



TRANSBOUNDARY MOVEMENT OF LIVING
MODIFIED ORGANISMS UNDER THE
CARTAGENA PROTOCOL AND THE SPS
AGREEMENT: A LEGAL ANALYSIS WITH
SPECIAL REFERENCE TO THE PRECAUTIONARY
PRINCIPLE

BY

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the degree of Doctor of Philosophy

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ABSTRACT

The thesis examines the implementation of precautionary principle (“PP”) on transboundary movement of living modified organisms (“LMOs”) under the Cartagena Protocol, the SPS Agreement and its enforcement by the World Trade Organisation (“WTO”) dispute settlement process, pertaining to issues of adverse impacts of LMOs on the environment and human health. The thesis emphasises that PP has various definitions and its scope covers different aspects of law. However, the core elements of PP in the various definitions are the same. To this end, the thesis specifically addresses the legal and regulatory frameworks with regard to PP under the Cartagena Protocol and the SPS Agreement, PP as a customary international rule in international environmental law and the WTO Law, the impact of the existence of the saving clause in the preamble of the Cartagena Protocol on the enforceability of the PP, and the issue of enforcement of PP in the WTO dispute settlements pertaining to the SPS Agreement. The methodology employed in addressing these issues is library-based research. Treaty norms, guidelines and other legal instruments were explored and analysed to understand the application of PP in transboundary movement of LMOs and to discuss relevant provisions of the Cartagena Protocol and the SPS Agreement. Furthermore, in order to understand the enforceability of PP in the WTO dispute settlements relating to SPS Agreement, the five evolution cases of SPS Agreements have been examined. The thesis finds that there is a fundamental difference in the application of PP under the Cartagena Protocol and the SPS Agreement. The PP under the Cartagena Protocol is justified by scientific uncertainty, while the PP under the SPS Agreement is premised on insufficient scientific evidence. However, this distinction affects the enforceability of PP under both frameworks. In the enforcement process, the ineffectiveness of the PP provisions under the SPS Agreement has been demonstrated by a number of facts, including the implicit adoption of PP in the SPS agreement provisions and the strict interpretation of risk assessment based on scientific evidence by the Panel and the Appellate Body, whereas the failure of all the respondents in the SPS-related cases to invoke PP successfully is triggered by the narrow and textual interpretation of the SPS provisions by the Panel and the Appellate Body. Besides that, the ruling of the Panel and the Appellate body is also affected by the existence of the saving clause in the preamble of the Cartagena Protocol and the lack of comprehensive knowledge of the Panel and the Appellate Body pertaining to protection of human, animal or plant life or health and the environment. The thesis therefore suggests that both conceptual and practical reforms be carried out in the SPS Agreement and the Dispute Settlement Body. Conceptually, the PP provisions should be explicitly reflected in the provisions of the SPS Agreement. However, in order to make PP enforceable in the WTO dispute settlements, the requirement of scientific uncertainty in PP can be substituted by insufficient scientific evidence in the SPS Agreement. In this regard, the Panel and the Appellate Body should interpret the SPS Agreement provisions along side with Multilateral Environmental Agreements (MEAs), including the Cartagena Protocol. Practically, members of the Panel should enhance their knowledge in environmental law so that they can give a comprehensive picture of both trade law and environmental law. In all, the Islamic perspective also complements the above conclusion where the thesis finds that the application of PP in Islamic law (*sadd al-dhari’ah*) and *maṣlahah mursalah* (public interest) can be used to justify the extent of validity and limitations of the manufacturing and transboundary movement of LMOs.

