Economic analysis of the

International Environmental Law Disputes

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A. Introduction:

The relation between economic and international laws is relatively new. The economic approach of international law is based on two assumptions. Firstly, that states are rational in dealing with international problems.[1] They attempt to drawmaximum benefit from international cooperation.[2]Secondly, that the eternal problem of international law is that of enforcement. [3]The economic solution is sometimes the best mechanism to solve such issues. Thus, international law must be self-enforcing.[4]

In the field of international environmental law, disputes can take many forms: Firstly, it may be connected to harm from pollutionbya state ontoa neighboring state, as in*Trail Smelter*. Secondly, it may involve territorial water or land disputes, where there is an economic benefit to such territory like in the *Continental Shelf*. Thirdly, environmental law disputes could be over non-navigational uses of international watercourses such as in Gabcikovo-Nagymaros.

Conversely, the economic analysis takes a different approach than the harm approach used in environmental law. The economic analysis approach analyzes the law based on the various branches – like criminal, tort, contract, and property law - rather than the type of the damage incurred.

This paper is not concerned with the type of dispute; it is rather concerned withdispute resolution techniques, whether the environment was the main issue, or it was one of its causes. This research argues that the economic approach to international law could be whatinternational judgesshould use to resolve disputes. The judgeshould take into consideration not only the environmental harm, but also the

[1] ERIC POSNER AND ALAN SYKES, ECONOMIC FOUNDATION OF INTERNATIONAL LAW, Harvard University Press, Cambridge, 2013, 3
[2] *Id 3*
[3] *Id 3*
[4] *Id 3*

overall economic benefit of the project in regards to the environment. Solving environmental law disputes on the national level is much easier than that on the international law level. It is usually the central or local governments' responsibility is to have citizensabide by laws of environmental legislation. The enforcing agency takes two forms: either as an independent agency or a government agency. In the United States, the Environmental Protection Agency (EPA) is responsible for both compliance and enforcement of federal environmental legislations. The EPA works to ensure that government, business, and industry entities are following the competent legislations.[5] In France, the competent authority of regulating and enforcing the environmental issue is the Ministry of the Environment. The Minister of the Environment is –at the same time- the head of the High Commission of the Environment. [6]

On the international level, there is a major issue of enforcement. States must believe that if they violate international law, other states are due to respond negatively. Self-enforcement constraint is the major analytic distinction between international law and domestic law. [7]It is still difficultforvictims toobtain damages for harm or Transboundary harm caused by the acts of another state. [8]

International disputes are based on the famous principle of *sic uteretuoalienum non laaedas*(use our own property so as not to injure another's). This principle touches with the state's sovereignty. [9]An example is when a state is building a dam on its territory, which will affect the flow of the water to another state. Another example is when a company is building a factory on its boarders, which will

[5] Compliance, Law and Regulations, United States Environmental Protection Agency, http://www2.epa.gov/laws-regulations/compliance last visit 03/15/2014.
[6] Jean-Paul Marty La Vauzelle, *Environmental Protection in France*, 27 BUS. LAW. 841, (1972), 842
[7] Supra note 1 at 3
[8] *Id* 225.
[9] *Id* 227.

generate enormous amount of pollution. Thirdly, is when a country is building a nuclear reactor, and the reactor is damaged.

This research argues that economics could be the tool to resolve environmental law disputes. In order to prove this claim, the research is divided into two main parts. The first part will discuss three international environmental law disputes. The choice of these cases is based on the branch of law that they are related to it. hence, the first case is concerned with nuisance cases, the second is concerned about the violation of a conventional agreement between two states, and the third type is about environmental cases that involve a criminal liability. In the second part, I will discuss several topics and trying to analysis the disputes based on the economic approach of law. It will be divided in to main three subsections. The First one will deal with the nuisance cases, which it will be divided into two parts. While part (a) is about the Economic Analysis of Nuisance Cases, part (b) is about Economic Analysis of *Trail Smelter* Case. The second subsection is about disputes that have Conventional dimension. While part (a) deals with the basis of Economic Analysis to Conventional Rights and Remedies, part (b) is about the Economic Analysis to *Gabcivkovo- Nagymaros*Project. Finally, the third subsection deals with environmental law cases that involve criminal sanctions. While part (a) is about the basis of the economic Analysis of Penal Law Cases, part (b) is about the Economic Analysis of *Hoshimaru* Case.

B. International Environmental Law Disputes:

1) Transboundary Harm- Pollution Cases/ Nuisance Cases:*Trail Smelter Case*

A. Background

The facts of this case are abouta nuisance causedby citizens of one state on to citizens of another. It imposes the question of the responsibility of states and wrong acts of its citizens to other states.[10] A factory workingin smelting ores (lead and zinc), operated at distance between 7 to 11 miles from the boarders of the United States. The factory waslocated in a place called Trail near the Columbia River in the British Dominion of Canada.[11]

In 1896, LeRoi Mining and Smelting Company established "Breen Cooper Smelter", which was later transferred to Northport Smelting and Refining Company in 1901. [12] The record and evidence placed before the tribunal did not detail any damage between 1896 and 1908. There had been many attempts to put the case to trial in the Stevens County courts, however, these attempts failed. [13] The record of the case shows that the company purchased smoke easement from the owners of the land in the vicinity.

