ Joint Convention on Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 36 I.L.M. 1431 (1997)

⁷⁴ Ibid, Art 27(1)(i)

⁷⁵ Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (**Basel Convention**) 28 I.L.M. 657 (1989)

from the transit state.⁷⁶ An important fact to be kept in mind and which applies throughout this paper wherever the Basel Convention is discussed, relates to its scope. Article 1 of the Basel Convention states that:

"Wastes which as a result of being radioactive, are subject to other international control systems, including international instruments, applying specifically to radioactive materials, are excluded from the scope of this Convention".⁷⁷

As such whereas the Convention contains numerous cogent and highly relevant and even effective provisions, they are of little solace when it comes to transboundary shipment of radioactive waste.

2.3.2.1 A Critical Analysis of the Consultation Process

Other than provisions on re-export of waste to the state of origin, which will be discussed later on, it is difficult to determine what consequence would befall a shipping state that violate the requirements on notification and consent. Without a clear punitive or deterrent consequence, the measures discussed would hardly achieve their regulatory objective. To leave the same to the rigors of long drawn legal battles, would offer little consolation to aggrieved states, especially where no incident occurred during an unauthorized shipment.

Under the current system of international law, the rules governing the duty to negotiate are merely aimed at facilitating negotiation in good faith, but not to put any substantial limits on the acts of a given state.⁷⁸ The overall objective being to provide an opportunity to accommodate conflicting rights and interests

⁷⁶ Ibid, Art.6

⁷⁷ Ibid, Art 1(3)

⁷⁸ P.Birnie, A.Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press), Chpt. 3 Pg 179-180

but not to stifle initiative, even where serious harm is threatened.⁷⁹ It is doubtful and questionable whether transboundary consultation would any in any event suffice to protect neighbours and the environment when dealing with the shipment of radioactive waste, or as it were a unilaterally determined nuclear risk. The difficulty and therefore the weakness of this approach is its reliance on negotiated settlements which can be frustrating, as was the case in Gabcikovo Dam case.⁸⁰ In that case ten years from the time the parties were asked to cooperate in joint management and environmental management and cooperation, no agreement had been concluded.

International law has failed to crystallize provisions on and the duty to consult affected Nations before hazardous cargo is ferried through their borders. The result is that while coastal States argue that they should mandatorily be consulted with regards to and before any shipment of hazardous cargo traversing their waters, shipping nations on the other hand oppose such a move claiming that it would be tantamount to according coastal States a veto power over vessels exercising the right of innocent passage, and as such a direct violation of international law.

Shipping nations also cite security concerns as a reason behind their objection to consultancy. The fact that majority of coastal States may not have sufficient naval force backing or technical capacity to offer ample security for the vessels is used to justify according them information only on a need to know basis. Shipping nations argue that prior consultation in such circumstances would only jeopardize the security of the crew, vessel and cargo by exposing them to opportunistic terrorists. It is this conflict that requires and indeed demands redress. The silence of International regulatory regimes on this issue only serves to heighten tension and anxiety over such shipments. The duty to consult is one of the most venerable and well established principles of international law. The

⁷⁹ Ibid

⁸⁰ ICJ Reports (1997) 7

international court of Justice took cognizance of the duty to consult in the Lac Lanoux Arbitration of 1957⁸¹ in which France was required to consult in good faith with Spain over riparian rights. Consultation between all affected parties on route selection and emergency planning, would be in everyone's best interest and can only serve to make these shipments safer for all concerned. Prior consultation would further serve to enhance the co-ordination of on board to shore based emergency planning for accidents.

2.3.3 Provision of Physical Safeguards.

Whilst the need to ensure adequate compensation and such elements as prior notification and consent is appreciated, the overall objective is the avoidance of nuclear accidents and proper protection of nuclear waste. Preventive⁸² measures may therefore be deemed paramount in comparison to remedial measures, and physical safeguards rank amongst the primary preventive measures.

Various instruments in international law provide the framework for the physical protection of radioactive waste in various respects. A specific instrument in this respect is the 1980 Convention on Physical Protection of Nuclear Materials⁸³. This convention applies to nuclear materials used for peaceful purposes while in international nuclear transport.⁸⁴ It prescribes standards meant to reduce the risk of a catastrophe during shipment of nuclear materials. To this end the convention incorporates duties to be upheld by both exporters and importers of such materials, particularly the need to obtain assurances from involved parties that they shall adhere to the recommended safety standards in Annex 1 of the

⁸¹ Lac Lanoux Arbitration; 24 I.L.R (1957) 101,128

⁸³ The Convention on Physical Protection of Nuclear Materials, 81 I.L.M. 1419 (1979)

⁸⁴ Ibid, Art. 2

convention.⁸⁵ The referenced Annex 1 of the convention comprises of different levels of physical protection to be applied on storage and transportation of different categories of nuclear materials. The categories of nuclear materials are contained in Annex II of the same convention and seems to be based on a perceived or ascertained level of inherent risk in the materials concerned.⁸⁶

Among other key provisions is the duty on state parties to identify and make known their central authority and point of contact, which has the responsibility for physical protection of nuclear materials and for coordinating recovery and response operations in case of any unauthorized removal, use or alteration of nuclear material or in case of a credible threat thereof.⁸⁷ State parties are bound to protect the confidentiality of information received in confidence by virtue of the Convention.⁸⁸ This provision was meant to spur a free and effective exchange of information without fear of exploitation by recipient states. However, the provision seems to be immediately clawed back by the provisions of Article 6(2) which allows a state to conceal any information deemed to be confidential under their national laws or that they deem would jeopardize their state security or the physical protection of nuclear materials. This provision essentially leaves it to the subjective determination of each state party on what information to avail and what not to avail. The convention creates a range of offences to be made punishable by each state, including theft or robbery or threats to use nuclear material to cause death or injury or property damage and provides for jurisdiction over offences⁸⁹. The Convention also incorporates the international law principle of *aut dedere, aut judicare ou punire*, when it provides the State Party in whose territory an alleged offender is present is to take all appropriate measures including detention towards prosecution or

⁸⁵ Ibid, Art.4

⁸⁶ Ibid, Annex I and II

⁸⁷ Ibid Art.5

⁸⁸ Ibid Art 6(1).

⁸⁹ Ibid Art.7 and Art.(7)

extradition.⁹⁰ To effectuate extradition, the Convention makes offences under it extraditable offences and the Convention is to act as a treaty in the absence of a specific extradition treaty between the parties involved.⁹¹

The 1997 Joint Convention on Safety of Spent Fuel⁹² is another pertinent instrument with respect to the provision of physical safeguards for nuclear waste in shipment. The Joint Convention is aimed at achieving and maintaining a high level of safety in spent fuel and radioactive waste management, ensuring that there are in place effective defenses against potential hazards during all stages of management of such materials. With respect to trans-boundary movement of spent fuels and radioactive waste, it establishes rules and conditions that *inter-alia* require a state of destination to have adequate administrative and technical capacity, as well as regulatory structure to manage spent fuel or radioactive waste in a manner consistent with the Convention.⁹³ The approach here seems to be the establishment of ample institutional capacity capable of overseeing the proper management and protection of radioactive waste during trans-boundary movement.

The Convention supplements its approach by provision of an integrated approach towards the general safety requirements in the management of spent fuel and radioactive waste.⁹⁴ It does so by requiring contracting parties to combine reduction of the generation of radioactive waste associated with spent fuel and radioactive waste management to a minimum, while also appreciating the interdependencies among the different steps in spent fuel and radioactive waste management. Contracting parties are also called upon to cater for inter generational responsibility by avoiding an imposition of undue burdens on future

⁹⁰ Ibid Art 9 & 10

⁹¹ Ibid Art 11

⁹² Joint Convention on Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 36 I.L.M. 1431 (1997)

⁹³ Ibid, Art. 27

⁹⁴ Ibid Art 4 & 11

generations and avoiding actions that impose reasonably predictable impacts on future generations greater than those permitted for the current generation.

Although the Basel Convention as already noted does not apply to nuclear waste it is very instructive with respect to physical safeguards and standards. It places an obligation on each state party to ensure no unauthorized persons transport or dispose of hazardous waste.⁹⁵ It adopts and incorporates international rules and standards in the field of packaging, labeling and transport; and requires shipping states to adhere and take due account of these rules and internationally recognized practices.⁹⁶ State parties must also ensure that shipments of hazardous and other wastes are accompanied by a movement card.⁹⁷ It is without doubt that these provisions are not only relevant but would be crucial in ensuring sufficiency of physical safeguards for radioactive shipments. The Basel Convention further requires parties to designate one or more competent authorities and one focal point.⁹⁸ The competent authority is obligated to receive notification in the case of a state of transit. This supplies the institutional supervision that is vital to ensure physical safeguards enshrined in the Convention are effected and upheld. However as earlier stated by virtue of Article 1 of the Basel Convention, wastes which as a result of being radioactive, are subject to other international control systems, including international instruments, applying specifically to radioactive materials, are excluded from the scope of this convention. The reason was the assumption that there were or would be other instruments of specific relevance and application to nuclear waste, which however is not the case and has not been the case.

⁹⁵ Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (**Basel Convention**) 28 I.L.M. 657 (1989) Art.4(7)(9)

⁹⁶ Ibid Art.4(7)(6)

⁹⁷ Ibid Art. 4(7)(c)

⁹⁸ Ibid Art. 5(1)

The Irradiated Nuclear Fuel Code (INF Code)⁹⁹ was formulated under the aegis of the International Convention for the Safety of Life at Sea (SOLAS) of 1st November 1974. The Code was optional until the passing of Resolution MSC 87(71) adopting amendments to Chapter VII of SOLAS which had the effect of making the INF Code mandatory under SOLAS from 1st January 2001. Its primary contribution is in its categorization of irradiated nuclear fuel and the class of vessels to be used in ferrying the same. The certification of vessels is based on their meeting specific quality and safety measures and the vessels are required to be differently equipped to handle different levels of hazardous cargo.¹⁰⁰ The certification entails a complete examination of the structure, equipment, fittings, arrangements and materials of the ship¹⁰¹. Once a vessel meets the required standards, it receives an international certificate of fitness for carriage of INF Cargo¹⁰² and thereafter it is subject to continuous inspections and surveys to ensure it remains compliant¹⁰³ and failing which the validity of the same is revoked.¹⁰⁴

The code also incorporates among its provisions on physical safeguards, damage stability requirements for the different classes of vessels used to ferry INF Cargo. These are the basic building standards to be adhered to in constructing such vessels;¹⁰⁵ fire safety measures to be applied depending on the nature and category of cargo to be ferried. The measures include fixed fire extinguishing arrangements, fixed cargo space cooling arrangements and fixed fire detection and alarm system. The code incorporates ventilation and refrigeration provisions for cargo spaces and permanent cargo securing arrangements to prevent

⁹⁹ The IMO Code for the Safe Carriage of Irradiated Nuclear Fuel (INF Code);
WWW.imo.org/HOME/html

¹⁰⁰ Ibid, Chpt.1

¹⁰¹ Ibid, Chpt 1(1.3.1)

¹⁰² Ibid, Chpt 1(1.3.2)

¹⁰³ Ibid, Chpt 1(1.3.3)

¹⁰⁴ Ibid, Chpt 1(1.3.4)

¹⁰⁵ Ibid, Chpt 2

movement of packages within the cargo spaces.¹⁰⁶ In regard to planning, shipboard emergency plans must be in each ship ferrying INF Cargo. The plan must be duly approved. The basic or minimum requirements of such a plan are also provided for in the Code. Indeed and by far the INF Code provides some of the most comprehensive and far reaching physical safeguards for transportation of nuclear materials, especially as read with the SOLAS Convention.