خلاصة البحث

الباحث تطرق لدراسة حالة تنفيذ مبدأ الوقائي في واقعة النقل عبر الحدود للكائنات الحية المحورة تحت بروتوكول قرطاجنة واتفاقية الصحة والصحة النباتية وكذا تحت سلطة تسوية المنازعات لدى منظمة التجارة العالمية، بموجب تأثير هذه الحيوانات على البيئة والبشرية. والبحث تؤكد أن مبدأ وقائي لها تعريفات عدة وتحتوي على مختلف مجالات القانون. لكن لا يختلف العناصر الأساسية لجميع التعاريف. وإلى هذا الحد، حاولت الإجابة إجابة على اطر القانوني والتنظيمي لمبدأ الوقائي تحت كل من بروتوكول قرطاجنة و اتفاقية الصحة والصحة النباتية، إعتبار مبدأ الوقائي كقائدة الدولي العربي في قانون البيئي الدولي ومنظمة التجارة العالمية، مدى تأثير الشرط الإستثنائي في ديباجة بروتوكول قرطاجنة على تنفيذ المبدأ، وقودية تنفيذ هذا المبدأ تحت وسائل تسوية المنازعات لدى منظمة التجارة العالمية بما يتعلق بالاتفاقية. والباحث في إجراء هذا البحث إعتد على الدراسة المكتبية، معينا بالاتفاقيات و النظم ومراجع القانونية الأخرى. والباحث قام بدراسة عميقة وتحليل هذه المصادر لفهم كيفية تنفيذ المبدأ في حالة النقل عبر الحدود لهذه الحيوانات، والحديث تطرق للمواد من البروتوكول والاتفاقية. لكي يتم فهم آليات تنفيذ المبدأ تحت منظمة التجارة العالمية، المتعلق باتفاقية الصحة والصحة النباتية، لا بد من التطرق للقضايا الخمسة التي تعتبر نقطة التحول لاتفاقية الصحة والصحة النباتية. وصل الباحث إلى أن ثمت فرق بين النظمين هما الاتفاقية والبروتوكول. المبرر الذي قدم لمبدأ الوقائي تحت البروتوكول هو عدم وجود اليقين العلمي، في حين تحت الاتفاقية هو أن الأدلة العلمية غير كافية. ولعل هذا الإختلاف يضر تنفيذ مبدأ الوقائي تحت النظمين. في حالة التنفيذ، وقد ثبت عدم فعالية أحكام المبدأ تحت الاتفاقية بعدد من الحقائق، بما في ذلك الإعتداد ضمنى لمبدأ الوقائي في أحكام اتفاقية الصحة والصحة النباتية، وتفسير الصارم لتقييم المخاطر على أساس الأدلة العلمية من قبل الفريق و هيئة الاستئناف. وقد أدى هذا إلى فشل الدفاع في عملية تسرية المنازعات بالاعتماد على مبدأ الوقائي بسبب التفسير الضيق لأحكام اتفاقية الصحة والصحة النباتية لدى فريق و هيئة الإستئنافية. وبالإضافة إلى ذلك، قرار الفريق و هيئة الاستئناف تأثر بالشرط الإستثنائي في ديباجة بروتوكول قرطاجنة وكذلك عدم وجود كفاءة العلمية لدى الفريق وهيئة الإستئناف فيما يتعلق بحماية البشر والحيوانات أو النباتات أو سحة البيئة. وعلى هذا الباحث تقترح ضرورة مراجعة وإصلاح الفكري والعملية في اتفاقية الصحة والصحة النباتية، وكذلك هيئة تسوية المنازعات. وينبغي إعتداد على مبدأ الوقائي من ضمن أحكام اتفاقية الصحة والصحة النباتية. أضف على ذلك لكي يتم تنفيذ مبدأ الوقائي تحت لجنة تسوية المنازعات لمنظمة التجارة الدولية، يمكن إستبدال الإشتراط في الحجة من عدم يقين العلمي إلى مجرد عدم وجود حجية العلمية الكافية، الموجود في اتفاقية الصحة والصحة النباتية. وفي هذا الصدد ، ينبغي على الفريق وهيئة الاستئناف تفسير أحكام اتفاق الصحة والصحة النباتية متعاضدة مع الاتفاقات البيئية المتعددة الأطراف، بما في ذلك بروتوكول قرطاجنة. عمليا ، يجب أن تعزير معرفتهم في مجال القانون البيئي بحيث أنها يمكن أن تعطي صورة شاملة عن كل من القانون التجاري والقانون البيئي. في حين ، على أساس المنظور الإسلامي البحث تكشف أنه يمكن استخدام تطبيق مبدأ الوقائي ومصالحة المرسله إلى تبرير صحة وبطلان التصنيع والنقل عبر الحدود للكائنات الحية المحورة.