Concerns increased from the United States' side. In 1913, the Department of Agriculture issued a report showing great concerns about the quality of the land in the Upper Columbia Basin, which was very stony, too rough, and too steep to be utilized. [14] In 1925 and 1927, Trail Smelter (A Canadian

[10] Josepine Joan Burns, Trail Smelter Case, 2 Cum. Dig. Int'l L. & Rel. 105 (1931-1932), 105.
[11] *Trail Smelter* Case, Reports of International Arbitral Awards, Volume III, 1905-1982,1913.
[12] *Id* 1915.
[13] *Id* 1915-1916.
[14] *Id* 1916.

Corporation) greatly increased its daily production of zinc and lead. [15] This increase led to more sulfur dioxide fumes in the air, and the damage increased on the American side. [16]

In August 1928, the "Citizens' Protective Association" was formed. The Association tookinordinate steps through an article to maintain "no member herein shall make any settlement for damages sought to be secured herein, unless the written consent of the majority of the Board of Directors shall have been first obtained."[17] As a consequence, Trail Smelter was not able to acquire ownership or easement over real estate in Washington. [18]

In December 1927, the US government took up the issue of Trail Smelter with the Canadian government. [19]There were many attempts to settle the issue, which all failed, until the US government delegated it to the Canadian government in 1931.[20] The US informed Canada that the damage was still taking place, and that diplomatic negotiations would have to be resumed. [21]

In August 1935, both the United States and Great Britain, in respect to the Dominion of Canada, signed the Convention for Settlement of Difficulties Arising from the process of smelter at Trail. Article III of the convention set out the three questions that the Tribunalhad to decide. These questions are as follows:

(1) Whether the damage took placebeginning on the first day of January 1932, and if so, what indemnity should be paid therefore? (2) In the event of affirmation of whether the Trail Smelter should be required to refrain from causing damage in the State of Washington in the future, then to

[15] *Id* 1917.
[16] *Id* 1917.
[17] *Id* 1917.
[18] *Id* 1918.
[19] *Id* 1918.
[20] *Id* 1918- 1919.
[21] *Id* 1919.

what extent? (3) In the light of the answer to the proceeding question, what measures, if any, should be adopted or maintained by the Trail Smelter? (4) What indemnity or compensation, if any, should be paid on account of any decision(s) taken by the Tribunal pursuant to the next two preceding questions?[22]

One of the significantaspects of*Trail SmelterCase* is how it amalgamates both the application of international law and US national laws. Article IV stated that the applicable law on the current dispute is both law and practice in "the United States of America as well as international law and practice." [23]Such a mixture between the two laws gave the tribunal enough space to develop the legal rules with regard to state responsibility. The court held that:

No state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties of persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence. [24]

B. The TribunalAnalysis to the Damage:

For the first question, the court considered three issues: the existence of injury, thecause of the injury, and the damage due to the injury. [25] The court found that there was evidence of injury, due to the actual causing factor and the 'the manner in which the causing factor has operated."[26]

After finalizing the issue of damage, the court tackled the issue of mending the damage. The court stated that "{T}he Tribunal is of the opinion that such injury to the soil itself can be cured by artificial

[22] *Id*, 1908.
[23] *Id* 1965.
[24] *Id* 1965.
[25] *Id* 1920.
[26] *Id* 1921.

means, and it has awarded indemnity with this fact in view on the basis of the data available."[27] The court combined consideration for environmental and economic balance. The court then added "{w}ith respect to damage to cleared land not used for crops and to all uncleared (other than uncleared land used for timber), the Tribunal has adopted as the measure of indemnity, the measure of damages applied by American courts."[28]

The court additionally considered the geographic issue to determine the exact damage. The court stated " It has not seemed feasible to give a determination of the geographical extent of the damage except in so far as it may be stated broadly, that a territory coinciding in extent with the Bayle cruises." [29]

As a consequence of applying the "measure of indemnity", the court found that since the destruction of merchantable timber will generally impair the value of the land itself, the measure of damage should be the reduction in the value of the land itself due to such destruction of timber. However, under the leading American decisions, the value of the merchantable timber destroyed is, in general, deemed to be substantially the equivalent of the reduction in the value of the land."[30] However, the Tribunal found that it would be hard to apply the American judicial standards in this issue. The court stated that it is not restricted to the method proposed by the United States in the determination of amount of damages, so long as its findings remain within the amount of the claim presented to it.[31]

[27] *Id* 1926.
[28] *Id* 1926.
[29] *Id* 1926-1927.
[30] *Id* 1928.
[31] *Id* 1929.