A similar approach to that given under the INF Code is to be traced in the 2005 IAEA Safety standards.¹⁰⁷ These standards were created under the terms of Article III of the IAEA Statute, which authorizes the IAEA to establish or adopt standards of safety for protection of health and minimization of danger to life and property. The 2005 regulations deal with the safe transport of radioactive materials and are binding upon the IAEA in its operations but not on member states, except when they engage in operations assisted by the IAEA. This can be viewed as an inherent weakness in the regulations, as a state may easily opt not to follow or adhere to them without much ramification. Section V of the Regulations tackles the issue of requirements and controls for transport of radioactive materials. It incorporates requirements on the containment system to be adhered to prior to the first shipment and the packaging and approvals to be attended to before each shipment, including approval of each package by the relevant competent authority.

The packages must comply to the requirements stated in various paragraphs of the Regulations and any requisite certifications. There is emphasis placed on the need to separate nuclear materials from other materials during shipment, and to this end, it is provided that:

*A package shall not contain any items other than those necessary for the use of the radioactive material.*¹⁰⁸ *Tanks and intermediate*

¹⁰⁶ Ibid, Chpt 2-9

¹⁰⁷ Regulations for the Safe Transport of Radioactive Material IAEA Safety Series No. 6, 2005 edition.

¹⁰⁸ Ibid, Para 503

*ball containers used for the transport of radioactive materials shall not be used, for the storage or transport of other goods*¹⁰⁹

The regulations also address the control of contamination and leakages and provides limits that must not be exceeded to guarantee the safety of persons and property.¹¹⁰ Where a package leaks or is damaged, it is provided that access to it shall be restricted and a qualified person shall as soon as possible assess the extent of contamination and resultant radiation level of the package. The objective is to determine the safest foundation of action and point of off-loading. The regulations call for actors to ensure clarity in marking, labeling and placarding of radioactive materials with the proper logo and classification marks and/or numbers¹¹¹ to ensure ease of identification of such materials.

Agenda 21 of the Rio Declaration¹¹² took cognizance of the growing and emerging challenge posed by the transboundary shipment of nuclear waste. Chapter 22 of Agenda 21 aptly titled Safe and Environmentally Sound Management of Radioactive waste, restates the importance of sound management of radioactive waste during transportation and disposal. It goes further to recommend that states should co-operate with international organizations to develop appropriate standards and policies that would enhance proper handling and management of radioactive wastes. It is to be noted that the general approach in Agenda 21 as a whole is more of soft law, making recommendations and leaving it to individual states to act on the same.

¹⁰⁹ Ibid, Para 504.

¹¹⁰ Ibid, Para 508-509

¹¹¹ Ibid, Para 534-536, 542-547

¹¹² The Rio Declaration on Environment and Development, 11 I.L.M. 876 (1992)

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¹⁰⁹ Ibid, Para 504.

¹¹⁰ Ibid, Para 508-509

¹¹¹ Ibid, Para 534-536, 542-547

¹¹² The Rio Declaration on Environment and Development, 11 I.L.M. 876 (1992)

2.3.3.1 Analysis of Provisions on Physical Safeguards

It will be recalled that under UNCLOS, there is provision for the right to coastal States to designate special/specific sea lanes¹¹³. The intention of such designation was to ensure that the transportation of radioactive waste takes place under conditions allowing for predictability and monitoring. This designation of sea lanes would also serve to allow States to avoid transit through areas that are of sensitivity or heightened vulnerability. However as it stands, outside these provisions little work has been done to identify particularly sensitive areas that ought to be avoided by ships ferrying radioactive cargo.

Various treaties such as the Bamako Convention incorporate a checklist of the information that ought to be disclosed by an exporting State to the importing and transit state. It is expected that the information availed through such disclosure would suffice to allow the transit and importing State to evaluate and determine the risk they are consenting to. There are however no provisions for verification of the authenticity of the declared information in any of the treaties that call for. The instruments do not provide for independent audit and verification that what is declared is actually what is being shipped. Few guidelines if any have been incorporated in the legal instruments that would ensure that shippers of radioactive materials make candid and honest data declaration and disclosure. It is a prima facie fact that for there to be prior informed consent and even proper emergency preparations, parties should and ought to know what they are dealing with. Countries that are importing radioactive materials whether for recycling or use, similarly also need to know correctly what they are receiving, particularly given the potential risk posed by adulteration of radioactive materials. This concern is not theoretical, but was practically borne out in the September 1999 revelation that British Nuclear Fuels

¹¹³ The United Nations Convention on the Law of the Sea, Art. 22; 21 I.L.M 1261 (1982)

had faked quality control checks on at least 10 lots of MOX (mixed oxide) cylindrical pallets in order to save time. After a shipment of MOX fuel containing pallets of dubious quality reached Japan, Japanese authorities pressed the British to take them back and in July 2000 the British Energy Director agreed that the MOX fuel with falsified data would be returned to the United Kingdom and that 6.4 billion yen would be paid to Japan for damages incurred because of the falsification.¹¹⁴

Shipping States continue to carry radioactive materials through secret itineraries, exploiting the obscurity in the law governing prior notification of transit States. They cite interest of security and as such do not inform coastal States that they are passing through their waters let alone adhering to designated sea lanes. The State of transit often will only know of the cargo in the event of an accident rather than as a precaution.

The shallowness of UNCLOS is also evident in its failure to account for response actions in case of an accident occurring. For example, in the case of the MSC Carla, the United Kingdom decided that it would not salvage the cases carrying radioactive cesium because any potential radiation would be negligible¹¹⁵. Such a stance sends a chilling message to every coastal State of transit and would hardly encourage approval of innocent passage. Where there is no provision for salvage and recovery obligation, then a coastal State will not be inclined to allow vessels carrying radioactive cargo within their territorial waters. Also if Coastal States take the view that their interests and resources are neglected under the current law, they are bound to take individual and unilateral measures to protect themselves, including frustrating the shipment of radioactive materials.

¹¹⁴ Prof. Jon M. Van Dyke, *"The Legal Regime Governing Sea Transport of Ultrahazardous Radioactive Materials"*. Paper Presented at the SEAPOL Conference in Bangkok, Thailand in March 2001. pg.4"

¹¹⁵ Ibid

The reliance on packaging standards is here urged as imprudent and insufficient. These standards as already noted are primarily derived from the INF code. The specifications in the code are criticized for being unrealistic and for falling short of the simulated conditions of an actual nuclear accident. Lawrence Marin observes that according to INF and IAEA specifications, the casks used in transporting radioactive materials must be capable of withstanding an 800°C fire for 30-60 minutes. This he observes is extremely inadequate when one considers that ship fires may last days and that fires involving radioactive materials burn at temperatures of 2000°C for periods exceeding 24 hours. The specifications also require the cask to endure impact speeds of 48 Km/h, a regulation that is severely insufficient when compared with the cask impact speed requirement of the United States (which is) 464 Km/h.¹¹⁶ The tests to confirm compliance with the IAEA and INF specifications are criticized because each is performed on a different cask, rather than testing one cask under several conditions, as it would experience in an accident at sea. The challenge remains to ensure that prescribed standards actually reflect the challenge posed by the activity in question. The INF Code and the IAEA regulations require constant review to ensure that they respond to the risks and actually minimize the same as far as possible.

The current state of international law in the field of nuclear shipment may be faulted on the fact of excessive reliance on design and packaging safeguards, without further supplement. As earlier urged, the INF Code and indeed SOLAS Convention do make provision for regulation of packaging of radioactive materials, construction, design and staffing of ships that transport the same. Such measures although important and to be lauded, are insufficient in the eyes of most coastal States. The key reason may be tethered to the issue discussed

¹¹⁶ Lawrence Marin, 'Oceanic Transportation of Radioactive Materials' *The Conflict Between the Law of the Sea Right of Innocent passage and Duty to the Marine Environment* 13 Fla.J.Intl L. (2000-2001) pg. 361

earlier on ease of falsification of data. The establishment and provision of various design and packaging safeguards without commensurate monitoring and enforcement measures achieves precious little in terms of proper regulation. Neither the INF nor SOLAS provide for institutional or other mechanisms that would serve to monitor the implementation of the safeguards. This by and large means that the safeguards are visible and are addressed more in breach than in observance, which defeats the need to adhere to preventive and precautionary principles and priorities. It is due to such weaknesses that coastal/transit States posit that the reliance on safeguards are neither prudent nor palatable.

Looking at the Joint Convention, certain aspects still stand out as requiring remedial action. The first issue relates to the provisions on consent by involved parties. The convention expressly requires under Article 27(1) (i) that the prior notification and consent of states of destination be obtained as a condition precedent to transboundary movement. However in sub-paragraph (ii) of the same Article, a remarkably different standard is applied with respect to transit states. The convention rather than requiring their consent and prior notification only States that the movement through such States shall be subject to the international obligations relevant to the particular mode of transport utilized.¹¹⁷ It would seem that transit states are treated as second rate citizens, yet exposed to just as much risk of harm as the States of origin and destination. The very concept of equality of States dictates that such treatment is not only untenable but prima facie offensive to international legal principles.

International law regulates the inspection and certification of vessels through classification societies, which then provide inspection and certification services for governments and insurance companies. The Achilles heel is in the fact that

¹¹⁷ Joint Convention on Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 36 I.L.M. 1431 (1997) Art. 27 (1)(i).

flag states and ship operators have the freedom to choose where to go for such services and they do so based on convenience rather than quality of services. The traditional structure of jurisdiction over ships and maritime areas has failed to protect the interests of coastal states whose proximity to shipping routes make for exceptional vulnerability. The failure has been occasioned by the imperfect definition and observance of the duty of flag states to adopt and enforce appropriate regulation; and the limited power accorded to coastal states to regulate shipping and activities off their coasts.¹¹⁸ There is no regime on shipment of radioactive cargo that soundly addresses the issue herein as well as the same is addressed under the regime governing oil pollution, in particular under MARPOL Convention.

2.4 Conclusion

In summary, the current state of international law clearly depicts that whereas the different perspectives of the stakeholders involved is appreciated, not enough has been done to balance the scales. There seems to be a tilt in favour of the shipping states over transit states. There is still need for more work towards the establishment of a more efficient regulatory framework that addresses all the pertinent concerns raised as highlighted.