APPROVAL PAGE

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DECLARATION

I hereby declare that this thesis is the result of my investigations, except where otherwise stated. Other sources are acknowledged by foot notes. I also declare that it has not been previously or currently submitted as a whole for any other degrees at IIUM or other Institutions.

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Signature

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PHYTOSANITARY AGREEMENT: A LEGAL ANALYSIS WITH SPECIAL
REFERENCE TO THE PRECAUTIONARY PRINCIPLE

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- Appellate Body Report on *Australia –Measures Affecting Importation of Salmon* (hereafter *Australia-Salmon*), WT/DS18/AB/R.
- Panel Report on *Japan Measure Affecting agricultural Products* (hereinafter *Japan-Agricultural Products*) WT /DS76/R.
- Appellate Body Report on *Japan Measure Affecting agricultural Products* (hereinafter *Japan-Agricultural Products*)
- Panel Report on *Japan-Measures Affecting the Importation of Apples* (hereinafter *Japan-Apples*) WT/DS245/R.
- Appellate Body Report on *Japan-Measures Affecting the Importation of Apples* (hereinafter *Japan-Apples*) WT/DS245/AB/R.
- The Panel Report on *Australia-Measures Affecting the Importation of Apples from New Zealand*. (hereinafter *Australia-Apples*) WT/DS367/R.
- The Panel Report on *Australia-Measures Affecting the Importation of Apples from New Zealand*. (hereinafter *Australia-Apples*) WT/DS367/AB/R.
- European Communities – Measures Affecting the Approval and Marketing of Biotech Products* (hereinafter *EC-Biotech*), United States (WT/DS291/R), Canada (WT/DS292/R), and Argentina (WT/DS293/R), 29 September 2006.

LIST OF TREATIES

Agreement for the Conservation of Africa Eurasian Migratory Waterbirds
Basel Convention on Control of Transboundary Movements of Hazardous Wastes and their Disposal (hereinafter Basel Convention)
Bergen Declaration on Sustainable Development in the European Commission for Europe
Cartagena Protocol on Biosafety to the Convention on Biological Diversity (hereinafter Cartagena Protocol)
Convention on International Trade and Endangered Species of Wild Fauna and Flora (hereinafter CITES).
Convention on the Ban of the Import of Hazardous Wastes into Africa and on the Control of their Transboundary Movements within Africa (hereinafter Bomaco Convention)
Declaration of the United Nations Conference on the Human and Environment (hereinafter Stockholm Declaration).
General Agreement on Tariffs and Trade (hereinafter GATT)
Johannesburg Declaration on Sustainable Development
Kyoto Protocol
Long Range Transboundary Air Pollution (hereinafter LRTAP) Acidification Protocol
Montreal Protocol on Substances that Deplete the Ozone Layer
Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety
Protocol to Marine Pollution (hereinafter MARPOL)
Protocol to the Convention on Long-Range Transboundary Air Pollution on Further Reduction of Sulphur Emissions
Rio Declaration on Environment and Development
Rotterdam Convention on the Prior Informed Consent (PIC) Procedure
The Convention on Biological Diversity (hereinafter CBD)
The Marrakesh Agreement Establishing the World Trade Organisation
The Vienna Convention on the Law of Treaties (hereinafter VCLT)
The WTO Agreement on the application of Sanitary and Phytosanitary Measures (hereinafter SPS Agreement).
The WTO Agreement on Technical Barrier to Trade (hereinafter TBT Agreement)
United Nations Framework Convention on Climate Change
Vienna Convention on the Protection of the Ozone Layer