In its determination, the court made a clear distinction between the clear land and uncleared land. The court awarded a compensation of $16,000 to the uncleared land, while it offered an indemnity to the cleared land for about $62,000. [32]

The US agent argued for cure of the damages in respect of business enterprises.[33] The court refused such an argument. It, firstly reached the conclusion that damage of this nature "due to reduced economic status" of residents in the area is too indirect, remote, and uncertain to be appraised and not such for which an indemnity can be awarded."[34] Secondly, it added that the burden of proof that such damages was due to fumes from the Trail Smelter, has not been sustained and that an award of indemnity would be purely speculative."[35]

In the second question, the court decided that the Trail Smelter "shall refrain from causing damage in the State of Washington in the future.[36]

In the third question, the Tribunal was not able to determine the permanent regime for the operation of the corporation. [37] However, the court established a temporary regime. [38]Firstly, the court appoints two technical Consultants.[39] Secondly, the court give both consultants the authority to 1) approve any "installation and operation of the necessary type of equipment be employed by the Trail Smelter,"[40] 2) have a regular report of the methods of operation of the plant of the Trail Smelter. [41]

2) Penal Law Case: *HoshinmaruCase*

[32] *Id* 1931.
[33] *Id* 1931.
[34] *Id* 1931.
[35] *Id* 1931.
[36] *Id* 1934.
[37] *Id* 1934.
[38] *Id* 1934.
[39] *Id* 1934.
[40]*Id* 1934.
[41] *Id* 1935.

A. Background:

Hoshinmaru is a Japanese fishing vessel.[42] On May 14th, 2007, the Russian Federation gave the Ikeda Suisan, a company incorporated in Japan, a fishing license to fish for salmon, tuna and trout within the area of the exclusive economic zone of the Russian Federation.[43]The Vessel was authorized to fish from May 15th-July 31st, 2007 for the following amount of fish: 101.8 tons of sockeye salmon, 116.8 tons of chum salmon, 7 tons of sakhalintrout, 1.7 tons of silver salmon, and 2.7 tons of spring salmon.[44] On June 1st 2007, a Russian patrol boat stopped the vessel, while fishing within the exclusive economic zone of the eastern cost of Kamchatka peninsula. The inspection team commanded the boat to the docks.[45]

A team forthe State Sea Inspection of the Northeast Border Coast Guard Directorate, of the Federal Security Service of the Russian Federation considered such act to be a misrepresentation of data in the fishing log and daily vessel report.[46]

On June 2nd, 2007, the protocol of detention stated the reason for the vessel's detention was that it contained untrue and inadequate operational accounts in the form of the daily vessel's report, thus creating a difference between the amount of permitted fish and the actual catch on board.[47] On June 3 2007, the vessel was escortedto the port of Petropavlovsk-Kamchatskii.[48] On June 4, 2007, the Military

[42] The *Hoshinmaru* case (Japan vs. Russian Federation) ITOS judgment 2007, 27
[43] *Id* 28
[44] *Id* 28
[45] *Id* 29
[46] *Id* 30
[47] *Id* 31
[48] *Id* 34

Prosecutor's Office started administrative proceedings against the owner of Hoshinmaru for violating the rule of catching (fishing) aquatic biological (living) resources. [49]

On June 26 a criminal case was filed against the owner of Hoshinmaru for violating article 256, Par. 1 (a) & (b).[50] On July 11, 2007, a letter sent from the Inter-District Prosecutor's Office to the Consul General of Japan confirmed that the damage,equivalent to 7,929,500 rubles, "has been caused to the living aquatic resources by illegal catch". On July 13, 2007, The Ministry of Foreign Affairs of the Russian Federation informed the Embassy of Japan that the bond was set at 25 million rubles, including the amount of damage mentioned above. [51] The Russian Federation affirmed that once the bond is paid, the 17 crew members and the vessel will be released. During the hearings of the trials, the Russian Federation lowered the bond from 25 to 22 million rubles.

b. The Tribunal Analysis of the Damage

The International Tribunal of the Lawof the Seas faced a number of issues pertaining to this case.[52] The first was its jurisdiction in relation to the case and,especially, the issue of releasing crew members. Based on Article 292, the Tribunal found that it had jurisdiction over the dispute between the two countries.[53]

The second question the Tribunal faced was whether the bond set by the Russian Federation was reasonable enough,under article 292 for prompt release of the vessel and its crew. The court held that it

[49] *Id* 36
[50] *Id* 40
[51] *Id* 50
[52] *Id* 82
[53] *Id* 59

had jurisdiction over such an issue, and whether there was a lack of a bond or whether the bond was unreasonable. [54] Therefore, the court had jurisdiction in the issue of releasing the vessel and the crew.

Thirdly the court was approached about the reasonableness of the bond set from the Russian Federation over the Japanese vessel. The Court based its rule on two issues in its estimation of this bond. The first is *Camouco*, where the court stated that "The Tribunal considers that a number of factors are relevant in an assessment of the reasonableness of bonds or other financial security. They include the gravity of the alleged offenses, the penalties imposed or imposable under the law of the detaining state, the value of the detained vessel, and the of the cargo seas, the amount of the bond imposed by the detaining state and its form. [55]

In its estimation of the bond, the court had based its ruling on two issues: The court saw that the Japanese vessel initially had a license for fishing. The second was that there was strong bilateral cooperation between the Russian Federation and Japan in the field of conservation and reproduction of salmon and trout which need to be preserved. Therefore the court lowered the bond from 22 to 10 million rubles. [56]