¹¹⁸ P.Birnie, A.Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press), pg.400

CHAPTER 3

LIABILITY, COMPENSATION AND DAMAGES IN THE EVENT OF NUCLEAR ACCIDENTS

3.0 Background

The preceding chapter highlighted the conflicting positions taken by shipping and transit states with respect to the shipping of nuclear wastes. It also highlighted the approach of international law in addressing this conflict, where we saw an attempt not to prohibit an activity but rather to create safety conditions and regulations on how the activity is undertaken. However as is often the case, there can never be certainty that an accident will not occur no matter what level of protection is in place.

What then happens in the event of an imminent or actual accident involving nuclear wastes being shipped internationally? What measures of compensation and redress exist to tackle such a likelihood? It is these questions that lend themselves to our current discourse. The main issue do be determined is the sufficiency or otherwise of the international law provisions in place to address the consequences of any accident involving the shipment of nuclear wastes.

One may wonder why so much uproar and opposition greets an activity that appears well regulated by regional and international legal provisions. The Caribbean nations, for instance, in 1992 through the Heads of Government of the Caribbean Community (CARRICOM) issued a strong statement that shipment of plutonium and other radioactive or hazardous materials should not traverse the Caribbean Sea¹¹⁹. Pacific island nations have also vigorously protested these

¹¹⁹ Prof. Jon. M. Van Dyke, "The Need for Further International Action Regarding safety of Sea Transport of UIttrahazardous Radioactive Materials", , pg. 5

shipments, for instance in October 1999 Pacific Island leaders called specifically for a compensation regime that would provide redress for any economic losses that the tourism and fishing industries in the island might suffer as a result of an accident even if there was no actual environmental damage caused¹²⁰.

Some leading jurists have concluded that 'although at a theoretical level, its quite correct to conclude that the international legal order has a perfectly adequate foundation for an equitable and effective regime for state responsibility for marine environment injury, the failure of states to resort to the foundation is its most conspicuous feature.'¹²¹ Professor Van Dyke observes that 'although the International Community has taken some steps to address risks created by the movements of ultrahazardous radioactive cargoes, important gaps still exist in the legal regime governing these activities...until agreements are reached on these important matters, the shipment of these extremely dangerous materials will continue to violate fundamental norms of International Law and comity'¹²².

3.1 The Concept of Fault in International Law

The concept of fault in law, draws two main distinctions; the first is subjective fault, where liability would require the presence of intent, malice or recklessness and second being objective fault, where liability is the result of a breach of an international obligation, without recourse to issues of intent.

International environmental law deals primarily with objective fault as the basis of liability. Indeed subjective fault, as requiring malice or intent is rarely ever the basis of liability for environmental damage. This is aptly captured by the eminent jurist Jimenez de Arechaga when he explains that:

¹²⁰ Ibid, pg.6

¹²¹ P.Birnie, A.Boyle, & Redgwell, *International Law & the Environment*,(3rd Edn, Oxford University Press,2009) Chpt4 Pg 43 l

¹²² Prof. Jon M. Van Dyke, '*The Legal Regime Governing sea Transport of ultrahazardous Radioactive Materials*', Paper preserved at the SIGAPOL Conference in Bangkok, Thailand, March 2001

*"The decisive consideration is that unless the rule of international law which has been violated specifically envisages malice or culpable negligence, the rules of international law do not contain a general floating requirement of malice or culpable negligence as a condition of responsibility."*¹²³

Fault in the objective sense as founding liability therefore connotes the failure to act with due care or diligence; breach of a treaty obligation or committing a prohibited act. 'A state therefore will not be culpable for harm resulting from risks it could not have been objectively aware of'.¹²⁴ International law takes the direction that states ought to observe due diligence in conduct, that is, a focus on regulation and control rather than an obligation of conduct, or regulation of conduct, which would allow for strict liability. Some writers however argue that standards of strict liability ought to be applied in the case of ultra hazardous activities, as a means of shifting the burden of proof and ensuring a more equitable distribution of loss.¹²⁵ In this respect, the duty would be on the shipping state or other proactive party to prove their innocence as opposed to the victim state proving their guilt.

It is noteworthy that international courts have been reluctant to apply strict liability because it is argued it would amount to judicial law making independent of the will of states. Those in favour of strict liability argue that a state ought to be liable even if it acted diligently, because in case of ultrahazardous activities, to let damage lie where it falls because the due diligence threshold has been met would be unfair. A victim state can neither contribute to the harm nor avoid it;

¹²³ P. Birnie, A. Boyle, & Redgwell, *International Law & the Environment*, 3rd Edn, Oxford University Press, Chpt.4 Pg 215

¹²⁴ Ibid pg. 217

¹²⁵ Supra n.123 Pg 218

has no veto power and no guarantee of indemnity, and as such ought not be forced to carry the burden of resultant damage.¹²⁶.

3.2 Liability for Injury and Damages from Nuclear Waste Shipment

When the issue of liability then is viewed in light of the transboundary shipment of radioactive waste, germane concerns of coastal states arise directly from the inherent risk posed by the transboundary shipment of radioactive waste. Succinctly stated, radioactive cargo poses major risk to property, life and environmental resources all of which would be irreparably damaged by any leakage or spillage of the same.

It is therefore quintessential for coastal and transit states that the issue of liability be addressed. They need to know that their interests are properly catered for, in that they would be able not only to apportion liability to a specific party, but more importantly that they would be able to be fully compensated for any damages resulting. This concern is more pronounced due to the tendency of international law to ignore and reject compensation for economic losses, while it is the damage to the tourism and fishing industries that may prove most costly from a nuclear incident. There is also need for clean up provisions, and salvage of any contaminating agents by the liable party. It is these concerns that make the issue of liability, damage and salvage such a key concern.

Issues of liability and damage are contentious because of the conflictive perspectives and positions taken by the stakeholders. On the one hand, the transit states posit that due to the huge risk involved in transport of nuclear cargo, and the tendency of customary international law to cover damage to life and property to the exclusion of economic loss (such as damage to tourism and

¹²⁶ Supra n.123 pg. 220

fishing industries), it is imperative that a new, radical and more pertinent liability regime be crafted to address the prevalent challenges. On the other hand we have the shipping and importing states that insist that there is no need for such a regime given that the current avenues are ample to cover liability and that the shipping states are liquid enough to meet any emerging liability.¹²⁷

These issues are addressed in the Paris Convention¹²⁸ Vienna Convention¹²⁹, and the Brussels Convention¹³⁰. The key objective of the Conventions, may be gleaned from the preamble to the Paris Convention on Third Party Liability, being to ensure adequate and equitable compensation for persons who suffer damage caused by nuclear incidents, and to provide a minimum level of standards to be applied and adhered to across board, while allowing individual countries to take any additional measures as they may deem fit. The basis of liability under these Conventions is strict liability of the operator of a nuclear installation in case of a nuclear incident. The Conventions exclude the liability of other persons other than the operator of the nuclear installation,¹³¹ except in specified circumstances. The approach taken is by recommending minimum and maximum liability levels.¹³² The Conventions also provides for a limitation clause, being a time/duration within which any claim relating to a nuclear incident must be brought. The generally set duration is for commencement of action within ten years of the even by complained of failing which the cause of action would be time barred¹³³. There is provision requiring the operators of nuclear installations to ensure that they obtain ample insurance that should be capable of settling likely damage.

¹²⁷ Prof. Jon M. Van Dyke, "The Legal Regime Governing Sea Transport of Ultrahazardous Radioactive Materials". Paper Presented at the SEAPOL Conference in Bangkok, Thailand in March 2001.

¹²⁸ Convention on Third Party Liability in the field of Nuclear Energy of July 29, 1960 ; 956 UNTS 264(1960)

¹²⁹ Convention on Civil Liability for Nuclear Damage(Vienna), May 21 1963, 2 I.L.M 727(1963).

¹³⁰ Agreement Supplementary to the Paris Convention of 1960 on Third Party Liability in the Field Nuclear Material (Brussels) UKTS 44(1975)

¹³¹ Vienna Convention on civil liability 2 I.L.M.727 (1963) Article 8; Art, 384 Paris Convention and Art. 183 of Brussels Convention.

¹³² Supra n.128, Art.7

¹³³ Supra n.128 Art. 8 & Supra n.129. Art. VI

The obligation is to take out and maintain insurance or other financial security of an amount not less than 5,000,000 special drawing rights and not exceeding 15,000,000 special drawing rights, which represents the maximum liability that can befall an operator of a nuclear installation¹³⁴. Under the Brussels Protocol to the Paris Convention provision is made for up to 300 million special Drawing Rights per incident¹³⁵. A state of transit is given the power to demand that an operator increases his maximum cover to adequately insure the risks of a nuclear incident, but such increase must be similar to the maximum amount of liability applied to operators within their own territory¹³⁶.

3.3 Damages and Salvage Responsibilities

The issue of damage is tackled under the Paris, Vienna and Brussels conventions which define damage as:

"Loss of life, any personal injury or any loss of, or damage to property"¹³⁷

A nuclear operator is liable for all damage or loss that is proved to have arisen from the nuclear incident. The Paris Convention provides that where damage or loss is caused jointly by a nuclear incident and by an incident other than a nuclear incident, if the damage is not reasonably separable, then the operator would be fully liable for the damage which will be attributed to the nuclear incident.

Whereas the Conventions tackle liability and damage they do not tackle the question of salvage responsibility as effectively or conclusively. Indeed as Professor Dyke observes, there are no general agreements known to

¹³⁴ Supra n.128, Arts. 4,7 & 10

¹³⁵ Supra n.130, Art 3.

¹³⁶ Supra n.128 Art 7(e)

¹³⁷ Supra n.128 Art.3

international law providing for salvage responsibilities¹³⁸. The importance of salvage and indeed clean-up of any leakages that would pollute is not only important but urgent if damage is to be reduced. In international law the primary principle applicable to maritime salvage is the 'no cure no pay' principle, by which salvors do not get paid for work done benefitting a coastal state and reducing vessel owner's liability if the vessel itself is lost.¹³⁹ What was clear was that it was the vessel that was central to salvage and not the environment or obligation to clean it up. This position held sway until the enactment of the 1989 International Convention on Salvage,¹⁴⁰ which introduced two key elements. First it established that salvors are entitled to special compensation for salvage operations in respect of a vessel or its cargo that has prevented or minimized damage to the environment and they must act so as to reduce such damage. Second, salvors are penalized by loss of or reduction of reward if by negligence or misconduct damage to the environment is not averted or minimized no matter how great the effort.¹⁴¹ International law also indirectly provides for salvage through the customary rule of the polluter pays principle. This principle in international law, officially recognized by the Organization for Economic Co-operation and Development (OECD) in 1972¹⁴², is used for the allocation of responsibility for the costs of pollution prevention and control. It binds the polluter to meet the cost of pollution abatement and control. This principle in so far as it calls for the abatement of pollution can be construed to require a polluter to undertake salvage and clean-up responsibilities in the event that nuclear cargo should leak or be exposed at sea.