LIST OF ABBREVIATIONS

AIA	Advance Informed Agreement
AEBC	Agriculture and Environment Biotechnology Commission
A.J.I.C.L	African Journal of International and Comparative
AJIL	American Journal of International Law
ALOP	Appropriate level of sanitary protection
Am. Bus. L.J.	American Business Law Journal
Am. U. Int'l L. Rev.	American University International Law Review
Am. U. Int'l L. Rev.	American University International Law Review
Am. U. Int'l L. Rev.	American University International Law Review
AML	African Model Law
A.J.I.C.L.	African Journal of International and Comparative Law
Ann. Surv. Int'l & Comp. L.	Annual Survey of International & Comparative Law
Ariz. J. Int'l & Comp. L	Arizona Journal of International and Comparative Law
Asean.J.Int'l.L.	Asean Journal of International Law
Asean J.WTO & Int'l Health L.& Pol'y	Asean Journal WTO & Int'l Health Law & Policy
Asper Rev. Int'l Bus. & Trade L.	Asper Review of International Bussiness & Trade Law
B.C. Env'tl. Aff. L. Rev	Boston College Environmental Affairs Law Review
B.C. Int'l & Comp. L. Rev.	Boston College International and Comparative Law Review
Duke Env'tl. L. & Pol'y F.	Duke Environmental Law and Policy Forum
B.U. J. Sci. & Tech. L.	Boston University Journal of Science and Technology Law
B.U. Int'l L.J.	Boston University International Law Journal
B.Y.U. Int'l L. & Mgmt. Rev	Brigham Young University International Law & Management Review
BCH	Biosafety Clearing House
BFSC	Biosafety and Food Safety Committee
BFSTT	Biosafety and Food Safety Technical Team
BISD	Basic Instruments and Selected Documents
Brook. J. Int'l L.	Brooklyn Journal of International Law
BSE	Bovine Spongiforme Encephalopathy
BST	Bovine Somatotrophin

BSWG	Working Group on Biosafety
Buff. Env'tl. L.J	Buffalo Environmental Law Journal
CAA	Clean Air Act
CAC	Codex Alimentarius Commission
Can. J.L. & Soc'y	Canada Journal Law and Society
Case W. Res. L. Rev.	Case Western Reserve Law Review
CBD	Convention on Biological Diversity
CEE	Central Eastern European
CFI	Court of First Instance
Chi. J. Int'l L..	Chicago Journal of International Law
CITES	Convention on International Trade in Endangered Species
CIT	Court International Trade
CNA	Competent National Authority
Colo. J. Int'l Env't'l L. & Pol'y	Colorado Journal of International Environmental and Policy
Colum. J. Eur. L.	Columbia Journal of European Law
Colum. J. Transnat'l L	Columbia Journal of Transnational Law
Colum. J.L. & Soc. Probs.	Columbia Journal of Law and Social Problems
Columb. J. Env'tl. L.	Columbia Journal of Environmental Law
Cumb. L. Rev.	Cumberland Law Review
Conn. Ins. L.J.	Connecticut Insurance Law Journal
COP	Conference of the Party
Cornell Int'l L. J	Cornell International Law Journal
Cornell L. R.	Cornell Law Review
Cornell L.Q.	Cornell Law Quarterly
CPM	Commission on Phytosanitary Measures
CTE	Committee on Trade and Environment
DDT	Dichlorodiphenyltrichloroethane
Denv. J. Int'l L. & Pol'y	Denver Journal of International Law and Policy
Dick. J. Int'l L.	Dickinson Journal of International Law
DNA	Deoxyribonucleic Acid
Drake J. Agric. L.	Drake Journal of Agriculture Law.
DSB	Dispute Settlement Body
DSU	Dispute Settlement Understanding
Duke Env'tl. L. & Pol'y F.	Duke Environmental Law and Policy Forum
Duke J. Comp. & Int'l L	Duke Journal of Comparative and International Law
E.L. Rev	European Law Review
EC	European Communities
ECJ	European Court of Justice
Ecology L.Q	Ecology Law Quarterly
Env'tl. L. & Litig	Environmental Law & Litigation
EPA	Environmental Protection Agency's
EU	European Union
Eur. J. Int'l L.	European Journal of International Law