[54] *Id* 65
[55] *Id* 50
[56] *Id* 100

3) Conventional Rights and Remedies: *Gabcivkovo- Nagymaros Project Case*

A. *Background*

This case is between the Czech and the Hungarian Republics in relation to their difference in signing the Agreement of "the construction and operation of *Gabcivkovo- Nagymaros System of Locks" (Hereinafter 1977 Treaty) signed in September 16th, 1977.*[57]The Convention was set for building anoperational system of locks on the Danube River, by consensus of both countries. [58] It aimed at generating hydro-electricity power, in addition to the improvement of the quality of water and maintaining its course. [59]

The Danube is the second longest river in Europe and marks the boundaries between Slovakia and Hungary. [60] This river plays a great role in commercial and economic relations between both countries, as well as bilateral relations between both countries. Additionally, a canal had been extended between the Danube and the River Rhine "to become an important artery connecting the Black Sea and the North Sea". [61] The Convention between both countries described the principle works to be constructed in pursuance of the project. The project had been divided in two parts, the first was to take place in *Gabcivkovo,* which lies in the Czech territory, while the second takes place in *Nagymaros,* lying on the Hungarian territories. The Convention had considered these two series of locks as a "single and indivisible operational system of works." [62]

[57] Project *Gabcivkovo- Nagymaros* (Hungary Slovakia) judgment, ICG reports 1997, 14/15
[58] *Id* 14/15
[59] *Id* 15/15
[60] *Id* 16/15
[61] *Id* 17/15
[62] *Id* 18/15

Article 1 of Paragraph 4 of the Treaty regulated a "Joint Contractual Plan", which had been stated in the agreement between both countries. It identified the system's technical specifications of the project. A delegation had been formed to ensure that the building of the system of locks would take place according to the joint contractual plan and the schedule of operation.

In 1978, the project was initiated and work had started. In 1983, the first bilateral protocol had been signed between both countries. It stated the agreement to slow the work down and postpone putting into operation the power plants. The second protocol, signed in 1986[63], stated that the project would be actualized and accelerated.In1989, the Hungarian government decided to stop operation until the conclusion of a necessary study related to locks. By the end of the same year, the government had decided to abandon work at *Nagymaros.*[64]As a consequence, Czechoslovakia started exploring other options. One such alternative was identified as the *VariantC.*These solutions entailed "a unilateral diversion of the Danube" for a distance of 10 Km upstream of Dunakiliti. [65]

The start of the construction of *Variant C* started in November 1991, while in May 1992 the Hungarian government terminated the 1977 Treaty[66]. In October 1992, Czechoslovakia started to "enable the closing of the Danube, as well as proceeded to damming of the River."[67]

B. *Court Analysis to the Harm*

The ICJ, in order to settle the dispute, had to answer a number of questions. Firstly, whether "the Republic of Hungary was entitled to suspend and subsequently abandon the work on *NagymarosProject*. Secondly was the issue of *GabcivkovoProject*, for which the Treaty attributed

[63] *Id* 21/22
[64] *Id* 22/22
[65] *Id* 23/22
[66] *Id* 23/27
[67] *Id* 24/27

responsibility for the Republic of Hungary."[68]The court saw that this question would only be interpreted as "An expression of [Hungary's] unwillingness to comply with at least some of the provisions of the Treaty and the Protocol of 6 February 1989, as specified in the Joint Contractual Plan."[69]

Secondly, the next question posed was "whether there was…a state necessity which would have permitted Hungary… to suspend and abandon works that was committed to perform in accordance with the 1977 Treaty and related instruments." The court found that Hungary invoked perils that were neither sufficient nor imminent, and that Hungary was able to respond to these perils through other means, rather than suspension and abandonment.[70] The court found that "Czechoslovakia was entitled to proceed to *Variant C* in so far as it then confines itself undertaking works which did not predetermine the final decision to be taken by it." There were five arguments to support such a claim of corroborating Hungary's argument in favor of lawfulness and effectiveness of its notification of termination. These arguments are: State of Necessity, the Impossibility of Performance, Fundamental Change of Circumstances, Czechoslovakian Breach of the Treaty, and finally a new development in the international environmental law. The court rejected the five arguments.

The third question the court faced was the issue of whether building *Variant C* could be presented as a justified counter measure to Hungary's illegal act.[71]The Court found that Czechoslovakia was entitled to proceed with*Variant C*. The decision was based on the fact that Czechoslovakia confined itself to undertaking the work, which did not predetermine the final decision.

[68] *Id* 24/29
[69] *Id* 48/39
[70] *Id* 57/45
[71] *Id* 82

C. Economic Analysis of the Disputes:

I. Alternatives: The Role of Extra Legal Consideration in the Legal Process

This section proposes policy considerationsas a main solution to the legal dilemma of international environmental law disputes. This is an integral part of lawmaking in the international law field, which I willname in this chapter the "Extra Legal Factor." This section will be divided into three main points.

The Extra Legal Factors are political and socio-economic factors that make up the legal base founded on mutual cooperation between members of this basin.[72] The determination of the applicable law is based on answering five questions. These questions are: what are the facts; what have been the decisions on comparable facts in the past and what factors appear to have influenced the decisions; what rules were applied and which were rejected; who are the probable decision-makers and what variables are likely to influence their decision; and finally, what ought the decision be.[73]

International law draws its legitimacy from power.[74] Professor Hyde defines the subject matter of international law as a system of rules. International law was coined as "the term international law maybe fairly employed to distinguish the principle of rules and conduct declaratory thereof which states feel themselves bound to observe, and, therefore, do commonly observe in their relation with each other."[75] Law has been set up to regulate a relationship, which could be violated. However, the question is always about what kind of politics shall prevail. I shall propose here that politics is built on mutual interest.

[72] ROSALYN HIGGINS, INTERNATIONAL LAW AND THE AVOIDANCE CONTAINMENT AND RESOLUTION OF DISPUTES, General Course on Public International Law, Collected Course of the Hague Academy of International Law, Martinus Nijhoff Publishers, London, 1993, 25.
[73] MYRES S. MC DOUGAL, INTERNATIONAL LAW: POWER AND POLICY A CONTEMPORARY CONCEPTION, General Course on Public International Law, Collected Course of the Hague Academy of International Law, Martinus Nijhoff Publishers, London, 1954, 146.
[74] *Supra note* 72 at 25.
[75] (I Hyde, international law (2d Rev. ed., 1945)1.) mentioned in MYRES S. MC DOUGAL, *Supra note* 73 at143.

The Extra Legal Factors play a major role in ending any political tension among states. It is a tool of peace and it paves the road for legal tools being enforced in the international arena. In the medieval age, a marriage between a king and a queen was a means to actualize a peace treaty between two potential enemies whether nations or tribes.[76]For the Anglo-Saxons it was called a peace-weaver,[77] a tool to prevent a war and start in a peace treaty.[78] While marriage is not an international legal act, the peace treaty is the most legal form in international law.

In modern ages, the Extra Legal Factor takes the form of money or mutual cooperation between two states. In the Arab-Israeli case, one of the Extra Legal Factors to end a state of war was to enter into a bilateral commercial relationship with Israel.[79] Annex III of the Peace Treaty between Egypt and Israel obliges both states to deal on the commercial and social levels.[80] Article one discusses diplomatic and consular relations.[81] Article two is about economic and trade relations, and article three is for cultural relations.[82]Article four is about freedom of movement upon completion of the interim withdrawal.[83]Article five tackles the Cooperation for Development and Good Neighborly Relations.[84]Article six tackles transportation and telecommunications.[85]

II. Why Use the US Approach to Economic Analysis of Law:

A. The Common Law and Less State Intervention

[76] Elenaor Franzen, Peace, Politics, Gender and God: Beowulf and the Women of Early Medieal Europe, http://blue-stocking.org.uk/2011/10/06/peace-politics-gender-and-god-beowulf-and-the-women-of-early-medieval-europe/ last visit 21/5/2012/
[77] Peace Weavers, The Wife Lament Pages, http://research.uvu.edu/mcdonald/anglo-saxon/wife'slament/wifepeacew.html last visit 20/5/2012
[78] *Id*
[79] *Id*
[80] *Id*
[81] *Id*
[82] *Id*
[83] *Id*
[84] *Id.*
[85] *Id.*

International law suffers various problems and challenges that pose as a hurdle to the execution of the law. The researcher in international law always faces a problem of soft laws, sovereignty, state sovereignty, and the lack of international police forlaw enforcement. I believe this is due to the absence of a centralized global government. This makes the US law more applicable to these typesof disputes. Common law reportedly has less state intervention governing the bonds and relationships among individuals.

Contrary to the civic law system, common law is based on the law created largely by judges and decided cases.[86] To actualize economic analysis of the law, there should be neutralization of the centralized role of the government. Applying that to international law, there is no centralized government. Components of the international community, which are the states, regulate their relationships without a centralized government or with its existence sparingly.

B. *Trial Smelter Case*and US Law as Grounds for the Tribunal Decision

In the *TrailSmelter Case,*US law and practice had been taken as a legal source for the court when answering the four questions posed from both countries. Article IV of Special Agreement "Convention for Settlement of Difficulties Arising from Operation of Smelter at Trial signed at Ottawa in August 15, 1935". The article stated that:

The Tribunal shall apply the law and practice followed in dealing with cognate questions in the US, as well as international law and practice, and shall give consideration to the desire of the high contracting parties to reach a solution to all parties concerned. Thus, *Trail Smelter* is the loophole from which US

[86] *Richard Posner, Economic Analysis of Law, 9th edition, Walter Kluwer law and business, 2014, 39*

law has penetrated to international law. I see that this loophole has made the economic approach of US law nearer to reality than any other approach in any other legal system.

III. Economic Analysis of the International Environmental Law Case

In this section, I will tackle all previous cases to answer a specific question: what were the solutions posed for the judge, on what basis did he reach his final decision, and whether this ruling is the best solution from the economic perspective. Before I go on to explain my viewpoint, I need to highlight the fact that the classification that I went by in the background is the common classification for disputes in environmental international law.

A. Nuisance Cases

1. The Economic Analysis of Nuisance Cases

The main question that arises in the field of pollution or nuisance is:who will be given an entitlement and how it will be protected.[87]We assume that X owns and operates a factory that disposes of hazardous waste in the land of Y, thewaste affects humans and the environment (air, land, and water),and causes high value damage.On the national level, there are 4 different perspectivesthat tackle the problem in sucha nuisance case.[88]

Firstly,Awould be able to polluteB's land with the consent of his neighbor B.[89]In such a case as this, the consent would not involve any financial compensation. If it involves compensation, it would lay under the second or third categories.

Secondly,Ais allowed to pollute if he pays compensation to neighbor B. [90]In such a case, Awill make a payment to B, the amount of which will be added to the general cost of operating the factory. If the

[87] Guido Calabresi and Douglas Melamed, *Property Rules, Liability Rules and inalienability: one view of Cathedral, 85harv.L.rev.10,89, 1971-1972, 1115*

[88] Frank I. Michelmant, *Pollution as a Tort: A non-accidental Perspective on Calabresi's Costs*, 80 Yale L.J. 647 1970-1971, 684, mentioned in Guido Calabresi and Douglas Melamed, *Property Rules, Liability Rules and inalienability: one view of Cathedral, 85harv.L.rev.10,89, 1971-1972, 1115*

[89] *Id*

expenses of operating A's factory is $ X, and the expenses of compensating B is $ Y, then the total expense of operating the factory is $ (X+Y). In a time frame of 5 years, the total expense of operating the factory would be $ (X+Y)x5. In such a case, A will not compensate B, unless his total profit exceeds such an amount. However, if the amount of profit is less than the expenses of the factory, then paying off B would be the other possibility thatA has to consider

Thirdly, A can pay off B to leave the land.[91]In this case, it is assumed that the price of the land is (Yx5). Then the total expense of the land would be (X+(Yx5)). In a time frame of 5 years, the total expense will be {(X+(Yx5))+ (Xx4)}. In both cases, A would pay the same amount as in the second perspective above to operate the factory. However, in the third case, instead of making a set payment to B, A will add the value of B's land to the cost of the whole project.

Fourthly, if B wants to stop A from the act of polluting, he has to pay him.[92] In this case, based on liability rules, B will pay to prevent polluting the environment.

Looking at all of the previous cases when the legal economistsanalyze the nuisance or pollution, they do not take into consideration damage for pain and suffering of humansresulting from polluting the environment. However, it is clear that they take a different methodology to their analysis, mainly depending on direct financial damages. Taking such an approach to analyze the environmental damage could lead to an unrealistic compensation of the damage.

2. The Economic Analysis of the *Trail Smelter Case*:

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[90] *Id*
[91] *Id*
[92] Guido Calabresi and Douglas Melamed, *Property Rules, Liability Rules and inalienability: one view of Cathedral, 85harv.L.rev.10,89, 1971-1972, 1116*

In reading the *Trail Smelter Case*, I will differentiate between economic solutions before and after the trial. Before the trial began, the smelting company adopted the third hypothesis. The company started to buy smoke easement from the owners of the land in the vicinity.[93] This solution not only gave the company the privilege of owning the smoke easement of such lands, it also protected the company from the judicial proceeding in the Stevens County courts. [94]

Alternatively, either the second or the fourth hypotheses were not appropriate solutions. For the first hypothesis, it would more costlyfor the smelting company to compensate all the people affected from the factory. Moreover, if the company compensates them, it would be considered as a declaration from the company of its responsibility of such damage, opening the door to a risk of overcompensation. As for the fourth hypothesis, it is cost prohibited for individuals to pay a company to stop air pollution. The third economic solution was not sufficient to solve the problem between the US and Canada, and consequently, a tribunal was formulated.

The tribunal adopted the measure of indemnity, which is the reflection of the second hypothesis. However, the tribunal did not stop at declaring the amount of compensation to the US party. It had taken two further steps. Firstly, it decided to stop the Trail smelter company from causing more environmental damage. Secondly, the tribunal established a temporary injunction to stop such environmental damage.

The tribunal had added the environmental damage as another factor to its economic analysis of the law. Such factors can be presented in the answer to the second and the third questions about nuisance and setting a regimen for the operation of the factory.

[93] *Supra note* 11 at 1916.
[94] *Id.*

B. Conventional Rights

1. The Basis of Economic Analysis to Conventional Rights and Remedies

The main target of states entering into international conventions and treaties is to achieve a beneficial cooperation. On the individual level, individuals enter into contracts "to secure investments in a jointly beneficial project."[95]

International conventions and treaties are not treated as contracts. However, Richard Posner sees that "the economics of contracts can be applied fruitfully to the international conventions." When countries go into bilateral relations, it is similar to that of individuals going into relationships with other individuals. The individuals and their needs are very similar to those of countries.[96] When I talk about international agreements and treaties, I will base my argument on contract laws within the national perspective. Some may argue that the absence of supranational authority enforces the conventions. It is not similar to the contract law where there are legally binding rules imposed by local authorities and courts on those who commit contract violations. Contracts are honored out of respect for one's reputation, rather than fear.[97]

Moreover, this research enforces the fact that conflict between countries to actualize a treaty has reached a judicial adjudication stage. During that stage, problems connected tosovereignty and soft law completely disappear. This is due to the fact that when countries revert to judicial adjudication in international law, they relinquish part of their sovereignty to courts that will find solutionsin international disputes.

[95] Eric Posner, *Economic Analysis of Economic Law after 3 decades: success or failure*, 112 YALE L.J., 829, 2002-2003, 832
[96] RICHARD POSNER, ECONOMIC ANALYSIS OF LAW, 9th edition, Walter Kluwer law and business, 2014, 992
[97] *Id* 993

Research was conducted on how property should be put to maximum use and how it should overcome challenges of such transactions. Such a process was set to operate without any legal intervention and with a great deal of reliability on those taking part in the process of exchange. It was thus agreed that reliability would be fully actualized when such a process takes place under the terms and conditions of a contract. It is only in the absence of honoring such a contract that problems might arise and can be solved only by law. Such challenges are opportunism on the side of either party, as well as contingencies that have not been counted for.[98]

The following is an example of such a conflict.A goes into a contractual relationship with B whereby they both agree to construct a factory functioning in two branches. The contract stipulates that each member is responsible for running a branch and both will equally share the profits of the factory. The contract is agreed to be open-ended. During the first 5 years, each branch submitted 50% of its profits to the other. After 5 years, B faces financial difficulties in running its respective part of the factory, which led to the reduction of his profits by half. At the same time, A faces logistical problems, such as a labor strike and the increase of taxation. This also decreases A's productivity by half. This binary situation has forced each member to be incapable of sending 50% of the profit to the other party. This situation continues to exist for 3 another years during which both parties are unable to fulfill the consummation of the contract. During that time, A nullifies the contract without the knowledge or consent of the other party.

Four questions ensue from the previous example: is nullifying a contractunilaterally, without the consent of a partner, possible;are the problems and challenges that both parties faced, a good enough reason to negate the contract; can the revoking partner take a remedial action at his own will, or would

[98] *Id* 95

he be compelled by the court to do so; and would the court would impose certain remedies to actualize the contract.

The first issue tackles the point of whether a partner can invalidate a contract unilaterally, without the consent of his partner. To answer thisquestion, there are two points. If the court refuses the invalidation unilaterally, the partner that initiated this step (partner A)would have to bear all costs, consequences, and penaltiesbased on the nullification. Now the second point occurs when the court validates this action. In that circumstance, the court is faced with two prospects. Either partner A is opportunistic or the revoking of the contract is the result of an involuntary action. In both cases, partner A will have to prove that his action is the result of an involuntary performance. Then the burden of proof shifts to the other party, who now has to prove that partner A is opportunistic.

The second question is the existence of *force majeure* that resulted in revoking the contract. If partner A can prove that partner B is the main reason behind revoking the contract, then it is in the best interest of partner B to prove a mutual mistake status. The benefit behind that, as Posner stated "is important since one function of contract enforcement is to penalize a party who negligently creates interpretative uncertainty." [99]

The third question is whether the revoking partner will take remedial action at his will or would he be forced by the court to do so. The answer to this question lies in the recognition that no one takes a remedial action on his own will. What usually happens is that the court gives the choice to the harming party to rectify his error either through monetary damages or a specific performance.Offering this choice, the harming party will weigh his options to decide which is less harmful for him. The result would be either paying the monetarydamage or the value of the deeds he needs to perform to reverse

[99] *Id* 109

his damage.[100] This takes me to the following question, of whether the court has the power to execute the specific performance on the offender or not.

The fourth question is whether the court would impose certain remedies to actualize the contract. The court has the right to issue a decree in this case, against the partner who was found guilty of breaking the contract. [101]

2. The Economic Analysis to *Gabcivkovo- NagymarosProject*

As for the *Gabcivkovo- Nagymaros Case*, the same four questions will resurfacesame as in the previous section. The first question is whether the Republic of Hungary was entitled to suspend and abandon the project. The court found that Hungary violated its responsibilities towards the Slovakian party. So in answer tothis question, the court refused the invalidation unilaterally. Hungary who initiated this step did bear all costs, consequences, and penalties based on the nullification. The second option is if the court validates this action, which did not happen. Such a finding brings us to the second question, which is what led Hungary to suspend its obligations to the project.

In the court analysis of the second question, the court found that Hungary failed to prove the state of necessity. It used two approaches to find its way to such a finding. It found that the 1977 Treaty did not indicate the state of necessity as a reason to terminate the contract. Subsequently, it resorted to the general rules in the Vienna Convention in the Law of Treaties. The court found that Hungary failed to find the existence of the state of necessity, which stood against the execution of the project from the Hungarian side.

[100] Paul Mahoney, *Contract Remedies and Options Pricing*, 24 J. LEGAL STUD. 139, 1995, 141
[101] *Id* 145

Further, the court saw that the 1977 Treaty is still valid between both countries, Hungary and Czechoslovakia (Slovakia and the Czech Republic). The court based its ruling for the continuity of 1977 Treaty on the will of both countries to comply with the rules of the Treaty.

Tackling the third question, the court found that the remedial action taken by Czechoslovakia through its use of *Variant C,*was a temporary solution to the existing problem. I believe that Czechoslovakia has put itself under a high risk in case the court did not consider *Variant C* as a remedial action.

The ICJ in *Gabcivkovo- NagymarosCase* dealt with the fourth question ofwhether the court would impose certain remedies to actualize the Treaty. Even though the court had the right to impose such a remedial action, it refused to intervene in such remedy. The court found that the parties had the upper hand to determine what would be the best remedy to ensure mutual cooperation between the two states.

C. Criminal Liability Cases:

1. The Basis of Economic Analysis to Penal Law Cases

- The Scope of the Economic Analysis of Penal Law

For the purpose of conducing this research, the economic analysis will be limited to environmental crimes where defendants are subject to monetary fines. The reason behind this limitation is that it will be difficult to conduct an economic analysis for the criminal systems of the states while imposing criminal punishment on violators of the environment.

In national laws, both criminal law and tort share the fact that the wrong doer is obliged to pay compensation to the victim. However, criminal law differs from tort in three cases. The first case is the intentional tort, where the wrong doer gets money or benefit from the victim. This is categorized in

murder, robbery, burglary and assault. The second instance is the acts that affect social welfare, such as price fixing. The third case is the exchange of illegal activities that the state prohibited, such as prostitution.

On the international level, there are three types of crimes. The first group of crimes are the ones that fall under the international criminal court statue, i,e, war crimes, genocide, and crimes against humanity. The second typeis patriotic in nature. However, when they are committed by foreign nationals, they become international crimes, like human trafficking and drug trafficking. The third type is called Universal Jurisdiction's Crime, such as plane hijacking and high seas piracy.

- The Economic Analysis of Penal Law:

To attempt to understand the simplest form of the economic analysis of a crime, Richard Posner proposed the formula of *D=L/p* to determine the amount of compensation of the damage. The letter D refers to the optimal damage, the letter L refers to the harm, and the letter P refers to the cost of being caught and put to trial. [102]

Optimal Damage or penalty (D)= Harm(L)/ Caught Cost(p), then

Harm = Optimal Damage/Penalty x Caught Cost

Based on the Richard Posner analysis of the penalties, if the harm is $100 and the cost of putting the plaintiff to trail is $50, the total amount of the harm or penalty is $5,000. However, such analysis is too broad for punishment of certain crimes and cannot be generalized. It neither applies to all types of

[102] *Supra note 86 at 256.*

crimes, nor can welimit such analysis to certain types of crimes. Such a view represents the optimal penalty; it failed to give any indication of how a minimum penalty is put to value.

It is hard to give a general theory of economic analysis to the cases that involve criminal penalties. I will give two examples to illustrate my point. Example A is that of a drunk driver.In this example, X is a driver who goes out with his friends and drinks on Saturday night. The question X faces is how to go home.First, he makes an economic analysis between either paying $50 to a taxi or taking his car that will cost him $5 in gas to get his house. While the first choice involves 0% risk of paying fines to the government, the second choice involves 50% risk of arrest and paying a fine in the range of $200 to $500. He then decides to take his car. While X is driving, driver Y sees him and perceives that he is drunk. Y calls 911 and reports X's vehicle license plate number. A Police Officer stops X to take an alcohol test and the test results are positive. The police officer asks him to pay the minimum amount of fine as a punishment.

Example B is more complicated than example A. In this example, no one reports X while driving. A Police Officer sees him and perceives that he is drunk. The Police Officer asks him to stop the car, but X refuses. The Officer asks for back up and three police vehicles end upchasing X. After one hour, the police officers are able to arrest him. The alcohol test is positive and the Police Officer asks him to pay a fine of $500. X refuses. Heisthen put on trial for two days, where the court upholds the maximum fine.

Based on Posner's example, the optimal punishment would be $500 in both examples. While there is no certain amount to indicate, the harm would be a very vague measurement in such case. In addition, the cost in Example A is represented in the time the Police Officer wasted in writing his report of the crime and the cost of making the alcohol test. Let's say that it would be $100. On the other hand, the

cost in Example B is much higher. It consists of the time wasted where three Officers chased him, the cost of alcohol test and writing the police report, as well as the trial cost.

2. The Economic Analysis to *HoshinmaruCase*:

In *Hoshinmaru Case*, the Russian Federation had calculated the bond against the Japanese vesselas follows: according to the respondent, the bond was calculated by taking into account the maximum fine imposable on the Master which was half a million rubles; the maximum fine imposable on the owner for about 2 million rubles x3; the procedural costs of 240,000 rubles; the penalty for damages caused by illegal fishing which was 7,927,500 rubles; and the value of the vessel of 11,350,000 rubles.[103]

The court's estimation whether the bond was reasonable or not, had found that it is not proportionate to the crime committed. It is not suitable to say that the maximum penalties or bond set against the vessel and its owner, or setting the penalty based on the confiscation of the vessel, could be a good basis for a reasonable bond.[104]

In this case, the court considered the extra legal factors rather than the monetary estimation of the economic analysis of the dispute. The court firstly went to say that the Japanese vessel is not a minor offense. The court affirmedthe cooperation between Japan and Russia in the field of fish activity of monitoring catches and managing of marine living resources.

D. Conclusion:

It is sometimes easy to predict the judicial decision of certain type of cases, while on the other hand it is very hard to find a rational basis for such decision. It was the main goal of this research paper to find

[103] *Supra note 42 at* 93
[104] Id at 93.

a basis for such judicial decisions, based on economics. I found some easy cases, where the judges just applied the rules like *Trail Smelter*. Some other cases, the judges took a different approach to reach theirdecision, like *Gabcivkovo- Nagymaros.* While in the third type of cases it was hard to accept economic basis for analysis, so the court took into consideration some of the extra legal factors to find a decision.