¹³⁸ Prof. Jon M. Van Dyke, 'The Legal Regime Governing sea Transport of ultrahazardous Radioactive Materials', Paper preserved at the SIGAPOL Conference in Bangkok, Thailand, March 2001

¹³⁹ P. Birnie, A. Boyle, & Redgwell, *International Law & the Environment*, 3rd Edn, Oxford University Press, pg. 429

¹⁴⁰ 1989 International Convention on Salvage IMO/LEG/Conf.7/27

¹⁴¹ *Ibid*, Art. 14.

¹⁴² See OECD, Recommendations on Guiding Principles 11 I.L.M. 1416 (1972)

Related to the issue of salvage, is the provision for re-shipment of nuclear cargo back to their source of origin. The nature of the provision is to facilitate the return of nuclear waste to source if the exportation cannot be completed, or cannot be completed according to relevant rules of international law. This obligation is normally couched to fall more on the state of export. Under the Joint Convention where transboundary movement cannot be completed in conformity with its provisions, the state of origin has a duty to permit re-entry into its territory or make alternative safe arrangements¹⁴³. A similar provision is embodied in the European Council Directive 92/3/EURATOM, which provides that;

"Where a shipment of radioactive waste cannot be completed or if the conditions for shipment are not complied with in accordance with the provisions under Title II, the competent authorities of the Member State of dispatch shall ensure that the radioactive waste in question is taken back by the holder of that waste".

The provision as to return of nuclear cargo, is meant to ensure that where transboundary shipment fails then the originator of the waste is saddled with the duty to handle the same and not the state of destination or transit.

3.4 Critical Analysis of Liability, Damage and Salvage Regimes

Early civil liability conventions, prior to the 1992 Civil Liability Convention¹⁴⁴ provided only for injury to persons and property but did not cater for environmental damage.

¹⁴³ The 1997 Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management IAEA 36 I.L.M. 1431 (1997) Art 27

¹⁴⁴ International Convention on Civil Liability for Oil Pollution Damage; 23 I.L.M 177 (1984)

If there were in place the most stringent of regulations governing shipment of radioactive waste, the best outcome would be a reduction of catastrophes to bare minimums, but not absolute safety. In the recognition of the possibility of an incident, there is need for the establishment of a liability regime. This has however not been an integral component of many a treaty on this subject matter. Few treaties have gone the way of establishing liability regimes as part of their substantive provisions. Some treaties have been negotiated to establish a liability regime in the event of a nuclear accident. Specific treaties imposing strict liability for nuclear accidents include the Paris Convention¹⁴⁵ and the Vienna Convention¹⁴⁶ supplemented by the Brussels Convention.¹⁴⁷

The basis of liability under these conventions is strict liability of the operator of a nuclear installation for a nuclear incident. There is clear stipulation that no other person is to be liable for nuclear damage other than the operator¹⁴⁸ except in specified circumstances under the Act. The approach is to set minimum liability levels and maximum liability levels.¹⁴⁹ Also created is a limitation/sunset clause within which action must be brought, which is ten years.¹⁵⁰ The operators of nuclear installations are also called upon to have ample insurance capable of settling likely damage. The key drawback lies in the fact that in both the Paris and Vienna Conventions, which apply to nuclear installations, the definition accorded to nuclear installation is *inter-alia* any facility where the material is stored other than storage incidental to the carriage of such materials.¹⁵¹ In net effect the conventions do not apply to cover nuclear materials stored in transit to a certain destination, and which are thus not as specifically provided for as stipulated in the Conventions aforementioned. Further, the three conventions

¹⁴⁵ Convention on Third Party Liability in the field of Nuclear Energy of July 29, 1960 ; 956 UNTS 264(1960)

¹⁴⁶ Supra n.140.

¹⁴⁷ Ibid

¹⁴⁸ Supra n. 131 Art. 8;

¹⁴⁹ Supra n.145, Art. 7.

¹⁵⁰ Supra n.145 Art. 8.

¹⁵¹ Supra n.131 Art. I

are criticized as embodying and providing inadequate funding and awkward procedural remedies.¹⁵² It is noteworthy that in tackling liability, the relevant treaties do not endeavor to address the question of salvage responsibility and clean-up procedure. The treaties talk of liability but appear to leave issues of salvage and clean up to post liability determination. This approach respectively falls way short in light of the grave consequences that would attend to a nuclear incident. It would be imperative that interim measures of containment even if not salvage be enshrined in such treaties.

What is apparent is that the definition of damage does not clearly include damage to the environment and consequential economic losses to the fishing and tourism industries, including those outside the Exclusive Economic Zones (EEZ). Indeed only under the Vienna Convention on Civil Liability for Nuclear Damage can it be urged that by implication or construction such losses may be covered under Article 1K(ii) which provides that:

" Nuclear damage means – any other loss or damage so arising or resulting if and to the extent that the law of the competent court so provides".

However as already noted, the conventions are limited in that they do not apply to storage incidental to carriage of nuclear materials.

On the area of judicial activity, it is noted that the one area in which there has been a noticeable absence of judicial activity and determination, is liability for environmental damage¹⁵³. Most environmental disputes have been dealt with

¹⁵² Prof. Jon M. Van Dyke, 'The Legal Regime Governing sea Transport of ultrahazardous Radioactive Materials', Paper preserved at the SIGAPOL Conference in Bangkok, Thailand, (March 2001) pg. 8.

¹⁵³ P.Birnie, A.Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press,2009) Chpt. 3 Pg 140.

through mutual conciliation and discussion rather than litigation based on the existent law. The requirement of *epuiselement des remedie locale* or the exhaustion of local remedies presents another challenge, in that under the current regime victims have to bring claims in the courts of the country responsible for damage rather than their own courts, or in a neutral forum¹⁵⁴. This procedure proves quite costly and time consuming to would be claimants, especially where multiple appellate stages exist in the country in question.

The fact that treaties enshrining liability regimes like any other treaty are only binding on State parties, except in so far as they may be codifying customary international law or peremptory norms of international law; means that several key players simply avoid their effect and regulation by avoiding and refusing to sign or ratify the same. This has the result of greatly weakening their role and effectiveness in regulating shipment of radioactive materials.

Professor Van Dyke observes that despite steps taken in international law, little has been generated by way of agreements regarding salvage¹⁵⁵. The point focuses more on the question in the event of an incident involving radioactive cargo, who bears the responsibility to undertake salvage? International law has left this lacuna without clear redress. The presumption would be that the party at fault or who occasions the incident would be responsible for salvage or its attendant costs. This however becomes dicey, when multiple parties are involved, including an exporter, a shipper or charter party and other third parties. The issue of liability may not be quickly established or ascertained, and due to the risky nature of cargo, the need for urgent, unequivocal action cannot be over emphasized. To leave the question of salvage responsibility to *ex post facto* determination as is the current case, is a recipe for disaster. The inherent

¹⁵⁴ Supra n.145, Pg. 9

¹⁵⁵ Supra n.145, pg.1.

risk of radioactive waste and its potential for wide scale damage to environmental and economic resources, dictates that there is urgent need for the establishment of specific agreements or the incorporation into existing agreements of provisions spelling out the responsibility and duty on who is liable to undertake salvage of both vessels and cargo upon an incident involving radioactive waste. A corollary to this need, and indeed supplemental to it, is the need to have agreements that specifically establish and define the liability of shippers for damages that occur due to shipment of radioactive waste. This kind of provision would foster greater caution on the part of shippers in a bid to reduce overhead costs.

The risk of a nuclear accident is to human life, flora and fauna, the greater ecosystem including the resources therein whether animate or inanimate. It is a trite fact that from the coastal waters, several communities draw a livelihood whether through exploiting the fishery resources, or from the foreign exchange occasioned by tourism and tourist visits. This is true for several ports such as Mombasa and Zanzibar. The development of international law on reparation and compensation has tended to proceed in a skewed manner, adhering to the traditional concepts of international law, that economic interests are non-compensable. The upshot then is that in the event of an incident involving a vessel ferrying radioactive cargo, coastal nations would not be entitled to recover for economic damage to tourism and fishing industries, yet here lies potentially the greatest loss to a State and its people. A loss that could take multiple years to recover or may even prove irreparable. There is a lack of appropriate compensation regimes especially for economic losses. It has variously been urged that the right to live is not just the right to be alive but also relates to the quality of life. If this argument be upheld, then an activity that would obliterate a people's way of life and source of livelihood, can be said to injure and abrogate their right life directly. It is therefore pertinent that compensation regimes take account of the need to compensate injury to tourism and fishing industries of coastal

nations, diverting from the hitherto parsimonious provisions of international law on reparation.

3.4.1. Legal Provisions for Technology Transfer and Monitoring Capability

The efficiency of liability regimes relies on is buttressed on the ability of a State to monitor its territory and actually inspect what cargo passes through its waters. The ability of a State to give or deny another State prior consent to a proposed activity also presumes its ability to evaluate the intended activity, which cannot be possible without the requisite technology and equipment. The fact remains that not all states are equally endowed with the financial wherewithal to develop or acquire state of the art technology, hence the need for transfer of technology.

The Joint Convention addresses itself to the requirement of consent of a State of destination before shipment as noted earlier. It goes further to provide that a State of destination must not consent to a shipment of waste to its territory unless it possesses the necessary technical and administrative capacity as well as regulatory structure to manage spent fuel or radioactive waste in a manner consistent with the Convention¹⁵⁶.

However unless and until there is provision for technology transfer, and sensitization of State actors on the various categories of nuclear cargo and attendant risks, it will be difficult for proper self evaluation by a State of its administrative and technical capacity relevant to the handling of radioactive waste. Further, the manner of framing of the consent requirement does not address itself to the fact that States are open to manipulation on the promise of economic betterment, and to this end would be prone to asserting capacity even where none exists. There are no safety nets such as independent audit of

¹⁵⁶ Ibid,

capacity to evade a scenario in which a government may falsify its ability to handle certain risks when it is well and truly known to it that such ability is wanting.

The Joint Convention incorporates in its provisions, specifically under Article 27(3)(i) the protection of the rights and freedom of maritime, river and air navigation as enshrined in international law. The convention basically upholds the right of innocent passage without an attempt to tailor the same to its obligations on consent and notification. A shipping State that is accused of abrogating the convention can be exculpated if it can show that its otherwise offensive conduct is justifiable or finds basis in a rule of international law. A shipping State will likewise be able to keep its itinerary secret and traverse territorial waters of other coastal States on the basis that it is only exercising innocent passage.

Without addressing these issues the preliminary step of information gathering and data collection, that would found a case before a court or tribunal and therefore bring into play liability and compensation regimes fails *ab initio*, no matter how good the provisions on compensation might be. The road from liability adjudication to eventual compensation must be continuous from start to finish.

3.4.2 The Need for a Comprehensive Regulatory Instrument

The Basel Convention as highlighted in the previous chapter, incorporates comprehensive provisions to govern the transboundary movement of hazardous wastes and their disposal. It is comparatively the most comprehensive and encompassing instrument on regulation of waste and penalties on infringement. That the provisions therein are pertinent to the challenges that attend to the movement of ultrahazardous waste is beyond peradventure. However the scope

of the convention expressly excludes application to "wastes which as a result of being radioactive, are subject to other international control systems."¹⁵⁷ The problem as already seen is that there is no comparable instrument in the field of radioactive wastes, and the piecemeal instruments that exist do not address the germane issues comprehensively. It is for this reason that Professor John Van Dyke argues that a proper construction of the scope of the Basel Convention as Stated in Article 1, would imply that 'because no adequate regime governs the high level ultrahazardous categories now being transported around the world, the Basel Convention serves as the "default" standard by which to evaluate such shipments'¹⁵⁸

It is submitted that the views of the learned Professor whether right or wrong, emphatically underscore the need for an integrated instrument like the Basel Convention to apply to transboundary movement of nuclear wastes.

3.4.3 Circumvention of Legal Redress by States

Where incidences of pollution have arisen, the various actors concerned, have preferred to negotiate their way to compromise solutions rather than to submit their disputes to adjudication by courts or tribunals. The result is parties adopt flexible solutions which are not necessarily dictated by international law. The problem with negotiated solutions is the reliance on community pressure and they may lack real enforcement power. A second concern is that such solutions may dilute legal standards and invariably legitimize practices that are untenable from an environmental stand point¹⁵⁹.

¹⁵⁷ Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, (**Bamako Convention**) 30 I.L.M. 775 (1991) Art. 11

¹⁵⁸ Prof. Jon. M. Van Dyke, "*The Need for Further International Action Regarding safety of Sea Transport of Ultrahazardous Radioactive Materials*", ,

¹⁵⁹ P.Birnie, A.Boyle, & Redgwell, *International Law & the Environment*, 3rd Edn, Oxford University Press, pg. 213

It is possible that the reason why states prefer negotiated solutions is the perceived lack of effective remedies even where a state is found culpable. In the Nuclear Test Cases, it was suggested by some judges that in international law prohibitory orders and injunctions to stop violations of international law cannot issue¹⁶⁰. The primary remedies therefore are first the discontinuation of the wrongful conduct, secondly to offer guarantees of non repetition and thirdly a full reparation for injury caused. The full reparation involves whether singly or jointly, restitution (being the re-establishment of the situation that would have existed before the wrong); and where restitution is not possible, then compensation is to be pursued; and where the first two do not suffice, then the only other remedy is satisfaction, which includes an apology and the mere expression of regret and letting the loss lie where it falls¹⁶¹. It is this last limb that creates the greatest uproar, in that international law legitimizes in certain situations the victim state bearing the weight and consequences of environmental harm that they neither contributed to nor could they avoid. This state of affairs is unfair and untenable.

The fact that the current legal regime relies on inter-state claims raises jurisdictional challenges. Most tribunals and/or courts in the international arena do not enjoy compulsory jurisdiction and rely on the consent of feuding parties. In this circumstance therefore unless both states consent, then legal redress of disputes is unlikely. This renders the legal avenues susceptible to frustration by a party unwilling to accede to jurisdiction.

It is suggested that the local remedies rule does not apply to transboundary environmental damage because a 'victim state' cannot be expected to have

¹⁶⁰ ICJ Reports (1973) 131, per Ignacio Pinto.

¹⁶¹ P.Birnie, A.Boyle, & Redgwell, *International Law & the Environment*, 3rd Edn, Oxford University Press, pg. 225

submitted to the jurisdiction of a source state for injuries to its environment and property.¹⁶² However the subject is contentious and has not been subject of unequivocal determination and this leaves it open for states to insist on the rule and its application, much to the frustration of victim states, who stand to suffer due to this lack of clarity on this legal rule and its scope.

In regard to global commons, international law is restrictive in its protection. It would seem reparation for damage to global commons is limited to actual cost a third or injured state incurs for instance cleanup cost or reinstatement cost. Counter measures with regard to global commons can also only be by an injured state and not by a third party to protect the commons¹⁶³. This situation contributes to the fabled tragedy of the commons and denies their protection for their own inherent value and worth by all states.

3.4.4 Challenges of Reliance on the Doctrine of State Responsibility

The current regime of international law is anchored and indeed driven by the concept of state responsibility and relies predominantly on states to act to bring breaches of the law to the fore, and to seek remedy . This might work well in some areas, but remains grossly inadequate for environmental protection and specific to this paper from the risk posed by transboundary movement of hazardous waste.

First claims can only be brought by states and they do so at their own discretion, which is limiting and allows for other extrinsic considerations and interests that might overshadow the need for environmental protection.

Second as the jurisdiction of most tribunals as already noted is not compulsory, even where a state is willing to act, consent of the parties is a necessary precondition, without which no action may be brought.

¹⁶² Ibid pg.224

¹⁶³ Ibid pg. 234-235

Many states shun such action because the outcome of claims is highly unpredictable, as uncertainty surrounds important issues such as cost allocation, liability of states or private parties, type of environmental damage covered and the role of equitable balancing.

State responsibility is inherently an inadequate model for enforcement of international standards of environmental protection, because at best it can only complement but not dispel the need for a system of regulatory supervision.¹⁶⁴ Such supervision may be achieved by setting of compulsory minimum standards to be adhered to by all shipping states. The standards would then be supervised by way of tribunals or courts through supervisory powers akin to those enjoyed by the I.C.J. Supervision may also be achieved through reliance on monitoring by the committee of parties where treaties exist that govern the parties involved.

In summary, unless and until these and other gaping loopholes are sealed and corrected, the status quo will subsist with shipping states and transit states maintaining tough and opposing stances. It is imperative that massive overhaul of the current regime be instituted to establish a more harmonious playground.

3.5. Conclusion

It is submitted here that in so far as the stance in international law regarding shipment of nuclear waste remains to permit shipment with appropriate regulation, then it is quintessential that maximum and effective redress mechanisms be integrated into the system. It does not create equity between transit and shipping states, if the question of redress, the heads of damages and the time of redress are not crystal clear and determinate. The damage and loss that may arise from a nuclear accident must be borne by those who are culpable and not left to lie where it falls.

¹⁶⁴ Ibid pg. 236

CHAPTER 4

PROPOSALS FOR AN INTEGRATED REGULATION OF NUCLEAR WASTE SHIPMENT

4.1. Introduction

The tenure of this paper has highlighted the international regime governing transboundary shipment of ultrahazardous waste more so with respect to rights and interests of transit states, it has highlighted the insufficiency of the current regime and state of affairs in light of the challenges that are posed by this risky cargo being shipped from one state to the next be it for disposal, reprocessing or other purpose.

What then can be done to better the state of affairs? How to render the existing regime more responsive to contemporary challenges and concerns or the creation of a new regime overhauling the current one are but some of the options that we must now grapple with.

It is proposed to first look at proposals with regard to the conflict highlighted in chapter two, and subsequently we will make appropriate recommendations towards enhancing the liability and compensation regimes to make them more effective in addressing the concerns of all stake holders.

4.2 Proposals on Effective Regulation of Transboundary Shipment

4.2.1 Enforcement of Prior Notification, Consultation and Disclosure

It is a trite requirement of international law that whenever the activities of one state pose the risk of significant harm to another state, the acting state should engage in prior and timely consultation at an early stage and in good faith with

the state likely to be affected. It should also avail all relevant information to the potentially affected state. This is a requirement upheld in several cases¹⁶⁵ and also in the 1923 Rio Declaration on Environment and Development.

*"States shall provide prior and timely notification and relevant information to potentially affected states on activities that may have a significant adverse transboundary environmental effect and shall consult with those states at an early stage and in good faith"*¹⁶⁶.

Professor Van Dyke observes that 'inherent in the duty to consult is the duty to inform or notify, which is a precondition to meaningful and effective consultation.'¹⁶⁷ 'Prior consultation based on adequate information exchange is well based in international law and is a natural counterpart to the concept of equal utilization of shared resources'¹⁶⁸.

We have highlighted the conflicting dialectics on the issue of prior consultation. We highlighted the stance taken by transit states on the same and that taken by shipping and exporting states. The duty to consult, inform and notify is fundamental in the bid to effectively regulate shipments of nuclear waste. In the 1949 Corfu Channel Case the International Court of Justice held that Albania had the duty to disclose the presence of mines in the channel¹⁶⁹. France was similarly called upon to consult in good faith with Spain over riparian rights in the 1957 Lac. Lanoux Arbitration¹⁷⁰.

¹⁶⁵ P. Birnie, A. Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press, 2009) Chpt. 3; 425-427

¹⁶⁶ Principle 19 Rio Declaration on Environment and Development, June 14, 1992 U.N. Doc. A/CONF.151/5/Rev.1992 31 ILM. 874(1992)

¹⁶⁷ Prof. Jon M. Van Dyke, 'The Legal Regime Governing sea Transport of ultrahazardous Radioactive Materials', Paper preserved at the SIGAPOL Conference in Bangkok, Thailand, (March 2001) pg 14

¹⁶⁸ P. Birnie, A. Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press, 2009) Chpt. 3 Pg 177

¹⁶⁹ Corfu Channel Case (United Kingdom vs. Albania) ICJ Reports (1949) 1.

¹⁷⁰ Lac Lanoux Arbitration 24 ILR (1957) 101

Effective and proper international consultation must meet various elements as emphatically urged by Professor Van Dyke¹⁷¹. First is that there must be a disclosure of the nature of the project with its attendant risks and safety measures to those states that may be affected by the activity. This may be best achieved vide the preparation of an Environmental Impact Assessment, as is envisioned and required in Articles 204 to 206 of the 1982 Law of the Sea Convention, and Article 16 of the South Pacific's regional environmental treaty, which calls on each party to assess "the potential effects of projects on the marine environment" through a process that includes public comments and widespread dissemination of results¹⁷².

This obligation is reinforced in Article 13 of the Caribbean's Protocol Concerning Specially Protected Areas and Wildlife¹⁷³ which requires each contracting party to prepare environmental impact assessments on "industrial and other projects and activities that would have a environmental impact".

The second step towards proper consultation is to listen to the concerns expressed by the affected Nations along with their suggestions for reducing the risks. Constructive suggestions should be accepted and acted upon.

Such consultation can only result to safer voyages and would allow collaborative efforts towards designation of shipping lanes and relevant information on weather patterns. It is imperative that exporting states come to the acceptance that such consultation is not tantamount to granting a veto power to transit states but that they (transit states) have the right to understand the risks they are being subjected to and to offer constructive advice to reduce such risks.

¹⁷¹ Supra n. 167 pg. 15

¹⁷² Supra n.166

¹⁷³ Discussed in 87 AJ IL 610(1993)

It is also important that reasons relied upon to prevent prior notification such as the allegation of its inconsistency with the freedom of navigation under the 1982 UNCLOS be put to rest. All actors be they state of export, import or transit must have a level playing field, and receive similar treatment and information. The issue of treating transit states as second rate citizens by keeping them in the dark on notification is untenable. What must be appreciated is that through prior notification state parties will be able to reduce the alarm that results from anxiety about unauthorized shipments. Such notification would also serve to catalyze the development and co-ordination of off-shore contingency plans to the on-board contingency plans, as parties work in synergy. There is urgent need to make requirements of notification and consultation mandatory and precedent to every shipment of nuclear waste. To make these requirements mandatory reliance may be had to the provisions of Article 24(1) of the 1982 UNCLOS by which state parties are empowered to enact legislation to *inter alia* prevent marine pollution. Such legislation could be drafted in such a way as to make prior consultation and negotiation mandatory by all states shipping nuclear waste through their territories.

Given the risks that are attendant to the shipment of nuclear waste, and the need for mutual co-operation to reduce the risk of catastrophic incidents; it is necessary that prior notification to states of export, destination and indeed of transit be made mandatory. Every State should take the appropriate steps necessary to ensure that, subject to the relevant norms of international law, the transboundary movement of radioactive waste takes place only with the prior notification and consent of all states involved. This would be achieved by each transit state putting in place administrative and policy guidelines that will ensure that each time nuclear shipments are ferried through territorial waters declaration of the same precedes the same. In addition to this, it is equally vital that the states that generate radioactive waste take steps reduce the waste

generation to a minimum taking into consideration social, economic, technological and environmental considerations.

It is equally imperative and supplemental that international law develop in line with and indeed crystallizes the proposals in the 2001 ILC Draft Articles on Transboundary Harm, which in addition to the issues of prior consultation and notification, also calls for States to consult and notify their neighbours and take appropriate response measures when an accident involving hazardous activities occurs.¹⁷⁴

Transit states must however appreciate that cooperation and the need to cooperate, is not a ticket for states to unduly delay or impede the shipment of nuclear waste or the passage of the same through their territorial waters especially where the relevant rules have been observed. In insisting on receipt of information, transit states should apply the principle of non discrimination in the treatment of domestic and transboundary waste, to avoid applying inordinately high standards to trans boundary risks that can be interpreted as unfair vetoing of lawful activities.¹⁷⁵

What is required is for states to build administrative and technical capacities so that they can actually have effective domestic standards, that can also be applied to international shipments. This would avoid a scenario where the principle of non discrimination results in weak and ineffectual standards and guards as a result of lack of capacity. The complimentary step would be the development of what we already cited as lacking, being effective and specific rules governing the issues of consultation and negotiation. Such a rule or rules may borrow from the case of dumping at sea, where there would be a requirement of prior consultation and approval of a relevant international organization such as the

¹⁷⁴ Article 5, ILC Report (2010) GAOR A/56/10, 366

¹⁷⁵ Ibid, pg. 152

International Maritime Organization. This might be more preferable to one making nuclear activities dependent on agreement of neighboring states while still reducing excessive unilateralism of the present law.

4.2.2 Resolving the Conflict between Prior Notification and the Right of Innocent Passage.

A major issue that was highlighted related to whether prior notification is a violation of the right of innocent passage. The issue was looked at in the context of Article 24(1) of the Law of the Sea Convention which inter-alia prohibits coastal states from imposing requirements on foreign ships which have the practical effect of denying or impairing the right of innocent passage, or discriminate in form, or in fact against the ships of any state or against ships carrying cargos to, from, or on behalf of any state¹⁷⁶

It was also in the context of Article 21(1) which provides that coastal states "may adopt laws and regulations, in conformity with the provisions of the convention and other rules of international law, relating to innocent passage through the territorial waters "in respect of (inter alia)" the safety of navigation and the regulation of maritime traffic, the conservation of the living resources of the sea and the preservation of the environment of the coastal state and the prevention, reduction and control of pollution thereof".

These two articles have been the basis of arguments by shipping states versus transit states. It is however to be noted and it is herein also urged that prior notification does not constitute an abrogation of Article 24 (1) and the customary right of innocent passage. Passage is innocent so long as it is not prejudicial to the peace, good order or security of a coastal state.¹⁷⁷ Coastal states argue that

¹⁷⁶ The United Nations Convention on the Law of the Sea, Art. 22; 21 I.L.M 1261 (1982) Art.24(1).

¹⁷⁷ Ibid Article 17-20

shipment of nuclear waste is prejudicial to their security and as such the passage is not innocent. This was the stance taken by South Africa through its 1981 Marine Traffic Act, which declares that:

“any vessel carrying cargo or any appliance or apparatus the use of which...may constitute a threat against the sovereignty, territorial integrity or political independence of the Republic, shall be deemed to be not innocent”¹⁷⁸

Indeed under, the 1982 UNCLOS, for passage to be innocent, it must take place in compliance with coastal laws mandated by international law as well as with other rules of international law. The requirement for notification by transit states would not be contrary to Article 24, in so far as transit states would be properly mandated to negotiate on matters relating to safety of navigation and protection of the marine environment.

4.2.3 Making the IAEA Standards Mandatory

The IAEA continues to formulate safety standards which as noted are binding only upon it and on states only in so far as they are engaged in an IAEA partnered project. The IAEA is specialized in dealing with nuclear related issues and their safety standards remain pertinent and relevant in protecting the environment, human life and property. Just as the INF code was made mandatory in 2001, by way of an amendment of Chapter VII of SOLAS, the IAEA standards need amendment to make them mandatory to state parties. These standards could thus serve as the bedrock upon which various instruments are crafted.

¹⁷⁸ South African Marine Traffic Act 2 of 1981 as quoted in Prof. Jon M. Van Dyke, ‘*The Legal Regime Governing sea Transport of ultrahazardous Radioactive Materials*’, Paper preserved at the SIGAPOL Conference in Bangkok, Thailand, (March 2001).

4.2.4 Development of an Efficient Certification and Inspection Regime

A proper and efficient certification and inspection system for ships carrying ultrahazardous cargo is indispensable to the establishment of an effective regulatory system on transboundary shipment of nuclear waste. Such a system may borrow from the system established under the MARPOL Convention; it should provide for sufficient enforcement and monitoring by port states and allow them to inspect and even prosecute ship owners where the vessels are found to breach established laws. There should also be established uniform inspection and detention rules to bolster the effectiveness of the certification and inspection system.

The need for technology transfer to facilitate proper surveillance and monitoring by all port states cannot be over emphasized and indeed would be in the best interest of proper environmental protection. It is however admitted that this is not easily achievable in light of the reluctance of developed states to genuinely transfer costly technology and more so, if the same may be used to curtail their own clandestine activities.

4.2.5 Additional Funding

It is important to ensure that victims of any incident involving nuclear waste shipment are well catered for, and also that any property damaged or loss emanating is sufficiently covered. In Chapter 3 we highlighted how the current funding systems for losses are insufficient and awkward, in that they rely on insurance to be obtained by a shipper and maximum levels of liability commensurate to the insurance required. The insurance element first creates issues of bureaucracy and procedural delays; and second the maximum liability levels set in accordance to the insurance means that where the levels are

exceeded, then the loss would be left to lie where it falls. It is to avoid a situation where victims are forced to bear losses that they did not author or contribute to that necessitates additional supplementary funding protocols at both the regional as well as global levels.

It is projected that the funding to be derived from such supplementary protocols would serve as a kitty from which affected states could get direct compensation for damages resulting from nuclear incidents. Such additional funding should be derived from mandatory contributions to be paid by all shipping, exporting and importing states as well as the general industry.

It is envisioned that other than providing a sound financial base to cater for risks associated with shipment of nuclear waste, such a fund would also provide added incentive for stakeholders to strictly adhere to all required procedures to cut down overheads, which would result if the fund was depleted. This would not be novel but synonymous to provisions developed for the transportation by sea of oil. After the 1967 Torrey Canyon oil tanker disaster, the legal committee of the IMO produced the 1969 Civil Liability Convention for Oil Pollution Damage and the 1971 Convention¹⁷⁹ on the Establishment of an International Fund for compensation for Oil Pollution Damage¹⁸⁰ which impose strict liability on tanker owners for the escape of persistent oil from their vessels and provide compensation for claims, partly funded by the ship-owner concerned and partly funded by the oil industry.

¹⁷⁹ International Convention on Civil Liability for Oil Pollution Damage (**CLC Convention**); 23 I.L.M 177 (1984)

¹⁸⁰ Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (**Oil Pollution Fund Convention**) 11 I.L.M. 284 (1972)

Another model can be found in the 1996 Convention on the Carriage of Hazardous and Noxious Substances by sea¹⁸¹ which establishes strict liability but imposes a maximum potential liability, establishing no fund but relies upon “post event collection” from the chemical industry¹⁸². This kind of approach would work effectively if the specific contributors and the amounts to be contributed were already agreed and established a fortiori.

4.2.6 The Designation of Special Sea Lanes and Vulnerable Areas

It is important that transit states not only properly and effectively designate special lanes to be adhered to vessels carrying nuclear cargo, but they should go a step further to designate areas of special vulnerability and which must not be traversed by vessels carrying such cargo. So far the South Pacific Region has notably attempted to do so, and it is imperative that other areas follow suit. In this way areas of special significance and/or vulnerability would benefit from the precautionary approach by avoiding undue risk.

It is also suggested that in order to resolve the conflict between innocent passage and the duty to protect the environment, there could be designated universal lane(s) for all ships carrying radioactive cargo. Rather than having such vessels search for a friendly course that would allow them reach their destination, they could travel via one predetermined route¹⁸³. This would reduce the amount of territorial seas such ships must traverse and due to the pre-

¹⁸¹ International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, May 3, 1996, 35 KM 1406(1996)

¹⁸² Supra n.167 pg. 10

¹⁸³ Lawrence Marin, ‘*Oceanic Transportation of Radioactive Materials’ The Conflict Between the Law of the Sea Right of Innocent Passage and Duty to the Marine Environment*’ 13 Fla J.Intl L (2000-2001) pg.361

determination of route and cargo ferried therein, all countries en-route would have receipt of advanced warning.

A universal route(s) would also allow for easy contingency planning; as emergency response is made easier for a vessel on a known route as opposed to one on a secret itinerary. By keeping to a universal lane, the protection of vulnerable areas will be eased, as the lanes can be planned away from such sensitive zones.

The proposition for a universal lane finds acclaim also in the fact that such lanes can be planned around fair weather seas that would reduce risk of shipwreck due to severe weather. In addition to the foregoing, the reliance on a universal lane would have the effect of segregating vessel traffic, keeping radioactive cargo from other non related cargo, and thereby reducing the risk of accidental collision between vessels ferrying ultra hazardous cargo and those ferrying other non hazardous cargo.

It is submitted that the creation of and use of universal lanes, is feasible even when the benefits are contrasted to its drawbacks. The drawbacks include the potential increase in shipping costs, as the designated lanes may not be the shortest from one point to another. However, the safety factor is of greater benefit and is paramount. The increased costs of travel may be clawed back through insurance discounts. A second drawback especially in the view of shipping states, is that since the route is pre-determined then the cargo would be more susceptible to attack. However this can be countered because the cargo is and should have an escort vessel and the universal lanes allow for easier co-ordination of contingency plans by all stakeholders. Finally it is indeed arguable that designation of such lanes and exclusively or specifically for vessels ferrying radioactive materials would amount to discrimination and hence a violation of the freedom of the seas. This while true may be tackled by having ships adhere to the route, rather than excluding the public from it.

4.2.7 Facilitation of Information and Technology Transfer

Shipping nations as was highlighted have severally shipped nuclear cargo on secret itineraries citing the inability and lack of capacity on the part of transit states to properly police the vessels and offer requisite security even if they were alerted to a given passage. They therefore argue the need to communicate information on a need to know basis to avoid opportunistic attacks by pirates and terrorists. This clandestine approach which we aptly described as treatment of transit states as second rate citizens is untenable, the security concerns notwithstanding.

What should be encouraged is a without prejudice and candid information and technology transfer, coupled with proper education on the proper handling of nuclear waste and their transportation. It cannot be left to shipping nations to solely address security issues, while transit states languish in darkness, while shouldering the risk incase of an accident. The need to have coordinated on-board and off-shore contingency measures calls for candid and mutual exchange of information and technology. Relevant information, technologies and education that would enhance the capacities of state actors to tackle the challenge of safe transboundary movement of radioactive waste should be easily and readily shared amongst concerned parties. This would help states achieve effective response incase of emergencies, which is integral to the effectiveness of such conventions as the Early Notification Convention,¹⁸⁴ which requires states to have a basic radiological monitoring and assessment capability.

This would not only end the treatment of some states as second rate citizens, but would also foster a true partnership in action between the states to the overall benefit of the environment and the global community. This kind of co-

¹⁸⁴ Convention on Early Notification of a Nuclear Accident, 25 ILM (1986) 1370

ordination is not without basis but is anticipated in the Convention on Physical Protection of Physical Materials, when it calls on state parties to protect the confidentiality of information received under it. The protection of confidence is meant to spur a free exchange of information between states albeit through international organizations¹⁸⁵. It is conceded that the provision does not come close to what is suggested here but at least shows as anticipation of information exchange, which can be built upon.

4.2.8 Specification of Administrative and Technical Capacity

It is vital that more be done beyond requiring that a state should have the necessary administrative and technical capacity to handle radioactive waste before it receives a shipment and before a shipping state exports to a given destination. There are no provisions made in treaties requiring such capacity stipulating the minimum administrative and technical capacities that are requisite to meet the standards of competence. It is necessary that what comprises administrative and technical capacity be spelt out. Mere institutional trappings without financial and technical backing to create competence would in paper seem sufficient but not in practice. Other than spelling out the specific requirements, it is important that audit provisions be provided for. New treaties and protocols, as well as existing treaties need to establish audit institutions that would regularly and also randomly scrutinize the administrative and technical capacities to handle radioactive waste. Such audit would serve to ensure that reliance on the declared administrative and technical capacity and competence is not merely subjective, or driven by other ulterior motives as opposed to actual fault of capacity. In this respect, the tendency to fake capacity due to some promised or anticipated benefit would also be reduced. It must be brought to mind that a false declaration endangers not an abstract entity called a state but actual human beings in the state and the neighbouring states.

¹⁸⁵ The Convention on Physical Protection of Nuclear Materials, IAEA Doc. INFCIRC/274/ Rev.1, Art. 6

Where it is discovered that a state made a false declaration or assertion of capacity, then the same should be actionable against the state. This might call for the proposed international claims tribunal to even entertain claims from citizens of the given state, as they might be the greatest victims of such falsification.

4.3 Towards More Effective Redress and Liability Regimes

4.3.1 The Development of Regional Protocols

One of the key concerns highlighted was the lack of a comprehensive instrument the equivalent of the Basel Convention but dealing exhaustively with the issue of nuclear waste regulation. In spite of the plethora of instruments referred to herein dealing with various sectoral issues and concerns, transit states should adopt the approach of the Southern Pacific States in their formulation of the SPREP to address their unique challenges.¹⁸⁶ The relevance and importance lies in the fact that this would ensure that a region tailors provisions to urgent and pressing concerns. The fact that challenges faced by a region are often unique in many respects to that particular region, would only mean that a regional protocol would address pertinent concerns more effectively and conclusively than an international instrument. This must not be done in a vacuum or without regard for existing instruments addressing similar issues. Such existent treaties can only serve to enrich or advise state actors as they seek to tackle their issues; and would also ensure harmony between new and existing instruments.

The relevance and importance of regional treaties and/or protocols, is exemplified in the success of the SPREP Treaty. This treaty provides the

¹⁸⁶ 1986 Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (SPREP Convention), 26 I.L.M 38 (1987).

framework for addressing the environmental concerns raised by the shipment of radioactive cargoes in the Pacific, by *inter-alia* committing members to do everything possible to reduce and control pollution,¹⁸⁷ conduct environmental impact assessments¹⁸⁸ and formulate rules to govern liability and compensation.¹⁸⁹ It is such a specificity that should to be emulated in other regions such as the Indian Ocean region, paying attention to the unique challenges therein. Regional protocols also would facilitate joint action among members with shared interests, giving them a louder voice and better bargaining ability.

To supplement the suggested development of regional protocols, and probably as a more immediate measure before regions can act jointly would be for the various nations to try and harmonize national laws of environmental liability. Individual states need to move to ensure that there are in place common minimum standards for all legal systems to foster effective access to judicial and administrative proceedings. Such harmonization would also mitigate the conflict of laws problems and contribute to shared expectations, while helping to implement the polluter pays principle. The harmonization of laws would also directly benefit and foster transboundary litigation by ensuring minimum standards across the board¹⁹⁰.

¹⁸⁷ Ibid Art. 6

¹⁸⁸ Ibid Art. 16

¹⁸⁹ Ibid Art. 25

¹⁹⁰ P.Birnie, A.Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press,2009) Chpt. 5 Pg 316.

4.3.2 Unilateral and Regional Action

In so far as transit states are apprehensive about a certain shipment, or where they are concerned that elements of prior consultation and safeguards are being flaunted by a shipping state, the concerned transit state(s) can proceed to initiate a unilateral or regional action to block and deter future shipments by the offending party by way use of their own or coordinated naval blockades. This sort of action is what is termed reprisals under international law¹⁹¹ and also would be pursuant to the right and duty to protect their marine environment as provided for in international law.

Coastal states must fully and boldly exercise their right to regulate activities especially in territorial waters and the EEZ areas. This connotes their exercise of the power to first designate environmentally protected areas or particularly sensitive sea areas, which must then be avoided by ships carrying ultrahazardous cargo; second to designate and control navigation routes for the sake of safety and environmental purposes; third they must do all within their legislative and administrative power to prohibit pollution discharges within their waters. The argument is made and is herein concurred with, that it is important for coastal states to be able to intervene beyond their territorial sea to protect themselves, and in situations of necessity, despite flag ship jurisdiction, to be able to intervene in the high seas.¹⁹²

4.3.3 Application of the Good Neighbour Principle

It is trite international law that a country must not allow activities in its borders that would injure another Country¹⁹³ and this is embodied in the good neighbour

¹⁹¹ See D.J. Harris, Cases & Materials on International Law, (5th Edn, Sweet & Maxwell, 1998),pg. 842

¹⁹²Ibid pg. 425-427

¹⁹³Trail Smelter Arbitration 33 AJIL (1939) 182

principle captured in the maxim *sic utere tuo ut alienum non laedas*. The ICJ in its Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons affirmed that:

*"The existence of the general obligation of states to ensure that activities within their jurisdiction and control respect the environment of other states or areas beyond national control is now part of the corpus of international law relating to the environment"*¹⁹⁴

If one country should however by its actions or omissions injure the interests of another country, the offending country is liable to compensate the injured state¹⁹⁵. However, with respect to nuclear shipments, the practical mechanisms for providing for that compensation are not always in place. Nuclear and shipping countries are putting coastal populations and small island communities at risk in a situation where they obtain no benefit from the activity. There is need for a detailed liability regime to be developed to ensure timely compensation in case of injury.¹⁹⁶ A general principle of law in several national legal systems and indeed also under international law, if a party engages in hazardous activities, they are held strictly liable for consequential harm. This was stated in the celebrated cases of the Trail Smelter Arbitration¹⁹⁷ and the Corfu Channel Case.¹⁹⁸ This similar approach on strict liability ought to be the backbone on which a new system that is less awkward and that covers all foreseeable damage is modeled and established. It is not feasible to continue with a system that provides for property, health and life injury to the exclusion of environmental and economic loss (which connotes harm to industries such as fishing and tourism). It is imperative that economic and environmental damage

¹⁹⁴ ICJ Reports (1996)226, para 29

¹⁹⁵ Gabčíkovo Nagymaros Dam Case, ICJ Reports (1997)7

¹⁹⁶ Supra n.167 pg. 19

¹⁹⁷ Supra n.194

¹⁹⁸ ICJ Reports (1949) 1

be expressly recognized as bases of liability and heads of damage in a new regime.

4.3.4 The Establishment of a Special Claims Tribunal

International law does not provide for or compensate for economic losses, and the existent definitions of damage as already seen, does not expressly cover environmental damage. The risk posed by transboundary movement to the tourism industry as well as to the fishing industry is immense. The existent dispute resolution tribunals and bodies such as the ICJ have not been keen or eager to award compensation for economic losses.

The requirements of exhaustion of local remedies which attend to the current system of international law would only serve to frustrate expedient recompense for victims of nuclear incidents. If the cliché justice delayed is justice denied is upheld, then the delay, which was run into years during which various judicial and administrative processes are pursued, only serves to further victimize the victims. To create a fair playing field and to create a predictable and settled dispute resolution mechanism, devoid of the peculiarities of local remedies there is need for the creation of an international claims tribunal to handle claims emanating from nuclear incidents. The tribunal acting as a neutral arbitral body would be better qualified and better placed to determine claims arising from nuclear incidents.

A specialized tribunal or court to handle international claims related to and arising from incidents involving nuclear wastes being shipped from one state to another is crucial. Such a specialized tribunal is necessary, given the peculiar risk to life, property and the potential catastrophic loss to the environmental and economic resources. It is envisaged that such a tribunal would be able to give reparations for economic losses other than the traditional heads of damage for loss of life and property. It should also necessarily have compulsory jurisdiction

over nuclear related incidents to ensure parties to do not avoid it by refusing to concede to jurisdiction

4.3.5 Application of Dispute Resolution under UNCLOS

While the special claims tribunal is proposed herein, in the interim period under the current regime, state parties should consider bringing claims under the dispute resolution mechanisms of the 1982 UNCLOS. Such claims would be based on the failure of shipping nations to comply with their obligation under the convention to prepare and distribute Environmental Impact Assessments, for what is an ultrahazardous activity. This is more so because of the clandestine nature by which such shipments are done, and more often than not in complete contravention of environmental standards and safeguards. Other than the failure to adhere to EIAs, the claims would also be premised on an abrogation of the duty to consult affected Nations, the failure to prepare emergency contingency plans and to agree to an effective liability regime in the event of an accident. All these are provided for within UNCLOS and as such state parties to the same are bound to adhere to the provisions and standards required of them under the Convention.

4.3.6 Right to Claim Beyond Territorial Limits

Whether or not specific harm to a given state is alleged, environmental damage per se must not be disregarded. It is imperative that the jurisdiction and mandate of a coastal state to claim or act with respect to areas beyond its territory must be recognized. Indeed this goes against the element of jurisdiction *ratione temporis*, but is necessary to ensure environmental protection. States must be allowed to act with regard to damages occurring outside their Exclusive Economic Zones (EEZ) more so because it is likely that

effects of events occurring outside their territory may well be felt well within their territory. The basis for such action already exists in international law, as exemplified in the Nuclear Tests Case where Australia and New Zealand argued for the right to bring a claim to prevent damage to an area beyond national jurisdiction, regardless of damage on its territory. In that case though the Court did not uphold their right, strong dissenting opinions were rendered in favour of allowing such a claim as was urged by Australia and New Zealand.¹⁹⁹

There is also need to expand the heads of claim, and while prospective material injury is necessary to customary obligations to prevent transboundary harm, it should not be limited to loss of resources and amenities of ascertainable economic value, but should extend to intrinsic worth of natural ecosystems including biodiversity, wilderness and other aesthetically significant elements of the environment.

4.3.7 Need for Harmonization of Efforts

The existence of several treaties and protocols dealing with various issues in a piecemeal manner only serves to breed inconsistency in what should be a co-related regulatory regime. It is necessary that a body or bodies be tasked both regionally and internationally to harmonize the provisions of various treaties on particular aspects of transboundary shipment of nuclear waste to ensure consistency. This in effect implies that where an aspect such as prior informed consent or salvage responsibility is tackled in two or more instruments, there should be a similar stance taken on them. The harmonization of treaty provisions where they address similar aspects is also fundamental if a cognizable minimum set of standards that is applicable across board is to be realized. The formulation of regional treaties and protocols has been recommended as a viable

¹⁹⁹ ICJ Rep. 1974 369-70) Particularly the Joint dissenting opinion of Judges Onifema Dilad, Jimenez de Arechaga & Sir Humphrey Waldock discussing Obligations Erga Omnes.

option in this paper; however, in doing so, there is need for beacons that would direct the various regions as they legislate. Such direction would be readily available upon harmonization of the existing instruments, by which clear and unequivocal positions would be taken on issues of mutual concern.

4.3.8 Requirement for Sanction backed Rules

Whereas several treaties have recognized the duty to uphold requirements of prior informed consent to countries through whose territory a shipment of radioactive waste is to pass; and also enshrined therein the duty to notify the same states. However, little if anything is stated about the ramifications and consequences of breach of this duty. This was witnessed in 1992 and 1995 when the Japanese government adamantly refused to reveal the intended route of vessels ferrying plutonium and high level waste and stated that the Japanese and British governments would continue to keep the route secret, even from 90 nautical miles of the coastline of South Africa despite assurances having been given to the South African Ministry of Environmental Affairs and Tourism that the vessel would sail well clear of South Africa's EEZ.

While the general approach of International law is to provide for rules while leaving it to individual States to seek redress before appropriate fori, there is good cause to depart from this custom. The recommendation to depart is premised on the need to deter abrogation of the duty to notify and obtain consent. It is likely that an offended state would not be inclined to do more than register protestation where its consent was not sought and no incident occurred. This would breed gradual contempt for the duty unless and until an incident is reported. However given the potential grievous harm, the global community cannot wait for such an incident to occur. The precautionary principle of law would dictate that deterrence not remedy be the primary concern and as such hefty penalties including sanctions against offending states should be spelt out.

What is being proposed here is the need to reduce reliance on negotiated settlements, which as was seen in the Gabcikovo Nagymaros Dam Case, can be very frustrating. In that case, the ICJ judgment required the parties to cooperate in the joint management of the project, and to institute a process of environmental protection and monitoring. Ten years later no such agreement had been concluded.²⁰⁰ Even after measures were agreed between the parties, years later the agreed measures had not been implemented. There is need to foster and encourage Court imposed regulatory regimes as was done in the Trail Smelter Arbitration.²⁰¹

The principle concern being emphasized here is as noted by Birnie, Boyle and Redgwell, that 'the development of rules of international law concerning environmental protection is of little significance unless accompanied by effective means of enforcement, compliance and dispute resolution. The objection to traditional international law being applied to environmental conservation is because reparation ignores the overriding need for protection of the environment from harm²⁰².

It is also submitted that the provision for re-exportation made in several treaties does not fulfill the same role, more so given that there is no requirement or duty to re-export for failing to obtain consent or failure to notify transit states. It is only by dire repercussions recommended here that international law can give proper effect to these duties.

²⁰⁰ ICJ Reports (1997) 7

²⁰¹ 33 AJIL (1939) 182

²⁰² Supra n. 190 pg. 211

4.3.9 Development of Salvage and Clean-up Treaties

Specific treaties dealing with the issues of salvage and clean-up ought to be developed both globally and at regional levels. There need be specific requirements that a polluter should immediately upon the occurrence of an accident undertake the salvage of the vessel and cargo if practicable. The containment of leakages and clean-up of the environment need to immediately accompany the emergency measures to be initiated at upon an incident occurring. The approach of leaving issues of salvage and clean-up without express redress is not feasible in an effective regulatory regime. To facilitate the salvage and clean-up requirements, it may be advisable that a fund be set up to which all states involved in export and import of radioactive waste, as well as shippers are bound to contribute. Their contributions would then be part of the source of funds for emergency salvage and clean-up prior to establishment of who is liable. The liable party would then be bound to replenish the spent costs of salvage and clean-up. In this respect, international law would separate the issue of salvage, clean-up and containment from the question of liability in the first instance.

There is need to have agreements that specifically establish and define the liability of shippers for damages that occur due to shipment of radioactive waste. This kind of provision tends to foster greater caution on the part of shippers in a bid to reduce overhead costs.

CHAPTER 5

CONCLUSIONS

The utility of nuclear power is probably bound to increase and its usage globally is likely to only increase in the future. The concerns raised in this paper cannot be wished away, the redress of pertinent concerns cannot also be allowed to proceed in an anecdotal and myopic manner as to do so would invariably result in laws that lag behind the developments in this field of nuclear waste shipment. Given the grave risks that are associated with this activity, it is imperative that the law keep pace and even set pace in ensuring an equitable and well regulated field. There is need for concrete, well thought out approaches to transboundary shipment of radioactive waste, in an all inclusive manner.

This entails looking at the activity in a multifaceted manner taking account of all the pertinent issues and risks associated with the transboundary shipment. In so doing, an approach as proposed herein needs to be developed that addresses the current state of affairs as well as making provisions for future developments and increases in use and generation of nuclear waste.

There is need to bring all key players/stakeholders together and to find a way of coordinating efforts being made at regulating transboundary shipment of wastes. It is self defeatist and counterproductive to have several efforts on a global, regional and national level but which have no reference point, lacking synergy but dealing with the same issue. To create consistency and predictability in regulation, the efforts being made should be coordinated through an independent competent agency such as the IAEA, which can be tasked to provide guidelines to be relied on by the various regions and states as they develop relevant treaties and protocols to govern their territories.

Unless the concerns highlighted in this paper are addressed and far reaching reforms undertaken, then with the increased usage and reliance on nuclear power, the increased generation of nuclear waste, transit states risk becoming the path of least resistance.

There is need for transit states to join effort in lobbying and pressuring bodies such as the IMO to develop a comprehensive and binding legal regime governing the shipments of radioactive wastes. The regime should at least categorically and unequivocally address the obligation to notify and prior consultation to any radioactive cargo shipment; the requirement to prepare an environmental impact assessment before shipping radioactive wastes; the designation and subsequent exclusion of hazardous and sensitive routes; detailed provisions on accident and emergency procedures including access to appropriate ports, availability of tug-boats and provisions on salvage and clean-up. There would also be need for the incorporation of provision establishing an international claims tribunal tackling grievances emerging from incidences during shipment of nuclear waste.

The issues of liability and compensation need to be addressed in tandem, and appropriate provision made to ensure that culpability is matched with ample compensation, that would ensure *restitutio in integrum* as far as practicable. This as already mooted could involve the creation or identification of a compensation fund for victims of accidents.

However under the current structures, there still is need to address the concerns and recommendations made by way of amendment of existing protocols and treaties. There is also need for concerned nations to apply and utilize the dispute resolution mechanisms enshrined in the 1982 UNCLOS. This is because under the said Convention, various obligations are placed on state parties such as the duty to prepare a full and comprehensive environmental impact assessment and to notify and consult with affected nations.

There is dire need therefore for the development of a more sophisticated approach to ensure prevention and regulation, rather than one based on interstate claims for environmental damage. A system that is multifaceted and that meets the challenges highlighted herein would have features best captured in the book "International Environmental Law", wherein the authors observe that:

It must be capable of first ensuring compliance with obligations of pollution control, resource conservation, transboundary risk management and cooperation as earlier discussed. Secondly it must be alive and capable of addressing emerging problems of a global character, by providing appropriate community responses to matters of enforcement and compliance. A perspective which accords rights only to 'injured states' after the event will be inappropriate to the polycentric character of global environmental problems involving a range of actors and a multiplicity of complex interrelated issues, or for the protection of common interests, common property or future generations. Third, many environmental problems involve harm which is subtle, cumulative and manifests only after a long period of time; in these circumstances only equitable and preventive remedies may be capable of providing an effective solution.²⁰³

It is such a system that the international community must rise to the challenge of creating, if such hazardous activities are to be allowed to subsist under the aegis of international law and peaceful interstate relations. The challenge remains to act now, while we are but a couple of steps delayed rather than to wait until the activities are so nebulous and out of control as to render any attempt to create a regulatory system impossible.

²⁰³ P. Birnie, A. Boyle, & Redgwell, International Law & the Environment, (3rd Edn, Oxford University Press, 2009) Chpt. 5 pg. 212

BIBLIOGRAPHY

A. Springer; The International Law of Pollution; Protecting the Global Environment in a World of Sovereign States as reported in Martin Dixon & Robert McCorquodale; Cases & Materials on International Law;(Oxford University Press, 2003). Pg 462.

Bodansky D; The Legitimacy of International Governance : A Coming Challenge for International Environmental Law; (1999) AJIL.596

D.J. Harris, Cases & Materials on International Law, 5th Edn, Sweet & Maxwell, 1998

M. Dixon & R. McCorquodale, Cases & Materials on International Law, 4th Edn, Oxford University Press,2003

M.N. Shaw, International Law, 4th Edn, Cambridge University Press, 1997

Olav. Schram Stokke and Oystein B. Thommessen (eds.), Yearbook of International Co-operation on Environment and Development 2002/2003 (London; Earthscan Publication)

P. Birnie, A. Boyle & C. Redgwell, International Law & the Environment, 3rd Edn, Oxford University Press,2009

P. Sands, Principles of International Environmental Law, 2nd Edn, Cambridge University Press