FAO	Food and Agriculture Organisation
FFPs	Food feed or for processing
Food & Drug L.J	Food & Drug Law Journal
Fordham Int'l L. J.	Fordham International Law Journal
FSEs	Farm Scale Evaluations
Ga. L. Rev.	Georgia Law Review
Ga. J. Int'l & Comp. L.	Georgia Journal of International and Comparative Law
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GEABPs	Genetically Engineered Agricultural Biotechnology
GEAC	Genetic Engineering Approval Committee
GEAPs	Genetically Engineered Agricultural Products
Geo. Int'l Env't'l L. Rev.	Georgetown International Environmental Law Review
Geo. Wash. Int'l L. Rev	Georgetown Washington of International Law Review
GMAC	Genetic Modification Advisory Committee
GMO	Genetically Modified Organism
GMOs	Genetically Modified Organisms
GSD	Governing the Settlement Dispute
HACCP	Hazard Analysis Critical Point Control
Harvard Env'tl. L. Rev	Harvard Environmental Law Review
Hastings Int'l & Comp. L. Rev	Hastings International and Comparative
Harv. Negot. L. Rev.	Harvard Negotiation Law Review
How. L.J.	Howard Law Journal.
HFCI	Halal Food Council International
HSNO	Hazardous Substances and New Organisms Act
I.C.C.L.R.,	International Company and Commercial Law Review
I.P.J.	Intellectual Property Journal
IBCs	Institutional Biosafety Committees
ICES	International Council for the Exploration of the Sea
ICJ	International Court of Justice
I.C.C.L.R.	International Company and Commercial Law Review
ICPM	Interim Commission on Phytosanitary Measures
ILM	International Legal Materials
INSERM	National Institute for Health and Medical Research
ILSA. J. Int'l & Comp.L	ILSA Journal of International and Comparative Law
Ind. J. Global Legal Stud.	Indiana Journal of Global Legal Studies
Indian J. Int'l. L.	Indian Journal of International Law
IPC	Prior Informed Consent

Int. T.L.R.	International Trade Law & Regulation
Int'l Legal Persp.	International Legal Perspective
Int'l T. L. J.	International Trade Law Journal
Int'l Trade. L	International Trade Law
Int'l. T. L. Rep	International Trade Law Representative
	Intellectual Property Rights
IPPC	International Plant Protection Convention
ITLOS	International Tribunal on the Law of the Sea
J. Env. L. & Prac.	Journal Environmental Law and Practice
J. Env'tl. Law and Litig.	Journal of Environmental Law and Litigation
J. Food L. & Pol'y	Journal Food Law & Policy
J. Int'l Econ. L	Journal International Economic Law
J. Int'l T. L. & Pol'y	Journal International Trade Law & Policy
J. Pol. Phil	Journal of Political Philosophy
J. Transnat'l L. & Pol'y	Journal Transnational Law & Policy
JAKIM	Jabatan Kemajuan Islam Malaysia
JECFA	Joint FAO/WHO Expert Committee on Food
JMPR	Joint FAO/WHO Meeting on Pesticide Law and Contemporary Problems
Law & Contemp. Probs	Law and Policy in International Business
Law & Pol'y Int'l Bus.	Loyola of Los Angeles International and Comparative Law Review
Loy. L.A. Int'l & Comp. L. Rev.	Loyola University Chicago International Law Review
Loy. U. Chi. Int'l L. Rev.	Saint John's Journal of Legal Commentary
St. John's J. Legal Comment.	Living Modified Organisms
LMOs	Ministry of Agriculture, Forestry and Fisheries
MAFF	Ministry of Science and Technology
MCT	Maryland Journal of International Law and Trade
Md. J. Int'l L. & Trade	Multilateral Environmental Agreements
MEAs	Monitoring-cum-Evaluation Committee
MEC	Melengestrol acetate
MGA	Michigan Journal of International Law
Mich. J. Int'l L.	Minnesota Journal of Global Trade
Minn. J. Global Trade	Ministry of Agriculture
MOA	Ministry of Environment and Forest
MoEF	Ministry of Foreign Economy and Trade
MOFET	Ministry of Science and Technology
MOFET	Ministry of Science, Technology and the Environment
MOST	Ministry of Public Health
MOSTE	North Carolina Journal of International and Regulation
MPH	New York University Environmental Law Journal
N. C. J. Int'l & Com. Reg.	
N.Y.U. Env'tl. L.J.	

N.Y.U. J Int'l Law& Pol	New York University Journal of International Law and Policy
N.Y.U. L. Rev	New York University Law Review
N.C. J. Int'l L. & Com. Reg.	North Carolina Journal of International Law and Commercial Regulation
NADFC	National Agency for Drug and Food
NAFTA	North American Free Trade Area
NBB	National Biosafety Board
NCB	National Committee on Biodiversity
NFP	National Focal Point.
NGO	Non-Governmental Organisation
NSERM	France's National Institute for Health and Medical
NTCBio	National Technical Commission for Biosafety
Nw. J. Int'l L. & Bus.	Northwestern Journal of International Law and Business
OAU	Organisation of African Unity
OECD	Organization for Economic Cooperation and Development
OGEBA	Office of Agricultural Genetic Engineering
OIE	International Office of Epizootics
Or. Rev. Int'l L.	Oregon Review on International Law
Pac. McGeorge Global Bus. & Dev. L.J	Pacific MCGeorge Global Business and Development Law Journal
Pac. McGeorge Global Bus. & Dev. L.J.	Pacific McGeorge Global Business & Development Law Journal
Pac. Rim L. & Pol'y J.	Pacific Rim Law and Policy Journal
Pace Env'tl L. Rev.	Pace Environmental Law Review
PBC	Products Biosafety Committee
Penn St. Env'tl. L. Rev.	Penn State Environmental Law Review
<i>Pepp. L. Rev.</i>	Pepperdine Law Review
PIC	Prior Informed Consent
PIT	Pesticides in International Trade
PIC	Prior Informed Consent
PP	Precautionary Principle
PCHCP	Procedure for Certain Hazardous Chemicals and Programme
Pub. Aff.Q	Public Affairs Quarterly
QA	Quality Assurance
<i>Queen's L.J.</i>	Queen's Law Journal
rBST	recombined Bovine Somatotrophin
RCGM	Review Committee on Genetic Manipulation
rDNA	recombinant deoxyribonucleic acid
Rich. J. Global L. & Bus.	Richmond Journal of Global Law and Business
S.Cal.L.Rev.	Southern California Law Review

S.Y.B.I.L	Singapore Year Book of International Law
SANJALR	San Joaquin Agricultural Law Review
SD	Sustainable Development
SDPC	State Development Planning Commission
SEPA	State Environmental Protection Authority
Sing. J. Int'l & Comp. L.	Singapore Journal of International and Comparative Law
SOPs	Sanitation Standard Operating Procedures
SPP	Strong Precautionary Principle
SPS	Sanitary and Pythosanitary
Stan. L. Rev.	Stanford Law Review
St. John's J. Legal Comment.	Saint John's Journal of Legal Commentary
Syracuse J. Int'l L. & Com	Syracuse Journal of International Law and Comparative
TBT Agreement	Agreement on Technical Barriers on Trade
Temp. Env'tl. L. & Tech. J.	Temple Environmental Law & Technology Law
Temp. Int'l & Comp. L.J.	Temple International and Comparative Law Journal
Temp. Pol. & Civ. Rts. L. Rev.	Temple Political and Civil Rights and
Tex. Int'l L.J	Texas International Law Journal
Trans. L.J.	Transnational Law Journal
Transnat'l .L .	Transnational Lawyer
TREMs	Trade-Related Environmental Measures
TRIMS	Trade-Related Investments Measures
TRIPS	Trade-Related Aspects of Intellectual Property Rights
Tul. Env'tl. L. J.	Tulane Environmental Law Journal
Tul. J. Tech. & Intell.	Tulane Journal of Technology and Intellectual Property Rights
Tulsa J. Comp. & Int'l L	Tulsa Journal of Comparative and International Law
U. Balt. J. Env'tl. L.	University of Baltimore Journal of Environmental Law
U. Miami Inter-Am. L. Rev	University of Miami Inter-American Law Review
U. Pa. J. Int'l Econ. L	University of Pennsylvania Journal of International Economic Law
U. Pa. L. Rev	University of Pennsylvania Law Review
U.C. Davis J. Int'l L. & Pol'y	University of California Davis Journal of International Law and Policy
U.C. Davis.L.Rev.	University of California Davis Law Review
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea