BUILDING A SYNERGISTIC MODEL ON CHEMICAL AND WASTE MULTILATERAL ENVIRONMENTAL AGREEMENTS TO IMPROVE ENVIRONMENTAL ENFORCEMENT : A CASE STUDY OF MULTILATERAL ENVIRONMENTAL AGREEMENTS REGIONAL ENFORCEMENT NETWORK

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การสร้างแบบจำลองเสริมสร้างการทำงานร่วมข้อตกลงพหุภาคีสารเคมีและของเสียให้มีผลบังคับใช้ทางสิ่งแวดล้อม : กรณีศึกษาข้อตกลงพหุภาคีเพื่อบังคับใช้ในเครือข่ายภูมิภาค

นายหนิง หลิว

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรดุษฎีบัณฑิต
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หนังหลิว : การสร้างแบบจำลองเสริมสร้างการทำงานร่วมข้อตกลงพหุภาคีสารเคมีและของเสียให้มีผลบังคับใช้ทางสิ่งแวดล้อม : กรณีศึกษาข้อตกลงพหุภาคีเพื่อบังคับใช้ในเครือข่ายภูมิภาค (BUILDING A SYNERGISTIC MODEL ON CHEMICAL AND WASTE MULTILATERAL ENVIRONMENTAL AGREEMENTS TO IMPROVE ENVIRONMENTAL ENFORCEMENT : A CASE STUDY OF MULTILATERAL ENVIRONMENTAL AGREEMENTS REGIONAL ENFORCEMENT NETWORK) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: วีระ สมบูรณ์, อ.ที่ปรึกษาวิทยานิพนธ์ร่วม: Professor Surichai Wun'gaeo สุริชัย หวันแก้ว, 219 หน้า.

การเพิ่มทวีของข้อตกลงพหุภาคีด้านสิ่งแวดล้อม (Multilateral Environmental Agreements, MEA) นำไปสู่การแยกส่วนและความซ้ำซ้อนในเชิงสถาบัน ทั้งยังสร้างภาระแก่การบริหารงานของประเทศมากเกินไป จึงอาจเป็นสาเหตุของความไม่มีประสิทธิผลในการนำข้อตกลงเหล่านี้ไปปฏิบัติ งานวิจัยชิ้นนี้ใช้ทฤษฎีการกระทำร่วมกัน (Collective Action Theory) ทฤษฎีระหว่างองค์การ (Inter-organization Theory) และข้อเสนอว่าด้วยการทำงานร่วม (Synergy) การรวมกลุ่ม (Clustering) การแยกส่วน (Fragmentation) และความมีประสิทธิผลของระบอบ (Regime Effectiveness) ศึกษาเชิงลึกกรณีของเครือข่ายการบังคับใช้ข้อตกลงพหุภาคีระดับภูมิภาค ซึ่งเป็นโครงการนำร่องที่มีเป้าหมายเพื่อเสริมความแข็งแกร่งในการบังคับใช้ข้อตกลงพหุภาคีที่เกี่ยวข้องกับการสารเคมีและของเสีย 4 ข้อตกลง (อนุสัญญาบาเซล อนุสัญญารอตเตอร์ดัม อนุสัญญาสตอคโฮล์ม และพิธีสารมอนทรีออล) ในทวีปเอเชีย (โดยเน้นที่ประเทศจีนและประเทศไทย) เพื่อพิสูจน์ข้อกล่าวอ้างที่ว่า การเสริมสร้างการทำงานร่วมระหว่างข้อตกลงพหุภาคีจะเพิ่มประสิทธิผลในการบังคับใช้ข้อตกลงเหล่านี้ การศึกษาวิจัยดำเนินการโดยใช้วิธีการสัมภาษณ์เชิงลึก การทบทวนเอกสาร การวิเคราะห์เชิงปริมาณข้อมูลการค้า และการวิเคราะห์เชิงคุณภาพ การวิจัยมีข้อสรุปว่า การเสริมสร้างการทำงานร่วมสามารถปรับปรุงการไหลเวียนของสารสนเทศ ความร่วมมือระหว่างหน่วยงาน การปฏิบัติงานด้านการบังคับใช้กฎหมาย การสร้างสมรรถนะ และการบังคับใช้ระบบการออกใบอนุญาต ซึ่งทำให้ประเทศสมาชิกบังคับใช้ข้อตกลงพหุภาคีได้อย่างมีประสิทธิผลมากขึ้น การวิจัยนี้เสนอแนะว่า การปฏิรูปองค์การ การสร้างเครือข่ายในการบังคับใช้ และการสร้างสมรรถนะ เป็นปัจจัยสำคัญในการปรับปรุงความมีประสิทธิผลในการบังคับใช้ และได้สร้างแบบจำลองสำหรับการเสริมสร้างการทำงานร่วมระหว่างข้อตกลงพหุภาคีที่เกี่ยวข้องกับสารเคมีและของเสีย เพื่อปรับปรุงการบังคับใช้ทางสิ่งแวดล้อมให้ดีขึ้น

สาขาวิชา สิ่งแวดล้อม การพัฒนาและความยั่งยืน ลายมือชื่อนิสิต .....

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5387820320 : MAJOR ENVIRONMENT DEVELOPMENT AND SUSTAINABILITY
KEYWORDS: BUILDING SYNERGIES / ENVIRONMENTAL ENFORCEMENT / REGIME EFFECTIVENESS / MODEL

NING LIU: BUILDING A SYNERGISTIC MODEL ON CHEMICAL AND WASTE MULTILATERAL ENVIRONMENTAL AGREEMENTS TO IMPROVE ENVIRONMENTAL ENFORCEMENT : A CASE STUDY OF MULTILATERAL ENVIRONMENTAL AGREEMENTS REGIONAL ENFORCEMENT NETWORK. ADVISOR: ASSOC. PROF.VIRA SOMBOON, Ph.D., CO-ADVISOR: PROF. SURICHAI WUNGAEO, Ph.D., 219 pp.

Proliferation of multilateral environmental agreements (MEAs) leads to institutional fragmentation, duplication as well as overloading the national administration and likely causes ineffectiveness of MEAs implementation. Using collective action theory, inter-organization theory and propositions on synergy, clustering, fragmentation and regime effectiveness, this research closely examined a case of MEA Regional Enforcement Network (MEA REN), a pilot project aimed at strengthening enforcement of four chemical and waste related MEAs (Basel/Rotterdam/Stockholm Conventions and Montreal Protocol) in Asia, to prove the claim that building MEAs synergies would improve enforcement effectiveness. The study was conducted through in-depth interview, documentation review, comparing trade data, and qualification analysis. The study concluded that synergy building could improve information flows, inter-agency cooperation, law enforcement operations, capacity building and enforcing licensing system so that countries can enforce MEAs in a more effective way. The study recommended organization reform, enforcement networking and capacity building are key areas to improve enforcement effectiveness, and constructed a model of building synergies for chemical and waste related MEAs to improve environmental enforcement.

Field of Study:	Environment Development and Sustainability	Student's Signature .....
		Advisor's Signature .....
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ABBRIEVATION

Abbreviations	**Equivalence**
BAN	Basel Action Network
BC	Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal
BCRC	Basel Convention Regional Centre
BRS Secretariat	Secretariat of Basel, Rotterdam and Stockholm Conventions
CFCs	chlorofluorocarbons
COP	Conference of the Parties
EIA	Environmental Investigation Agency
FAO	Food and Agriculture Organization
GCI	Green Customs Initiative
GMS	Greater Mekong Sub-region
HCFC	Hydrochlorofluorocarbons
INECE	The International Network for Environmental Compliance and Enforcement
IOR	Inter-organization Relationship
iPIC	Informal Prior Informed Consent
IUCN	International Union for Conservation of Nature and Natural Resources
MEAs	Multilateral Environmental Agreements
MEA REN	Multilateral Environmental Agreements Regional Enforcement Network
MEP	Ministry of Environmental Protection
MOP	Meeting of Parties
NOU	National Ozone Unit
ODS	Ozone Depleting Substances
PAN	Pesticide Action Network
PATROL	Partnership Against Transnational Crime Through Organized Law Enforcement
POPs	Persistent Organic Pollutants
RC	Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade
RILO A/P	Regional Intelligence Liaison Office for Asia and the Pacific
ROCB	Regional Office for Capacity Building for Asia and the Pacific
SC	Stockholm Convention on Persistent Organic Pollutants
UNEP	United Nations Environment Programme
UNODC	United Nations Office on Drugs and Crime
WCO	World Customs Organization

Chapter 1 INTRODUCTION

1.1 Background and Importance of the Study

The proliferation of multilateral environmental agreements (MEA) leads to institutional fragmentation, duplication as well as overloading national administration and likely causes ineffectiveness of MEAs implementation (Berruga, 2006; Charnovitz, 2005; Nowotny, 2006). Although the current ongoing synergy-building process among the chemical and waste related MEAs[1] at the global level has made some progress, it is still not clear whether this process can bring about effective implementation of MEAs and to what extent it can improve MEAs enforcement at the regional and national levels. The Multilateral Environmental Agreements Regional Enforcement Network (MEA REN), a pilot project aimed at strengthening the enforcement of four chemical and waste related MEAs[2] in Asia, was closely examined to verify the claim that building MEAs synergies would improve enforcement effectiveness. The study also attempted to explore a model of building synergies of chemical and waste related MEAs to improve environmental enforcement.

1.1.1 Background

In order to address trans-boundary environmental threats, nation states have preferred to create binding agreements and international law through negotiation since the end of the nineteenth century (O'Neill, 2009). It was concluded that there are more than 500 MEAs[3] registered with the United Nations. Among them, 61 deal with atmosphere, 155 on biodiversity, 179 on chemicals, hazardous substances and waste, 46 on land conventions, and 197 on water issues(Knigge, Herweg, & Huberman, 2005; Najam A. & M. Papa, 2006; Roch P. & F. X. Perrez, 2005) .

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[1] The three MEAs are *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade ;and Stockholm Convention on Persistent Organic Pollutants.*

[2] *The above mentioned three conventions plus Montreal Protocol on Substances That Deplete Ozone Layer*

[3] A multilateral environmental agreement (MEA) is a legally binding agreement between three or more states relating to the environment.

On one hand, it is applauded that more and more environmental issues have been brought to the attention of nation states and they decided to take collective action to address these issues. On the other hand, people have questioned the effectiveness of the MEAs due to institutional fragmentation (see section 2.3) without holistic and consistent arrangements. It was criticized that the proliferation of MEAs caused jurisdictional overlaps, gaps, and treaty congestion. This, they argue, has led to inefficiencies and inconsistencies in the implementation of the agreements and an overload of the national administration (Ivanova & Jennifer Roy, 2007; Weisss, 1995).

Among chemical and waste MEAs, there are four major MEAs whose parties exceeded 140 signatories, ratifications or accessions. They are the *Montreal Protocol on Substances That Deplete Ozone Lay*er (referred to hereinafter as Montreal Protocol), *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* (referred to hereinafter as the Basel Convention), *Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade* (referred to hereinafter as the Rotterdam Convention) and *Stockholm Convention on Persistent Organic Pollutants (POPs)* (referred to hereinafter as the Stockholm Convention).

All of the four MEAs have trade regulation provisions to control transboundary movement of chemicals or toxic waste. However, in the Asia and Pacific region, illegal trade in harmful chemicals and hazardous waste has reached an alarming level and adversely affected the efforts of countries to meet their commitments to the four MEAs. This raises the question of how could these MEAs be enforced more effectively?

Adam Smith pointed out that trade takes place on the basis of countries exercising absolute advantage. He wrote in *The Wealth of Nations*, "If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better to buy it off of them with some part of the produce from our own industry, employed in a way in which we have some advantage" (Smith, 1776 Book IV, Section ii, 12). David Ricardo brought forward the idea that the country with an advantage in technology or natural resources gains a comparative advantage. In the early 1900s, two Swedish economists, Eli Heckscher (1919) and Bertil Ohlin (1933) developed the theory that a country will manufacture and export products that require resources (factors) which are relatively abundant and import products that require resources which are in relatively

scare. Lawrence Summers, the chief economist of the World Bank stated in an internal memo suggesting to dump waste to countries with low wages and low population densities. Because low wages implies people are willing to pay less for environmental pollution. Low population density means the negative impact brought by environmental risks is lower (Schulze & Ursprung, 2002).

There are various researches on illegal trade in chemicals and hazardous waste (Liu & Bagai, 2007; PANAP, 2009; Puckett et al., 2002; Rucevska et al., 2015) . Although the figures were mostly an estimate, they do however present specific evidence such as the scale of problems and the frequency of occurrence to evaluate the effectiveness of enforcement and identify loopholes within the implementation of MEAs.

The following sections describe the overview of illegal trade in chemicals and waste including reasons and scale. Illegal trade is an important indicator for environmental enforcement and governance. The chemicals and waste-related MEAs are in place to regulate trade, but why illegal trade appears and how to address it is important to explore it.

1.1.1.1 Illegal trade in hazardous waste

With economic development, waste (including hazardous waste) generation is rocketing. It was estimated that the generation of waste in the world was 12.7 billion tons in 2000, and will reach 27 billion tons by 2050 (Yoshizawa, M. Tanaka, & AV Shekdar 2006).

In early the 1970s, when developed countries started to strengthen regulation on waste and people were unwilling to dispose of the waste in their own backyards, waste operators began shipping waste to developing countries where awareness on waste was low and regulation was loose. Several waste dumping cases raised international concern regarding waste trade and subsequently led to the inception of the Basel Convention (Secretariat of Basle Convention, 2011). The Basel Convention regulated that the country of origin when exporting hazardous waste, should obtain written consent from the receiving country. The transboundary movement of hazardous waste is a result of the costs on the recycling within the country of origin, as it is significantly higher than the receiving country. The price difference is caused by stricter

environmental regulations and higher labour costs in the country of origin. Many countries do not have effective legislation on hazardous waste and enforcement on waste is loose (Secretariat of the Basel Convention, 2011).

The Basel Convention Secretariat reported that annually, there are 9.5 million tonnes of hazardous waste that legally moves across boundaries (UNEP, 2013). To avoid supervision and control, some dishonest businessmen or criminal syndicates have smuggled hazardous waste via misdeclaration, using fake documentation, concealment and etc. It is difficult to give the specific figure regarding illegal waste trafficking, however Asia has become the main destination for dumping of hazardous waste, and China, Cambodia, India, Indonesia, Vietnam, etc. have continued to make seizures of hazardous waste and chemicals (Rucevska et al., 2015).

Taking electrical and electronic waste as an example, UNEP (2006a) estimated the global generation of electronic waste could be 20-50 million tonnes per year, which is enough to fill a line of trucks stretching halfway around the equator. The U.S. National Safety Council reported that nationally, around 500 million computers were out of date between 1997 and 2007. More than 80% of e-waste from the United States has been sent to Asia and Africa (Johnson, 2006). The Basel Action Network (BAN) traced 179 waste containers originated from North America from 2008 to 2010 and found that 96% of them have arrived at Asia, and 80% have arrived in China though the Government has banned the import of electrical waste since 2000 (Gutierrez, 2010).

The Home Appliance Recycling Law of Japan (applicable from 2001) regulated that producers are obligated to practice "resource recovery" on the end-of-life home appliances including televisions, refrigerators, washing machines, and air conditioners. Consumers should pay the costs of transportation and "resource recovery" when disposing of these end-of-life home appliances (Kawakami, 2001). Japan's Ministry of Environment and Ministry of Economy, Trade and Industry (2006) reported that only 47% of 22,870,000 end-of-life home appliances discarded in 2005 came into the possession of home appliance recycling factories. This means that almost half of the obsolete appliance might have been sent to other countries. Terazono (2008) estimated that about 1,539,433 second-hand television sets were sent to Hong Kong in 2006, 370,477 to the Philippines, and 60,241 to China. The flow was changed in 2007, as 838,168 second-hand television sets were sent to Vietnam, 369,036 to Hong Kong,

467,670 to the Philippines and 311,254 to China. Shinkuma (2009) observed that old printed circuit boards were smuggled from Cambodia to Ho Chi Minh City, then they were sent to China via Mong Cai, Vietnam. Second-hand personal computers were also sent from Cambodia and China to Vietnam.

Currently, the European Community legislation bans the export of e-waste; however it allows exports of second-hand goods. It is difficult to distinguish e-waste and second-hand goods. It was reported that up to 50% to 75% of second-hand goods for some countries does not function when it reaches its final destination (Nordbrand, 2009). Stricter legislation on higher targets for collection and recycling may increase the economic incentives to export the waste to countries offering low costs. SwedWatch reported that it costs about EUR 10 to recycle a computer in Sweden while in India, within the informal sector, it can be recycled for EUR 1.50 (Nordbrand, 2009).

Basel Action Network (2002) observed that in Asia, hazardous wastes have been mainly sent to Karachi, Pakistan, Mumbai and Ahmedabad, India, Nanhai and Guiyu, China. Waste trafficking and unsound disposal of e-waste in these countries have caused severe damage to health and the environment. Guiyu is a small town located at Guangdong Province, China. BAN's study found that, annually, Guiyu accumulates millions of tons of e-waste from both overseas and domestically. Studies demonstrated that the high levels of toxic heavy metals and organic contaminants in samples of dust, soil, river sediment, surface water, and groundwater of Guiyu (Brigden, I. Labunska, D. Santillo, & M. Allsopp, 2005). The people in Guiyu reported higher occurrences of skin damage, headaches, vertigo, nausea, chronic gastritis, and gastric and duodenal ulcers, all of which may be caused by the primitive methods of recycling of e-waste (Qiu et al., 2004). It was found that the levels of lead in the blood of children in Guiyu are much higher than children in other places (Huo et al., 2007). Low awareness on waste trafficking and limited enforcement ability to detect waste trafficking have been the bottleneck for combating illegal trade in hazardous waste. Another challenge is that when enforcement agencies seize waste shipments, it is difficult to handle them, as it is costly to store the waste and is not easy to repatriate the seized shipments in accords to the articles of the Basel Convention.

1.1.1.2 Illegal trade in ozone depleting substances

The ozone layer in the stratosphere protects plants and animals on the Earth from the harm of ultraviolet rays. In the early 1970's, scientists found that substances like chlorofluorocarbon (CFC) and Halon can destroy the ozone layer. CFCs were widely used as refrigerants, propellants, and solvents. Halons are ideal fire-extinguishing substances. The depletion of the ozone layer causes increased exposure of life on Earth to ultraviolet rays and leads to skin cancer, cataracts, suppression of the immune system, and damage of plant life and aquatic system. In 1985, scientists found that the Ozone Hole over Antarctica was three times as big as Australia. This finding shocked the international community. The Vienna Convention on the Protection of the Ozone Layer was adopted in 1985 and entered into force in 1988. The Montreal Protocol on Substances That Deplete the Ozone Layer was agreed on September 16, 1987, and entered into force on January 1, 1989.

The Montreal Protocol has been applauded as the single most successful MEA (United Nations, 2015a). The protocol has set-up a timetable for countries to phase out ozone depleting substances (ODS). Each party shall report to the Ozone Secretariat on their consumption which is the production plus import minus export of ODS. In order to regulate import and export of new, used, recycled and reclaimed controlled substances, the Montreal Protocol required parties to establish a licensing system. When countries began to issue licenses to control import and export of ODS, due to the limit of license, smugglers started to use counterfeit license or declare ODS as non-ODS.

When governments start to control or ban any substance, a black market is bound to develop. A UNEP report on "Illegal Trade in Ozone Depleting Substances" (UNEP, 2001b) stated that "By 1996, illegal ODS trade had grown to an alarming level. Though reliable figures on the scope of illegal trade are difficult to come by, it is estimated that between 16,000 and 38,000 tonnes of illegal chlorofluorocarbons (CFCs) were traded worldwide during 1995". By the end of 2000, the volume of illegal trade in CFCs had declined in developed countries.

Reports of seizures indicate that illegal trade in the Asia and Pacific region was on the rise around 2006. The Environmental Investigation Agency (EIA) estimated (based on a 2006 estimate) that 7,000 to 14,000 tonnes of the CFCs are smuggled annually into developing countries(Liu & Bagai, 2007) .

Developing countries have begun to phase out consumption and production of Hydrochlorofluorocarbons (HCFCs) since 1 January 2013. The Environmental Investigation Agency reported on the growing evidence that HCFCs are starting to be illegally traded in many parts of the world, and some indications of smuggling of methyl bromide. Large seizures of illegally smuggled HCFCs have already begun to occur in the United States, the Philippines and India. The EIA released a 2014 report, New Trends in ODS Smuggling, that predicted the likelihood that the scale of illegal trade in HCFC will be much larger than the illegal trade of CFC due to higher consumption of HCFC. At its peak, HCFC was three times greater than at CFCs peak production (EIA, 2014). Currently, the Asia-Pacific Region is the largest ODS producing and consuming region in the world. China alone produces 70% HCFCs of the global production (Ozone Secretariat website, 2010).

1.1.1.3 Illegal trade in pesticide

In 1985, in order to address the potential risks posed by dramatically increased hazardous chemicals and pesticides (BRS Secretariat, 2015a), the Food and Agriculture Organization (FAO) launched a voluntary information exchange programme, the International Code of Conduct on the Distribution and Use of Pesticides. UNEP set up the London Guidelines for the Exchange of Information on Chemicals in International Trade in 1987. In 1989, the voluntary Prior Informed Consent (PIC) procedure was integrated into these two instruments. In the United Nations Conference on Environment and Development held in 1992 in Brazil (Rio Earth Summit), countries called for a legally binding instrument on the voluntary PIC procedure by the year 2000. Consequently, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was adopted in Rotterdam on 10 September 1998. The Convention entered into force on 24 February 2004.

More than 70,000 chemicals are traded worldwide, which account for 10 percent of the global economy (UNEP & FAO, 2004). China and India have a major trade in chemicals. In the region, China is the largest producer and exporter of pesticides, with India being the second largest.

The challenges for the Rotterdam Convention are when assessing chemicals, there is a need to consider pesticides with disrupting potencies, eco-toxicological properties, or inhalation toxicity, and a need for effective documentation of pesticides and classification. On the Prior Informed Consent (PIC) list, many governments simply do not indicate whether to permit or prohibit the import of the listed substances. If a country indicates the prohibition of a good or substance and then receives a request to import, the lack of a response is considered to be a default NO. In the Mekong Sub-region, the use and trade of pesticides have increased and many pesticides are labelled in foreign languages (93% in Cambodia). Pesticide production in China and their export to other Asian countries have increased. There is illegal trafficking in pesticides, for example, Class 1 pesticides still being used by farmers (e.g. Methamidophos, Follidol). Weak enforcement and corruption stand as a significant barrier in addressing issues related to pesticides, Yet, even where legislation is in place, unsafe practices in pesticide use are all too common–mixing multiple chemicals, spraying when pregnant and breastfeeding and discarding waste into local waterways (PANAP, 2009).

The Pesticide Action Network Asia and the Pacific (PANAP) in 2007 stated that about 31% of pesticides are used in developing countries. The World Health Organization (2008) stated that around 346,000 people died per year across the world due to unintentional poisonings. Two-thirds of the deaths were from developing countries due to poverty, illiteracy, lack of information and health facilities. Vulnerable rural farming communities of small farmers, peasants, indigenous people and agri-workers, especially women and children, were trapped in a cycle of poison.

1.1.1.4 Challenges in the implementation of the Stockholm Convention

In 1995, the Governing Council of UNEP requested the Intergovernmental Forum on Chemical Safety (IFCS) to undertake an international assessment on 12 persistent organic pollutants (POPs) on their threats to human health and the environment. In June 1996, IFCS recommended international action including a global, legally binding instrument to minimize the risks from the 12 POPs. The Stockholm Convention was adopted on the 22nd and 23rd of May 2001, in Stockholm, Sweden.

As of May 2015, the Stockholm Convention obligates its parties to take measures to eliminate the productions and use of 22 persistent organic pollutants

(POPs), including Dieldrin and Aldrin, to restrict the productions and use of two POPs, and to reduce the unintentional release of six POPs. The challenges in the implementation of the Stockholm Convention include illegal trade and illegal use of pesticides and a lack of capacity to identify POPs chemicals and products. Similar to the Montreal Protocol and the Basel Convention, when regulations and controls are in place, illegal trade appears. In many developing countries, there is a need to strengthen the capacity of relevant government institutions in the prevention of illegal trade and illegal use of pesticides, as well as a need for more stringent laws and regulations. In many developing countries, customs officers have limited knowledge regarding POPs. For example, the Vietnamese customs seized transformers that contained POPs for several years but was forced to store them in their own warehouse. Some countries lack the necessary human resource capacity and essential professional knowledge on POPs and skills to identify POPs chemicals and products. Furthermore, some countries also lack national standards and knowledge for POPs application, procurement, storage, transport and disposal, and awareness on adverse effects of POPs (UNEP, 2010).

There is a lack of specific legislation governing illegal trade in hazardous waste and harmful substances in many countries. Poor enforcement or limited legal penalties reduce the risks for international crime syndicates to traffic hazardous wastes and harmful substances.

1.1.1.5 Calling for building synergies on MEAs

Normally, each MEA has its own secretariat, Conference of the Parties (COP) or Meeting of the Parties (MOP), technical expert groups, or open-ended subsidiary bodies. At the national level, each MEA has its own national focal point. For example, the Montreal Protocol has its National Ozone Units. The Basel Convention has its competent authorities or focal points. The Rotterdam Convention and Stockholm Convention also have their national focal points. In most of countries, the national focal point for each MEA is a different government competent authority. That is, there can be four different national competent authorities serving as four chemical and wasted related MEAs. In order to implement the four MEAs, each focal point needs to coordinate with the ministry of trade or commerce, the customs department and other relevant governmental agencies, such as the ministry of industry and the ministry of

agriculture. The main reason is each MEA is negotiated independently to address a certain issue. Once an MEA is established, a Party is normally requested to nominate its own focal point and/or competent agency. Each MEA would have its own conference of parties and secretariat.

For the four chemical and waste MEAs, the customs department plays an important role in enforcing the MEAs including data reporting, enforcing licensing system, control import and export, and combating illegal trade. In most countries, especially developing countries, collection of customs duty and border protection is the top priority. It is difficult for customs officers to attend all the meetings required by different focal points of MEAs. They also do not have time to attend all the training required by different MEAs. Customs officers expressed their concern about the inter-ministry coordination between the customs authority and environment agency. They highlighted if it is difficult to coordinate and harmonize activities within the ministry of environment, it is more difficult for the coordination between the customs authority and environment agency[4].

The United Nations called for building synergies on MEAs to improve environmental governance as early as 2002(United Nations, 2002) "To ensure the full implementation of multilateral environmental agreements and other international and regional environmental commitments in an effective and coordinated manner while promoting synergies among them, acknowledging their positive contribution to sustainable development." At the global level, synergies among the Basel/Rotterdam/Stockholm Conventions are ongoing (see section 2.2). These three conventions have already started to hold extraordinary COPs (holding COPs meetings of three conventions at the same time), and undertaken joint programmes, joint management, and joint capacity building, etc. since 2009. At the regional level, the Basel Convention Regional Centres have now also acted as the Stockholm Convention Regional Centres. At the national level, countries like Thailand have established a coordination committee to address chemical and waste issue. The decisions adopted by the Basel/Rotterdam/Stockholm Conventions have been mostly focused on global

[4] From the researcher' interview to customs officers during the coordination of Project Sky Hole Patching, an Operation on Combating Illegal Trade in Ozone Depleting Substances and Hazardous Waste (see section 4.1.4) in 2006.

efforts, it is still not clear whether MEA synergies can help actual implementation of MEAs at the regional and national levels and therefore need to be researched.

While the synergies processes among the Basel/Rotterdam/Stockholm Conventions are taking place at the global level, an MEA Regional Enforcement Network on Chemical and Waste (MEA REN) has been established since 2007. This pilot project was developed and implemented by UNEP in Asia and the Pacific region based on the experiences from the implementation and enforcement of the Montreal Protocol. The MEA REN may offer lessons to be learned from MEA building synergies at the regional and national levels to improve environmental enforcement.

On 25 September 2015, the General Assembly of the United Nations (United Nations, 2015b) adopted a set of sustainable development goals which include the following:

> *"12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment*
>
> *12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse"*

The General Assembly called for revitalizing global partnership for sustainable development. Approaches including building synergies to achieve the sustainable goals should be further explored.

1.1.2 Statement of the problem

Firstly, four main chemical and waste related MEAs (Basel/Rotterdam/Stockholm Conventions, Montreal Protocol) have overlapped in administration, information exchange, capacity building and awareness raising, there is also a great need for coordination among enforcement agencies. The current institutional fragmentation has weakened international environmental governance and reduced the effectiveness of enforcement of MEAs. Secondly, compliance and enforcement of chemical and waste related MEAs, such as dealing with illegal trafficking and prosecution of offences, has imposed great challenges to parties to the

MEAs. Illegal trade in chemicals and waste have posed severe impacts to human health and the environment, a negative affect for countries to meet their obligations to the MEAs. Thirdly, the success of allegedly improved enforcement effectiveness between the chemicals and waste related MEAs (Basel/Rotterdam/Stockholm Conventions) through building synergies will have to be proved, as well as an exploration of how such synergies came about at the regional and national levels. Finally, there is limited understanding/exploration on what experiences and lessons can be learned from the implementation and enforcement of the Montreal Protocol (which has yet to be synergized with the Basel/Rotterdam/Stockholm Conventions) and whether the case of MEA REN at the regional level and its capacity building activities at the national level could improve environmental enforcement.

1.2 Research Objectives

The main research objective is to analyse the claims by Frank Biermann, Steffen Bauer(2005), Maria Ivanova, Jennifer Roy(2007) and et al, regarding the benefits of building synergies on chemical and waste related MEAs as a way of overcoming fragmentation and improving environmental enforcement. The sub-objectives are as below:

1.2.1 To analyse the institutional changes including reform of organizations or revisions of regulation and legislation after building synergies;

1.2.2 To assess the impacts imposed on environmental enforcement by the institutional changes brought by building synergies;

1.2.3 To explore the factors that building synergies on MEAs that are likely to improve the effectiveness of environmental enforcement;

1.2.4 To build a model on synergizing chemical and waste related MEAs to improve enforcement effectiveness.

1.3 Research Questions

The main research question of this thesis is whether and how building synergies on chemical and waste related MEAs improves enforcement effectiveness in the Asia and Pacific region.

To answer this research question, the sub research questions of the thesis are:

13.1 What are the institutional changes including reform of organizations or revision of regulation and legislation after building synergies?

13.2 What are the impacts imposed on environmental enforcement by the institutional changes brought by building synergies?

13.3 What are successful factors in and barriers to building synergies on MEAs to improve the effectiveness of environmental enforcement?

13.4 How can one build a model on synergizing chemical and waste related MEAs to improve enforcement effectiveness?

1.4 Scope of the Study

This study has focused on building synergies among four chemical and waste MEAs i.e. Montreal Protocol, Basel Convention, Rotterdam Convention, and Stockholm Convention in the Asia and Pacific Region, while focusing on China and Thailand. The temporal scope is from the year of 2001 to 2015.

The aforementioned scope of study is described below:

This study used the MEA Regional Enforcement Network (REN) project as a case study. The project had been implemented in the Asia and Pacific Region from 2007 until present (2015). It was built on a Regional Customs Network which addressed trade in Ozone Depleting Substances (ODS) since 2001. The MEA REN project has covered the Montreal Protocol, and the Basel/Rotterdam/Stockholm Conventions. The participating countries are as below:

Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Fiji, India, Indonesia, Iran, DPR Korea, Republic of Korea, Lao PDR, Maldives, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Timor Leste, and Viet Nam.

The reasons for focusing on China and Thailand are as below:

- China is the second largest economy in the world;
- Thailand is a leading economy in the Southeast Asia;

- China is the largest producer of Ozone Depleting Substances in the world, and largest producer and exporter of pesticide in the region. Trade volume between China and its neighbouring countries have been increasing;
- Thailand's National Coordinating Committee on Chemical Safety was established in 1997. Thailand is a good example for what appears to be a highly synergized country.
- Seizures on chemicals and waste have been reported by China and Thailand in recent years.
- The researcher is a Chinese national and has worked in Thailand. This facilitated the access to information needed for the research.

1.5 Outcome

This study explored the relationship between enforcement effectiveness and building synergies of MEAs. This study provides empirical proof on building synergies on MEAs can address the issue of institutional fragmentation and improve environmental enforcement. It contributed in improving environmental governance at large and developed a model on improving environmental enforcement through building synergies.

1.6. CONCEPTUAL FRAMEWORK

1.6.1 Hypothesis

Building synergies of MEAs might address problems such as institutional fragmentation, overlap or conflicts of international environmental regimes, and could likely improve the effectiveness of compliance and enforcement of MEAs, as well as improve environmental governance at large.

1.6.2 Conceptual Framework

This research applies concepts of fragmentation, synergy, collective action, inter-organization theory, and regime effectiveness to conduct the case study.

Global environmental governance has continued to be dominated by the model of issue-by-issue negotiation of MEAs (O'Neill, 2009). A new convention, Minamata

Convention on Mercury was agreed on 19 January 2013. It is under discussion which country will host the Secretariat for the Minamata Convention.

The first multilateral environmental agreement, the Convention on the Rhine, entered into force in 1868. The United Nations Environment Programme (UNEP), Food and Agriculture Organization (FAO), and International Union for the Conservation of Nature and Natural Resources (IUCN) identified 519 environmental treaties (Carlsnaes, Risse-Kappen, & Simmons, 2002) through their Ecolex project (FAO, UNEP, & IUCN, 2015).

It was pointed out that there is a need to study internal politics of international environmental regimes, especially the performance and effectiveness of the regimes. There are overlaps and even conflict among international regimes (O'Neill, 2009, p. 123). Rosendal (2001) studied synergistic gain across regimes and discussed how institutional overlap imposed a negative impact on international environmental co-operation.

1.6.2.1 Institutional fragmentation

Biermann et al (2009) pointed out that international legal literature employed the notion of fragmentation widely, and "the concept of fragmentation of global governance architectures focuses on the overall institutional setting in which distinct institutions exist and interact". Koskenniemi and Leino (2002) describe fragmentation as "[s]pecial regimes and new organs are parts of an attempt to advance beyond the political present that in one way or another has been revealed unsatisfactory." Andresen, Steinar (2001), Bernstein and Ivanova (2007), Kanie (2007), who work in the fields of international relations and international economics, refers to the "fragmentation" of arrangements, especially regarding environmental governance.

Scott (2011, p. 2) pointed out that "fragmentation emphasizes the isolation and disconnect between regimes and institutions. Irrespective of its more general relevance, the concept of fragmentation has particular resonance within the international environmental law, a complex regulatory field comprising multiple regimes and institutions giving rise to overlapping and, occasionally, conflicting legal and policy mandates." Biermann et al (2009) found that different strands of academic research assessed fragmentation either positively, affirmatively or rather negatively. They called

continued study “both through more in-depth empirical studies of fragmentation, in particular, policy domains and through larger comparative study programs that reach beyond the environmental policy domain”. Roch and Perrez (2005) argued that if an environment minister had to attend all of the meetings of the required by different MEAs, he or she would likely be participating in meetings for 600 days out of the year.

1.6.2.2 Synergy

The UN has called on building synergies among MEAs to improve environmental governance. Synergy is defined by the Oxford Dictionary as “the interaction or cooperation of two or more organizations, substances, or other agents to produce a combined effect greater than the sum of their separate effects.[5]” Daft and Marcic defined synergy as, “When organizational parts interact to produce a joint effect that is greater than the sum of the parts acting alone, synergy occurs. The organization may attain a special advantage with respect to cost, market power, technology, or management skill. When properly managed, synergy can create additional value with existing resources, providing a big boost to the bottom line.” (Daft & Marcic, 2011, p. 161)

1.6.2.3 Clustering

Oberthür (2002) defined clustering as, “the combination, integration or merging of MEAs or their parts in order to improve international environmental governance”. Oberthür (2002) propounded that clustering could improve international environmental governance. He identified organizational elements and functional elements to be included in clustering. For organizational elements, he pointed out organizing combined meetings could reduce administrative effort, travel costs, and related burdens, and enhance learning and cross-fertilisation. For function elements, three common functions could be clustered: (i) decision-making processes (including scientific and technological assessments, transparency of participation in the decision-making, like defining common rules), (ii) review of implementation (including dispute settlement, monitoring, implementation review and compliance) (iii) supporting

[5] http://oxforddictionaries.com/definition/english/synergy

activities such as capacity building and resource transfer (including training, awareness raising, and information exchange).

1.6.2.4 Enforcement

UNEP (2001a) defined "enforcement " in its GUIDELINES ON COMPLIANCE WITH AND ENFORCEMENT OF MULTILATERAL ENVIRONMENTAL AGREEMENTS:

> *"Enforcement means the range of procedures and actions employed by a State, its competent authorities and agencies to ensure that organizations or persons, potentially failing to comply with environmental laws or regulations implementing multilateral environmental agreements, can be brought or returned into compliance and/or punished through civil, administrative or criminal action."*

In this research, the term enforcement refers to the enforcement authorities being customs and police that implement multilateral environmental agreements, national laws and punish offenses.

1.6.2.5 Regime

Stephen Krasner defined regime as "a set of implicit or explicit principles, norms, rules and decision making procedures around which an actor's expectations converge in a given area of international relations". He further clarified, "norms are standards of behaviour defined in terms of rights and obligations, rules are specific prescriptions or proscription for action. Decision-making procedures are prevailing practices for making and implementing collective choice."(Krasner, 1982, p. 187). Keohane and Nye defined regimes as "sets of governing arrangements" that include "networks of rules, norms and procedures that regularize behaviour and control its effects"(Keohane & Nye, 1977) .

1.6.2.6 Regime Effectiveness

Young and Levy defined effectiveness is "a matter of the contributions that institutions make to solving the problems that motivate actors to invest the time and

energy to create them" (Young & Levy, 1999, p. 4). They point out that an effective regime has a greater behaviour impact, which could eliminate or solve problems. In other words, the regime effectiveness is how well the regime helps society limit the consequences of human activities such as pollution or health damage to acceptable levels or cope with pollution or damage most productively. They conceptualized regime effectiveness as (i) a legal approach in which is a measurement of a regime's effectiveness, as in the extent that contractual commitments are met, i.e. compliance of rules, changes in policies and the setup of programs. Obligations have been written in treaties that could demonstrate effectiveness.; ii) The economic approach that is a measurement whether a regime lead the expected outcome in a cost efficient manner; (iii) The normative approach considers including normative principles like justice, stewardship and participation; (iv) And the Political approach. Young and Levy stated "A political definition treats regimes as directed at particular international problems and conceives of these problems as functions of specific constellations of actors, interests, and institutions or what we call behavioural complexes…" Measurement of regime effectiveness could be observed in the changes of behaviour, interests of actors, and policies and performance of institutions that lead to a positive management of the problem (Young & Levy, 1999, pp. 5-6).

Young defined process effectiveness (Young, 1994, p. 146) as a matter of "the extent to which the provisions of an international regime are implemented in the domestic legal and political systems of the member states as well as the extent to which those subject to a regime's prescriptions comply with their requirements." A regime is effective in constitutive terms if "its formation gives rise to a social practice involving the expenditure of time, energy, and resources on the part of its members"(Young, 1994, p. 148).

The research used a legal approach and political approach to evaluate effectiveness improvement of the four MEAs after synergizing, such as in the improvement of compliance of rules, changes in policies, the establishment/set-up of programs, increase of seizures, data reporting, and the cooperation and coordination among stakeholders.

Table 1-1 Using Young and Levy's Concept to Evaluate Regime Effectiveness

	Before synergies	**After synergies**
Young and Levy concept on regime effectiveness		
(i) legal approach (Measurement of a regime's effectiveness is in what extent that contractual commitments are met)		
1.compliance of rules		
2. change of policies,		
3. Set-up of programs.		
4. obligations have been written in treaties		
(ii)Economic approach		
5. measurement whether a regime lead the expected outcome in a cost efficient manner.		
(iii) normative approach		
6. consider including normative principles like justice, stewardship and participation.		
(iv) Political approach		
7. changes of behaviour,		
8. interests of actors,		
9. policies and performance of institutions which lead to positive management of the problem		

Rittberger (1993) proposed to evaluate whether a regime has set-up formal mechanisms and rules to foster deeper cooperation and give the institutionalized regime a strong foundation. This could be an indicator to evaluate the MEA REN.

1.6.2.7 Environmental compliance and enforcement measurement

Kenneth J. Markowitz and Krzysztof Michalak (2004) discussed the indicators to measure environmental compliance and enforcement. They proposed the following indicators:

Table 1-2 : Basic Types of Environmental Compliance and Enforcement Indicators (source: Markowitz & Michalak, 2004)

Indicator	Measures	Environmental Compliance and Enforcement Examples
Input Indicator	Resources (human, material, financial, etc.) used to carry out activities, produce outputs and/or accomplish results.	- # of staff assigned to a task - $ spent per inspection - Ratio of # of staff to # of reg- ulated facilities
Output Indicator	Government activities, work products, or actions.	- # of enforcement cases settled per year - # of fines issued per year
Intermediate Outcome Indicator	Measure progress towards achieving final outcomes, such as changes in behaviour, knowledge, or conditions that result from program activities.	- pounds of pollutants reduced through enforcement actions
Outcome Indicator	The real impacts of compliance promotion and enforcement actions and the ultimate change in the state of the environment	- improved water quality - improved air quality

1.6.2.8 Collective Action Theory

Ostrom (1998) propounded that human actors could sort some of the collective action problems without external rules and enforcement imposed to them. Reputation, trust and reciprocity could contribute to higher level of cooperation (see figure1-1).

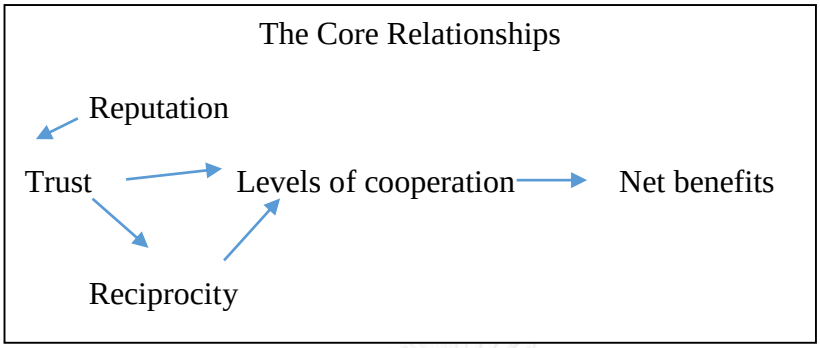


Figure 1-1 Ostrom's Collective Action Theory (source: Ostrom, 1998)

A relationship of trust is the foundation to work cooperatively. Mutual trust is critical to reduce transaction costs between people, because people do not need to monitor others (Vanni, 2014, p. 29). Trust is strongly associated with reputation. Ostrom (2007) observed people decide to trust others on the basis of their reputation in previous collective action situations. The joint action of reputation, trust and reciprocity reinforce each other and can increase the level of cooperation. Consequently, collective action could bring more benefits.

A nation could be treated as in individual in the study of international cooperation. The collective action theory could help to understand why countries are willing to cooperate with each other in addressing common environmental problem without external rules and enforcement imposed from outside.

1.6.2.9 Interorganization Relationship (IOR)

Oliver (1990) posited 6 Critical Contingencies of the Relationship Formation including necessity, asymmetry, reciprocity, efficiency, stability, and legitimacy. She highlighted that “Motives of reciprocity emphasize cooperation, collaboration, and coordination among organizations…. IORs occur for the purpose of pursuing common or mutually beneficial goals or interests.” She further supported the claims by Molnar (1978) and Raelin (1982) that “The enforcement of a joint program by a higher authority may induce mutuality and reciprocity between two agencies”, and Van de

Ven (1979)'s claim that the enforcement of joint programs "may increase each agency's respective efficiency by reducing duplication of effort."

Parmigiani and Rivera-Santos (2011) reviewed IOR and highlighted that "organizations partner with others to more effectively accomplish tasks and to reinforce interorganizational and interpersonal relationships. These partnerships enable them to gain powerful allies, improve their reputations, legitimacy, become connected with other more distant organizations, and gain access to greater and more diverse sources of social capital".

The IOR helps us to understand the incentives and factors to why agencies are willing to cooperate with each other.

1.6.2.10 Flow chart of conceptual framework

In order to build synergies, there is need to have the right institutions, regulations, people and coordinating mechanisms to ensure synergies occur (see figure 1-2). The key question is how building synergies improve environmental effectiveness? Step one is to map institutional changes brought about by building synergies, including changes in organizational reform and to regulations at both the national and regional levels (see figure 1-3). The concept of clustering was applied. Step two is to evaluate the enforcement effectiveness after building synergies. Young and Levy's concept on regime effectiveness and Input-Output-Outcome model were applied. Step three is to explore the successful factors and barriers in building synergies. Ostrom's collective action theory and Oliver's inter-organizational proposition were applied.

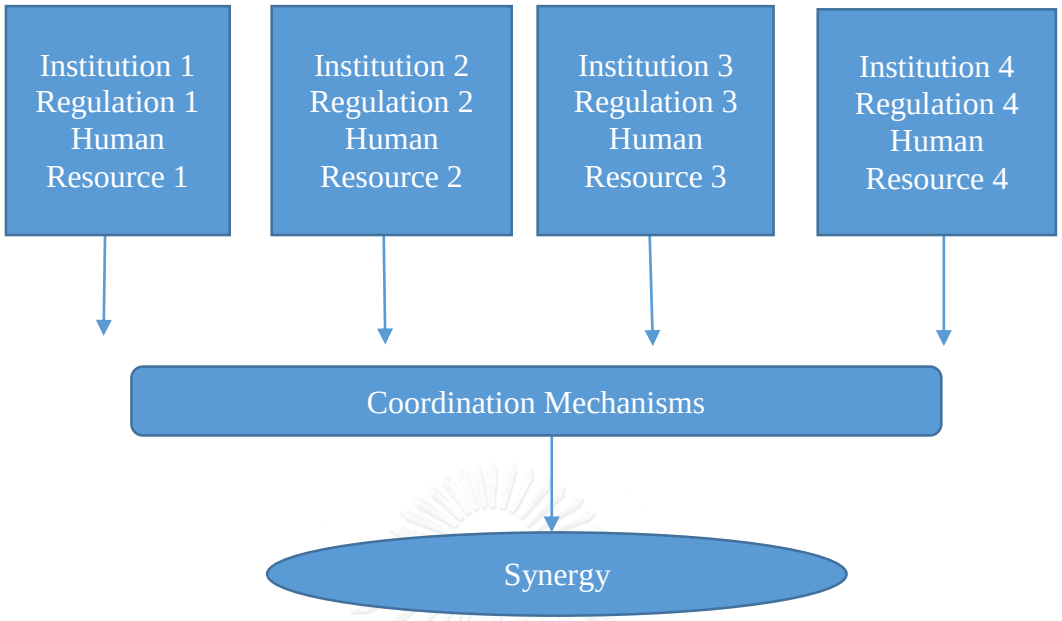


Figure 1-2 Flowchart on Synergy

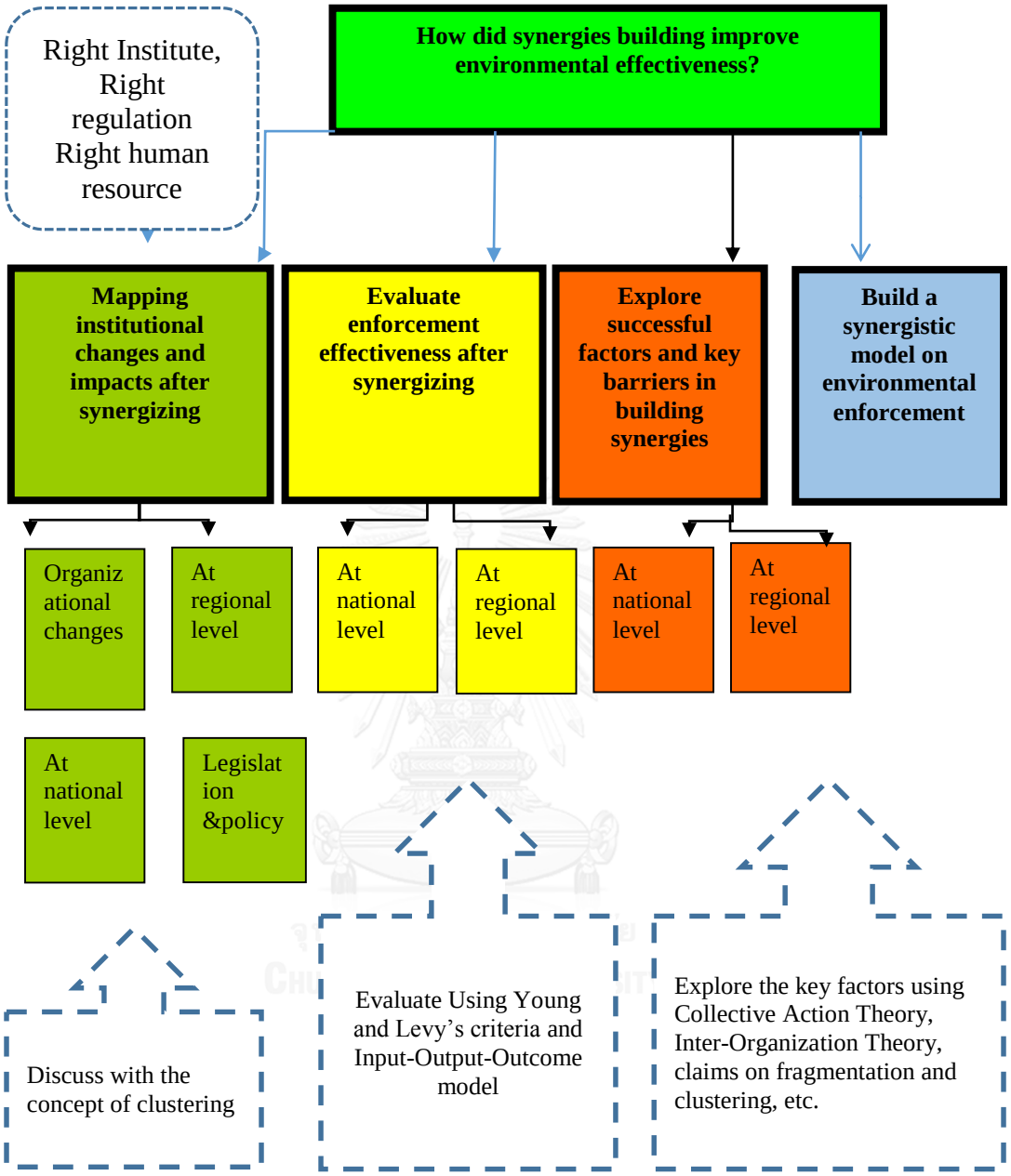


Figure 1-3 Flow Chart of Conceptual Framework on Whether Building Synergies Could Improve Enforcement Effectiveness

1.7 RESEARCH APPROACHES AND METHODOLOGY

1.7.1 Research Approaches

The research was conducted in the following three steps, with each step becoming one chapter within the dissertation:

Step 1: Mapping institutional changes before and after synergizing at regional and national level

Two data sets were collected through documentation analysis and in-depth interviews citing fragmentation and clustering theories. The data included the information before and after synergizing at national and regional levels:

- Reform or change of the organization dealing with the four MEAs such as newly established agency, coordination committee or merged agency. Any mechanism that has also been established.
- Revision of regulations and legislation regarding the four MEAs.
- What are the key elements and factors, and main barriers of institutional change?
- How did building synergies take place, such as are the four MEAs are clustered by functional elements or organizational elements?

Step 2: Measure enforcement effectiveness before and after synergizing;

Oran Young's methods were applied to measure the changes of enforcement effectiveness. Information was obtained through documentation analysis, in-depth interviews, and trade data analysis. The focus points are as below:

- Data reporting
- Trade control:
  --enforce licensing & permit
  --inspect goods
  --combating illegal trade
- Capacity building

Step 3: Explore the relationship between building synergies and improvement of enforcement effectiveness.

Ostrom's Collective theory (see section 1.6.2.8 Collective Action Theory) was applied to explore the synergies at the regional level. Interorganization relation theory

(see section 1.6.2.9 Interorganization Relationship) was used to analyse synergies at the national level. Biermann's theory was referred to analyse the characters of the fragmentation of the four MEAs and how building synergies to improve architecture of governance.

1.7.2 Methodologies

The study conducted documentation reviews (for step 1 and 3); in-depth interview (for step 1 and 3), comparing trade data (for step 2), and qualification analysis (for step 3)

1.7.2.1 Documentation review on MEA REN

The UNEP Desk Review documents related to the MEA REN Project including meeting reports, project reports and evaluations to retrieve the institutional changes and evaluate effectiveness such as:

- At the regional level, are there any changes of organization of the four MEAs?
- Are there any new mechanism established after the implementation of the project?
- How did the synergies among the MEAs come out at regional level?
- What are the key successful factors in the project for synergizing the four MEAs?
- What are the key barriers in the project for synergizing the four MEAs?
- How do the project activities improve effectiveness of enforcement of the four MEAs?

1.7.2.2 In depth interview

Using purposive sampling methods, the researcher interviewed the following people in order to elicit opinions on building synergies on chemical and waste MEAs and questions are listed as below:

- The National Focal points of Montreal Protocol and the Basel/Rotterdam/Stockholm Conventions in China and Thailand for national

institutional arrangements, status on clustering, key elements, main barriers and impacts.

- Customs focal points of on environmental issues for impacts of synergies and effectiveness improvement.
- Officers of the Secretariats of the Basel/Rotterdam/Stockholm Conventions and their regional Centres, OzonAction Programme and its regional office for views on clustering of MEAs, pros and cons, challenges.
- NGOs including the Environmental Investigation Agency (EIA), the Basel Action Network (BAN), the Pesticide Action Network (PAN) and the International Network for Environmental Compliance and Enforcement (INECE) for views on building synergies, and suggestions for improvement.
- Media persons for overall views on building synergies.
- Academic persons for views on building synergies, including key successful factors and barriers.

Table 1-3: List of Interviewees for the Research

Date of Interview	**Organization**	**Type**	**Title**	**Remarks**
14-Mar-2013	Tsinghua University	Academia	Programme Officer	Academic person for views on building synergies including key elements and barriers. They provided thoughts from academic aspects.
25-Mar-2014	Shanghai Customs College	Academia	Division Director	
6-Mar-2013	Anti-Smuggling Bureau, China Customs	Customs	Officer	Customs focal points on environmental issues for impacts of synergies and effectiveness improvement.

25-Mar-2013	Supervision and Control Department, General Administration of China Customs	Customs	Division Director	They are the key persons on trade control and are related to enforcement effectiveness. They were interviewed on impact imposed by MEA REN such as changes in data reporting, trade control and capacity building.
22-Mar-2014	World Customs Organization Regional Office for Capacity Building (WCO ROCB)	Customs	Project Manager	
22-Mar-2014	Korea Customs Service / Regional Intelligence Liaison Office for Asia and the Pacific	Customs	Deputy Director, Former Deputy RILO Head	
22-Nov-2013	European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL)	International Organization	Programme Officer	

19-Mar-2014	UNEP ROAP	MEA Secretariat/ Regional Office	Consultant	Officers of Secretariats of Basel/Rotterdam /Stockholm Conventions and their regional Centres, OzonAction Programme and its regional office for views on clustering of MEAs, pro and cons, challenges. They are the leading international agencies for the MEAs. They have the key information on building synergies and implementation of MEAs at international and regional levels. They were interviewed on contributions of MEA REN to the synergy process of Chemical and Waste related MEA at global level.
29-Mar-2014	United Nations Environment Programme Regional Office for Asia and the Pacific (UNEP ROAP)	MEA Secretariat /Regional Office	Programme Officer	
28-Mar-2012	Secretariat of Basel Convention	MEA Secretariat/ Regional Office	Legal Officer	
3-Dec-2013	Basel/Rotterdam/Stockholm Secretariat	MEA Secretariat/ Regional Office	Legal Officer/Program Officer	
26-Feb-2013	Basel Convention Regional Centre for Asia and the Pacific (BCRC China)	MEA Secretariat/ Regional Office	Programme Office	
22-Apr-2014	Indochina Bureau, The Strait Times	Media	Chief	Media person for overall views on building synergies. Media have involved in raising awareness on MEAs. They were interviewed on MEA

				REN's contribution from the angel of media.
28-Mar-2012	Division of Hazardous Waste, Pollution Control Department (PCD), Thailand	National Focal Point	Director	National Focal points of the Montreal Protocol and the Basel/Rotterdam/Stockholm Conventions in China and Thailand for national institutional arrangements, status on clustering, key elements, main barriers, impacts. These officers are key persons to implement the MEAs at national level. They lead the process of building synergies or planning for building synergies. They were interviewed on institutional changes at national level regarding the four MEAs, key elements and main barriers on synergizing, impact brought by synergizing, and how to improve the synergizing.
1-Mar-2013	National ODS Import and Export Management Office, Foreign Economic Cooperation Centre (FECO) of Environmental Protection (MEP), China	National Focal Point	Programme Officer	
5-Mar-2013	Division 5, Foreign Economic Cooperation Centre (FECO), Ministry of Environmental Protection (MEP), China	National Focal Point	Director	

7-Mar-2013	Division 3, Foreign Economic Cooperation Centre (FECO), Ministry of Environmental Protection (MEP), China	National Focal Point	Programme Officer
8-Mar-2013	Division 5, Foreign Economic Cooperation Office (FECO), Ministry of Environmental Protection (MEP), China	National Focal Point	Deputy Director,
8-Mar-2013	Division 5, Foreign Economic Cooperation Centre (FECO), Ministry of Environment Protection (MEP), China	National Focal Point	Programme Officer

12-Mar-2013	Division 5, Foreign Economic Cooperation Centre (FECO), Ministry of Environmental Protection (MEP), China	National Focal Point	Programme Officer	
23-Dec-2013	Solid Waste Centre, Ministry of Environmental Protection (MEP), China	National Focal Point	Programme Officer	
23-Dec-2013	Pollution Control Department (PCD), Thailand	National Focal Point	Programme Officer	
2-Jan-2014	Division of Hazardous Waste, Pollution Control Department (PCD), Ministry of Environment and Natural Resources, Thailand.	National Focal Point	Focal Point for Basel Convention, Division Director	

8-Apr-2014	Pollution Control Department, Thailand	National Focal Point		
9-Apr-2014	National Ozone Unit, Thailand	National Focal Point	Former Programme Officer	
10-Jul-2013	Environmental Investigation Agency	NGO	Campaigner	NGOs for views on building synergies, and suggestions for improvement. They are important players on implementation of MEAs, for they are watchdogs and have unique views on compliance, meeting commitments, challenges, and effectiveness. They were interviewed on how the MEA REN contributes to environmental enforcement from the view point of NGOs.
11-Mar-2014	Environmental Investigation Agency	NGO	Campaigner	
27-Mar-2014	Environmental Investigation Agency (EIA)	NGO	Campaigner Director	
1-Apr-2014	Pesticide Action Network for Asia and Pacific (PAN AP)	NGO	Programme Officer	

22-Nov-2014	Basel Action Network (BAN)	NGO	Executive Director	
21-Mar-2014	The Netherlands, Human Environment and Traffic Inspectorate (ILT)	Environmental Inspector from EU	Senior Inspector	Interviewed for the viewpoints for exporting countries of hazardous waste

The interviewees are officers who are involved in the implementation of chemicals and waste related MEAs. The officers have extensive knowledge and experiences regarding the MEAs and have provided insights on the challenges and difficulties in their implementation, as well key barriers and successful factors in building synergies. The researcher transcribed and documented the interviews and quoted them during analysis. The questionnaires for interviewing the above listed informants are attached as Annex A,B,C,D, E and F.

1.7.2.3 Compare trade data

The research analyses the data from various sources to explore the impact brought by building synergies. The data sources include:

- Trade Data on Ozone Depleting Substances, hazardous waste, pesticide, persistent organic pollutants reported by parties to Secretariats of the Ozone/Basel/Rotterdam/ Stockholm Conventions.
- Seizure reports of countries to UNEP.
- Selected trade data, such as the chlorofluorocarbon (CFC) from UN Comtrade database—a web-based international trade database

The author compared the trade data to evaluate the effectiveness of trade control of the countries in Asia and Pacific, especially China and Thailand.

1.7.2. 4 Qualification analysis (for step 3)

The research triangulated the interview with the results of document review of MEA REN to verify the claims, and explore the factors behind the activities through qualification analysis. The author analysed the impact brought by building synergies in China, Thailand and the Asia Pacific Region in enforcing chemicals and waste related MEAs by comparing the findings of document review and the statements of interviewees. The author has also analysed the views to barriers and factors of building synergies from the aspect of an environmental officer, customs officer, media, academia and NGOs to in order to make convincible conclusions.

1.7.3 The process to develop a synergizing model

Conceptual model of building synergies to improve enforcement effectiveness is applied from designing and method of case study written by Yin (1994) comprising: 1. Outlining a case study conclusion; 2. Modifying theories and concepts; 3. Developing policy implication and; 4. Drawing a model.

Stage 1. Outlining a case conclusions:

The conclusions of the desk study of the MEA REN regarding building synergies to improve environmental effectiveness were summarized.

Stage 2. Modifying theories and concepts:

Concepts of clustering of MEAs, synergizing building of MEAs were further discussed.

Stage 3 Developing policy implications

Recommended how to use the findings of the research to improve policies, such as reform of organization, revision of regulation, policy and legislation, and informal arrangement like MOUs, etc.

Stage 4 Develop a model

Based on the findings of the study, the research builds a model on how to improve environmental enforcement.

1.8. RESEARCH LIMITATIONS

Though the author endeavoured to conduct this study in a very comprehensive manner, but there were some limitations of this study which included:

1. The research only addressed enforcement aspect. While the scope of enforcement of MEAs include many enforcement factors, the research only focused on issues border control through customs; And there might be mistakes in reporting trade data.
2. Because customs authorities only can seize part of the illegal shipments due to the large volume of trade, limited resources of customs, tricky smuggling methods, and countries do not report all of their seizures to international agencies due to political concerns and other reasons, it is difficult to obtain reliable data on illegal trade. The research heavily relied on information from NGOs.
3. Due to time constraint and language barriers, the research only could interview limited officers who can speak English and Chinese or work through interpreters.
4. The research has heavily relied on UNEP projects documents. The researcher is a UN staff member. Though it is an advantage to have experience in implementation of the projects and obtain internal information, there is also a risk to be an insider. Moreover, because the UN needed to maintain a neutral position in the implementing project, plus its bureaucracy, its project reports and progress reports need to be scrutinized carefully.
5. The synergies are still ongoing, how they have done at national and regional levels are still not clear. The progress may be slow.

1.9. SIGNIFICANCE OF THE RESEARCH

The research provided an empirical study on how building synergies on MEAs could contribute to environmental enforcement. It explored the relationship between building synergies and enforcement effectiveness, and discusses to what extent building synergies could improve enforcement effectiveness. It could contribute to the understanding of the politics and policies of building synergies itself, through a review (and interviews on) the recent history, and could evaluate claims surrounding the benefits of building synergies as a way of overcoming fragmentation and improving environmental enforcement. It provided policy recommendation on improving the effectiveness of compliance and enforcement of MEAs through synergizing and improving environmental governance at large. It will contribute to governance theory and provide solutions for MEA implementation.

1.10. RESEARCH ETHICS

The researcher complied with research ethics strictly. The researcher treated the information obtained from interviewing with sensitivity. The information collected in any cases is used only for this research. The researcher received consent from informants before interviewing. Confidentiality and anonymity was strictly maintained. Participants in the study were highly respected.

1.11. STRUCTURE OF THE THESIS

Chapter 2 reviewed literature on architecture of global environmental governance including earth system governance, fragmentation and clustering, clustering of multilateral environmental agreements, synergies process of the Basel/Rotterdam/Stockholm Conventions at the global level and background of cases of building synergies on chemical and waste MEAs in the Asia and Pacific region. Knowledge gap were identified.

Chapter 3 mapped the institutional changes after building synergies in Southeast and South Asia, China and Thailand.

Chapter 4 discusses the impacts imposed on environmental enforcement by the institutional changes brought by building synergies.

Chapter 5 discussed why building synergies likely improved the environmental enforcement effectiveness. This Chapter built a model on synergizing chemical and waste related MEAs to improve enforcement effectiveness.

Chapter 6 is the conclusions and recommendations.

Chapter 2 . LITERATURE REVIEW

This section lists some topics related to this study that include: the architecture of global environmental governance (section 2.1), a synergies process for the Basel/Rotterdam/Stockholm Conventions at the global level (section 2.2), background on cases of building synergies on chemical and waste related MEAs in the Asia and Pacific region (section 2.3), the identified knowledge gap in section 2.4 highlighting that there is little empirical work on the pros and cons of institutional multiplicity, the relationship between institutional proliferation and effectiveness, efficiency, and equity of global environmental governance. The author proposed to use the empirical study on building synergies around chemical and waste MEAs in the Asia and Pacific Region. The author investigated the evidence of pros and cons on how to improve environmental governance, and further explored how to address overlap, duplication or synergy issues.

2.1 Architecture of Global Environmental Governance

It was expounded that after the 2002 World Summit on Sustainable Development, the political and academic debates have converged on "whether the architects of a reformed global environmental governance system should embrace its current multiplicity or promote greater coherence and actively stem fragmentation"(Ivanova & Jennifer Roy, 2007, p. 2). Maria Ivanova and Jennifer Roy pointed out the magnitude of environmental problems and the ability of contemporary institutions to effectively address them is disconnected. The environmental problem is exacerbated by the lack of coherence and coordination of international organizations' priorities, activities and investments (Ivanova & Jennifer Roy, 2007, p. 12). This research explores the overlap in chemical and waste related MEAs and key factors to address ineffectiveness of enforcement.

2.1.1 Earth System Governance

Young (2009) elaborated that governance is a social function to direct societies to gain collective benefits and avoid collective harms. Levy et al. defined regimes as "social institutions consisting of agreed-upon principles, norms, rules, procedures, and programs that govern the interactions of actors in specific issue areas" (Levy, 1995).

The Basel/Rotterdam/Stockholm Conventions and the Montreal Protocol are international agreements where countries agreed to address issues of hazardous waste, pesticide, persistent organic pollutants and ozone depleting substances. Countries committed to the obligations in the MEAs to avoid collective harm.

It was posited international organizations, non-governmental agencies and the private sector could also contribute to solving social conflicts instead of a sovereign government doing it alone. The United Nations Environment Programme was created in 1972 to set the global environmental agenda and promote the coherent implementation of the environmental dimension of sustainable development (UNEP, 2003). Non-governmental organizations have been played an important role in governance. For example, the World Wide Fund for Nature (WWF) has been very active in wildlife conservation. The Environmental Investigation Agency, an NGO based in the United Kingdom and United States, have conducted undercover investigations on environmental crime and provide intelligence to the World Customs Organization and Interpol (EIA, 2015). The Basel Action Network (BAN) has focused on environmental justice, toxic trade and its devastating impacts (BAN, 2015). This case study discusses how international organizations and NGOs interact with governmental agencies to assist them to implement MEAs.

Biermann (2007) proposed the concept of 'earth system governance' as "the sum of the formal and informal rule systems and actor-networks at all levels of human society that are set-up in order to influence the coevolution of human and natural systems in a way that secures the sustainable development of human society". He introduced the 'earth system governance' as the interface of earth system analysis and governance theory. He outlined the five key problem structures of earth system governance, and identified credibility, stability, adaptiveness, and inclusiveness as overarching principles for earth system governance. He suggested five research and governance challenges namely, "the problems of the overall architecture of earth system governance, of agency beyond the state, of the adaptiveness of governance mechanisms and of their accountability and legitimacy, and of the modes of allocation in earth system governance—in short, the five A's of earth system governance research" (Frank Biermann, 2007). The case study discusses the institution setting on chemical

and waste related MEAs at the regional and national levels, and explores the changes of institutions before and after synergies.

2.1.2 Fragmentation and Clustering

Biermann (2009) defined global governance architecture as "the overarching system of public and private institutions that are valid or active in a given issue area of world politics. This system comprises organizations, regimes, and other forms of principles, norms, regulations, and decision-making procedures." They pointed out that fragmentation is an omnipresent feature of global governance architectures, it is important to research the advantages and disadvantages of fragmented governance architecture for future institutional development. They further differentiated fragmentation in three degrees, i.e. synergistic, cooperative, and conflictive. Cooperative fragmentation may bring significant benefits, while conflictive fragmentation imposes negative effects. Synergistic fragmentation is the second-best option (Frank Biermann, Philipp Pattberg, et al., 2009). Oberthür et al (2004) asserted that because environmental issues are so complicated, no single body can address them alone, so that a certain degree of overlap and duplication in institutional arrangement is necessary.

Most MEAs "have evolved independently, cover different geographic and substantial scopes, and are marked by different patterns of codification, institutionalization, and cohesion" (F. Biermann, Siebenhüner, & Schreyögg, 2009, p. 18). The United Nations has called for closer cooperation between multilateral environmental institutions to promote synergies and facilitate policy coherence (United Nations, 1998). This case study discusses the synergies among the Basel, Rotterdam and Stockholm Conventions at the regional and national levels, as well as the relationship between the Montreal Protocol and the Basel/Rotterdam/Stockholm conventions.

Oberthür (2002) propounded that clustering could improve international environmental governance. He identified organizational elements and functional elements to be included in clustering. For organizational elements, he pointed out organizing combined meetings could reduce administrative effort, travel costs and related burdens, and enhance learning and cross-fertilisation. The disadvantages are that

one environmental issue may dominate the other and reduce opportunities for raising awareness. Various functional committees and specialized bodies could be integrated, such as compliance bodies. However the difference in their structures and functions may prevent coordination. For function elements, three common functions could be clustered: (i) decision-making processes (including scientific and technological assessments, transparency of participation in decision-making such as defining common rules); (ii) Review of implementation (including dispute settlement, monitoring, implementation review and compliance); (iii) Supporting activities like capacity building and resource transfer (including training, awareness raising, information exchange). This thesis reviews the synergies process of the Basel/Rotterdam/Stockholm conventions, and explores how the synergies could be built at the regional and national levels.

Oberthür further assessed and evaluated advantages and disadvantages of the three different types of proposals of clustering i.e. clustering by issue, function or region. Moltke (2001) proposed to cluster MEAs within five thematic issues: conservation, global atmosphere, hazardous substances, marine environment, and extractive resources. UNEP (2001c) categorized the MEAs into five clusters: the biodiversity-related conventions, the atmosphere conventions, the land conventions, the chemicals and hazardous wastes conventions, and the regional seas conventions and related agreements. Other approaches include clustering by environmental harm, ecosystem or scientific research.

Oberthür (2002) argued that clustering of organizational and functional elements of MEAs would improve the consistency and transparency of the international system of environmental governance, as well as facilitate effective participation of states and other stakeholders due to the reduction of the number and length of international meetings. Clustering of capacity building activities would enhance resource efficiency and synergies in the implementation of such activities.

This case study on MEA REN referred to synergistic fragmentation and clustering to explore how the clustering of Chemical and Waste MEAs was able to bring about benefits and improved effectiveness. Moreover, the research also discussed the possibility of clustering between the Montreal Protocol and the Basel/Rotterdam/Stockholm Conventions.

2.1.3 Clustering of Multilateral Environmental Agreements

Moltke (2001), Biermann and Frank (2005) and the United Nations University (1999) all pointed out that clustering of MEAs is to sort out the problem of 'fragmentation' within the system of international environmental governance. Proliferation of MEAs caused inefficient and ineffective function of the system, as it increasingly repeated work and conflict between different MEAs due to previous lack of co-ordination and the increasing resources required from countries, international agencies and NGOs, for participation in the system.

Oberthür (2002) defined clustering as "the combination, integration or merging of MEAs or their parts in order to improve international environmental governance". It was proposed that without changing legal or administrative arrangements, clustering of institutions and bureaucracies could improve the efficiency and effectiveness of existing agreements (Moltke, 2005).

At the national level, clustering could promote coordination in the drafting of national laws, training, and awareness raising activities conducted by different MEAs and also save both human and financial resources. Information dissemination and communication strategies of MEAs could be similar (Oberthür, 2002). The argument focused on 'material' or administrative benefits instead of how the compliance and enforcement of MEAs could be improved.

Biermann called for continued research on fragmentation "both through more in-depth empirical studies of fragmentation in particular policy domains and through larger comparative study programs that reach beyond the environmental policy domain." (Frank Biermann, Bernd Siebenhüner, et al., 2009, p. 32). The case study of MEA REN is an in depth empirical study of fragmentation in chemical and waste related MEAs.

Though Van Asselt (2005, p. 213) et al. have studied regime inter-linkages, regime 'clusters' or regime 'complexes', they concluded that "contestation of regulatory approaches at the international level either counteract the convergence pressures from globalization or provide room for policy diversity", it is still worth researching the structure and effectiveness of this overall architecture. The research question could be what kind of mechanisms, and how those mechanisms could ensure effective vertical interaction of governance systems in different levels and scales.

Elements, barriers and hindrances to effectiveness of the mechanisms should be explored.

Below, figure 2-1 presents the relationship among MEA Secretariats, Meeting of the Parties, Subsidiary Agencies, National Focal Points and Law-related Agencies especially customs department. Some duplications in terms of the Meeting of the Parties, data reporting, training, and trade control could be observed. For example, the Basel Convention has its Secretariat, Conference of the Parties, Open End Working Groups, Implementation and Compliance Committees, and Regional Centres. At the national level, it has a National Competent Authority. The authority works closely with customs department on data reporting, trade control and training. When a prosecution of offence occurs, they will further work with the police, prosecutor(s) and judge. The Rotterdam and Stockholm Conventions, and the Montreal Protocol have similar institutional arrangement. Therefore, there is an overlap of work, or double work, and presents an obvious need for the coordination among various actors.

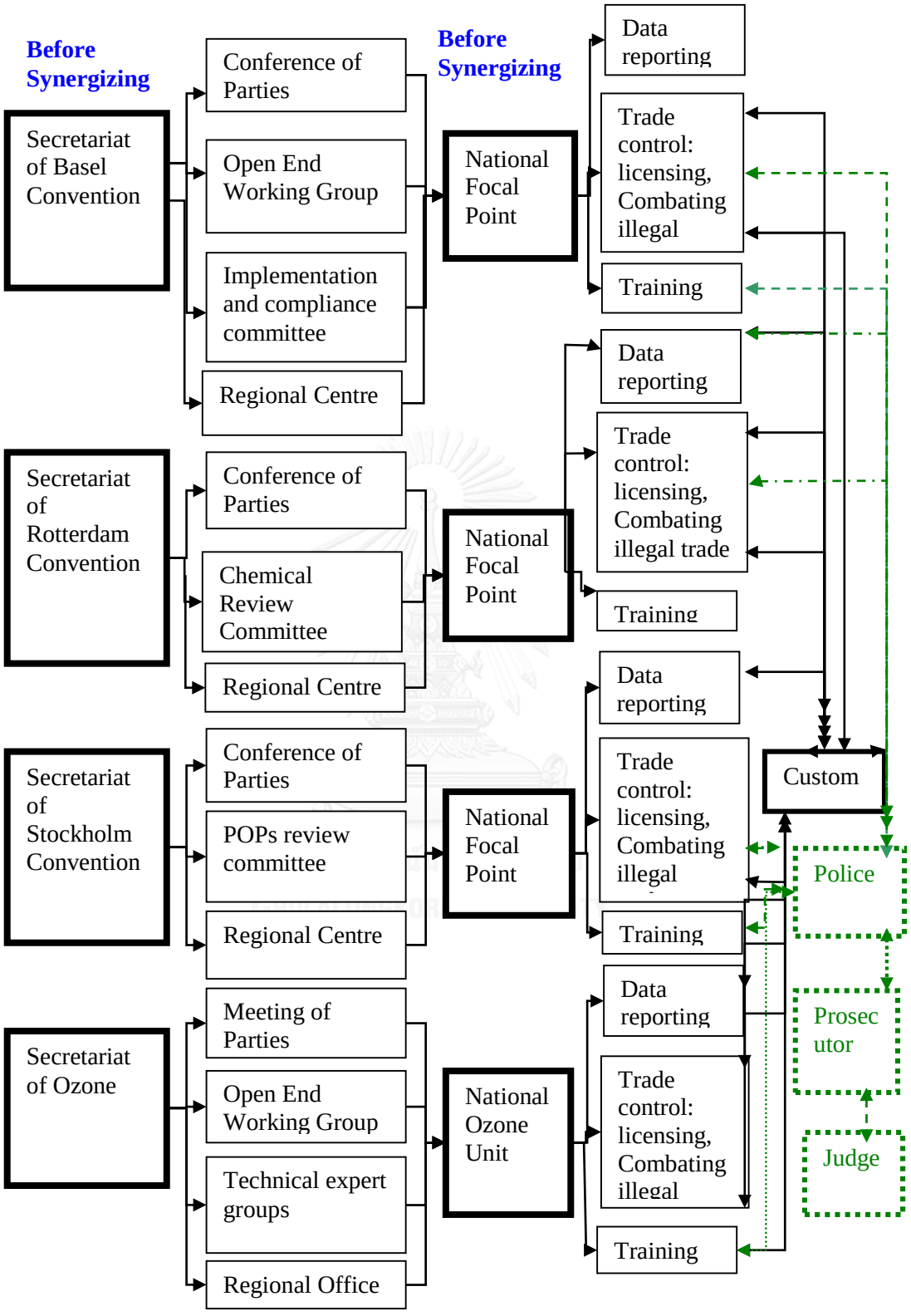


Figure 2-1: Diagram of Relations among MEA Secretariats, National Focal Points and Law-related Agencies before Synergizing

Below, figure 2.2 shows how possible synergizing could simplify relationships and further improve coordination and effectiveness. At the global level, the synergies process of the Basel/Rotterdam/Stockholm Conventions have been underway since 2002 (see section 2.2). At regional level, the Basel Convention Regional Centres have assumed the role of the Stockholm Convention Centres. Between the Montreal Protocol and the Basel Convention, there is a kind of synergizing activity similar to the MEA Regional Enforcement Network project in Asia. At national level, it is possible that combined focal points could liaise with customs and Secretariats.

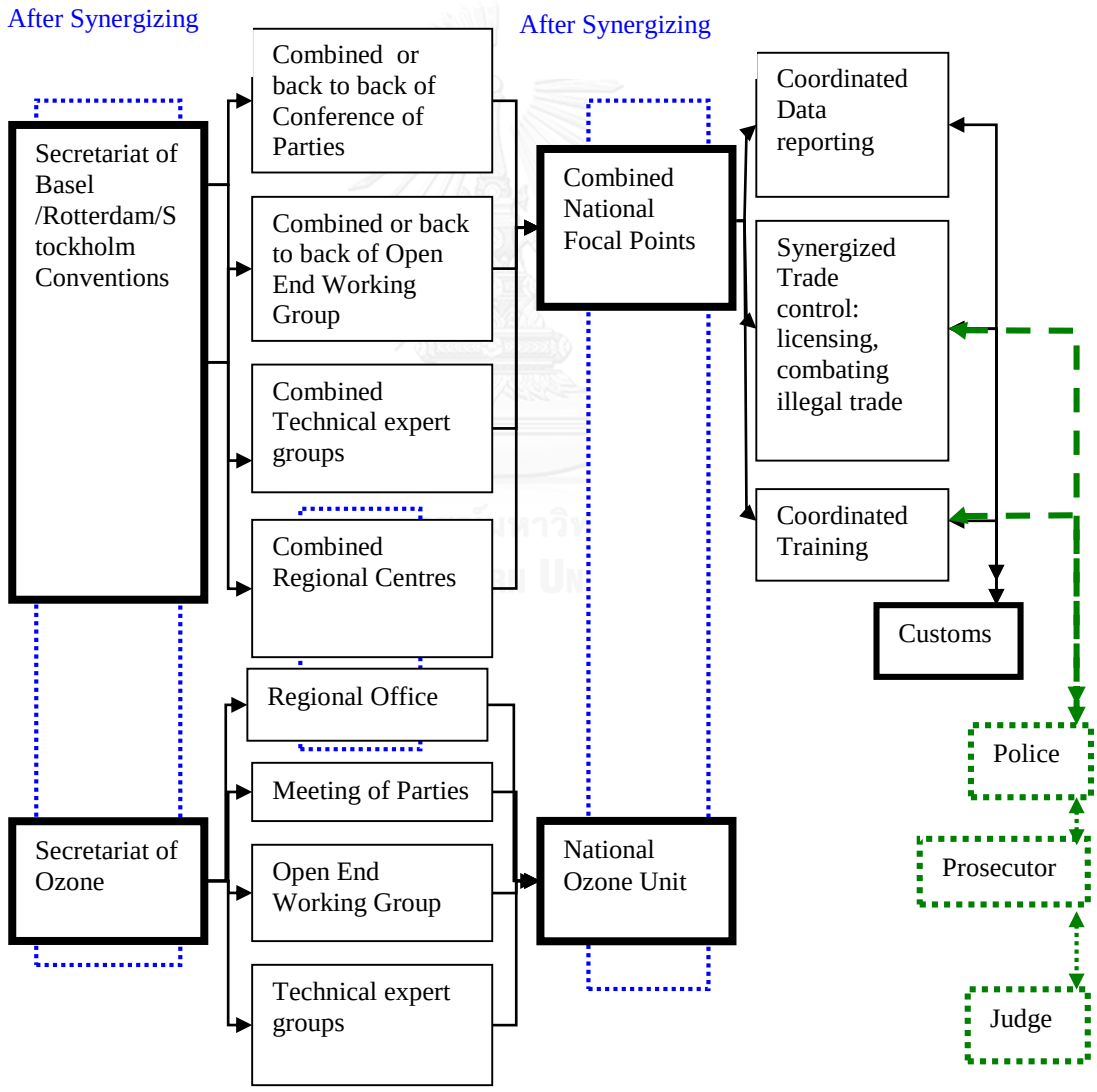


Figure 2-2 Diagram of Relations among MEA Secretariats, National Focal Points and Law-related Agencies after Synergizing

2.2 Chronology of the synergies process of Basel/Rotterdam/Stockholm Conventions at global level

In February 2002 and 2005, in order to improve the implementation of MEAs, the Governing Council of UNEP made the decisions (SS.VII/1 and 23/9) to highlight the need for enhancing cooperation, collaboration and synergies among chemical and waste MEA Secretariats. In October 2004, at the first Meeting of the Conference of the Parties of the Rotterdam Convention it was proposed to have a joint head of the Secretariats of both the Rotterdam and Stockholm Conventions. In 2005, the Conference of the Parties to the Stockholm and Rotterdam Conventions, and the Open-ended Working Group of the Basel Convention requested the secretariats to prepare studies on how to improve.

The study prepared by the Stockholm Convention Secretariat in 2006 summarized the provisions and structures of the three conventions, substantive or technical mandates and activities of the three secretariats, and proposed opportunities and options for increased synergy among the secretariat functions. The two options were: "Option 1. A common head and common convention support limited to core a management function; Option 2. An integrated administrative support mechanism, plus integrated implementation and technical assistance services"(UNEP, 2006b). The study focused on administrative issues. The Secretariat of the Basel Convention argued the synergy process should consider the existing cooperation and collaboration between the Basel Convention with other international organizations, along with the workload and feasibilities to conduct activities such as organization of conferences and meetings. Furthermore, the synergy should not be limited to the three conventions (UNEP, 2006b).

In 2006 and 2007, the Conferences of the Parties to the three conventions decided to establish an Ad Hoc Joint Working Group to prepare joint recommendations on the synergy of the three conventions in the fields of administration and programme (SC-2/15, RC- 3/8, VIII/8). The Ad Hoc Joint Working Group of the Basel, Rotterdam and Stockholm Conventions met on 26 - 28 March 2007 in Helsinki, Finland, 10 to 13 December 2007 in Vienna, Austria and on the 25-28 March 2008 in Rome, Italy. They made recommendations on the following areas:

- Organizational issues in the field;

- Technical issues;
- Information management and public awareness issues;
- Administrative issues;
- Decision-making. (UNEP, 2007a)

The recommendations concerned synergies at the national, regional and global levels had been adopted by the Conference of the Parties of Basel/Rotterdam/Stockholm Conventions respectively.

On 15 June 2009, the three secretariats created interim joint services for administration, conference services, public information, legal services and information technology. Afterwards, they also created an interim joint service for resource mobilization.

In 2011, the Conferences of the Parties to the Basel, Rotterdam and Stockholm conventions adopted substantively identical decisions for further cooperation and coordination(UNEP, 2011c).

"Excerpts from important relevant decisions on synergies between chemicals and waste multilateral environmental agreement Secretariats.

Box 1: Excerpts from United Nations Environment Programme Governing Council decision SS.VII/1 on international environmental governance (February 2002)

"In particular, there is support for enhancing collaboration among multilateral environmental agreement Secretariats in specific areas where common issues arise, such as current work among the chemicals and waste multilateral environmental agreement Secretariats and including the interim Secretariats".

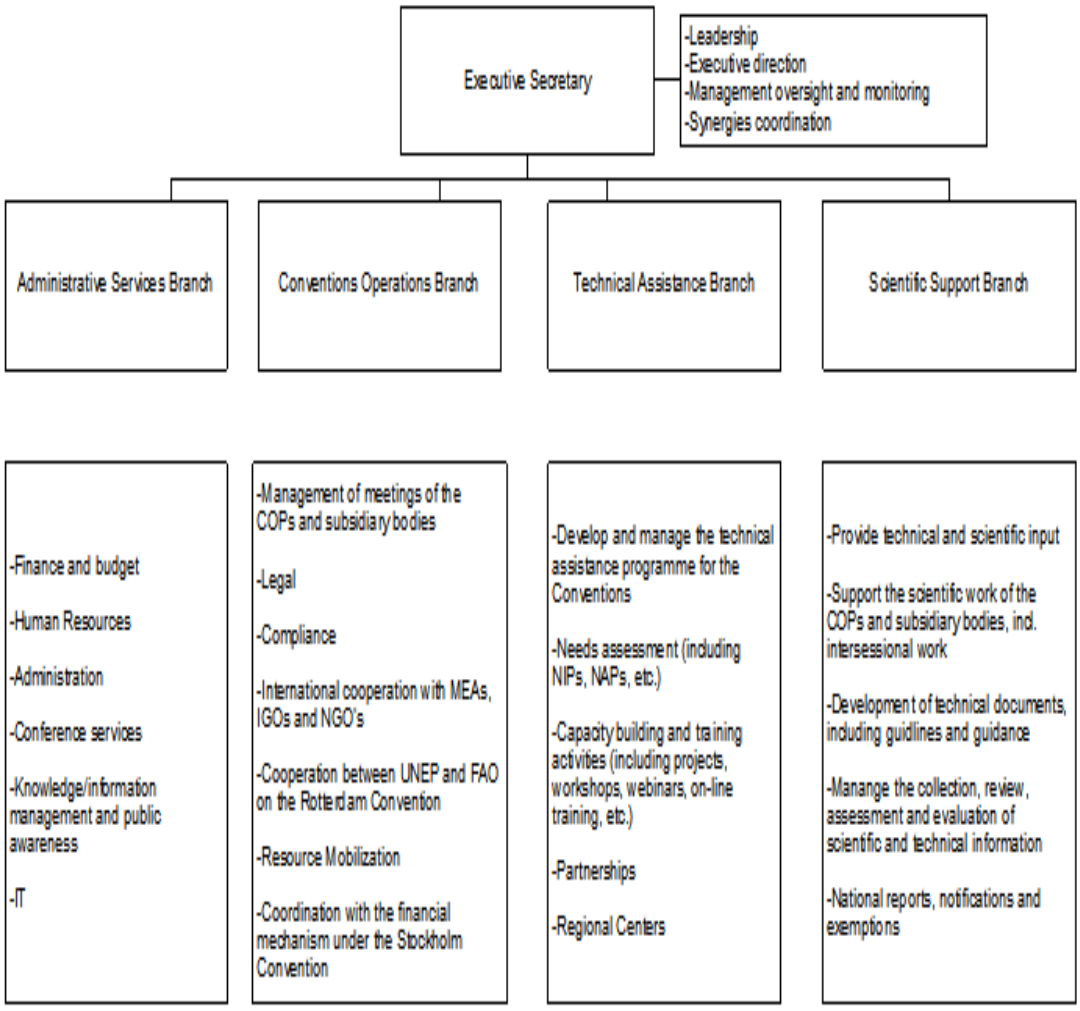
Box 2: Excerpts from Rotterdam Convention Conference of the Parties decision RC-1/17 on financing and budget for the biennium 2005–2006 (September 2004)

"*Invites* the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants at its first meeting to consider, if feasible and appropriate, co-financing in 2006 the position of a joint head of the Secretariats of both the Stockholm and Rotterdam conventions at the level of D-1."

The United Nations Environment Programme Governing Council made several decisions (decision 23/9)(UNEP, 2005) on chemicals management in February 2005, requesting the UNEP Executive Director to promote the cooperation between the Montreal Protocol, the Basel, Rotterdam, Stockholm and Conventions, the UNEP Chemicals Branch and the World Customs Organization in combating illegal trade in

chemicals and waste. This decision was to disseminate clear messages that chemical and waste related MEAs should work closely with World Customs Organization. The decision has also requested the UNEP Executive Director to promote the cooperation at the regional level using the Basel Convention Regional Centre. The decision also requested the UNEP Executive Director "to promote full cooperation and synergies between the Secretariats of the Basel Convention, the Rotterdam Convention, the Stockholm Convention and UNEP Chemicals";

It was encouraging to see that a joint head for the three Conventions was appointed in 2011. The three MEA Secretariats have started to coordinate in activities, in regards to administrative issues, fundraising and training programmes. A joint Conference of the Parties of the Three Conventions was held in 2013. The 2013 meetings of the Conferences of the Parties (BC.Ex-2/1, RC.Ex-2/1 and SC.Ex-2/1) endorsed the new organizational structure of the secretariat which consists of four



branches: the Administrative Services Branch, the Conventions Operations Branch, the Technical Assistance Branch, and the Scientific Support Branch (BRS Secretariat, 2015b).

Figure 2-3 The newly endorsed organizational structure of the Basel/Rotterdam/Stockholm Secretariat (Source: BRS Secretariat Website).

The Montreal Protocol has been excluded from the synergy process. The main reason may be that the Montreal Protocol has ample funding, and there is no incentive to be synergized with other chemical conventions. But at the regional level, there has been projects synergizing the Montreal Protocol with the Basel/Rotterdam/Stockholm Conventions. At the national level there was moderate progress in synergies. At the regional level the Basel/Stockholm Regional Centres have not been involved in the synergies process. There are fourteen regional centres around the world. The regional centres are hosted by hosting countries. The host countries provide staff and facilities. The Basel/Rotterdam/Stockholm Conventions secretariats provide some activities funds. The decisions of United Nations Environmental Programme Governing Council have focused at the secretariat level and only recommended a few regional focal centres to facilitate the coordination of chemicals and waste management activities. The synergies process is consistent with Biermann's proposition on synergistic fragmentation.

UNEP and FAO (Risby & Amador, 2013) reviewed the progress of the synergies decisions on the Basel/Rotterdam/Stockholm Conventions. The report proposed an evaluation model which was based on the theory of change.

The proposed impact drivers include:

1. *"Governments are committed to enhancing national (ID1) / regional (ID2) cooperation and coordination among the Ministries responsible for the implementation of the Conventions*
2. *Other stakeholders (BC / SC ReCs, UN agencies, civil society, private sector) are incentivized to support synergistic interventions (ID3):*
3. *Management capacities are sufficient to enforce national legislation and measure progress (ID4)"*

Outcome-Impact Pathway for Synergies at the National and Regional Level

GOAL → OUTCOMES → DRIVERS & ASSUMPTIONS → THREATS / RISKS → INTERMEDIATE STATE (RESULTS) → IMPACT

Goal	Expected Outcomes	What key drivers and assumptions that are responsible for delivery (or non-delivery) of results	What are the risks or threats that will prevent results / impacts	What has happened since the intervention(s) ended, or still needs to happen, to achieve impacts?	What was the strategy ultimately aiming to achieve? - IMPACTS
Enhanced cooperation and coordination between the Basel, Rotterdam and Stockholm Conventions at the National, and Regional level leads to improved protection of human health and the environment	Strengthened national process and coordinating mechanisms among sectors and ministries Policy coherence improved through the integration of the three Conventions into national development plans and strategies Harmonized legislation to promote life-cycle approaches to ensure environmentally sustainable management of chemicals and wastes Strengthened technical capacities for coordinated national and regional implementation Improved knowledge management on human health and environmental impacts	ID1: Governments are committed to enhancing national cooperation and coordination among Ministries responsible for the implementation of the Conventions	Conflicts ('turf wars') between Ministries block cooperation and coordination	Policy and legislative changes (Life-cycle / cradle to grave or product stewardship) are implemented Cost-effective and viable synergistic investments are executed by stakeholders (e.g., Government, private sector) Monitoring and evaluation of environmental status and human health to track progress towards Convention goals	Reduced exposure to hazardous chemicals and wastes for humans and the environment
		ID2: Governments are committed to regional cooperation and coordination for the implementation of the Conventions	Lack of Government commitment to national and regional policy and legislative harmonization		
		ID3: Other stakeholders (BC / SC ReCs, UN agencies, civil society, private sector) are incentivized to support synergistic interventions	Other stakeholders are not sufficiently involved or incentivized to support synergies		
		A1: Policies and legislation at the national level can be harmonized	National management capacities are insufficient to enable synergies		
		ID4: Management capacities are sufficient to enforce national legislation and measure progress	No measurement of progress towards improved protection of human health and the environment		

Figure 2-4 Outcome-Impact Pathway for Synergies at the National and Regional Level (Source: UNEP 2013)

From figure 2-4, we can deduce that the expected outcomes include a strengthened process and coordinating mechanism, harmonized policies and legislations, strengthened capacity and improved knowledge to manage chemicals and waste. The case study of MEA REN explores institutional changes after building synergies include reform of organization and issuance of new law or regulations. It also discusses improvement of capacity and knowledge sharing.

The key drivers and assumptions were discussed in the previous section above the model. The case study of the regional enforcement network explores to what extent that governments in Asia and Pacific have enhanced national (ID1) and regional (ID2) cooperation and coordination among the relevant ministries to enforce chemicals and waste related MEAs. The study also discusses whether the Secretariat of the Basel, Rotterdam and Stockholm Conventions, UNEP, the World Customs Organization, and NGOs (ID3) have been incentivized to support synergistic interventions. Finally, the study discusses capacities (ID4) to enforce the Basel/Rotterdam/Stockholm Conventions and the Montreal Protocol in a synergistic fashion.

The key threats and risks to the model include a turf war between the ministries, lack of governments' commitment to national and regional legislation and policy harmonization, lack of incentivization of other stakeholders to synergies, inadequate capacity to enable synergies, and limited measures indicators for the improvement of environment. The case study of MEA REN explores the barriers in building synergies among chemicals and waste related MEAs in China, Thailand and the Asia and Pacific region.

With regard to intermediate state (results), i.e. what happened since the intervention(s) ended, or still needs to happen or to achieve impacts, the case study of MEA REN evaluates the institutional changes after building synergies and explores the relationship between the changes and enforcement effectiveness.

The UNEP/FAO evaluation report concluded that the Basel/Convention/ Stockholm Convention Secretariats have successfully merged together, but it is too early to give assessment on effectiveness of the synergy. At national level, countries like Brazil and Uruguay have established inter-ministerial committees to coordinate cooperation before the synergies processes and decisions. The case study of MEA REN

is to assess effectiveness of the synergy of the Basel/Rotterdam/Stockholm Conventions and the Montreal Protocol at the national and regional levels.

2.3. Background of Cases for Building Synergies on Chemical and Waste MEAs in the Asia and Pacific region.

Responding to the calls of countries in the Asia and Pacific region on addressing illegal trade in chemical and waste, and improving the cooperation and collaboration between environmental and enforcement agencies at the national and regional levels, the United Nations has implemented several projects in the region in line with decisions and recommendations regarding synergizing of MEAs.

2.3.1 Overview of the MEA Regional Enforcement Network (MEA REN)

In order to assist countries in the Asia and Pacific region to control the transboundary movement of ozone depleting substances, UNEP, with support from Sweden, has implemented a Regional Enforcement Network in Southeast Asia since 2002. The network was expanded to cover countries in South Asia in 2003. The network has facilitated participating countries in compliance of the Montreal Protocol. In 2007, participating countries requested the network to include hazardous waste, harmful chemicals, persistent organic pollutants which are regulated by the Basel, Rotterdam and Stockholm Conventions. This is the first, and only, project in the world working to build synergies amongst the four MEAs to improve enforcement effectiveness.

The project has requested countries to coordinate their activities among the Basel, Rotterdam and Stockholm Conventions. This answered the call of synergy of chemical and waste MEAs. The project has promoted the inter-agency cooperation between environment agencies and customs administrations. Customs and environment officers have been networked at the national and regional levels. Information exchange mechanism has been established. Enforcement operations in addressing illegal trade in harmful chemicals and hazardous waste have been organized. Desk studies on transboundary movement of harmful chemicals and hazardous waste were conducted. Annual meetings have helped 25 countries in the region to understand the illegal trends of regulated chemicals and waste, bottlenecks and possible solutions of the enforcement of related MEAs. Several NGOs such as the Environmental Investigation Agency, the

Pesticide Action Network, and the Basel Action Network have been actively involved in the project. They have demonstrated the role of NGO's in environmental governance in such areas as the watchdog, informer, awareness raiser, societal conscience etc. The enforcement operation, Project Sky Hole Patching which aimed to address illegal trade in ODS and hazardous waste could be a good example to explore the factors which contributed to enhance the cooperation between enforcement agencies and environmental agencies, as well as lessons learnt in the operation. MEA REN is discussed in detail in Section 3.1.2. It is the main research target for this research. The conclusion of the study is mainly based on the discussion of the creation of MEA REN and synergies built through MEA REN in various aspects include: information exchange, enforcement operation, and capacity building.

The MEA REN project is a bottom up proposal. The experience of implementation of the project could be a good case study and retrieve empirical evidence on addressing institutional fragmentation of environmental governance. It is worth exploring key elements for building synergies, what are the barriers, and evaluating the effectiveness of enforcement of the four MEAs.

2.4 Identified Gaps:

Ivanova and Roy (2007) pointed out analysts like Najam (2002), Oberthür and Gehning (2004) believed that that institutional multiplicity and a certain degree of overlap and duplication can make the optimal operation of the system ; However, Chanovitz (2005), Ivanova, Berruga and Maurer(2006), as well as Nowotny (2006) thought that institutional proliferation has tended to cause harm to effectiveness, efficiency, and equity in global environmental governance. Ivanova and Roy (Ivanova & Jennifer Roy, 2007, p. 2) elaborated:

> *"With little empirical work on the topic, however, the arguments on the pros and cons of multiplicity have mostly been grounded in anecdotal rather than systematic evidence. No comprehensive assessment of the activities and effectiveness of international organizations, conventions, and other institutional arrangements in the environmental arena currently exist. Few systematic efforts to track mandates, actions, outcomes, and investments have been*

undertaken by scholars or practitioners. Analysts have therefore often built their claims on assumptions, personal experiences, and normative visions, rather than on rigorous analytical and empirical research (Frank Biermann & Bauer, 2004)."

Therefore, the empirical study on the building synergies of chemical and waste MEAs in the Asia and Pacific Region could investigate the evidence of pros and cons on how to improve environmental governance, and further explore how to address overlap, duplication or synergy issues.

The MEA Regional Enforcement Networking Project has addressed the Montreal Protocol and the Basel/Rotterdam/Stockholm Conventions in one go. It is a perfect case to explore to what extent the building synergies on MEAs work, what are the key elements for synergizing, what are the key barriers, how to improve cooperation between environmental agencies and law enforcement agencies, and whether the building of synergies is the right direction for improving the implementation of MEAs (see details in Section 3.1.2 and Section 4.1).

Another gap identified through the review of literature and the practice in the Asia and Pacific region is the absence of a proven model for explaining the benefit of building synergies on chemical and waste related MEAs to improve environmental enforcement. There is very limited research on models related to environmental enforcement. It is worth exploring, what are the key factors for improving building synergies and what should be prioritized to enhance environmental enforcement?

CHAPTER 3 MAPPING INSTITUTIONAL CHANGES AFTER BUILDING SYNERGIES

The chapter maps institutional changes after building synergies on chemicals and waste related MEA in Southeast and South Asia (section 3.1), China (section 3.2) and Thailand (section 3.3). It compares the institutional changes before and after building synergies at regional and national levels. It answers the research question: what are the institutional changes including the reform of organizations or revisions of regulation and legislation after building synergies?

3.1. Mapping Institution Changes after Building synergies in Southeast and South Asia

According to conceptual framework (section 1.6.2.10), this section maps the key players in implementing chemicals and waste related MEAs at the regional level of Southeast and South Asia, and reviewed the creation of MEA REN. Section 3.1.1 discusses the role of various players in the implementation of chemical and waste related MEAs in Southeast and South Asia, and summarizes the status of enforcement of the MEAs before building synergies. The players include the UNEP OzonAction Programme (section 3.1.1.1), the Basel Convention Regional Centres (section 3.1.1.2), the Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes (section 3.1.1.3), the Asia and Pacific Plant Protection Commission (section 3.1.1.4), the Environmental Investigation Agency (section 3.1.1.5), the Basel Action Network (section 3.1.1.6), and the Pesticide Action Network (section 3.1.1.7).

Section 3.1.2 discusses the creation of the Regional Enforcement Network in the Southeast and South Asia and its operation. It is comprised of how the Regional Enforcement Network was set-up (section 3.1.2.1), the objective of MEA REN (section 3.1.2.2), the Management of MEA REN (section 3.1.2.3), and the main activities of the MEA REN (section 3.1.2.4). Finally, section 3.1.3 summarizes of the changes at the regional level after building synergies.

3.1.1 Implementation of chemical and waste related MEAs in Southeast and South Asia

In Southeast and South Asia, there are number of international organizations and non-governmental organizations involving in the implementation of chemical and waste related MEAs. Those organizations, which are involved in trade control or combating illegal trade, include UNEP, the Basel Convention Regional Centres, the Basel Action Network (BAN), The Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes (Asian Network), the Food and Agriculture Organization (FAO), and the Pesticide Action Network for Asia and the Pacific (PAN AP). The following section discusses the role of these actors.

3.1.1.1 UNEP OzonAction Programme Compliance Assistance Programme

In order to help developing countries to implement the Montreal Protocol, the Multilateral Fund was established in 1991. The Fund is managed by its Executive Committee and has been provided with over US $ 3.0 billion between 1991 to 2015 to support industrial conversion, technical assistance, training and capacity building. (Multilateral Funds, 2015).

The United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), the World Bank and the United Nations Industry Development Organization (UNIDO) were assigned as implementing agencies. UNEP has taken the lead in capacity building and training. Based on the experience of Nordic Ozone Officer network, the Southeast Asia Network for Ozone Officers was set-up in 1993 with the participation of Brunei Darussalam, Cambodia, Fiji, Indonesia, Lao P.D.R., Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam. Two developed countries, Australia and Sweden have also joined to share their experience. The network is to help members to phase out ODS and meet commitments to the Montreal Protocol, to improve the ability of Ozone Officers through experience exchange, information and approach sharing (OzonAction, 2015a).

In 2002, UNEP created the Compliance Assistance Programme (CAP) to further enhance its activities in the implementation of Montreal Protocol. The Compliance Assistance Programme has been responsible in the managing of the Southeast Asia Ozone Network. The South Asia Network for Ozone Officers was launched in 2000. Its members include Afghanistan, Bangladesh, Bhutan, China, India,

Iran (Islamic Republic of), Korea (Democratic Republic of), Korea (Republic of), Maldives, Mongolia, Nepal, Pakistan and Sri Lanka, and two developed countries: Japan and the United States of America (OzonAction, 2015b). UNEP has worked with the World Bank, UNDP and UNIDO in assisting countries to phase out ODS through activities like information exchange and capacity building.

3.1.1.2 The Basel Convention Regional Centres

The Basel Convention Regional Centre for Asia and the Pacific (BCRC China)

The third meeting of Conference of the Parties to the Basel Convention was given approval and subsequently established fourteen regional centres to help developing countries in training, technology transfer, information exchange, consultation and awareness-raising. The Basel Convention Regional Centre for Asia and the Pacific (BCRC China) was set-up in 1997 in Beijing. In May 2009, the fourth meeting of the Conference of the Parties to the Stockholm Convention has approved BCRC China to be the Stockholm Convention Regional Centre for Capacity building and the Transfer of Technology on Persistent Organic Pollutants. In May 2010, "Solving the E-waste Problems (StEP)" initiative assigned BCRC China as its regional focal point for Northeast Asia (BCRC China, 2015).

BCRC China has worked with national focal points of Basel Convention closely on the implementation of the Basel Convention. The newsroom for the website of BCRC China shows that BCRC China has focused on waste management and technology transfer. For addressing illegal waste trafficking, it organized Regional Workshop on Prevention of Illegal Transboundary Movement for Hazardous Waste, 28-29 March 2007, in Beijing. A seminar on prevention of waste trafficking was held in 2011 in Shenzhen, China.

The Basel Regional Centre for Southeast Asia (BCRC SEA)

The Conferences of the Parties to Basel Convention has selected Indonesia to host its regional Centre for Southeast Asia countries covering: Brunei Darussalam, Cambodia, Lao PDR, Malaysia, Myanmar, Indonesia, Singapore, Philippines, Thailand

and Vietnam. In 2005, the Indonesian Government approved the framework Agreement on the Basel Regional Centre for Southeast Asia (BCRC SEA). The Centre came into operation in January of 2006. Its core functions are similar to that of BCRC China (BCRC SEA, 2015).

In 2013, the sixth meeting of the Conference of the Parties to the Stockholm Convention endorsed BCRC SEA as a Stockholm Convention Regional or Subregional Centre for Capacity-Building the Technology Transfer for a period of two years. The Centre has worked closely on information sharing and capacity building. It also organized several meetings of the Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes in cooperation with Japan's Ministry of Environment.

Basel Convention Regional Centre in Iran

The Department of the Environment (DOE) of the Islamic Republic of Iran began operation of its Basel Convention Regional Centre since May 2007. The centre was endorsed by the Conference of the Parties to Stockholm Convention in 2011 as regional or subregional centre for capacity building and the transfer of technology for four years.(Stockholm Convention Secretariat, 2015)

3.1.1.3 The Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes

The Asian Network for Prevention of Illegal Trans-boundary Movement of Hazardous Wastes is a network project that was established in 2003. The project aims to promote information exchange on trans-boundary movement of hazardous wastes and second-hand equipment among north-east and Southeast Asian countries(Asian Network or Prevention of Illegal Transboundary Movement of Hazardous Wastes, 2015).

3.1.1.4 The Asia and Pacific Plant Protection Commission (APPPC)

The Asia-Pacific Plant Protection Commission (APPPC) was set-up in 1956 to administer the Regional Plant Protection Agreement for the Asia and the Pacific. The commission reviews the plant protection situation at the national and regional levels.

The Commission coordinates and promotes the development of regional plant protection systems, assists member countries to develop effective plant protection regimes, sets standards for phytosanitary measures, and facilitates information sharing. A total of 25 countries are members and the APPPC meets at least once every two years (FAO Regional Office for Asia and the Pacific, 2015).

3.1.1.5 The Environmental Investigation Agency (EIA)

The EIA is a non-governmental organization founded in 1984 in the United Kingdom. Its goal is 'to protect the environmental with intelligence.' It conducted a number of undercover investigations on environmental crime, raised awareness and advocated for meaningful change and policy reforms (EIA, 2015). EIA has worked closely with UNEP in monitoring illegal trade. It has helped to develop training videos and fact sheets on combating illegal trade in ODS. It has released several reports on illegal trade in ODS. It has also conducted research on e-waste.

3.1.1.6 The Basel Action Network (BAN)

BAN is a U.S. based NGO working to prevent the globalization of the toxic chemical crisis, confront the global environmental injustice and economic inefficiency of toxic trade (BAN, 2015). BAN has been playing a very active role as an environmental watchdog in monitoring waste shipments sent from developed to developing countries. In 2002, BAN released the report: Export Harms- The High- Tech Trashing of Asia. The report garnered instant world-wide attention. BAN has closely monitored the waste trafficked from North American countries to Asia. It has also been very proactive in Conference of Parties to the Basel Convention.

3.1.1.7 The Pesticide Action Network (PAN) Asia-Pacific

PAN Asia-Pacific is a global network working towards the elimination of harm imposed by pesticides used upon humans and the environment. PAN Asia-Pacific is one of five regional centres of PAN and based in Malaysia(PANAP, 2015).

PAN Asia-Pacific has been very active in monitoring illegal pesticides and conducted several surveys in countries within the Greater Mekong Sub-region. An

officer from PANAP (1 April 2014) said, “Pesticides are a human rights and environmental justice issue. I have seen rural and poor people exposed to pesticides. When they are very sick, nobody pays for their medicine, they die. To control toxic pesticide is to get social justice….. PAN understands what is happing at the grassroots level. We wish to work with governments and partners to raise awareness…”

In summary, in the Asia Pacific region, UNEP, UNDP and the World Bank are working to assist countries to meet their commitments to the Montreal Protocol. EIA’s work also covers this region; Three BCRCs work on the Basel/Stockholm

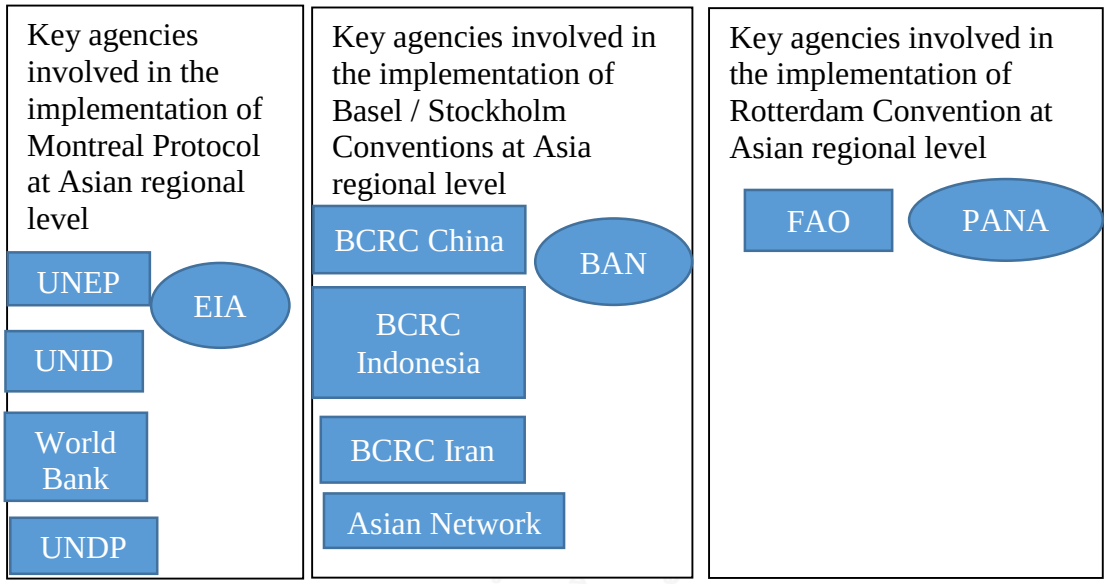


Figure 3-1 Key agencies involving in the implementation of Montreal Protocol/Basel/Rotterdam/Stockholm Conventions at Asian regional level

Conventions. The Asian Networks connected to the on Basel Convention. FAO and PANAP work on Rotterdam Convention.

Before the launch of the MEA REN, under one MEA, there was some cooperation amongst different stakeholders, but there was little cooperation among different MEAs and related players. Consequently, there were very limited synergies in information exchange, cross border cooperation, enforcement operation and capacity building between different MEAs. Each Secretariat of MEA, its Regional Office and National Focal Point approached Customs authorities individually for cooperation such as delivery of training, development of training materials and control of trade.

3.1.2 The creation of the Regional Enforcement Network in the Southeast and South Asia

3.1.2.1. The Setting-up of the Regional Enforcement Network

When the Montreal Protocol was created, the Protocol developer did not expect that there would be illegal trade in ODS. However the illegal trade in CFCs reached to 20,000 tonnes in 1995 when developed countries began the phasing out of CFCs (UNEP, 2001b).

The main reasons for ODS smuggling are as following (Liu, Vira Somboon, & Carl Middleton, Upcoming): The first reason is decreasing legal supplies of ODSs causes prices to rise which created a business opportunity for smugglers. The second reason is some alternatives to ODSs are more expensive, and using ODS alternatives may require owners to retrofit equipment. The third factor is the long life-time of ODS-containing equipment results in high demand of ODSs in the servicing sector. Before all ODS-containing equipment reaches its end-of-life or the ODSs in such equipment is replaced by non-ODS substances, it is clear the demand of ODS will continue. The availability of illegal ODSs delays the replacement process. Fourth, many countries have banned the import of ODS-containing equipment. The smuggling of ODC-containing equipment increased the market for ODSs.

In order to monitor and control trans-boundary movement of ODS, in 1999, the Multilateral Fund for the Implementation of the Montreal Protocol Executive Committee (ExCom) approved a pilot regional workshop on preventing illegal trade. The workshop was jointly coordinated by UNEP and Sweden and funded by Sweden and Japan. In 2001, the success of the workshop led ExCom to subsequently approve the first Customs Network project, *"Regional cooperation for monitoring and control of Ozone Depleting Substances (ODS) consumption and preventing illegal trade."* The project was to improve the monitoring and control of ODS in Southeast Asia and the Pacific Region(Liu & Bagai, 2007) . The project was to network ozone officers and customs officers in Southeast Asia in order to control the ODS trade. Sweden supported this project through the Swedish bilateral contribution to the Multilateral Fund. In April 2003, the project was expanded to include the South Asia region. Twenty-four countries

in Southeast Asia and South Asia joined this project. The main activities of this project included: i. organizing an annual network meeting to facilitate the cooperation between customs authorities and the National Ozone Unit (NOU) at national and regional levels; ii. A desk study on the transboundary movement of ODS and; iii. Cooperation with regional partners to address illegal trade.

Because the success [6] of the Customs–Ozone network on monitoring transboundary movement of ODS and preventing illegal trade, promoting cooperation between environmental agencies and customs authorities, the Southeast and South Asia countries requested to extend the project and expand it to include the Basel/Rotterdam/Stockholm Conventions.

UNEP OzonAction Programme Compliance Assistance Programme was willing to share its experience with other MEAs, and with the new project also meant job opportunities. A limited posts of UNEP were supported by regular contribution of member countries, many posts were project based, i.e. if there is a new project, there might be a need to hire one, or several, project staff to run the project. Job security is an incentive for many UN staff, thus they tend to produce the first-rate results to donor agencies.

The UNEP Compliance Assistance Programme submitted the proposal to the Regional Enforcement Networking with the objective to improve compliance with the Multilateral Environmental Agreements that include trade restrictions, to the Swedish Government. The Swedish Government approved the project, as it is a bilateral contribution to Multilateral Fund in 2007. The project ended in March 2011. In 2012, The Swedish Government continued to fund the project and the project was renamed as the Regional Enforcement Network for Chemicals and Waste. The duration of the REN is February 2012 to March 2017.

This project responded to the recommendations made in 2008 by the Ad hoc Joint Working Group on Enhancing Cooperation and Coordination among the Basel, Rotterdam and Stockholm Conventions, which was established in 2007:

(a) *"Invites Parties to establish or strengthen, as necessary, national processes or mechanisms for coordinating:*

[6] Final report of Customs Ozone Network

(i) Activities to implement the Basel, Rotterdam and the Stockholm Conventions, in particular activities of the focal points and designated national authorities for the three conventions, the Strategic Approach to International Chemicals Management and other relevant policy frameworks, as appropriate;

(c) Recommends that Parties, when implementing the three conventions, including through capacity-building and technical assistance, ensure close cooperation and coordination among relevant sectors, ministries or programmes at the national level with respect to, among other things, the following:

(iii)Combating illegal traffic and trade in hazardous chemicals and wastes;

(iv)Information generation and access;

(vii)Development cooperation" (UNEP, 2011c);

The MEA REN materialized the recommendations of the Ad hoc Joint Working Group. The implementation of MEA REN demonstrated that four MEAs could work together. The synergies could be built. The following sections describes the development of MEA and analysis its strengths and weaknesses.

3.1.2.2 The objective of MEA REN

The MEA REN project aimed to initiate an integrated regional cooperation between countries in Northeast, South and Southeast Asia that will enable the participating countries to gain better control over their import and export of chemicals and waste by promoting further regional co-operation in trade control. The project endeavoured to improve communication channels for informal information exchange and develop common tools for data management and collaboration(UNEP, 2007c).

The UNEP OzonAction Compliance Assistance Programme (CAP) piloted this project to synergize activities on combating illegal trade in chemicals and waste. The CAP shared its experience on addressing illegal trade in ODS, and explored the opportunities to work with the Secretariats of the Basel, Rotterdam and Stockholm Conventions to fight against illegal trade in a coordinated manner. The project also tried to promote the cooperation and coordination among national focal points of the

Basel/Rotterdam/Stockholm Conventions and Montreal Protocol. Before the Secretariats of the Basel, Rotterdam and Stockholm Conventions were merged, the MEA REN project endeavoured to explore possible cooperation within existing institutional settings at the regional and national levels. The practice and experiences gained from this project is a very useful case to be explored and observed for building synergies.

3.1.2.3 The Management of MEA REN

3.1.2.3.1 Secretariat of MEA REN

The project has been implemented by UNEP through its Division of Technology, Industry and Economics (DTIE)/ Compliance Assistance Programme (CAP) at the Regional Office for the Asia and the Pacific (ROAP)(UNEP, 2011a). The Swedish International Development Agency (Sida) has overseen the project through the Swedish Environment Institute (SEI) from April 2007 to March 2010, and through the Swedish Environmental Secretariat for Asia (SENSA) from April 2010 to May 2011. Twenty-four (24) countries took part in the project[7] during its execution. Key partners of the project are the Secretariats of the Basel/Rotterdam/Stockholm Conventions, the Basel Convention Regional Centres in Indonesia, China and Iran, the World Customs Organization Regional Intelligence Liaison Office for Asia and the Pacific (WCO RILO A/P), the Regional Office for Capacity Building (ROCB), the Environmental Investigation Agency (EIA), the Netherlands' Ministry of Infrastructure and Environment (VROM), etc.

UNEP CAP has assigned its Policy and Enforcement Officer, an Associate Project Officer and a Project Assistant to work as the Secretariat for MEA REN. The CAP team had given overall support to the MEA REN during its implementation.

UNEP has played a key role in managing this project and initiating various synergized activities to address illegal trade. The reaction of the MEA Secretariats and

[7] Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China (People's Republic of), Fiji, India, Indonesia, Iran (Islamic Republic of), DPRK (Democratic People's Republic of Korea), ROK (Republic of Korea), Lao (Lao People's Democratic Republic), Malaysia, Maldives, Myanmar, Mongolia, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, and Viet Nam.

their regional offices and national focal points is good evidence to explore the barrier and factors for building synergies. MEA Secretariats welcomed the creation of the project. One officer from the Basel Convention Secretariat pointed out during an interview that the MEA REN project was the only project in the world that address all four chemicals and waste related MEAs in one go. The Rotterdam and Stockholm Conventions can learn from the Montreal and Protocol and Basel Convention on best practices and mechanisms to address illegal trade (Interview, 28 March 2012).

3.1.2.3.2 Nomination of National Focal Points

The project requested each country to nominate one customs focal point, one Ozone Officer and one MEA representative who would coordinate the Basel/Rotterdam/Stockholm Conventions to participate in the Project. When the project began in 2007, UNEP had sent nomination letters to all the heads of the respective Customs Administrations and Ministries of Environment in the participating countries. This was to establish the points of contact in customs authorities and national focal points to coordinate the information exchange and enforcement activities of the MEAs. The nominated officers have provided a foundation for implementing the Project. They have participated in all the network meetings under the Project and provided information and feedback on issues related to control and monitoring of trans-boundary movements of the substances/waste covered by the MEAs, enforcement issues and guaranteed to the operation of the Project. All countries within the project scope, except the DPR Korea and Singapore, have nominated a customs focal point for the Project. Singapore Customs reason for not joining the project was that the Singapore Pollution Control Department is in charge of the control of transboundary movement of chemicals and waste. Nineteen countries nominated a national MEA representative to the project by September 2010 and took part in the MEA-REN Workshops. However, the project encountered some difficulties to get the DPR Korea and Republic of Korea (ROK) on board. With the assistance of Regional Intelligence Office for Asia and the Pacific (RILO A/P), one customs officer from the ROK attended the 4th MEA-REN workshop. An interview with an officer from ROK (22 March 2014) revealed that the ROK promotes exportation and ROK is not a destination of hazardous waste and toxic chemicals.

In 2007, the synergies at the MEA Secretariat level had not begun, thus it was difficult to nominate one officer to represent the Basel/Rotterdam/Stockholm conventions. As was discussed earlier, national focal points for the three conventions are different officers working in different agencies. China has nominated its officer from the Department of International Cooperation of the State Environmental Protection Administration (SEPA) to participate in the project; however the Department of International Cooperation is not the actual agency who is implementing the three conventions. A few years later, China nominated its focal point for the Basel Convention to the project. Thailand has nominated its focal point for the Basel Convention to attend the project. The main reason is that countries have encountered more challenges in the control of transboundary movement of hazardous waste than pesticides regulated by the Rotterdam Convention and POPs regulated by the Stockholm Convention. The nomination of an MEA Representative is a kind of promotion on synergies of the Basel/Rotterdam/Stockholm Conventions. Though the initial consideration was due to budget constraint, it was difficult to invite the three focal points of the Basel/Rotterdam/Stockholm conventions.

The first MEA REN workshop (November 2007 in Bali, Indonesia) highlighted the need for strong communication and collaboration link between Customs and Environmental agencies. This link would determine to a large extent the success of customs in dealing with environmental crime.

The Project requested the same participants (MEA representatives dealing with the Basel, Rotterdam, and Stockholm Conventions, ozone officers and customs officers) attend all the subsequent MEA REN workshops, as they would have full understanding of past discussions and could follow up on the recommendations made by the Project in between workshops and the network could progress.

The first MEA REN workshop recommended that:

- The Ozone Officer in the country without nominated a MEA Representative will take the initiative to meet with the focal points of Basel, Rotterdam and/or Stockholm Conventions to finalise the nomination of the MEA Representative.
- The Ozone Officer, MEA Representative and the focal points to the Basel, Rotterdam, and Stockholm Conventions shall meet on a regular basis to discuss issues related to the enforcement of the Multilateral Environment Agreements.

- The establishment of a common Steering Committee for the Montreal Protocol/Basel/Rotterdam/Stockholm Conventions should be explored. Alternatively, countries may consider organising joint meetings of the four steering committees to follow up the recommendations of the MEA REN Workshops, including possible synergies in implementation (UNEP, 2007d).

The establishment of a steering committee is a kind of informal organizational setting where officers from different MEAs are able to direct the operation of the MEA REN project. Synergies occurred in the process to address illegal trade in a more effective way.

3.1.2.3.3 Steering Group of MEA REN

The Project established the Steering Group comprising the following officers:

- 1 regional representative from the Secretariat of the Basel/Rotterdam/ Stockholm Conventions
- 1 regional representative from the Secretariat of SAICM (The Strategic Approach to International Chemicals Management) (attended the 4the MEA REN workshop in Beijing in 2009).
- Project Coordinator and/or project coordinator assistant
- 4 Focal points from countries representing the different sub-regions (Northeast – South and Southeast Asia and the 11 countries that ratified at least Montreal Protocol and Rotterdam and Basel Conventions)
- 1 representative from the donor agency

The steering group was established to advise the project on the main implementation issues, including set-up and delivery of meetings and workshops. The Steering Groups have facilitated the organizing of the MEA REN workshops and have given invaluable advice on how to move the project ahead. The rotation of country representatives has also promoted the ownership and participation of the project. The participation of MEA Secretariats and other UN agencies has also enhanced the involvement of the said agencies to ensure the timely technical and policy support from them.

3.1.2.4 The main activities of the MEA REN

The main activities of MEA REN included:

- Annual network meetings for information dissemination, trade data management and discussion on regional approaches for handling of trans-boundary movements of hazardous chemicals and waste;
- Desk study on the trans-boundary movement of hazardous chemicals and waste in the region;
- Development of cross-border cooperation on combating illegal trade in chemicals and waste and;
- Development of practical enforcement management tools to assist combating illegal trade.

Building on the Regional Network for Ozone and Customs Officers (2001-2006), the MEA REN project increased information flows, initiated cross-border cooperation, and promoted capacity building. All of which, will be evaluated in Chapter 4. The activities under MEA REN explored how to synergize operations of the four MEAs including knowledge sharing, networking, problem solving, etc.

3.1.3 Summary of the changes at the regional level.

Before the creation of MEA REN, there were number of organizations working on different chemicals and waste related MEAs individually. The MEA REN subsequently networked related players and conducted a series of activities. The figure below demonstrates how MEA REN networked the MEA Secretariats, national focal points of MEAs, customs focal points and partners. The Secretariats of Basel/Rotterdam/Stockholm nominated one representative to liaise with MEA REN. National focal points from most of the participating countries of the Basel/Rotterdam/Stockholm Conventions nominated one MEA representative. The figure 3-2 below demonstrates the changes of interaction of various actors dealing with the four MEAs. It shows how the MEA REN project has addressed the fragmentation issue through nominating one officer representing the Basel/Rotterdam/Stockholm Conventions, and UENP serving as the secretariat to coordinate with international organizations, national customs departments, and national environmental agencies. Therefore synergies occurred during the implementation of the MEA REN project.

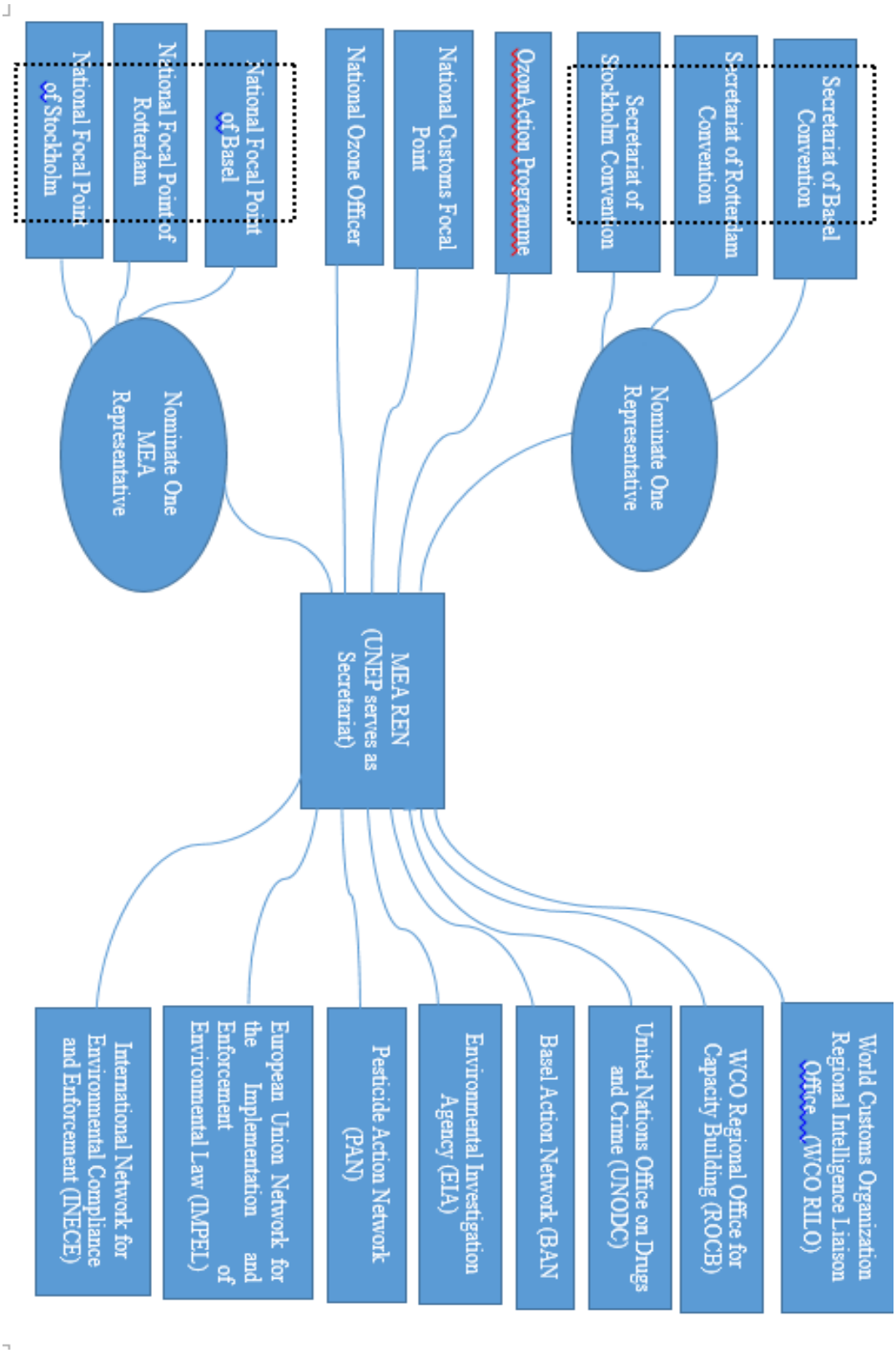


Figure 3-2 Graph on How MEA REN Networked MEA Secretariats, National Focal Points and Partners

UNEP runs the MEA REN as the Secretariat. The MEA REN has networked the national customs focal points, the National Ozone Officer, the Ozone Secretariat, the World Customs Organization's Regional Office for Capacity Building (WCO ROCB), the World Customs Organization's Regional Intelligence Office for Asia and the Pacific (WCO RILO), NGOs, partners from the EU (IMPEL) and North America (INECE).

The network built the synergies between UN agencies, governmental agencies and NGOs. Though at the global level, the Secretariats of the Basel/Rotterdam/Stockholm Conventions merged into one Secretariat, the merger of these respective Secretariats with the Ozone Secretariat seems doubtful at this moment. The main reason Ozone Secretariat has avoided merger is because it has its own funding mechanism. At regional level, the MEA REN is a pilot to explore how the Basel/Rotterdam/Stockholm Conventions and Montreal Protocol could work at the regional and national levels.

3.2 Mapping institutional changes after building synergies in China

The following section discusses the actors who implement chemical and waste related MEAs in China, and will review the institutional changes. Section 3.2.1 discusses implementation of the Montreal Protocol, the Basel, Rotterdam and Stockholm Conventions respectively. Organization setting and related laws and regulations are touched upon. Section 3.2.2 describes the institutional changes in China including the cooperation between China, Netherlands and Japan, the merger of the Solid Waste Management Centre and Chemical Registration Centre into the Solid Waste and Chemical Management Centre, staff rotation among different implementing agencies, China's participation as the MEA Representative for the MEA REN Project, a new regulation on ODS, enhanced capacity building on environmental issues in China, and operations launched by China on combating illegal trade in environmental commodities.

3.2.1 Implementation of Chemical and Waste related MEAs in China

3.2.1.1. Implementation of the Montreal Protocol in China

China accessed its Vienna Convention on 11 September 1989, and the Montreal Protocol on 14 June 1991. China revised its Law on Air Pollution Prevention and added an article on ODS in 2000. China established the China Ozone Protection Office in 1991, an inter-agency coordination unit to implement the Vienna Convention and the Montreal Protocol and develop a national work plan. The office is composed of the Ministry of Foreign Affair, the State Development and Planning Commission, the State Economy and Trade Commission, the Ministry of Science and Technology, the Ministry of Finance, the Ministry of Public Security, the Ministry of Information Industry, the Ministry of Agriculture, the General Administration of Customs, the Ministry of Foreign Trade and Economic Cooperation, the Domestic Trade Administration, the State Petrol and Chemical Industry Administration, the State Light Industry Administration, the State Tobacco Monopoly Administration, China Aviation Industry Corporation I, China Aviation Industry Corporation II and China Aviation Technology Corporation.

In 2000, China established the ODS Import & Export Management Office which was headed by the Pollution Control Department of the State Environmental Protection Administration (today's Ministry of Environmental Protection). Its members include Policy and Regulation Department of the General Administration of China Customs, the Foreign Trade Department of the Ministry of Foreign Trade and Economic Cooperation, and the Foreign Economic Cooperation Centre at Ministry of Environmental Protection (China' Ministry of Environmental Protection, 2015).

China adopted 25 sector phase-out plans, and closed more than 100 ozone depleting assemblies, and phased out 250,000 tons of ODS since it ratified the Montreal Protocol, which accounts more than 50% of the overall total which developing countries phased out (Chen, 2015). It is worth applauding the achievements made by the Chinese Government on the phase out of ODS, however the challenges it encountered are also worth noting.

In 2005, the Environmental Investigation Agency released a report titled "Under the Counter- a report on China's Booming trade in ozone-depleting substances."

The report disclosed the illegal production and illegal trade in ODS in China (EIA, 2005). The United Nations Office on Drugs and Crime pointed out that China is the main source of illegal trade in ODS(UNODC, 2013) .

3.2.1.2 Implementation of the Basel Convention in China

China signed the Basel Convention on 22 March 1990. The People's Congress of China ratified the Convention on 4 September 1991. The Convention took effect in China on 20 August 1992. China promulgated the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes in 1995.

The Ministry of Environmental Protection was assigned as the governing body and national focal point. Other governmental agencies involved in the control of transboundary movement of hazardous waste, include the Ministry of Commerce, General Administration of Customs and the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ). In 2011, the Ministry of Environmental Protection and the General Administration of Quality Supervision, Inspection and Quarantine issue a notice on the 'Enhancing Information Sharing on Import Management and Enforcement of Solid Waste.'

China has established a relatively comprehensive legal and regulation system that includes a national law and regulation, sector rules, category, criteria, policy, plan and local regulation. On 8 April 2011, the Ministry of Environmental Protection, the Ministry of Commerce, the State Development and Reform Commission, the General Administration of Customs, the General Administration of Quality Supervision, Inspection and Quarantine enacted the Solid Waste Import Management Regulation.

In 1994, the Solid Waste Import Registration Management Centre of State Environmental Protection Administration was set-up. The Centre was renamed as Waste Import Registration Management Centre of Ministry of Environmental Protection. In 2006, the Solid Waste Management Centre of State Environmental Protection Centre was established.

The major law and regulations on hazardous waste issued in China:

1. National law

Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes

Bylaw of Recycling of Waste Electronic and Electrical Equipment

2. Sector regulation

   Solid Waste Import Management Regulation;

   Hazardous Waste Export Permission Management Regulation;

   Regulation on Accompanying Document on Movement of Hazardous Waste;

3. National Category

   National Hazardous Waste Category

4. National Criteria

   Criteria on Pollution Prevention on Waste Electronic and Electrical Equipment;

   Criteria on Pollution Control on Incineration of Hazardous Waste; etc.

5. National Technical Policy

   Technical Policy on Hazardous Waste Pollution Prevention;

   Technical Policy on Pollution Prevention on Waste Electronic and Electrical Equipment;

6. National Plan

   National Plan Hazardous Waste and Medical Waste Disposal Facility Construction.

The Basel Convention Network and the Silicon Valley Toxics Coalition released a report titled, “Export Harms--The High-Tech Trashing of Asia” (Puckett et al.) in 2002. The report revealed that 90 percent of electrical waste collected in the United States was sent to China. The Chinese Government has banned the import of electrical waste since 1990, but the investigation conducted by the Basel Convention Network showed that Guiyu, a town in Guangdong Province of China processed huge amounts of imported electrical waste that has caused severe damage to human health and the environment. Research that was also conducted by Shantou Medical School confirmed these findings (Huo et al., 2007).

In 2013, China Customs launched an enforcement operation called Green Fence to crack down waste trafficking. Near one million tonnes waste were

subsequently seized by China Customs. From another angle, we can see that waste crime presents a huge challenge for Chinese Government.

3.2.1.3 Implementation of the Rotterdam Convention in China

China signed the Rotterdam Convention on 2 August 1999, and ratified it on 29 December 2004. The Convention took effect in China on 20 June 2005. The Chinese Government has assigned the Chemical Registration Centre at the State Environmental Protection Administration (SEPA), and the Pesticide Testing Institute at Ministry of Agriculture as its focal points to the Convention.

The State Environmental Protection Administration, the Foreign Economy and Trade Ministry and the General Administration of China Customs have promulgated the Regulations for Environmental Management on the First Import of Chemicals and the Import and Export of Toxic Chemicals. China issued The List of Prohibited and Restricted Toxic Chemicals on 1 May 1994. At the same time, China established the State Committee for the Evaluation of Toxic Chemicals, executive body—Chemicals Registration Centre. Any exporter, when exporting chemicals in the List of Prohibited or Strictly Restricted Toxic Chemicals, should submit an application for Release Notice for Export of Toxic Chemicals to State Environmental Protection Administration together with the import permit of the importing country. Once the Release Notice is submitted, Customs can clear the exported goods.

In June 1996, the Ministry of Agriculture and the General Administration of China Customs publicized a notice on the Registration of Import and Export of Pesticides. An importer or exporter should apply for a Registration Certificate for Import and Export of the Pesticide from the Ministry of Agriculture. Customs releases the goods after reviewing the certificate. (China's Ministry of Environment Protection, 2011)

The export of pesticide in China increased from 74,0000 tonnes in 1996 to 1,653,000 tonnes in 2012(Li, 2014). China reported that the inter-agency online system between China Customs and the Ministry of Agriculture of China prevented 70 export applications in China in 2007 and 2008 (FAO Regional Office for Asia and the Pacific, 2008).

Research has pointed out that the illegal pesticides in China and India are believed to account for nearly 20-30 percent of the pesticide market. In 2006, 86 percent of all counterfeit pesticides seized in Europe originated from China (Fishel, 2015) . The above mentioned reports show the challenges in the control of pesticide trade.

3.2.1.4 Implementation of the Stockholm Convention in China

China signed Stockholm Convention on 23 May 2001, and ratified the Convention on 25 June 2004. The Convention took effect in China on 11 November 2004. In September 2003, a coordination team was established, comprising of the State Environmental Protection Administration, the Ministry of Foreign Affairs, the State Development and Reform Committee, the Ministry of Science and Technology, the Ministry of Finance, Ministry of Construction, the Ministry of Agriculture, the Ministry of Commerce, the Ministry of Health, the General Administration of Custom and the State Electrical Power Supervision Committee. The coordination team developed an inter-ministry coordination mechanism and review policy, guideline, criteria and regulation on POPs. The State Environmental Protection Administration is the National Focal Point and Clearing House for the Stockholm Convention. (China's Ministry of Environmental Protection, 2010)

The Article 33 of the Environmental Protection Law of China stipulates that "production, storage, transportation, sale and use of poisonous chemicals and goods containing radioactive substances must abide by related national stipulations to prevent environmental pollution". Other laws that could be applied to POPs include the Law on Water Pollution Prevention and Control, the Law on Air Pollution Prevention and Control, the Law on Marine Environmental Protection, the Law on Environmental Impact Assessment, and the Law on Solid Wastes Pollution Prevention and Control. There is no specific law or regulation addressing POPs in China. The Regulations on Safety Management of Hazardous Chemicals issued by the State Council in 2002 regulated the production, sale, use, import and export, as well as monitoring and control of key hazardous substances (SSC, 2004).

An officer from Ministry of Environmental Protect stated in an interview (5 March 2013), "it is difficult to predict on illegal trade in the newly added substances in the Stockholm Convention. It is not clear regarding the 10 new substances. The

inventory of existing POPs is ongoing. As for the twelve old substances, there is no import and export. Among the twelve substances, two are by-products, the remaining ten are seldom used and produced—almost no production. The main issues are the remaining POPs, such as remaining substances in capacitor and transformer. The Chinese Government banned the import and export of PCB. The equipment sets were imported in the 1980's might contain POPs. However, later 1990, the policy banned the import of all kinds of PCB. Currently, there are no new POPs, the main POPs are remaining substances."

3.2.1.5 Analysis of Implementation of Chemicals and Waste related MEAs in China

In summary, there is a coordination committee for each of the four MEAs (Basel/Rotterdam/Stockholm/Montreal). The Ministry of Environmental Protection (MEP) is the leading agency for implementing the four MEAs. The Department of International Cooperation of MEP coordinates negotiation and liaison work. The Department of Pollution Prevention and Control develops policies and regulations together with the Department of Policies, Law and Regulations. The Solid Waste Division under the Department of Pollution Prevention and Control is the National Focal point for the Basel Convention. The Chemical Division, together with the Pesticide Testing Institute of Ministry of Agriculture, are the Designated National Authorities (DNA) for the Rotterdam Convention. The Atmosphere Division is responsible for developing policies and regulations on ozone depleting substances together with Department of Polices, Law and Regulations. The Division III of the Foreign Economic Cooperation Centre (FECO) of MEP is the National Ozone Unit, i.e. the implementing agency for Montreal Protocol in China. The Division VI of FECO is the implementing agency for the Stockholm Convention. The Solid Waste Management Centre is the implementing agency for the Basel Convention, while the Chemical Registration Centre is the implementing agency for the Rotterdam Convention. The two Centres merged into the Solid Waste and Chemicals Management Centre in June 2013.

3.2.2 Institutional changes in China

3.2.2.1 Cooperation between China, Netherlands and Japan

China's Ministry of Environmental Protection and the Netherlands signed an agreement on environmental protection in 2008. China and Japan established dialogue at the director general's level on solid waste. China has also established cooperation relationship with IMPEL/TFS (The European Union Network for the Implementation and Enforcement of Environmental Law- Cluster Transfrontier shipment of waste) (China's Ministry of Environment Proection & Basel Convention Regional Center for Asia and the Pacific, 2012). In 2010, 154 pieces of information exchange prevented 47 illegal shipments of waste to China. In 2009, 129 pieces of information exchange prevented 38 illegal shipments of waste due to the implementation of the MOU.

One officer from the Ministry of Environmental Protection (MEP) of China complained in an interview (17 March 2013) that,

> *"when MEP passed the intelligence received from foreign countries to China Customs. The foreign countries were waiting for the return of seized waste shipment. However, after customs investigated, detected and sued the offenders, 80%-90% of the cases have no feedback (i.e. Customs does not provide details of investigation to MEP so that MEP were unable to provide responses and results of the investigations to foreign counterparts). Waste should be disposed by accredited enterprises. But who should pay the dispose costs? In principle, the offender should pay. When no offender could be traced, the treasury of the country should pay it."*

The response shows the difficulties and barriers in the cooperation between the environment agency and customs. The information exchange between the two agencies was not smooth. There is no mechanism to mandate the Customs to respond timely. The delay in responding or not responding discouraged foreign counterparts and environmental agencies from providing further support.

3.2.2.2 Solid Waste Management Centre and Chemical Registration Merged into Solid Waste an Chemical Management Centre

In China, there is progress in synergies between the Rotterdam Convention and Basel Convention (3 Feb 2015). The Solid Waste Management Centre (a division level agency which implemented Basel Convention) and the Chemical Registration Centre (a division level agency which implemented Rotterdam Convention) has merged into a director general level agency--the Solid Waste and Chemicals Management Centre in June 2013. The merged centre has more power, funds, human resources and mandates. The reason to set-up the merged centre is to have a life-cycle management of chemicals .i.e. from the cradle to the grave (form production to waste). The new centre could coordinate activities among various actors involving in chemicals and waste, and promote the coherence of policies in chemical and waste. The concept framework of this research (section 1.6.2.10) is to identify whether this is any institutional change after building synergies, and explore why building synergies likely improve effectiveness. The new centre is a clear change of organization in China on the management of waste and chemicals.

3.2.2.3 There have been staff rotation among different implementing agencies

For example officers worked on ozone issue have been transferred to work on POPs (Stockholm Convention) or on International Cooperation affairs, so there is knowledge and experience sharing (5 March 2013, Interview) . The staff rotation can also facilitate personal contact between different agencies and provide trust to one another. Trust can lay the foundation for further cooperation. The staff rotation is a part of the synergies process at the national level because the rotation promoted knowledge sharing and information sharing among different MEAs. The personal contact has also laid the foundation for trust.

3.2.2.4 China nominated a MEA Representative for MEA REN Project

Upon the request of UNEP, China's Ministry of Environmental Protection nominated one MEA Representative to coordinate with the national focal points for the Basel/Rotterdam/Stockholm Conventions on the implementation of the MEA REN project. The nomination facilitated information sharing among different national focal

points, because the meetings of MEA REN adopted a series of recommendations that request countries to cooperate amongst the Basel/Rotterdam/Stockholm Conventions and the Montreal Protocol. The nomination is part of the synergies process at the national level and also involves the regional level.

3.2.2.5 A new regulation on ODS was promulgated in January 2014 in China

A new regulation on ODS was promulgated in January 2014 in China. The severer penalty has been given to ODS trade offenders. It was difficult to prove that a government issued or revised regulation is due to international pressure or the influence of a watchdog played by an NGO. But the Environmental Investigation Agency issued the film, "Under the Counter: China's booming Illegal Trade in Ozone Depleting Substances", which was released at the Meeting of the Parties to the Montreal Protocol. The EIA film, along with the MEA REN network, may have had an indirect impact on China's National Ozone Unit and China Customs. At least, the MEA REN had provided the platform for dialogue.

3.2.2.6 Enhanced capacity building on environmental issues in China

An Asia Regional Green Customs Workshop was held in 2007 in Shanghai and National Green Customs Workshops were held in Xiamen in 2011, in Ningbo in 2011, and in Ningbo in 2014. UNEP has provided funds and resource persons to support these workshops. UNEP has also cooperated with Shanghai Customs College to translate the Green Customs Guide from English into Chinese. In 2014, China Customs organized two Green Customs workshops with their own funds. The Shanghai Customs College is also in the process of including a Green Customs program in its curriculum. The China Customs used its own funds to organize Green Customs workshops, thus demonstrating that the country has endorsed and bought into the international initiative. China Customs recognized the strengths in the improvement of their officers' abilities on various MEAs in a synergized approach. The inclusion of the Green Customs Initiative into the customs college's curriculum sustains the synergies in capacity building on environmental issues.

3.2.2.7 China launched operations on combating illegal trade in environmental commodities.

In 2006, when Operation Sky Hole Patching on Combating Illegal Trade in ODS and Hazardous Waste launched in the Asia and Pacific region, China Customs had also launched its national operation to coordinate with Operation Sky Hole Patching. China adopted its national action plan for the operation, and also organized a series capacity building workshops. The inter-ministries communication mechanism was subsequently improved during the operation (Interview with the ODS Import and Export Management Office of China, 1 March 2013). China launched the Operation Green Fence Initiative to address illegal waste trafficking in 2013. China Customs enhanced its control on the import of waste in its main seaports. A national work plan was implemented. China Customs and the Ministry of Environmental Protection worked together to address waste trafficking. Over a period of 6 months, (February to September) during the Initiative, China Customs seized more than 976.5 thousand tonnes of wastes; filed 221 criminal cases related transboundary shipments of wastes and chemicals (Zhang, 2014).

This operation can be perceived that China Customs has given great importance to environmental issues. China Customs has organized a series of enforcement operations to crackdown on smuggling of relics, drugs, as well as tax evasion. The Environmentally sensitive commodities are a low priority for them. The organization of enforcement operations on chemicals and waste shows the behaviour change of China Customs. Through Operation Sky Hole Patching, China Customs, the ODS Import and Export Management Office, and the Solid Waste Management Division worked together to an adopt action plan, exchange information, and coordinate amongst one another's activities to address illegal trade. The operation demonstrated how ODS and hazardous waste could be addressed in one operation. It shows the synergized activities promote the fight against illegal trade in ODS and hazardous waste. The seizures made in Operation Green Fence is another good evidence showing the effectiveness of building synergies that customs authorities and environmental agencies worked together to enforce the Basel Convention. Synergies on enforcement operations have promoted the effectiveness on the enforcement of related MEAs.

3.2.3 Summary of intuitional changes after building synergies in China

In figure 3.3 on the next page, shows the key players in China to implement the Chemical and Waste related MEAs. Since 2007, there was only one organizational change, i.e. Solid Waste Management Centre and Chemical Registration Centre were merged and elevated. A new regulation on ODS has been issued. The MEA REN project requested China to nominate one representative to coordinate the Basel/Rotterdam/Stockholm Conventions. The cooperation with UNEP in the networking for regional enforcement subsequently facilitated the inception of Operation Sky Hole to address illegal trade in ODS and hazardous waste. Chapter 4 will discuss the cooperation with UNEP on capacity building also promoted the sustainability of training on environmental issues.

Leading Agencies Implementing Chemical &Waste MEAs in China

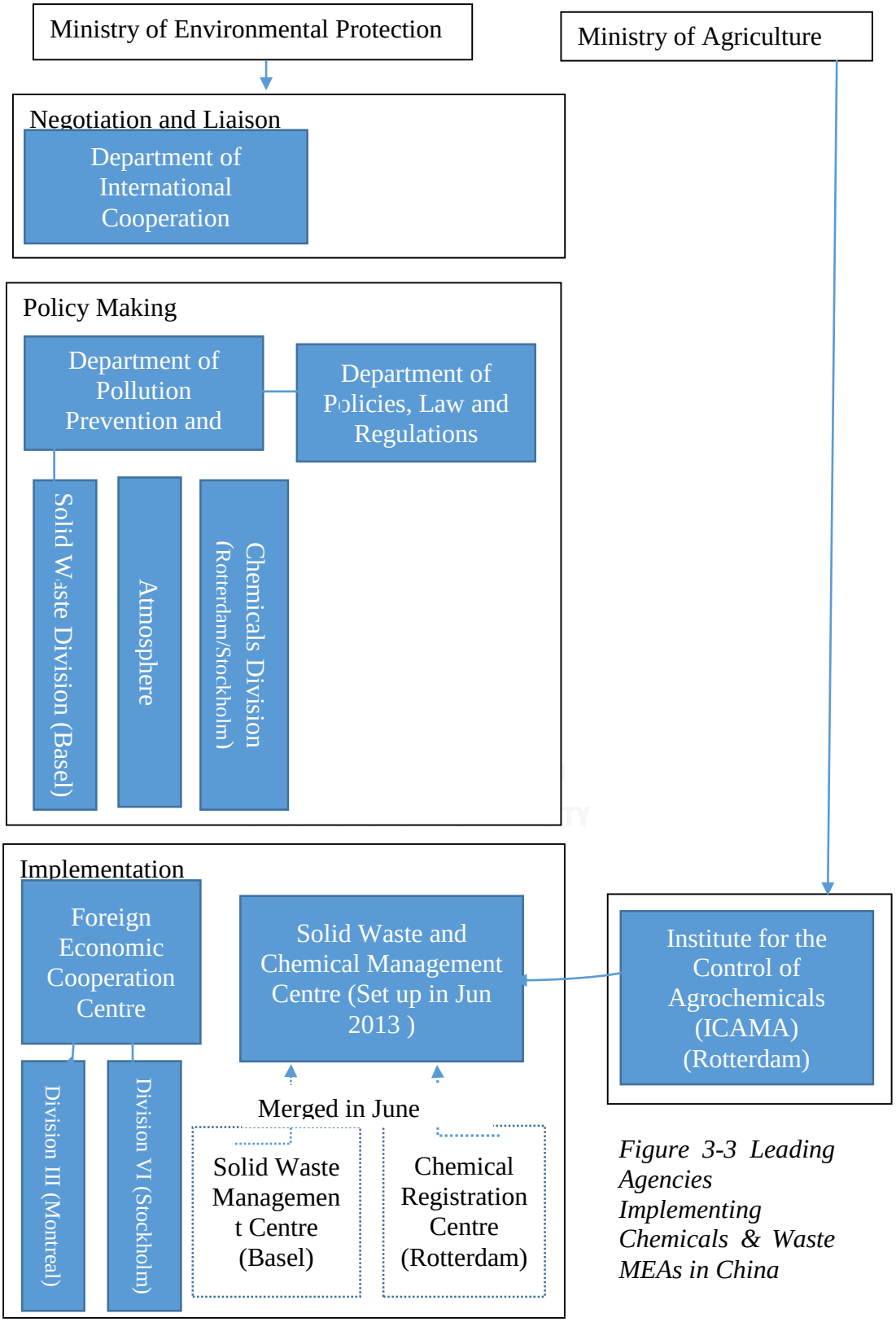


Figure 3-3 Leading Agencies Implementing Chemicals & Waste MEAs in China

3.3 Mapping Institutional Changes on Implementation of chemical and waste MEAs in Thailand

3.3.1 Implementation of Chemical and Waste related MEAs in Thailand

3.3.1.1 Implementation of the Montreal Protocol in Thailand

Thailand acceded the Montreal Protocol on 7 July 1989. The Department of Industrial Works (DIW) from the Ministry of Industry was assigned as the focal point in the implementation of the Montreal Protocol. The National Ozone Unit was established in 1992 within DIW with the financial support from the Multilateral Fund. ODSs are control as Hazardous Substance Schedule 3 under the Hazardous Substance Act B.E. 2535. The Ministry of Commerce issued its notification to ban chlorofluorocarbon (CFC) containing equipment, with the government increasing its excise tax on CFC from 15% to 30% (Food and Drug Administration of the Royal Thai Government, 2010).

Training materials were developed and training workshops were organized. Sixty refrigerant identifiers provided to 29 major port/entry points and the Customs training institute. The trainers subsequently trained 700 customs officers. The training and identifiers help customs officers to seize a number of ODS seizures.

An import quota system for CFCs was established in Thailand in 1995 (Department of Industrial Works of Thailand, 2011). The Department of Industrial Works of Thailand has not issued import licenses to any new importers since 1995. By the end of each year after the licensing system was set-up, the Department of Industrial Works informs Thailand's Customs Department on the list of authorized importers and the allowed import quota of CFCs for the upcoming year. Thai Customs Department signed an MOU with the Department of Industrial Works aiming to establish a close co-operation in the field of training and import control of ODS. Thailand successfully phased out CFC by 2010.

3.3.1. 2 Implementation of the Basel Convention in Thailand

Thailand ratified the Basel Convention on 24 November 1997. The Department of Industrial Works of the Ministry of Industry was assigned as the

Competent Authority, with the Pollution Control Department of Ministry of Natural Resources and Environment respectfully assigned as the Focal Point.

The Factory Act B.E.2535 and the Hazardous Substance Act B.E.2535 regulated industrial waste management in Thailand. Twenty-one Notifications of the Ministry of Industry are enforced to regulate industrial waste management. Records confirm the illegal imports of used tyres, electrical equipment, lead acid batteries, as well illegal export of e-waste from Thailand to China. The following is cited from an article on the website of Pollution Control Department Of Thailand:

> "*The intention of dumping hazardous waste is still prevalent and exists beyond what is expected….Although DIW performs its dual duties on the promotion of factory establishment and law enforcement in the area of environmental and safety management covering all aspects of industrial waste management, there are still some obstacles for the Basel Convention implementation as follows:*
>
> • *Inefficient cross-function management and cooperation among relevant government agencies;*
>
> • *Limited knowledge on this Convention among government officers, public, and stakeholders; and*
>
> • *Although DIW plays major roles with many duties and responsibilities on industrial promotion and regulation, the top priority for management in terms of human resources, budget, etc. is not assigned to the Basel Convention implementation. This phenomenon seems to be similar for both at the organizational and national levels*"(Thangtongtawi, 2007).

3.3.1.3 Implementation of the Rotterdam Convention in Thailand

Thailand accessed the Rotterdam Convention on 19 February 2002. The three Designated National Authorities (DNAs) for the implementation of the Rotterdam Convention were assigned, namely the Department of Agriculture (DOA) as DNA for pesticides, the Department of Industrial Works (DIW) as DNA for industrial chemicals and the Pollution Control department (PCD) as DNA for other chemicals and the national focal point. Pesticides and industrial chemicals are regulated by the Hazardous Substances Act B.E. 2535 (1992).

The National Sub-Committee for the Rotterdam Convention was established under the National Environment Board on 8 August 2005. The Sub-Committee is composed of representatives from the Department of Agriculture, the Department of Industrial Works, the Pollution Control Department, the Food and Drug Administration, the Department of International Organizations, the Customs Department, the Department of Treaties and Legal Affairs, the Department of Foreign Trade, the Department of European Affairs, the Department of Health, the Department of Disease Control of the Ministry of Public Health, the Port Authority of Thailand and three scholars, as well as representatives from the Federation of Thai Industries and Chemical Business Association. The PCD performs the role of the secretariat (FAO, 2008).

Statistical data shows that Thailand's imported pesticide increased from around 30,000 tonnes in 2001 to nearly 120,000 tonnes in 2010(Thailand's Office of Agricultural Economics 2010; Thailand's Office of Agriculture Regulation). The increased import of pesticide brought forth many challenges to the Thai government in managing pesticides. Panuwet et al. (2012) pointed out that Thailand lacks a consolidated, uniform system designed specifically for pesticide management. "The HAS (Hazardous Substance Act) relies heavily on the industry itself for chemical management, from importation until the point of sale. Much of the misuse and mishandling of pesticides occurs after the point of sale, thus leaving pesticide use largely uncontrolled" (p. 4). Plianbangchang et al (2009) pointed out some toxic chemicals like endosulfan, which has been banned by Thai Government since 2004, was still used in Thailand after it was banned.

3.3.1.4 Implementation of the Stockholm Convention in Thailand

Thailand does not have special legislation on POPs, but rather has a number of legal instruments and non-regulatory mechanisms to control chemicals including POPs. The concerned laws are:

- The Enhancement and Conservation of National Environment Quality Act B.E. 2535(1992) ;
- The Hazardous Substance Act B.E. 2535 (1992)
- The Factory Act B.E. 2535 (1992)

- The Public Health Act B.E. 2535 (1992)
- The Customs Act B.E. 2469 (1926) and amendments B.E. 2534 (1991)
- Several notifications of Ministry of Interior concerning occupational safety.

The following governmental agencies are involved in control of POPs:

- Ministry of Natural Resources and Environment
- Ministry of Public Health
- Ministry of Agriculture and Co-operation
- Ministry of Industry
- Ministry of Labour and Social Welfare
- Ministry of Transport and Communication

Several inter-ministerial commissions and coordinating mechanisms involve in chemicals management (in general) and POPs management (in particular) in Thailand:

1. The National Coordinating Committee on Chemical Safety was appointed by the Cabinet to formulate policy, monitor, evaluate and make decision of respective chemicals.
2. The National Environment Board, Pollution Control Committee, Hazardous Substance Committee were established by Acts to regulate and manage various aspects of chemicals' life cycle.

Other commissions include:

- National Environment Su-Committee: Stockholm Convention
- National Environment Sub-Committee: Environmental and Industrial Management Coordination
- Pollution Control Su-Committee: Basel Convention
- Hazardous Substances Sub-Committee: Toxic and Hazard Evaluation on Hazardous Substances
- Hazardous Substances Sub-Committee: Establishing of Ministerial Notification and Regulation
- Hazardous Substances Sub-Committee: Agriculture hazardous Substance Regulation

- Hazardous Substances Sub-Committee: Hazardous Substances in Industry
- Hazardous Substances Sub-Committee: Public Health hazardous Substances
- National Coordinating Sub-Committee on Chemical Safety: Policy and Planning
- National Coordinating Sub-Committee on Chemical Safety: Diagnosis and Surveillance of Chemicals Related health Hazard
- National Coordinating Sub-Committee on Chemical Safety: Poison Centre Network
- National Coordinating Sub-Committee on Chemical Safety: Chemical safety Information Network
- National Coordinating Committee on Chemical Weapons Control
- Occupational Safety and Health Improvement Committee
- Occupational Safety and Health Improvement sub-Committee: structural Development of management and Prevention System for Transport of Chemicals and Dangerous Substances(Thailand's Pollution Control Department, 2004).

Table 3-1Responsibilities of Different Government Agencies of Cycle of Hazardous Substance in General Management of Thailand (source: Thailand NIP)

From Table 3-1, you can see that the Pollution Control Department, the

Responsibilities of Different Government Agencies of Cycle of Hazardous Substance in general Management

Government Agencies	Production	Import	Export Re-export	Having in Possession				Disposal	Hazard Monitoring
				Storage	Trade	Transport	Use/ Handling		
Pollution Control Department		X	X	X		X	X	X	X
Department of Industrial Works	X	X	X	X	X	X	X	X	X
Department of Agriculture	X	X	X	X	X	X	X	X	X
Food and Drug Administration	X	X	X	X	X	X	X	X	X
Department of Fisheries	X			X	X	X	X		X
Department of Labour protection and Welfare	X			X			X		
Customs Department		X	X						
Ministry of Transport and Communication						X	X		
Ministry of Interior						X			
Ministry of Defense	X	X	X	X		X	X		X
Ministry of Commerce		X	X	X					
Ministry of Natural Resources and Environment							X		X
Port Authority of Thailand				X					

Department of Industrial Works, the Department of Agriculture, the Food and Drug Administration, the Customs Department, the Ministry of Defence and the Ministry of Commerce are all involved in the import and export of hazardous substances in Thailand. The concept framework of this research is to identify the institutional changes after building synergies. This table shows the fragmentation of enforcing chemicals and waste related MEAs, because the Stockholm Convention involves the agencies listed in the table separately. The Montreal Protocol, the Basel and Rotterdam Conventions do the same. With the fragmentation of the institutional setting, the effectiveness of enforcement of the four MEAs is in question.

Table 3-2 Involvement of Non-governmental Organizations (NGOs) in POPs-related Issues (source: Thailand NIP)

Involvement of Non-governmental Organizations (NGOs) in POPs-related Issues

POPs-related Issues	Industries	Universities	Research Institutes	Professional Organizations	Labour Union	Interesting Groups
Research and Study	X	X	X	X		
Informational compilation	X	X	X	X	X	X
Education and Training	X	X	X	X		X
Testing and Analysis	X	X	X	X		
Risk Assessment	X	X	X	X		
Monitoring	X	X				X
Information Dissemination	X	X	X	X	X	X
Implementation of Policies and Strategies	X	X	X			

From table 3-2, we can notice that industries, universities, research institutes, labour union and groups of interests are all involved in POPs related issues in either research, education, testing and analysis, monitoring, information dissemination or implementation of polices and strategies.

3.3.2 Institutional Changes after Building synergies in Thailand

3.3.2.1 National Environmental Board plays an important role in coordinating different players.

One key informant from the Pollution Control Department (2 January 2014) deliberated that while Rotterdam Convention was drafted, it was specified that more than one DNA (designated national authority) was admissible. Therefore, in Thailand, the Department of Agriculture takes the lead in managing pesticides, with the Pollution Control Department (PCD) works on environmental issues. The Ministry of Natural Resources and Environment would, however, like to take the lead for implementing the Rotterdam Convention, but the Department of Agriculture did not agree. Finally, UNEP

agreed that two or three DNAs were acceptable. So in Thailand, the Department of Agriculture works on pesticides and the Department of Industrial Work (DIW) works on industrial chemicals, with the PCD working as the focal point to facilitate cooperation with the secretariat and national agencies. No article in the agreement specified which agency would implement.

A national sub-committee for the Rotterdam convention is under the National Environmental Board (NEB), chaired by the Prime Minister. With regard to the Rotterdam Convention related issues, if no decision could be made amongst the Pollution Control Department, the Department of Agriculture and the Department of Industrial Works, the issue will be brought to National Environmental Board. Every two months the National Environmental Board convenes a meeting. The National Environmental Board will make the final decision. Once the National Environmental Board has approved/resolved the issue, the Department of Industrial Works and the Department of Agriculture are tasked with implementation.

For the Stockholm Convention, based on the lessons learnt from Rotterdam Convention, the Pollution Control Department is the only focal point for the convention. This helps to avoid the issue of too many national focal points and reduce the workload for inter-agency coordination.

The National Environmental Board looks after different acts. The Hazardous committee controls chemical from the beginning. National Focal points of the Basel, Rotterdam and Stockholm Conventions are under the same bureau of the Pollution Control Department. Restructure of the PCD is ongoing.

In order to coordinate national operations concerning chemical safety among the 11 ministries and numerous NGOs, and enforcement of the 29 laws and regulations, The National Coordinating Committee on Chemical Safety was set-up with the Food and Drug Administration serving as its secretariat (Food and Drug Administration of the Royal Thai Government, 2005). The first National Master Plan on Chemical Safety (1997-2001) was developed as part of the 8th National Social-Economic Development (1997-2001). The master plan is to encourage inter-agency cooperation and coordination, minimize the adverse effects of chemicals on health and the environment, and reduce the redundancy of concerning organizations' responsibilities. The Second National Master Plan on Chemical Safety (2002-2006) was endorsed in 2001. The Third

(2007-2011) and the Fourth plan (2012-2016) were also developed and endorsed by the Cabinet of Thailand.

3.3.2.2 The implementation of the Strategic Approach to International Chemicals Management promoted synergies at certain level

The Strategic Approach to International Chemicals Management (SAICM), a policy framework to foster the sound management of chemicals, promoted the synergies at a certain level. However, it is not legally binding and the implementation relies on the Government. Thailand implemented the SAICM Quick Start Program project entitled "Capacity building on the POPs analysis in core media" in 2010. The project strengthened the network of POPs laboratories and personnel, and promoted inter-agency cooperation and information sharing concerning POPs monitoring analysis (Chareonsong, 2010).

3.3.2.3 Sub-committee of different Chemical and Waste related Conventions has certain level synergies

The Sub-committee of the Basel Convention has begun to invite the Sub-Committee of Rotterdam Convention to organize meetings together. A working group for synergies was set up in 2014. In 2010, the Sub-Committees of the Basel, Rotterdam, and Stockholm Conventions organized a joint meeting to discuss the issue of national synergy.

The Sub-committees organize meetings three times a year. Customs officers attended all those meetings. The Chairman of the Sub-committee for the Rotterdam and Sub-committee for the Basel Convention is the same.

3.3.2.4 There have been staff rotation among different implementing agencies

In Thailand, there is staff rotation among different MEAs; for example, the officers who worked on the Rotterdam and Stockholm Conventions have been transferred to work on the Basel Convention. Consequently, there is knowledge sharing amongst different MEAs. It is now possible to apply good practices from one MEA to

another MEA. It also became feasible to identify cross-cutting issues for different MEAs or offices to work together (Interview, 2 January 2014).

3.3.2.5 Thailand nominated one MEA Representative for MEA REN Project

Upon the request of UNEP, Thailand has nominated one officer from the Hazardous Waste Division of the Pollution Control Department to coordinate the Basel/Rotterdam/Stockholm Conventions under MEA REN. The MEA Representative has attended all of the MEA REN workshops. The Representative responded to MEA REN's questionnaires and has actively interacted with the focal points from the Thai Customs Department and Thai National Ozone Unit.

3.3.3 Summary of institutional changes in Thailand

The figure 3-4 below shows the implementing agencies for Chemicals and Waste related MEAs. Overall the agencies work separately to implement the MEAs.

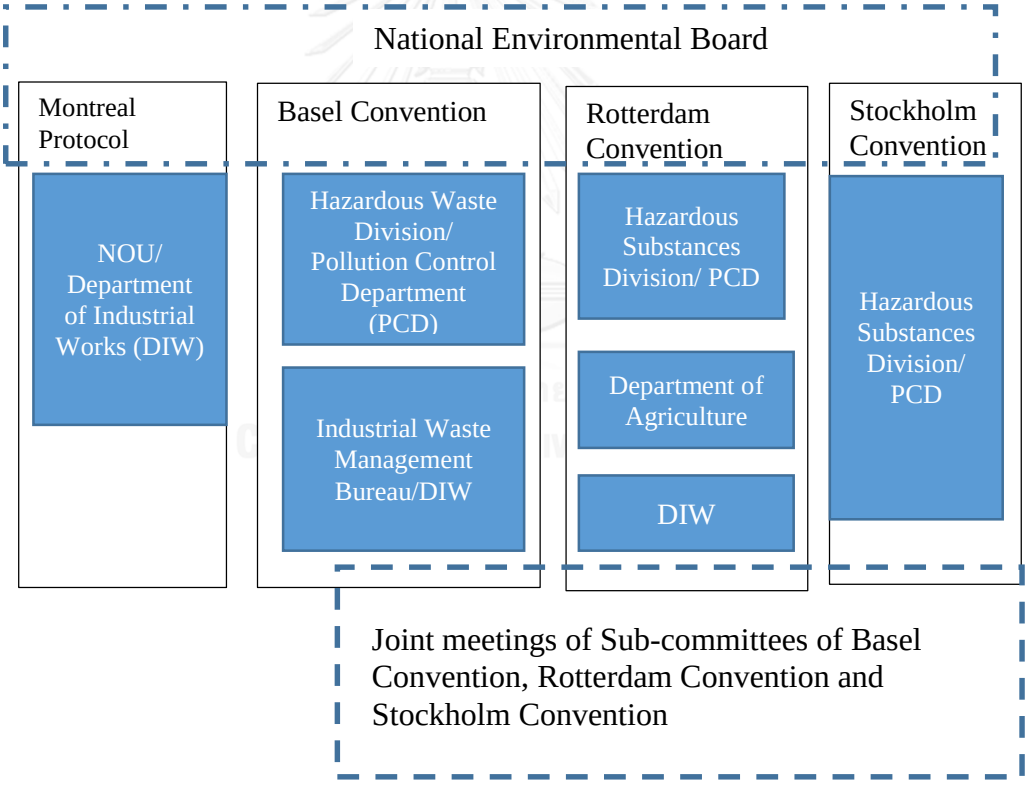


Figure 3-4 Leading Agencies Implementing the Chemical & Waste Related MEAs in Thailand

However, the National Environmental Board has played an important coordinating role. Sub-committees for the Basel/Rotterdam/Stockholm Conventions have begun to discuss synergy related issues. The National Committee on Chemical Safety has promoted the inter-agency cooperation and coordination in various ways. The MEA

REN has informally requested Thailand to nominate one representative to coordinate the Basel/Rotterdam/Stockholm Convention.

3.4 Summary of Institutional changes in the Asia-Pacific Region, China and Thailand

Chapter 3 reviews institutional changes before and after building synergies at the regional and national levels, and answers the research question: what are the institutional changes, including the reform of an organization or revision of a regulation and legislation, after building synergies?

At regional level, UNEP runs as the Secretariat of the MEA REN project. The MEA REN networked national customs focal points, the National Ozone Officer, as well as international organizations and NGOs to address illegal trade in chemicals and waste. The network built the synergies between UN agencies, governmental agencies and NGOs.

In China, the Solid Waste Management Centre and Chemical Registration Centre was merged and elevated. A new regulation on ODS was issued. The MEA REN project requested China to nominate one representative to coordinate the Basel/Rotterdam/Stockholm Conventions. The cooperation with UNEP in regional enforcement networking facilitated the inception of Operation Sky Hole to address illegal trade in ODS and hazardous waste. The cooperation with UNEP on capacity building also promoted the sustainability of training on environmental issues.

In Thailand, the National Environmental Board has played an important coordinating role to coordinate the management of chemicals and waste. Sub-committees for the Basel/Rotterdam/Stockholm Conventions have begun to discuss synergy issues. The National Committee on Chemical Safety has promoted the inter-agency cooperation and coordination. The MEA REN has also facilitated the coordination amongst the focal points of the Basel/Rotterdam/Stockholm Conventions.

CHAPTER 4 . EVALUATE IMPACTS BROUGHTABOUT BY BUILDING SYNERGIES

Chapter 4 is to answer the research question: what are the impacts imposed on environmental enforcement by the institutional changes brought by building synergies? Section 4.1 discusses what actually were synergized among the Basel/Rotterdam/Stockholm Conventions and the Montreal Protocol in the Project MEA REN, and the impacts brought by the synergies. Section 4.1.1 discusses common components for Enforcing MEAs. Section 4.1.2 explores how the MEA REN project provides a platform for stakeholders who work on the Montreal Protocol, and the Basel/Rotterdam/Stockholm Conventions to work together, and what has been synergized among the four MEAs. Section 4.1.3 explores how information exchange among the four MEAs could be synergized. Section 4.1.4 discusses the building synergies on the enforcement operation. Section 4.1.5 discusses building synergies on cross border operations. Section 4.1.6 discusses building synergies on capacity building among the four MEAs. Section 4.2 and Section 4.3 discuss the impact of institutional changes brought by building synergies in China and Thailand respectively.

Chapter 1 and Chapter 2 reviewed the following theories or propositions:

Section 1.6. 2.1 Institution Fragmentation

Biermann et al (2009) called continued to study "both through more in-depth empirical studies of fragmentation in particular policy domains and through larger comparative study programs that reached beyond the environmental policy domain". This chapter discusses how four chemical and waste related MEAs worked together to address fragmentation issues.

Section 1.6. 2.2 Synergy

Daft and Marcic propounded "When organization parts interact to produce a joint effect that is greater than the sum of the parts acting alone, synergy occurs. ….. When properly managed, synergy can create additional value with existing resources, providing a big boost to the bottom line." (Daft 2011, pp 161). The chapter explores whether the building synergies in the Asia Pacific region, China and Thailand have created additional value.

Section 1.6. 2.3 Clustering

Oberthür (2002) argued that clustering of organizational and functional elements of MEAs would improve the consistency, transparency of the international system of environmental governance, facilitate effective participation of states and other Stakeholders due to the reduction the number and length of international meetings. For organizational elements, he pointed out that organizing combined meetings could reduce administrative effort, travel costs and related burdens, while also enhancing learning and cross-fertilization. For function elements, three common functions could be clustered: (i) decision-making processes (including scientific and technological assessments, transparency of participation in decision-making like defining common rules); (ii) review of implementation (including dispute settlement, monitoring, implementation review and compliance) and; (iii) supporting activities like capacity building and resource transfer including training, awareness raising, and information exchange which can enhance resource efficiency. This chapter discusses how the Montreal Protocol and the Basel/Rotterdam/Stockholm conventions worked at the regional level, and whether the four MEAs could be clustered by organizational elements, or by function elements at the regional and national levels.

Section 1.6.2.6 Regime Effectiveness

Young and Levy propounded that regime effectiveness could be assessed on how well the regime helps society limit the consequences of human activities like pollution or health damage to acceptable levels or cope with pollution or damage most productively. They conceptualized regime effectiveness as legal approach, economic approach normative approach and political approach. This chapter uses Young and Levy's concept to evaluate effectiveness of building synergies in Asia, China and Thailand.

Section 1.6.2.7 Environmental compliance and enforcement measurement

Referring Arild Underdal's output-outcome-impact model, this chapter will use Kenneth J. Markowitz and Krzysztof Michalak (2004)' proposed indicators to measure environmental enforcement of chemical and waste related to MEAs in Asia, China and Thailand respectively to discuss the effectiveness brought by building synergies.

Table 4-1: Basic Types of Environmental Compliance and Enforcement Indicators (Source: Markowitz & Michalak, 2004)

Indicator	Measures	Environmental Compliance and Enforcement Examples
Input Indicator	Resources (human, material, financial, etc.) used to carry out activities, produce outputs and/or accomplish results.	- # of staff assigned to a task - $ spent per inspection - Ratio of # of staff to # of regulated facilities
Output Indicator	Government activities, work products, or actions.	- # of enforcement cases settled per year - # of fines issued per year
Intermediate Outcome Indicator	Measure progress towards achieving final outcomes, such as changes in behaviour, knowledge, or conditions that result from program activities.	- pounds of pollutants reduced through enforcement actions
Outcome Indicator	The real impacts of compliance promotion and enforcement actions and the ultimate change in the state of the environment	- improved water quality - improved air quality

According the approaches of case study proposed by Yin (1994), the following sections will use the theoretical matching methods to discuss the whether the evidence collected from China, Thailand and MEA REN support or confirm above the theoretical claims.

4.1 Impacts brought by MEA REN

4.1.1 Common components for Enforcing MEAs

The Basel Convention has specified illegal traffic of hazardous waste is a crime, however, the Montreal Protocol, Rotterdam and Stockholm Conventions do not have a similar provision. However, the Basel/Rotterdam/Stockholm Conventions and

Montreal Protocol all contain trade control provisions. Parties are requested to set up a licensing system and report data to related Secretariats (UNEP, 2011a). There is a need to exchange information between enforcement authorities and environmental agencies. Customs officers need to know how to handle seized chemicals and waste and need technical support from related environmental experts. It is essential for enforcement officers to know how to identify chemicals and waste. Proper labelling is required for packing or shipping chemicals and waste. To address illegal trade, cross border cooperation is critical.

For law enforcement agencies, it does not matter whether the substances are ozone depleting substances, waste, pesticide, or persistent organic pollutants, as long as there is national legislation and regulation to control the substances, as enforcement officers should enforce the laws and regulations. Therefore, the approaches to control trade in environmentally sensitive commodities could be synergized to reduce overlap or duplicated work, and enhance resource efficiency. And vice versa, enforcement of each single Chemical and Waste related MEA could explore joint approaches to reduce overlap.

The common components for the enforcement of Basel/Rotterdam/Stockholm Conventions and Montreal Protocol are summarized as below:

Table 4-2Common components for Enforcing Basel/Rotterdam/Stockholm Conventions and Montreal Protocol

	Montreal Protocol	**Basel Convention**	**Rotterdam Convention**	**Stockholm Convention**
Regulated substances	Ozone Depleting Substances	Hazardous Waste and other wastes	Pesticide	Persistent Organic Pollutants
Trade control provision	Yes	Yes	Yes	Yes
Set up and enforce licensing system	Yes	Yes	Yes	Yes
Prior Informed Consent	No (voluntary)	Mandate	Mandate	Mandate

Data reporting	Yes	Yes	Yes	Yes
Train enforcement officers	Yes	Yes	Yes	Yes
Handling of seized shipments	Yes	Yes	Yes	Yes
Identification/testing of chemicals and waste including labelling (tools)	Yes	Yes	Yes	Yes
Inter-agency cooperation including information exchange	Yes	Yes	Yes	Yes
Cross border cooperation/Detect/ Investigation	Yes	Yes	Yes	Yes

Each MEA has its own Secretariat, Regional Offices and National Focal Points. According to individual conventions and national laws, each Secretariat and related agencies tend to work independently. This chapter discusses what has been synergized under the MEA REN project and what impacts incurred. It explores how synergies in information exchange, enforcement operation, cross border cooperation, capacity building could occur at the national and regional levels through the MEA REN project. This chapter identifies the institutional changes after building synergies and the related outcomes and impacts.

4.1.2 MEA REN provides a platform for synergizing the four MEAs

Annual networking meetings of MEA REN (details see section 3.1.2: The creation of the Regional Enforcement Network in the Southeast and South Asia) have provided a platform to bring stakeholders together to address the four MEAs in one go. The MEA REN network meeting is the key output of the MEA REN Project. The

project has networked customs officers, ozone officers, MEA Representatives for the Basel/Rotterdam/Stockholm Conventions, MEA Secretariats, the Basel Convention Regional Centres, the World Customs Organization Regional Intelligence Liaison Office for Asia and the Pacific (WCO RILO A/P), the WCO Regional Office for Capacity Building (ROCB), the United Nations Office on Drugs and Crime (UNODC), the Basel Action Network (BAN), the Pesticide Action Network (PAN), Environmental Investigation Agency (EIA) and other relevant partners.

At global level, the Ozone Secretariat and Basel/Rotterdam/Stockholm Convention Secretariats have worked together to address illegal trade through the MEA REN project. The Secretariats sent their representative to attend the annual workshops of the MEA REN. The Basel/Rotterdam/Stockholm Convention Secretariats nominated one representative to involve in the MEA REN project since 2007. It is worth noting that the three convention's secretariats merged into one in 2012. In each annual workshop, the Representative of the Basel/Rotterdam/Stockholm Convention Secretariats introduced the new decisions and latest development of the Conference of Parties of Basel/Rotterdam/Stockholm Conventions regarding illegal trafficking and building synergies. MEA REN piloted the synergies process much earlier than the joint secretariat was set-up. It piloted the extent and what scope that different MEAs were able to work together.

At regional level, the Basel Convention Regional Centres in China, Indonesia and Iran were all invited to join the project. The three Centres presented their activities and explored how to work together with the participating countries in addressing illegal trade and enhance capacity. MEA REN has provided the opportunities for the Basel Convention Regional Centres to work together with UNEP OzonAction Programme. The cooperation among the Montreal Protocol and the Basel/Rotterdam/Stockholm Conventions were initiated at the regional level.

The World Customs Organization's Regional Intelligence Office for Asia and the Pacific (RILO A/P), and the Regional Office for Capacity Building (ROCB) were key partners to the MEA REN project, whilst the RILO A/P facilitated the enforcement operation. ROCB joined most of the Green Customs workshops organized in the Asia-Pacific region, and provided funds to organize one regional Green Customs workshop in India in 2008 and one in South Korea in 2009(UNEP, 2011a) .

The participation of IMPLE and INECE facilitated the inter-regional cooperation. IMPEL brought information and experience from European countries. INECE facilitated the liaison with North American countries.

At the national level, most of the participating countries nominated one MEA Representative to coordinate activities of the Basel/Rotterdam/Stockholm Conventions. The nomination is a kind of clustering MEA by function. Though in the reality, it is not that simple. For example, China nominated an officer from International Cooperation Department of the Ministry of Environmental Protection to be their representative, because the Solid Waste Division of Pollution Prevention Department is in charge of the Basel Convention and the Chemical Division of Pollution Prevention Department is in charge of the Rotterdam/Stockholm Conventions. It was difficult for China to nominate one Division Director to represent two different Divisions. However, it is apparent that the customs focal point, Ozone Officer, MEA Representative could sit together through the MEA REN project to explore ways to address illegal trafficking in chemical and waste. Eventually, synergies began to unfold.

NGOs, like the Environmental Investigation Agency, the Basel Action Network and Pesticide Action Network also joined the network. These NGOs played the role of watchdog and the platform provided the opportunities for face-to-face meeting.

The network meetings explored ways for implementing decisions made by the four MEAs by looking at ways to collaborate in the form of information exchange, trade data analysis, cross border cooperation, inter-agency cooperation etc. Each network meeting made recommendations, and the MEA REN Secretariat followed-up with the participants. As a result, a number of the activities and recommendations were conducted during the implementation of the Project.

The first MEA REN workshop (8-10 Nov. 2007, Bali, Indonesia) clarified/agreed the role of all participants; identified issues to work on during/between workshops, agreed on modalities to implement conclusions and recommendations, and identified regional organizations/NGOs to be included as partners. The second (24-26 Sep. 2008, Bangkok, Thailand), the third (12-15 Oct. 2009, Chiangmai, Thailand) and the fourth (21-22 September 2010, Beijing, China) workshops have discussed and made recommendations on a wide range of topics including information exchange, inter-

agency cooperation, enforcement operation and enforcement tools. The following sections summarize key outputs.

4.1.3 Building synergies increased information flow at regional and national levels

In order to promote information exchange among national focal points and partners, the MEA REN Project created an e-forum, produced MEA REN Newsflash, a weekly Environmental Crime Update (ECMU) and developed an MEA REN website (UNEP, 2011a). The information sharing with World Customs Organization Regional Intelligence Office (WCO RILO) and the EU was also explored.

4.1.3.1 Information exchange tools

E-forum

An e-forum was created via googlegroup that included Customs Officers, Ozone Officer, MEA Representative, National Focal Points of the Basel/Rotterdam/Stockholm Conventions. UNEP has managed the access and exit process. The e-forum facilitated timely information exchange among the members, disseminated seizure information, alerts, news, etc..

The e-forum provided a convenient platform for all the stakeholders to share information. Officers who work for different MEAs communicate on various topics. This shows clearly how synergies in information exchange could happen among stakeholders. The E-forum addressed the fragmentation in information sharing. It synergized the information flow related to various chemicals and waste.

MEA REN Website

The participating countries(UNEP, 2011a) requested UNEP to develop a website to facilitate information exchange. The first and second network meetings discussed the content of the website. The project website, www.mea-ren.org, was launched in October 2009. The website was composed of two sections: a public section and a members' corner. The Members' Corner can only be accessed by participants of the MEA REN projects. It is composed of content such as, Information Sheet, Information Exchange, Forum, iPIC (informal Prior Informed Consent on import and

export of ODS), Desk Study, and Important Documents. The forum also provided a platform for discussion.

The website plays a role as an information pool or library. It covers information on the Montreal Protocol and the Basel/Rotterdam/Stockholm Conventions. The website was developed based off of the requests made by the participating countries. They saw the need to pool various information. The members' corner (confidential part) facilitates the dissemination of sensitive information. The MEA REN website is different from a single MEA's website, such as the OzonAction website, or the Basel Convention which focus on one MEA. It facilitates information flows across different MEAs. This is further evidence that the four MEAs could be coordinated together, and related information could be pooled and shared.

Environmental Crime Media Update (ECMU)

MEA REN launched weekly Environmental Crime Media Update (ECMU) in August 2008. The ECMU collected media reports related to pollution and wildlife crimes and related enforcement activities. More than 300 users around the world subscribed the ECMU. The World Customs Organization requested to link it to its online library.

The ECMU updated enforcement officers and environmental officers on the trends of various environmental crime and enforcement activities. This is the excellent evidence on how synergized information sharing could promote enforcement. Instead each MEA Secretariat issues individual update, the ECMU synergized the information on four MEAs. This increased the efficiency of information sharing. The evaluation of the Third Workshop of MEA REN confirmed this (UNEP, 2011a).

MEA-REN News Flash

The newsletter updated the progress of the project, new approaches of related MEA Secretariats. It has been distributed by the e-forum biannually. The Basel/Rotterdam/Stockholm/Ozone Secretariat contributed to the newsflash. This also demonstrated how the four secretariats could collaborate together at a working level. This is further evidence on how synergies occurred.

Country Information Sheet for Basel, Stockholm and Rotterdam Conventions

UNEP has worked with the respective MEA Representatives to inventory laws and regulations related to the Basel/Rotterdam/Stockholm Convention of countries in the region, and developed a country information sheet that incorporates relevant laws, regulations and rules; the role of the customs and their mandate for the four MEAs; institutional structure for enforcement and their contact information. The information sheets were circulated to the countries and the MEA-Secretariats.

The development of the Country Information Sheet involved national focal points for the Basel/Rotterdam/Stockholm Conventions. It promoted an understanding of the different MEAs. The Sheet further helped environmental officers to understand what enforcement officers were able to undertake. It also helped the participating countries to know each other's laws, regulations and mandates. The pooled information facilitated enforcement activities. Whenever there is a need to send requests for assistance, the officer can check from the sheet and find out whom to contact. This is an excellent example of how synergized information can promote communication among stakeholders.

4.1.3.2 Facilitated Information Exchange with enforcement agencies and MEA Secretariats.

The MEA REN project facilitated Information Exchange with the World Customs Organization's Regional Intelligence Liaison Office for Asia and the Pacific (WCO RILO A/P), Interpol, and MEA Secretariats (UNEP, 2011a). The participants agreed in the network meetings:

- To report information on illegal trade to the MEA Secretariats, RILO and INTERPOL. Existing channels (INTERPOL's ECO-message and World Customs Organization (WCO)'s Customs Enforcement Network (CEN)).
- To share information to enable the development of risk indicators because development of risk indicators is recognized as a valuable tool for risk profiling on illegal trade.

The network meeting participants identified that the existing information flows: customs to customs via the Customs Enforcement Network (CEN), competent authorities to each other, and police to police (eco-message). However there was limited information flow across these three different groups. It would be beneficial to develop a mechanism, or build upon an existing mechanism, to facilitate the flow of information between these three groups.

MEA REN played the role as the facilitator of information exchange among the three groups. The e-forum provided a platform. The network participants list and contact information allowed timely informal communication whenever there is an intelligence need that should be disseminated or an alert needs to be circulated.

However, the Regional Intelligence Liaison Office is a professional agency working on intelligence. The Customs Enforcement Network (CEN) provided a powerful communication tool and database. Each customs administration has its national contact point (NCP) who is mandated to report seizures to the CEN. RILO works as a hub to analyse the reported data. Due to the confidentiality of CEN, it is difficult for RILO to share data with environmental officers, but RILO did summarize the seizures and shares the trends in MEA REN network meetings.

MEA REN has encouraged customs focal points to report seizures on environmental goods to the CEN. Reported seizures have helped RILO to conduct intelligence analysis. In return, the intelligence analysis facilitated the law enforcement in participating countries.

One example is that UNEP was invited to deliver a training course in RILO's on-the-job training program. UNEP encouraged the trainees to report cases on ODS and waste to the CEN. The trainee from Thailand reported 46 ODS cases to the CEN and UNEP. UNEP informed the Ozone Officer in Thailand about this. The Ozone Officer was surprised to know there were so many seizures and requested to organize a border meeting to discuss this. Therefore the information sharing with RILO did promote the trade control in chemicals and waste. However, a concrete mechanism among customs, police and environmental agency has not yet been realized due to: i. resources to develop a global or regional database in the context that CEN and Eco-message are already in place; ii. Confidentiality of the seizure or case information, as law enforcement agencies are not willing to share information with a non-law enforcement

agency or other law enforcement agencies; iii. CEN has its national contact points and the Eco-message has its national central bureau as institutional arrangement to support the information exchange. So the MEA REN can only be realized by the informal information exchange via networking.

This is a clear case that demonstrates how national customs authorities, environmental agencies and international organizations can work together to identify problems and find solutions. MEA REN facilitated the dialogue between respective environmental and customs officers. The information flow between RILO and UNEP helped countries to address illegal trade. This shows that synergies in information exchange and communication among stakeholders at the regional level helped problem solving.

4.1.3.3 Promoted Information Exchange between EU, North America and Asia

The IMPEL (the European Union Network for the Implementation and Enforcement of Environmental Law) is an important network to facilitate environmental enforcement in Europe. The INECE (The International Network for Environmental Compliance and Enforcement) is a global network to raise awareness and promote enforcement cooperation to improve environmental compliance and enforcement with its Secretariat based in North America. Since waste is mainly trafficked from developed countries to developing countries, UNEP has invited IMPEL and INECE to the MEA REN network meetings to promote inter-regional information exchange. IMPEL commented that MEA REN had provided a very critical platform to allow IMPEL to reach Asian countries, timely, to monitor suspicious shipments. One example is that the Netherlands found a suspicious shipment that originated from France and was destined for South Korea. The Netherlands informed the MEA REN Secretariat and monitored the movement of the container(UNEP, 2011a) . The container changed its route and was eventually discharged in Malaysia. The Malaysia authorities inspected the container thoroughly.

Under the inter-regional cooperation and information sharing, a seizure of e-waste was made in India in April 2010; the United Kingdom has sent notifications on suspicious e-waste shipments to Pakistan in 2011 concerning e-waste; the Netherlands and Malaysia have monitored suspicious PVS paste shipment in July 2011 concerning

PVS paste. This shows that building synergies in different regions could facilitate environmental enforcement.

4.1.3.4 Promoted the information exchange between governmental agencies and NGOs.

NGOs play a very important role as watchdog, however this also makes it difficult for NGOs to communicate and cooperate with government agencies. MEA REN has invited the Environmental Investigation Agency (EIA), the Basel Action Network (BAN) and the Pesticide Action Network (PAN) to its annual network meetings and provided the platform for dialogue between those NGOs and government officers. BAN presented their civil enforcement operation in the 4th MEA REN meeting in Beijing in 2010. BAN has traced e-waste containers in the U.S. and found that most of those containers arrived in Hong Kong and Mainland China. PAN presented their survey in Laos and Cambodia and found banned pesticide could still be purchased in the markets of Cambodia and Laos with labels in Vietnamese, Chinese and Thai. EIA introduced their investigations on illegal ODS trade. The findings helped government officers to understand better about the loophole and problematic trade.

4.1.3.5 Desk Study on Trans-boundary Movement of Chemicals and Waste

Desk study(Liu & Bagai, 2007) is one of the important components of the MEA REN project. It helped the countries to identify problematic trade and find solutions to improve enforcement.

During the implementation of the Customs-Ozone Officers Network from 2001 to 2006, UNEP had sent questionnaires to participating countries, conducted the desk study on ODS trade data and tried to help countries to find the loopholes in their trade control processes. Because the questionnaires submited by countries were confidential, it was quite difficult to present the results to international conferences, because when participants heard the trade data dicrepancies between anonymous country A and anonymous country B, they did not pay much attention. Later on, UNEP used the UN Comtrade database, a web-based trade database which is managed by United Naitons Statistics Dvision, and Global Trade Atlas, to conduct analysis. The

study results targeting specific countries resulted in pressure towards the particpating countries in network meetings.

The desk study has been proven to be very effective and has continued in the MEA REN project. The following demonstrates how cooperation on sharing trade data, exchange seizure information and anaylsis could identify problems.

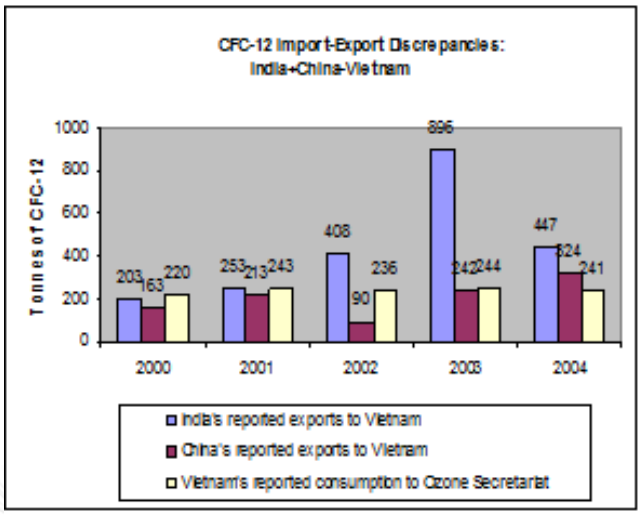


Figure 4-1 Desk Study on Import and Export of Chlorofloruocarbon-12 (source: Global Trade Atlas)

UNEP has identified significant data discrepancies in more than 900 tonnes in 2003 between India and China's reported exports of chlorofluorocarbon (CFC)-12, a kind of refrigerant, to Vietnam and Vietnam's consumption reported to the Ozone Secretariat. In 2004, the discrepancies decreased a little but still reached 540 tonnes. The discrepancies once again exceeded 900 tonnes in 2005 (see figure 4-1).

UNEP wrote to Vietnam's National Ozone Unit (NOU) regarding the discrepancies. Vietnam NOU was unhappy and suspected the accurateness of the desk study.

During the same time period, it was found that Thailand reported seven ODS seizures in 2003 to the Meeting of the Parties to the Montreal Protocol, four of these seizures were imported from India, and two of them were seized at the border of the Lao People's Republic. In 2005, after attending the on the job training in RILO and with the encouragement of UNEP, Thai Customs reported 46 ODS seizures for the period 2003 - 2005 to the Customs Enforcement Network (CEN). Among the 46 cases, 27 were smuggled from Laos, accounting for 58.9 % of the total. The Thai Ozone Officer was surprised by the seizures made at the border with Laos, because Laos is not a ODS producer country. Thai Ozone Officer requested a meeting with Cambodia, Laos, and Vietnam in April 2006 in Vientiane, Laos. The meeting found that several hundred tonnes of ODS were exported by Vietnam in 2005 to neighbouring countries such as Laos and Cambodia and it is highly probable that these ODS were subsequently

smuggled to Thailand, because Thailand has a huge market to consume ODS (CFC-12 used as refrigerator in air conditioner in cars and buildings). In order to control ODS trade and accelerate the phase out of CFCs, Thai government imposed 30 % tax on imported CFCs. The Vietnamese government only levied 5 % tax on imported CFC. The desk study and quadrilateral meeting concluded that it was highly probable that CFCs were imported from India and China into Vietnam, and then re-exported to Cambodia and Laos, then smuggled into Thailand (see figure 4-2).

This case demonstrated that how desk study helped to identify problematic trade, and how the UN and countries can work together to address the trade data discrepancies. This case reminds us that a synergized process can promote the fight

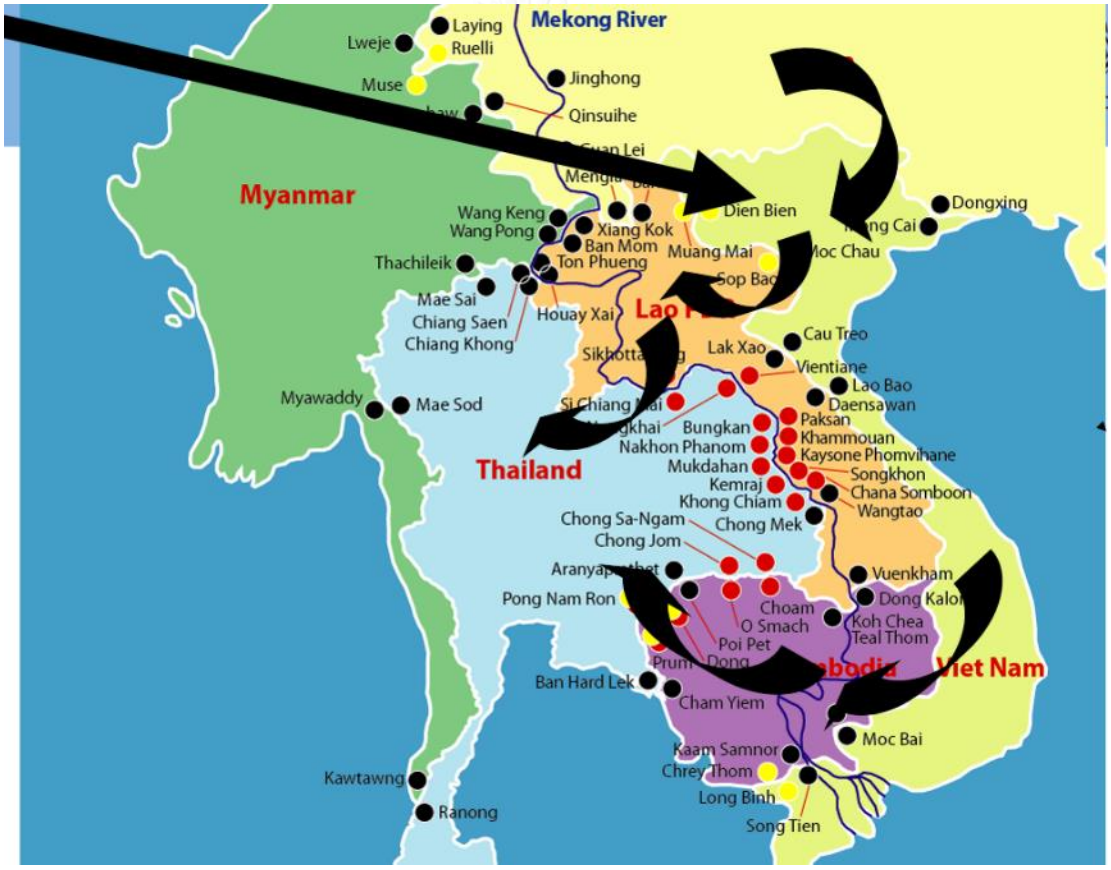


Figure 4-2 The movement of illegal trade in ODS from India and China to Thailand

against illegal trade, as it is impossible for one country alone to sort the problem out. One country or one agency alone, it's quite difficult to address cross border issues. Customs and environment officers from importing and exporting countries should work together in exchanging information and improve trade control.

In the 3rd MEA REN workshop in Chiang Mai in 2009, UNEP presented the Desk Study on hydrochlorofluorocarbon (HCFCs), polychlorinated biphenyl (PCBs) and Used Lead Acid Batteries. The considerable discrepancies between importing and exporting countries caused a fierce dispute among participants. UNEP highlighted that based on the previous desk studies on CFC, networking countries should consider the factor of smuggling that stands behind of the discrepancies.

As for the desk study on polychlorinated biphenyl (PCB) and Used Lead Acid Batteries (ULAB), some issues were identified, such as Malaysia reported four seizures of ULAB in 2006 and 2007. Destinations of the goods were Thailand and Indonesia respectively, but there were no import records from Thailand on the said ULAB. UNEP pointed out in the network meeting that only half of networking countries replied to the questionnaires; Sources of information are limited; and too general findings could not assist countries to combat illegal trade effectively.

UNEP(2011a) presented another desk study in the 4th MEA REN workshop in Beijing in 2010 that: CFCs continued to be seized in 2009 and 2010 both in exporting countries and importing countries; New CFCs were declared as recycled CFCs. It was also observed that discrepancies in HCFCs trade data were increasing, and large quantity of HCFC-22 had been seized in developing countries. As for hazardous waste, many developing countries are facing the challenges like: lack of a comprehensive legal and institutional system for hazardous waste controlling, limited knowledge of customs officials and police on chemicals and waste, difficulties in handling seized illegal shipments and the lack of capacity to dispose hazardous waste safely.

The study has also found that an emerging threat for Sri Lanka is that hazardous waste is a rapidly increasing. Massive importation of used automobile parts, computers and their parts, mobile phones and other electronic waste has become a grave problem. Loss of foreign exchange and usage of low quality goods and excessive power consumption has become a menace in Sri Lanka. Sri Lanka has become a dumping ground for electronic waste and many health hazards have originated, such as kidney disease. The pollution of soil by Cadmium salts by applying imported fertilizer causes the kidney disease and cancer.

Challenges reported by the Iran MEA Representative is one of the most important problems in the areas covered by the Conventions toxins present in the

country and the remaining issue is that toxins in the environment due to high environmental stability and resistance to biological decomposition, being semi-volatile, low solubility in water and high fat with most aspects of the high toxicity has created serious concerns. A system of registration statistics for specific codified distribution, consumption and import of pesticides is not present. Other problems can be related to the importation of second industrial factories containing PCBs, such as, transformers and capacitors.

4.1.3.6 Informal Prior Informed Consent on Import and Export of ODS (iPIC)

Not like the Basel/Rotterdam Conventions, the Montreal Protocol does not have the article on prior informed consent of import and export of controlled substances. However, UNEP (2011b) has promoted countries in South Asia and Southeast Asia to implement a volunteer Informal Prior Informed Consent of Export and Import of ODS to assist member countries to implement licensing systems effectively so that they do not exceed their maximum allowable annual consumption levels, as contained in phase-out strategies or prescribed by the Protocol.

Countries share their ODS quota and registered trader annually. Exporting countries check the copy of import licenses voluntarily before issuing export licenses. Similarly, the importing countries inform exporting countries of their registered importers and the quantities allocated to them for 2009.

The iPIC mechanism required that (see figure 4-3)

1. All importers and exporters of CFCs and HCFC need to be registered in their respective countries;
2. A license is issued per single shipment of CFCs and HCFC;
3. An exporter should add the contract with his client to the request for import license, and the importer should add the contract with the exporter at the time of request of a license.
4. Exporters should give the details of the destinations to the NOUs of the importing countries.

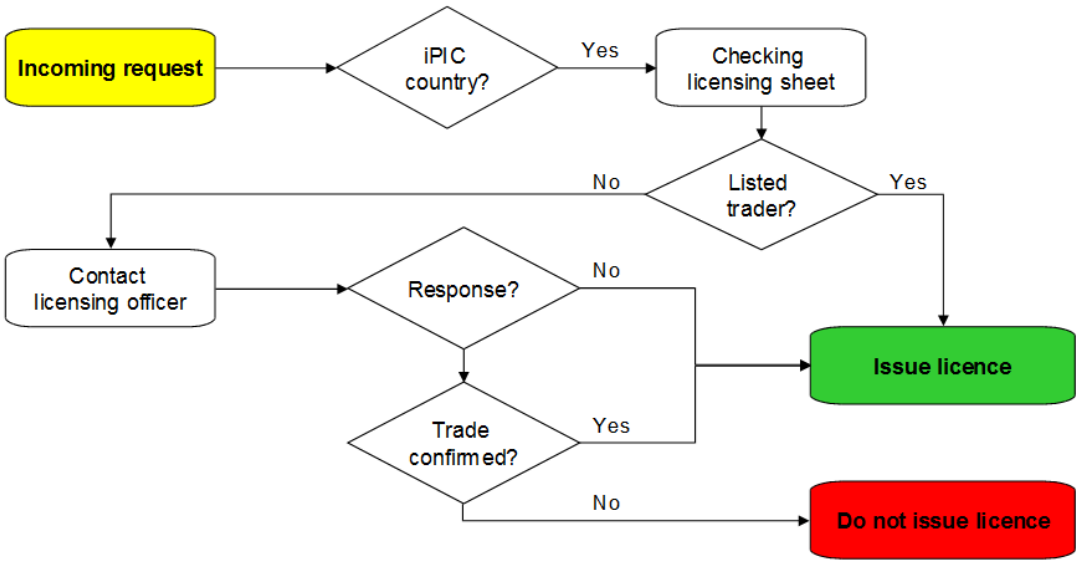


Figure 4-3 Flowchart of iPIC (Source: UNEP 2011)

iPIC has helped countries to prevent illegal trade effectively. In 2010, more than 1000 tonnes illegal ODS were prevented. The mechanism was expanded to the world and became a global initiative. In 2012, 41 unauthorized shipments weighing 980 tonnes of ODSs were prevented through iPIC. In 2013, more than 273 tonnes of illegal ODSs including HCFCs, halons were prevented (UNEP, 2014)

IPIC proved that even though there is no regulation or article in an international convention, countries could still cooperate with each other voluntarily to control trade.

The key factors for the success of the mechanism include:

a. UNEP networked ozone officers in South Asia and South East Asia countries who have the mandate to control ODS and have a willingness to cooperate.
b. Ozone officers provided the information of their trade quota, registered traders, contact information which provided the basis for the mechanism;
c. UNEP played the role of secretariat to facilitate the information collection and dissemination.
d. UNEP designed the mechanism and promoted the implementation.
e. Producers like China and the EU were willing to support the initiative regardless of extra work for them. The regional network built trust among the key officers.
f. The regional network has put pressure on the officers who did not implement the mechanism.

g. The benefit gained from the mechanism .i.e. helping prevent illegal trade, encouraged more countries to participate in the iPIC.

The success of iPIC is an evidence that the Montreal Protocol can learn from the Basel/Rotterdam/Stockholm Conventions in the control of trade. Regarding the Montreal Protocol, the iPIC is voluntary agreement and, with the assistance of UNEP, the mechanism scored various successes. Prior Informed Consent is mandated in the Basel and Rotterdam Conventions. Illegal trade in hazardous waste and pesticide is the evidence that more work needs to be done for the Basel/Rotterdam Conventions in their respective enforcing PIC mechanisms.

4.1.4 Building synergies at regional level promoted enforcement operations

The Regional Enforcement Network has initiated the first enforcement operation on combating illegal trade in ozone depleting substances and hazardous waste in the world. An enforcement operation for enforcement agencies like customs intensified their actions in the areas of monitoring, surveillance, or inspecting targeted companies, commodities or suspects in order to crack down on crime or offences in a more effective manner. During the enforcement period, enforcement agencies would allocate special resources to intensify information collection, speed information exchange, and enhance inter-agency cooperation. The reasons for conducting an operation instead of doing it routinely include mobilizing resources in the context of constraint of human and financial resources, prioritizing certain issues in a given time period in order to tackle bottle-neck problems, raise awareness, establish cooperation mechanisms and improve their respective inter-agency cooperation.

If an opera is the integration of arts of dancing, singing, stage designing, lighting, dress designing, and musical performing, then an enforcement operation is the integration of information collection, intelligence analysis and dissemination, monitoring or surveillance, prosecution, and inter-agency cooperation.

4.1.4 .1 Introduction of Operation Sky Hole Patching

World Customs Organization's Regional Intelligence Office for Asia and the Pacific (WCO RILO A/P) was set up in 1987 in Hong Kong to coordinate information exchange, intelligence analysis and enforcement operations among customs administrations in Asia and the Pacific. RILO A/P was the first regional intelligence office of World Customs Organization in the world. Ten more RILOs were established around the world following the good practice in the Asia Pacific Region.

Figure 4-4 . Enforcement Operation under MEA REN (Source: RILO A/P)

RILO A/P's main mandates include: i. producing monthly bulletin which includes alerts and intelligence analysis reports; ii. Organizing regional seminars that focus on topics for interested RILO members and; iii. Convening annual meetings of national focal points to report progress on RILO and adopt an action plan for the next year. RILO A/P has played a very important role in addressing drug trafficking and illegal cigarette imports since its inauguration.

Observing the unique role of RILO in coordinating international cooperation and the role of the hosting customs administration could play on the international stage, the Japanese Customs and Tax Bureau requested to host the RILO A/P Office and was subsequently relocated from Hong Kong to Tokyo in 1998. A few years later, China Customs raised the same request and RILO A/P moved from Tokyo to Beijing in January 2004.

The UNEP OzonAction Programme Regional Office for Asia and the Pacific (ROAP) has invited RILO A/P to attend its Customs-Ozone Officer Network workshops since 2003. The RILO A/P presented ODS seizures reports to the Customs Enforcement Network (CEN), a communication platform and database on seizures

made by customs. In August 2005, UNEP invited the Head of RILO A/P to visit Bangkok. The Asia Partner's Forum on Combating Environmental Crime was set-up during the visit. The forum is meant to provide a space for like-minded organizations (World Customs Organization, Interpol, United Nations Office on Drugs and Crime, IUCN, TRAFFIC, etc.) to update their activities on combating environmental crime and explore areas for cooperation and synergy. The RILO Head expressed their intention to conduct an enforcement operation in the Asia and Pacific region to address environmental crime.

In November 2005, RILO A/P invited UNEP ROAP to its 14th National Contact Point meeting in New Zealand. The UNEP OzonAction Programme proposed an enforcement operation on combating illegal trade in ODS. The meeting participants requested UNEP to deliver an assessment report deliberating what the problem is, why it happens, scale of the illegal activities, and what customs could do. RILO A/P suggested UNEP to include hazardous waste in the proposal because the volume of hazardous waste is much higher than ODS, as Asia countries have suffered from waste trafficking, and it would be easier to convince customs administrations to conduct an enforcement operation if hazardous waste is included.

UNEP OzonAction Programme consulted the Secretariat of the Basel Convention regarding the operation. The Secretariat assigned its two Regional Centres-the Basel Convention Regional Centres based in Beijing and Jakarta to support this operation.

The UNEP OzonAction Programme produced the requested assessment report and further attended the World Customs Organization's Enforcement Committee meeting in Brussels in February 2006, and World Customs Organization's Regional Contact Point meeting in Bangkok in November 2005 seeking the support of the meetings. The two meetings suggested that the enforcement operation should be initiated by a country instead of the UN, and the Meeting of Head of Customs Administration should be the platform to approve the operation.

On the 3-6 April 2006, the 11th World Customs Organization (WCO) Asia Pacific Regional Meeting of the Head of Customs Administrations was held in Beijing, China. UNEP was invited to the meeting. In the meeting, China Customs proposed to organize the Operation Sky Hole Patching to combat illegal trade in ozone depleting

substances and hazardous waste. The proposal was supported by Thailand, Bhutan, Hong Kong, and other customs administrations. The meeting approved to conduct the operation. In May 2006, UNEP ROAP organized the Fourth South-Asia and South-East Asia and the Pacific Customs & Ozone Officers Cooperation Workshop, in Bangkok. The action plan for Operation Sky Hole Patching was adopted in the workshop.

4.1.4 .2 Participation and mechanism of Operation Sky Hole Patching

Twenty customs administrations from 18 countries in the Asia and Pacific Region participated in the operation. They included Australia, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Fiji, India, Japan, Republic of Korea, the Maldives, Mongolia, New Zealand, the Philippines, Samoa, Sri Lanka, Thailand and Vietnam.

The Operation Sky Hole Patching established a mechanism (see figure 4-5)to monitor suspicious shipments of ozone depleting substances and hazardous waste when they are exported, transited and imported among participating countries. An Immediate Seizure Notification System was also set-up to enable customs administrations to report their seizures timely. As well, Mutual Assistance on investigation and prosecution was agreed by the participating customs. RILO A/P worked as the pivot to coordinate the information exchange. UNEP ROAP coordinated the cooperation between environmental agencies and customs authorities, and provided technical support.

The operation was divided into two phases. Phase I started from September 2006, ended in February 2006, and focused on ODS. Phase II followed Phase I and focused on hazardous waste.

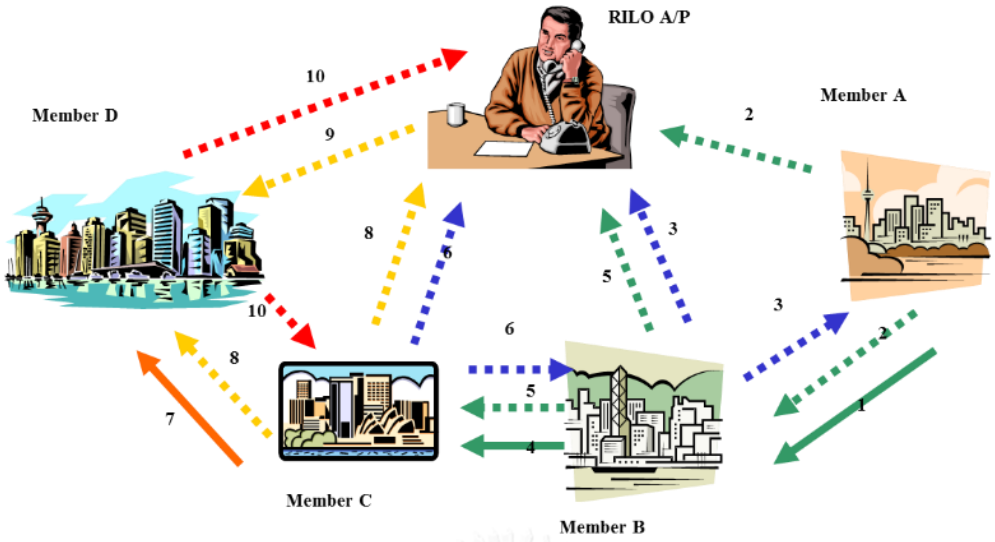


Figure 4-5 Mechanism of Sky Hole Patching (Source: RILO A/P)

Step 1: a shipment moves from Member A to Member B

Step 2: Member A informs RILO and Member B

Step 3: Member B responds to RILO and Member A about the movement

Step 4: The shipment moves from Member B to Member C

Step 5: Member B notifies RILO and Member C

Step 6: Member C responds RILO and Member B

Step 7: The shipment moves from Member C to Member D

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4.1.4 .3 Technical support

In order to support the implementation of Sky Hole Patching, China's Ministry of Environmental Protection organized a capacity building workshop in Wuxi, China in July 2006 and in Zhuhai, China in October 2006 respectively. UNEP invited experts from the U.S., India, Hong Kong, Mongolia, Kyrgyzstan, the Environmental Investigation Agency, and Thailand to the Zhuhai workshop to further discuss how to move the operation ahead. Similar training workshops were also held countries like Fiji.

Apart from an assessment report, UNEP has provided lists of registered importers and exporters of ODS and their quotas to customs authorities. The Environmental Investigation Agency compiled a list of suspicious companies to help the risk profiling for customs.

4.1.4 .4 Achievements and seizures

The operation was the first of its kind in the world and gained a great deal of attention from international media. The operation was reported in countries like Australia, Bangladesh (The Independent), China (China International Radio), France, Germany (Deutsche Presse-Agentur), South Korea, Singapore, Thailand (Bangkok Post), the U.K. (Monsters and Critics), and the United States (International Environmental Reporter).

This feat was the first of its kind in which customs authorities and environmental agencies worked together at a regional level to address the crime of ozone depleting substances and hazardous waste (Liu et al., Upcoming). Operation Sky Hole Patching achieved three things to strengthen enforcement. First, it established a mechanism to monitor suspicious movement of ODSs and hazardous waste. RILO A/P worked as coordinating Centre. Countries liaised with each other in monitoring suspicious shipments. Second, an immediate seizure notification system helped customs administrations to report their seizures timely. Third, the Mutual Assistance on investigation and prosecution facilitated the participating customs to crack down syndicates involving in chemicals and waste crime. The operation raised awareness of ODS and hazardous waste among customs officers and explored mechanisms on how to disseminate information inter-customs authorities, inter-environmental agencies, inter-customs authorities and environmental agencies, and inter-regions.

After Phase II of the operation, RILO has converted the operation in the routine work. From 1 September 2006 to 15 September 2010, 51 ODS seizures were detected, with 730,026 Kg of ODS seized, including CFC-12, HCFC-123, HCFC-22. Also, 33,971 pieces of equipment containing ODS were seized (UNODC, 2013).

Some 339 waste seizures were made weighing 29,436,043 Kg. Seizures included used batteries, used computer monitors, used TV monitors, copper ash, electronic and telephone parts. The goods were commonly declared as metal scrap, plastic scrap, computer parts, hardware materials, electric goods, etc (see figure 4-6).

The Sky Hole Patching was the first of its kind in the world. Customs authorities and environmental agencies worked together at the regional level to address criminal trafficking of chemicals and hazardous waste.

Figure 4-6 Seizures on Hazardous Waste in Operation Sky Hole Patching (source: RILO)

It is quite normal for environmental agencies and officers to think that international conventions and national legislations are in place, and expect that the enforcement agencies like customs authority are working effectively. "Some environmental officers do not know trade control and logistics issue," said one interviewee (21 Mar 2014). For customs officers, due to the globalization and trade facilitation, they need to make quick decision in releasing or detaining a shipment. For example, the annual import and export of containers cleared by Shanghai Customs reached to 33.6 million(World Shipping Council, 2013), but due to the limited human resources, only around 5% containers could be physically inspected by the customs.

1. For developing countries, revenue collection is top priority, followed by anti-drug trafficking. Environmentally sensitive commodities is low priority;
2. Environmentally sensitive commodities is normally complicated and need special knowledge and expertise. Regular staff rotation make the knowledge transfer and training more difficult;
3. Customs authorities also think environmental agencies are the leading agency for the compliance and enforcement of MEAs.
4. Handling of seized goods is costly and need expertise.

The reasons for the initiation of Sky Hole Patching Operation included the following:

1. RILO has the mandate to coordinate enforcement operations among customs administrations and has the experience in conducting operation on addressing drug trafficking and cigarette smuggling;
2. China Customs hosted RILO A/P and would like to show its leadership in international affairs. Good international image and reputation is the incentive. This is consistent with Ostrom's collective action theory.
3. Environmental issues are easier to reach consensus to take action comparing with other types of smuggling, such as the smuggling of gasoline, because exporting country may benefit from the exportation and show lower interests in cooperating with importing country. This is also consistent with Ostrom's claims on reciprocity.
4. The UNEP OzonAction Program has the mandate to promote the activities to address illegal trade in ODS.
5. The UN has the convening power to network countries. Using the power, the UNEP ozone-customs network project networked customs authorities and environmental agencies in the region;
6. The WCO's CEN and RILO provided the existing platform for information exchange on monitoring trans-boundary movement of shipments.
7. UNEP provided funds for capacity building through the Multilateral Fund for the Implementing Montreal Protocol, Swedish International Development Agency, and Green Customs Initiative.
8. NGOs like the Environmental Investigation Agency played a special role like watching dog and provided information from black market and their own investigation which helped law enforcement. This confirms the claims of Biermann on the role of NGOs.
9. Consultation among RILO, UNEP, Basel Convention Secretariat and China Customs crystalized the initiation of the operation.

As Oberthür proposed, "combination, integration or merging of MEAs or their parts in order to improve international environmental governance", the enforcement operation shows how collaboration between respective customs authorities, national environmental agencies and international organizations can address ozone depleting

substances and hazardous waste regulation between two MEAs in an integrated and coordinated way. The operation synergized the activities among customs authorities, national environmental agencies, international organizations and NGOs. The synergies include information exchange, inter-agency cooperation, cross border cooperation and capacity building. The Operation covers two MEAs, i.e. Montreal Protocol and Basel Convention. It shows the possibility of synergies. The operation also shows how different agencies work together to create added value.

The MEA REN annually reviews the progress of Sky Hole Patching. Sky Hole Patching has converted into a routine mechanism since 2007.

After Operation Sky Hole Patching, MEA REN has facilitated networking countries to participate in World Customs Organization's Operation Demeter, a global operation in combating waste trafficking, and INECE (The International Network for Environmental Compliance and Enforcement)'s Inspection Month to address waste trafficking.

4.1.5 Building synergies facilitated cross border cooperation—Project PATROL

Building synergies facilitated cross border cooperation-Project Partnership

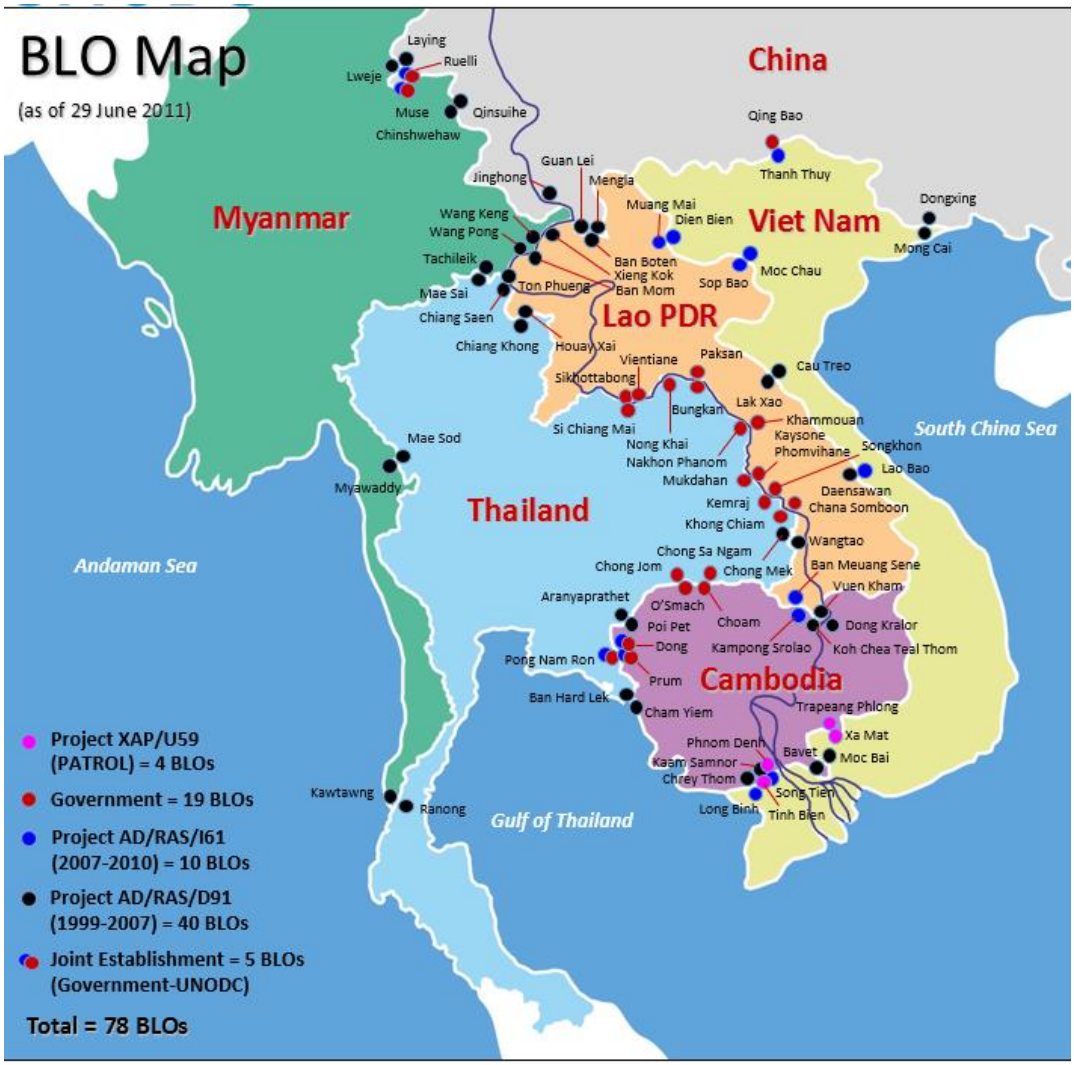

Figure 4-7 : Geographic coverage of PATROL project (Source: UNODC 2011)

Against Transnational Crime Through Organized Law Enforcement (PATROL). Since 1998, the United Nations Office on Drugs and Crime (UNODC) Regional Centre for East Asia and the Pacific has established the border liaison office mechanism (BLO) to address drugs trafficking in the Greater Mekong Subregion (see figure 4-7). BLO allows officers at both sides of a border to exchange information timely and coordinate cross border enforcement cooperation. The mechanism addressed drug trafficking effectively in the Greater Mekong Sub-region. There were 78 BLOs established at the borders among the Greater Mekong Sub-region countries.

The MEA REN network meetings invited UNODC to present the BLO mechanism and discussed how to include ODS, chemicals and waste within the mechanism. In 2010, UNODC, in cooperation with UNEP and two NGOs, i.e. the Freeland Foundation and TRAFFIC, has launched Project PATROL (Partnership Against Transnational Crime Through Organized Law Enforcement) which included ozone depleting substances, hazardous waste, wildlife, migrants, and timber in the BLO mechanism.

After the project was launched, UNODC, UNEP, Freeland and TRAFFIC conducted a training needs assessment and border survey in Thailand, Cambodia, Laos, Vietnam, and Myanmar. The assessment identified the needs for training for border enforcement officers on trafficking in wildlife, persons, chemicals and waste. The result revealed there was very limited knowledge on chemicals and waste at the border. For example, the training needs assessment conducted in Chiang Rai, Thailand in May 2011 demonstrated that the

> *"Participants in the survey reported having a certain familiarity with both hazardous waste and ODS. Although only one of the 68 respondents claim to have encountered cross border movements of hazardous waste and ODS, around 60% of the sample claims to know what these substances are. Yet, further exploration into the precise knowledge of potential ODS reveal that some misconceptions still need to be addressed (e.g. 30% of those who claim to know what ODS are have mistakenly identified Carbon Dioxide as an ODS). In fact, approximately 80% of the respondents are unfamiliar with the Basel Convention or the Montreal Protocol. Furthermore, 7 out of 10 respondents do not have access to copies of national legislation at their duty station and have never received any training in these areas. Hence, design and delivering curricula on international treaties and national laws dealing with waste and ODS are regarded as the most important training need for the respondents."(UNODC, 2010, p. 11)*

After the assessment and survey, UNODC organized a national consultation meeting in the GMS countries. It was smooth in Cambodia, in 2011 that various

governmental agencies like customs, police, The Ministry of Forest, Ministry of Environment, Immigration, and the Border Army all in attendance at the meeting. It was suggested to issue a decree on including wildlife, chemicals, waste, timber and migrants in the border liaison office mechanism and enhance the inter-agency cooperation. In Vietnam, at the very beginning, the anti-drug enforcement agency refused the participation of the Ministry of Environment, citing that the ministry is not an enforcement agency. UNEP debated in the meeting on how could those enforcement agencies deal with environmental sensitive commodities without the support from environmental authorities. The consensus was reached finally and the Ministry of Environment subsequently joined the National Steering Group for PATROL.

A series of training workshops were organized at border areas, including topics on ODS and waste. Cross border meetings and regional meetings have been organized. Seizures have been reported by GMS countries. The PATROL project strengthened the information exchange among different law enforcement agencies domestically and internationally, promoted the efficiency to address smuggling events, and targeted intervention at hot spots of smuggling. However, it should be noted that smugglers may change their smuggling routes, as possible corruption by remote border agents remains an issue and inadequate capacity of agents in remote posts. Financial support from donors or central governments is key to maintaining the inter-agency cooperation and enforcement coordination (Liu et al., Upcoming).

The reasons for the successful implementation of PATROL include (based on the author's observation during the involvement of PATROL project):

a. UNODC accumulated experience in addressing drug trafficking through border liaison offices mechanism in the Greater Mekong Sub-region.
b. UNODC was willing to expand its mandate apart from anti-drugs so that more funding and job opportunities will be available.
c. UNEP needs to address the illegal trade issue but UNEP is not an enforcement agency and need to cooperate with other organizations.
d. Countries in the Greater Mekong Sub-region have the needs to strengthen border control and maintain environmental and social security.
e. Donors are willing to help to address trafficking issues.

f. Key officers from UNODC, UNEP, and partners, who were willing to tackle the difficulties to develop the new project, were also key for the success of the PATROL project.

4.1.6 Building synergies at the regional level facilitated the Implementation of the Green Customs Initiative

The Green Customs Initiative was launched on 2 June 2003 (UNEP, 2003). Its aim is to enhance the capacity of customs officers and other law enforcement officers to monitor and facilitate legal trade and combat illegal trade in environmentally sensitive commodities regulated by multilateral environmental agreements including the Montreal Protocol, the Basel Convention, the Stockholm Convention, the Rotterdam Convention, the Cartagena Protocol, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Chemical Weapon Convention. The Green Customs Secretariat raised fund for the programme, developed the Green Customs Guide, online training module that was subsequently included in the World Customs Organization's training system.

The Green Customs Initiative was proposed by UNEP OzonAction Programme based in Paris. UNEP raised the funds through the Multilateral Fund for Implementing Montreal Protocol, United Nations Development Fund, EU and other donors. The funding provided the basis for promoting the Initiative. Partners' technical support for the development of the Green Customs Guide, an online training module, as well as providing resource persons to regional and national workshops was also critical to the Initiative.

The Green Customs Initiative conducted a series of regional, sub-regional and national workshops in a coordinated manner. The MEA REN has worked closely with the Green Customs Secretariat to respond country's request for capacity building, and organized Regional Workshop in Shanghai and Bangkok in 2007, as well as in Maldives, Vietnam, China, Nepal and Mongolia from 2007 to 2011 (UNEP, 2011a). Due to the coordination with MEA REN, the World Customs Organization Regional Office for Capacity Building (WCO ROCB) provided funds to organize a regional

Green Customs workshop in India in 2008 and in South Korea in 2009. The MEA secretariats and focal points of MEAs were invited to the workshops.

The Green Customs workshops covered topics of ODS, chemicals, waste, POPs, chemical weapons and wildlife. The following is an example of the evaluation of the sub-regional Green Customs workshop organized in Bangkok in 2007: 90% of the participants gave excellent or very good scores on the overall evaluation of the workshop (see figure 4-8). This shows the workshop was welcomed by the participants.

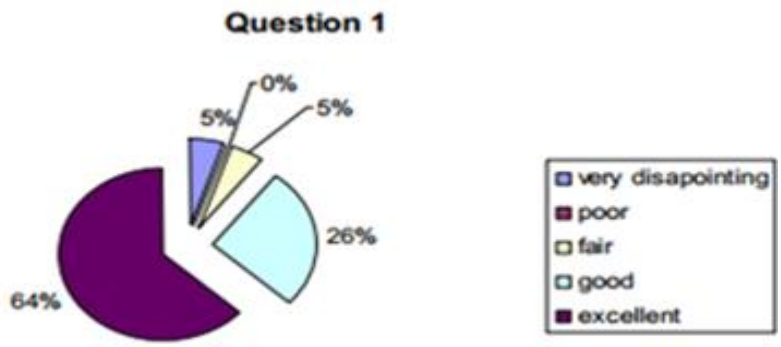

Figure 4-8 Overall evaluation of the Green customs training in Bangkok in 2007 (Source: UNEP 2007)

One question asked the participants, "Compared to what you knew before the workshop, do you feel you have now a better knowledge of the role of customs officers

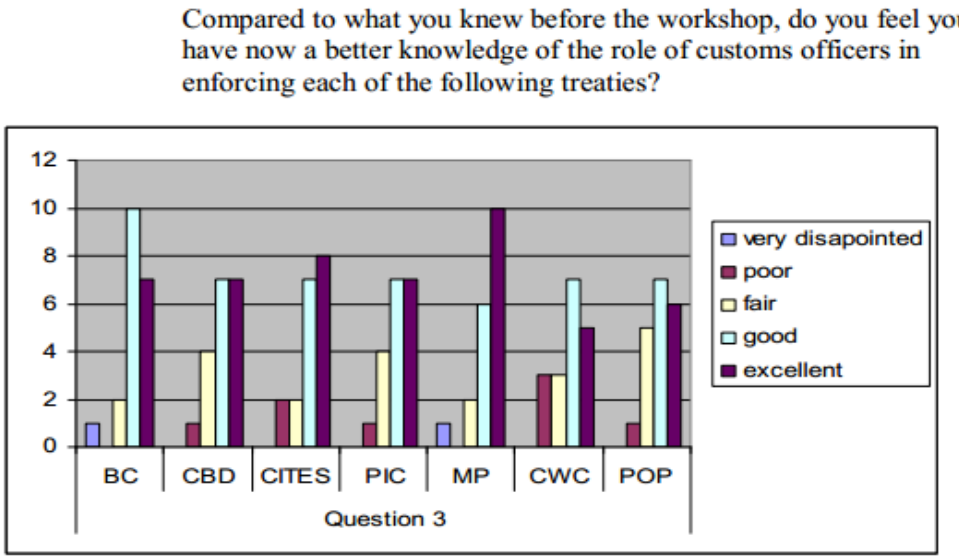

Figure 4-9 Knowledge Improving after the Workshop (source; UNEP, 2007)

in enforcing each of the following treaties: The Basel Convention, Convention of Biodiversity (CBD), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Rotterdam Convention (PIC), Montreal Protocol (MP), Chemical Weapon Convention (CWC), Stockholm Convention (POPs)?". Figure 4-9 indicates that the after the workshop, the knowledge of most of the participants improved.

Though this is considered a snapshot of the evaluation of one workshop, but the responses from participants revealed the improvement of knowledge on different MEAs after the training. Enforcement officers requested to organize similar trainings and to increase the length of the trainings. The feedback from the enforcement officers demonstrated that an integrated approach has been recognized and appreciated (Interview with Shanghai Customs College, 25 March 2014).

In 2014, China Customs organized two 'Green Customs' training workshops with their own funds. This demonstrated that the Green Customs Initiative was accepted by China Customs. It also showed the sustainability of the Green Customs Initiative. Moreover, Shanghai Customs College is also in the process of including the concept of 'Green Customs' into their training curriculum.

4.1.7 Lesson learnt from MEA REN

While the MEA-REN as a project concluded in 2011, with phase II of the project beginning in 2012, it provided some lessons learnt through its implementation, that are worthwhile to note. The Third MEA REN workshop, which held in Chiang Mai, Thailand in September 2009, evaluated MEA REN. The following points are directly quoted from the evaluation section of the third MEA REN workshop report (UNEP, 2009): .

a. *"Regional fora, such as the MEA-REN, often struggle to draw firm and proactive commitments from national focal points. Having constant communication channels open seems to increase the country commitment with time. However, this is a high maintenance task.*
b. *There are some models of information exchange/ networking that have been successful in elsewhere and have potential for replication in Asia (e.g. the system for waste trade inquiry in the Europe, maintained by IMPEL).*

c. *It was difficult for one officer to represent three conventions (Basel/Rotterdam/ Stockholm). The MEA-REN project has requested participating countries to nominate one officer as MEA Representative to cover the three conventions. In practice, three different agencies within a country to look after the three conventions respectively. Therefore, comparing Montreal Protocol, it was more difficult to coordinate the information exchange and activity coordination on the three conventions.*

d. *Up to date, Secretariats of Rotterdam/Stockholm Conventions have not seen illegal trafficking as a challenging or hot issue; therefore there is limited guidance and information from the Secretariats in this regard.*

e. *The Enforcement of other MEAs is limited, compared to ODS/ the Montreal. Strengthening of other MEA-REN national representation/ enforcement capacities should be attempted. Conference of Parties (COPs) of respective MEAs should have done more to address the issue of lack/ weak enforcement in countries and offer solutions. Much focus of the MEA-REN has been on ODS/ the Montreal Protocol since the requirements of this protocol are very precise and easier to follow. As to other MEAs, more clarity is needed for member countries to be able to take enforcement action.*

f. *The region is one of the main destinations for waste dumping. There have been repeated calls for capacity building on addressing hazardous waste issues. However, there were not enough funds to conduct the requested activities. UNEP has tried to organize more Green Customs workshops to address this issue.*

g. *Safe handling of harmful substances and hazardous waste is a complicated issue. Though there were intensive discussions in the MEA-REN workshops, it is easier said than done. This is still a challenge in the region.*

h. *While development of tools is an essential part of any capacity-building, there are numerous tools already have been or being developed by the MEAs Secretariats, national authorities, and NGOs.*

i. *Face-to-face meetings under the networking such as the MEA-REN tend to become an occasion during which every possible topic is tabled and participants generate a long "wish list" with limited regards to what can*

be done realistically in intervals. The project should be designed to utilize face-to-face meetings as opportunity to evaluate the progress and sharpen scope of future activities. Meetings should be more focused and be seen as part of the project delivery process, not an achievement on its own.

j. MEA-REN workshop agenda should change to cover more items, to focus on specific issues (e.g. E-waste), or should it maintain its status-quo regardless of the funding issue. Meetings could focus on specific topics while the MEA-REN should maintain its overall focus. Covering other issues by the MEA-REN is desirable.

k. There are some periodic meetings in/outside the region that the regional networking forum such as the MEA-REN might benefit from by associating more closely (e.g., annual meeting of the Basel Convention Regional Centres (BCRCs) Directors organized by the Basel Convention Secretariat). Moreover, some effort could be made to bring the national environmental authority and the department of sustainable development in the country closer and create joint initiatives with BCRC.

l. After the completion of the MEA-REN, there have been some global and regional developments that may be important to take into account in future enforcement networking work. Among them are the new global United Nations System Task Force on Transnational Organized Crime and drug trafficking, and discussions during COP-10 of the Basel Convention on a partnership on preventing and combating illegal traffic."

An officer from the Netherlands highlighted (Interview, 21 March 2014) that the MEA REN is a very important network focusing on enforcement. The officer from Pesticide Action Network said in an interview (Interview, 1 April 2014): "MEA REN is very useful to share information. Customs officers are not aware of pesticide. They work more on drugs. MEA REN put pesticides on their radar."

During the implementation of MEA REN project, some recommendations on facilitating data reporting and proper labelling of chemicals were made. However, due to the complexity of data reporting for the four MEAs, MEA REN could not achieve what the Multilateral Funds is able to do regarding punishment for non-compliance and

providing funds to support reporting. Therefore facilitating data report is easier said than done. Due to the limited human resources of the MEA REN Secretariat, it was difficult to follow-up on all of the recommendations of the MEA REN network meetings.

4.1.8 Evaluate the effectiveness of MEA REN

This section is comprised of three sub-sections. Section 4.1.8.1 is to summarize the synergies under MEA REN and related impacts. Section 4.1.8.2 is to use Young and Levy's regime effectiveness proposition to evaluate the effectiveness brought by synergies. Section 4.1.8.3 is to use output-outcome-impact model to further discuss the effectiveness.

4.1.8.1 Summary of changes brought by building synergies on enforcement effectiveness in Asia and Pacific Region

Table 4-3: Summary of changes brought by building synergies in Asia and Pacific Region

Action	**Building synergies**	**Outcome**
Enforcement of licensing/permit	Informal Prior Informed Consent (IPIC)(Section 4.1.3.6)	Improved licensing on ODS dramatically, but no progress for waste, pesticide and POPS
Inspection of goods	Green Customs Trainings (section 4.1.6)	Training helped greatly
Information exchange	e-forum/website/ ECMU/newsflash/cooperation with RILO /EU/ Desk study (section 4.1.3)	Improved greatly
Domestic coordination	MEAN REN Network meeting (section 4.1.2)	Network meeting helped greatly
Cross border cooperation	MEAN REN Network meeting (section 4.1.2) PATROL/cross border dialogue (section 4.1.5)	Big change due to border dialogues and PATROL
Enforcement operation	Sky Hole Patching/ Demeter/ Inspection Month(Section 4.1.4)	Great success on ODS and waste

Handling of seizures	Green Customs Trainings (section 4.1.6) MEAN REN Network meeting (section 4.1.2)	Training improved; Network meetings have given recommendations
Prosecution of offence	MEAN REN Network meeting (section 4.1.2)	Little progress because it takes time to enact new laws and regulations
Capacity building	Green Customs Trainings (section 4.1.6) MEAN REN Network meeting (section 4.1.2)	Much improved
Data reporting	MEAN REN Network meeting (section 4.1.2)	No progress though the network meetings recommended due to complexity and workload in data reporting

MEA REN provided a platform for synergizing the Basel/Rotterdam/ Stockholm Conventions and Montreal Protocol

The MEA REN networked with the Basel/Rotterdam/Stockholm Secretariat, Ozone Secretariat, UNEP OzonAction Compliance Assistance, Basel/Stockholm Convention Regional Centres, NGOs, Customs focal points and MEA focal points, as well as IMPEL from EU and INECE. The MEA REN provided a unique platform for various stakeholders to explore ways to enforce the four MEAs (section 4.1.2). The network facilitated domestic coordination because customs focal point, Ozone Officer, and MEA Representatives were all invited to the MEA REN workshop to discuss approaches to address illegal trade in chemicals and waste. The network has also promoted cross border cooperation because the network provided a platform for importing countries and exporting countries to enhance coordination and cooperation in trade control.

Synergies on Information Exchange

Information flow has increased under MEA REN (section 4.1.3). The Informal Prior Informed Consent on import and export of ODS (section 4.1.3.6) helped countries to prevent illegal trade in ODS (iPIC); The iPIC mechanism was not obligated by the Montreal Protocol, however due to the built trust of countries in the Southeast and South

Asian countries, through networking projects, the iPIC scored success. Moreover, intelligence exchange between MEA REN and RILO, between the EU and MEA REN participating countries facilitated the investigations of illegal shipments. Because of the regular networking opportunity and the constant means of information sharing that the project provided, the Customs focal points, National Ozone Officers, and MEA representatives are increasingly viewing the challenges of chemicals and waste trade control as a common task with a well-defined responsibility for each respective agency and country. A collective review of desk studies on trade data discrepancies and illegal trade cases has helped acknowledge existing problems and to jointly identify possible solutions such as, improvement on national licensing systems and a process for detection and reporting. Similar exercises have been done on other harmful chemicals and hazardous waste.

Synergies on Cross Border Cooperation

There is rapid progress in synergizing between the Montreal Protocol and the Basel Convention under PATROL project (section 4.1.5) in the Greater Mekong Sub-region. The PATROL Project has included ODS and waste in the Border Liaison Office mechanism. Training, surveys and cross-border cooperation helped to coordinate the work on the enforcement of the Montreal Protocol and the Basel Convention at border areas within the Greater Mekong Sub-region. A National Steering Committee for PATROL in the Greater Mekong Sub-region (excluding China) has convened officers who work on ozone and waste issues. A new sub-decree was discussed in Cambodia regarding cover ODS, waste, wildlife, timber and migrants in the Border Liaison Office mechanism. The training needs assessment, survey, development of training materials and delivery of trainings, set-up of a national steering committee for PATROL, and cross-border consultations have raised awareness on ODS and waste. Furthermore, with the improved capacity of border control officers at certain levels and in the end promoted the enforcement and compliance of the Montreal Protocol and the Basel Convention within the Greater Mekong Sub-region.

Synergies on Enforcement Operation

Operation Sky Hole Patching (section 4.1.4) addressed the ODS and hazardous waste in one go. The operation requested the coordination between the National Ozone Unit and the Competent Authority of the Basel Convention. After Operation Sky Hole Patching, countries in Southeast and South Asia have attended a number of enforcement operations coordinated by different organizations like the World Customs Organization, Interpol, INECE, and have further improved their cooperation and coordination between environmental agencies and customs authorities. MEA REN further coordinated participating countries to participate in INCEC's Inspection Month Campaign to address waste trafficking, and the World Customs Organization's Operation Demeter to combat illegal trade in hazardous waste. These enforcement operations improve the cooperation between the Secretariat of the Basel Convention, the World Customs Organization, UNEP, national customs authorities and environmental agencies.

Also, the governmental law enforcement entities – traditionally suspicious of NGOs – are now more forth-coming in receiving technical advice from them, partially as result of the project introducing work of some NGOs, such as, the Environmental Investigation Agency (EIA) in the UK and the Basel Action Network (BAN) in the USA to the MEA-REN focal points.

Synergies on Capacity building

Though the Green Customs Initiative was not initiated by the Implementation of MEA REN in the region, it never the less facilitated synergies in capacity building on the four MEAs. The Initiative helped to reduce training costs and promoted to train customs officers in a more efficient way.

Some lessons

The synergies process is difficult and many of the recommendations from MEA REN workshops have become wish lists or lip cooperation. For example, for the punishment of offenses, it takes a long time for a country to revise its law and regulation, so giving severe punishment to offenders always takes time. Secondly, the MEA REN involved customs and environmental officers, but judges and prosecutors were not invited to the project. It is difficult to have substantial progress in this topic.

Another example is labelling of chemicals. The project participants reiterated there is a need to label products of ozone depleting substances, pesticide and other toxic chemicals properly. However the labelling issue request clear provisions of national laws and regulations, and also need the support of the industry. It is difficult for customs and environmental officers to single handedly move this issue forward. The third example is data reporting. The Basel Secretariat requested the MEA REN project to promote data reporting. The Montreal Protocol has the mechanism to punish parties who do not report data timely. The Basel/Rotterdam/Stockholm Conventions do not have this mechanism. Just replying on a project to appeal an MEA representative to do the time consuming work does not work well. One officer from a Basel Convention Regional Centre said in an interview (26 February 2013), "Synergy does not reduce the burden for data reporting due to a big difference required by different MEAs". This is consistent with the difficulty encounter by MEA REN in promoting data reporting.

The building synergies promoted by MEA REN was functional, because MEA REN is not in the position to change organizational structure. And organizational reform should be the tasks of MEA Secretariats and governmental agencies. It is worth noting that MEA REN relied on the grant provided by the Swedish Government. When funds are not available, the network may die and the built synergies may fade out.

4.1.8.2 Use Young and Levy's concept on regime effectiveness to evaluate MEA REN

The following table is to use Young and Levy's concept on regime effectiveness to evaluate MEA REN.

Table 4-4 Use Young and Levy's concept on regime effectiveness to evaluate MEA REN

Young and Levy concept on regime effectiveness	**MEA REN**	**Evidence**
(i) legal approach (Measurement of a regime's effectiveness is in what extent that contractual commitments are met)		

1.compliance of rules	Better enforcing licensing system	Implementation of informal Prior Informed Consent mechanism on import & export of ODS (section 4.1.3.6)
	Improved information exchange helping countries in compliance of the Basel/Rotterdam/Stockholm Conventions and Montreal Protocol.	-Set-up of e-forum, website, issuance of Environmental Crime Media Updates, Newsflash (section 4.1.3.1) -Promotion information exchange with MEA Secretariats and -Enforcement Agencies (section 4.1.3.2) -Promoted information exchange between EU, North America and Asia (section 4.1.3.3) -Promoted the information exchange between governmental agencies and NGOs (section 4.1.3.4) -Desk study of trade in chemicals and waste (section 4.1.3.5)
	Enhanced enforcement operation;	Operation Sky Hope Patching launched to synergize the cooperation on addressing illegal trade (section 4.1.4)

		Facilitated INECE' Inspection Month (section 4.1.4); Assisted World Customs Organization's Operation Demeter (section 4.1.4)
	Facilitated cross border cooperation	PATROL project facilitated the synergies in border control of ODS, waste, wildlife, timber and human trafficking in Greater Mekong Sub-region.(section 4.1.5).
2. change of policies,	Not applicable. Policies changed at national level.	
3. set-up of programs.	-PATROL project was set-up;	PATROL project facilitated the synergies in border control of ODS, waste, wildlife, timber and human trafficking in Greater Mekong Sub-region.(section 4.1.5)
	-MEA REN project was extended to Phase II in 2012	
4. obligations have been written in treaties	-Informal Prior Informed Consent Mechanisms were included in the decisions in the	Key decisions and recommendations on iPIC (UNEP, 2015)

	meeting documents of Meeting of Parties of Montreal Protocol.	
	-Operation Sky Hole Patching was highlighted in the meeting documents of Meeting of Parties of Montreal Protocol.	Decision XIX/12: Preventing illegal trade in ozone-depleting substances (UNEP, 2007b)
(ii)Economic approach		
5. Measurement whether a regime lead the expected outcome in a cost efficient manner.	-Reduced regional meetings;	-UNEP OzonAction Compliance Assistance Programme, the Basel Convention Regional Centres, national customs authorities, environmental focal points worked together under MEA REN so that regional meetings were reduced (section 4.1.2.)
	-Green customs training reduced costs comparing training for different MEAs organized separately.	- Green Customs workshops have been organized in Maldives, Vietnam, India, Korea, Fiji, China and Thailand. The synergized approached reduced costs for capacity building (section 4.1.6).
(iii) normative approach		

6. consider including normative principles like justice, stewardship and participation.)	MEA Secretariats, Regional Offices, World Customs Organizations, UNEP, customs authorities and environmental focal points worked together in MEA to address illegal trade	Set-up of MEA REN (section 3.1.2) and operation of MEA REN (section 4.1.2).
(iv) Political approach		
7. changes of behaviour	-iPIC implemented; -PATROL promoted to include chemical and waste in the border liaison office mechanism; Inter-agency information exchange mechanism set-up.	-iPIC promotes importing countries and exporting countries to exchange information to prevent illegal trade (section 4.1.3.6) -PATROL included ODS and waste in the border liaison office mechanism (section 4.1.5)
8. interests of actors	Customs prioritized environmental issues on their agenda; Environmental issue became second most important one to RILO (the first is drug).	Customs initiated Operation Sky Hole Patching to address ODS and waste in one go (Section 4.1.4). MEA REN further promoted participating countries to join INECE's Inspection Month and World Customs

		Organization's Operation Demeter (section 4.1.4)
9. policies and performance of institutions which lead to positive management of the problem	Inter-agency cooperation and capacity building helped to address illegal trade in chemicals and waste.	Operation of MEA REN (section 4.1.2) Sky Hole Patching (section 4.1.4), iPIC (section 4.1.3.6), information exchange (4.1.3) and capacity building (section 4.1.6) helped countries to manage chemical and waste in a better way. Seizures made in Sky Hole Patching and potential illegal shipments prevented by iPIC are hard evidences.

In summary, when we use Young and Levy's concept to evaluate MEA REN, we notice: 1. MEA REN improved the licensing system of the Montreal Protocol through iPIC, facilitated information exchange in compliance of the Basel/Rotterdam/Stockholm Conventions and the Montreal Protocol through an e-forum platform, Environmental Crime Media Updates, Newsflash, inter-region and inter-agency communications, as well as enhanced enforcement operations in combating illegal trade and the facilitation of cross-border cooperation. Those synergized approaches initiated by MEA REN promoted countries in compliance of chemical and waste related MEAs; 2. There is no clear evidence on policy changes under MEA REN. This is mainly because MEA REN focused at work at the regional level; 3. For setting up new programs, the PATROL project was set-up and the MEA REN project was extended to Phase II in 2012; 4. iPIC and Operation Sky Hole Patching were highlighted in the documents at the Meeting of the Parties of the Montreal Protocol. These could be seen as a kind of obligation written within treaties; 5. The MEA REN helped to reduce regional meetings on combating illegal trade in chemicals

and waste because the project promoted a synergized process on dealing with different chemicals and waste in one go. The Green Customs training has also helped to reduce costs for the different MEAs as the trainings are no longer organized by individual MEA Secretariat; 6. For the normative approach, the MEA Secretariats, Regional Offices, the World Customs Organization, UNEP, customs authorities and environmental focal points worked together in the MEA REN project to address illegal trade in a coordinated manner. In another words, the various actors participated in one project to address different issues, resulting in great success; 7. The iPIC and PATROL project could be recognized as a behavioural change of the participating countries, because countries started to check permits, registered importers and exporters of ODS and included chemicals and waste in the Border Liaison Office mechanism. These did not happen before the synergies process; 8. Customs prioritized the environmental issues on their respective agendas. Environmental issues became the second most important concern to RILO (the first is drug). This could be seen the change of interests of actors; 9. The Inter-agency cooperation and capacity building helped to address illegal trade in chemicals and waste. Therefore, we can say that building synergies brought by MEA REN do improve enforcement of chemical and waste related MEAs.

4.1.8.3 Measure MEA REN with Output-Outcome-Impact Model

The model below to further discusses the effectiveness brought by building synergies, the researcher referring to Arild Underdal's output-outcome-impact model, Kenneth J. Markowitz and Krzysztof Michalak (2004) proposed indicators to measure environmental enforcement of chemical and waste related MEAs in Asia.

Table 4-5 Using Output-Outcome-Impact Model to evaluate MEA REN

Output-Outcome-Impact of MEA REN		
Indicator	Measures	Environmental Compliance and Enforcement Examples

Input Indicator	*Resources (human, material, financial, etc.) used to carry out activities, produce outputs and/or accomplish results.* Funds provided by Swedish Government to implement MEA REN; Participation of Customs focal point; MEA Representative; Ozone Officer, Representative of Basel/Rotterdam/Stockholm Convention; RILO, ROCB, BAN, PAN, IMPEL,	- 1 Customs Focal point, 1 Ozone Officer, 1 MEA representative of 25 countries joined the MEA REN project; - 5 Representatives of the Montreal Protocol, 1 from the Basel/Rotterdam/Stockholm Convention Secretariats and Regional Centres participated in the project; - 1 representative each of the World Customs Organization's RILO and ROCB joined the project; - 2 officers from BAN, 2 from PAN, 3from EIA jointed the project
Output Indicator	*Government activities, work products, or actions*. 1. Annual network meetings of MEA REN provided a platform to bring stakeholders to address the four MEAs in one go (section 4.1.1).	Four annual workshops for MEA REN organized. A series of recommendations were adopted and followed up.
	2.1 Information exchange tools including e-forum, MEA REN Website, Environmental Crime Media Updates, Newsflash and Country Information Sheet. (section 4.1.3.1)	Improved the information exchange between enforcement agencies and environmental agencies at the national, regional and global levels on combating illegal trade in chemicals and waste. Environmental Crime Media Updates issued weekly; Newsflash issued biannually
	2.2 Facilitated Information Exchange with enforcement agencies and MEA Secretariats (section 4.1.3.2)	The MEA REN project facilitated Information Exchange with WCO RILO A/P, Interpol, and MEA Secretariat. For example, the intelligence officer of Thailand reported 46 ODS cases to the Customs Enforcement Network (CEN) led a quadrilateral meeting between Thailand, Cambodia, Vietnam and Laos.
	2.3 Promoted Information Exchange between EU, North America and Asia (section 4.1.3.3)	MEA REN worked closely with the EU and North American countries to monitor suspicious shipments

	2.4 Promoted the information exchange between governmental agencies and NGOs (section 4. 1.3.4)	The Basel Action Network (BAN) presented their civil enforcement operation in the 4th MEA REN meeting in Beijing in 2010. BAN has traced e-waste containers in the U.S. and found that most of those containers arrived at Hong Kong and mainland China. Pesticide Action Network (PAN) presented their survey in Laos and Cambodia and found banned pesticide still could be bought in the market of Cambodia with labels in Vietnamese, Chinese and Thai. Environmental Investigation Agency (EIA) introduced their investigations on illegal ODS trade. The findings helped government officers to understand better about the loophole and problematic trade.
	2.5 Conducted Desk Study on Trans-boundary Movement of Chemicals and Waste (section 4.1.3.5)	Desk study helped the countries to identify problematic trade and find solutions to improve enforcement. In the 3rd MEA REN workshop in Chiang Mai in 2009, UNEP presented the Desk Study on hydrochlorofluorocarbon (HCFCs), polychlorinated biphenyl (PCBs) and Used Lead Acid Batteries. UNEP presented another desk study in the 4th MEA REN workshop in Beijing in 2010 on ODS and waste.
	2.6 implementation of iPIC (section 4.1.3.6)	- iPIC has effectively helped countries to prevent illegal trade.
	3 Operation Sky Hole Patching	
	4 Green Customs workshops were organized	Green Customs Workshops were organized in China, Maldives, India, Korea, Thailand, Fiji, and Vietnam to improve the capacity of enforcement officers in control illegal trade.

Intermediate Outcome Indicator	*Measure progress towards achieving final outcomes, such as changes in behaviour, knowledge, or conditions that result from program activities.* 1. Stakeholders cooperate with each other to address illegal trade in ODS, pesticide, waste and POPs in one go including sharing information, knowledge etc.	- Pounds of pollutants reduced through enforcement actions
	2. iPIC makes ozone officers in exporting and exporting countries to exchange license and quota information before they issue permit	In 2010, more than 1000 tonnes of illegal ODS were prevented. In 2012, 41 unauthorized shipments of ODSs were prevented through iPIC, totalling at least 980 tonnes. In 2013, more than 273 tonnes of illegal ODSs were prevented.
	3. Information exchange of inter-region information sharing and a desk study has helped to facilitate and identify gaps in trade and detain suspicious shipments	A desk study led to a meeting among Cambodia, Laos, Thailand and Vietnam in April 2006 in Vientiane, Laos. The meeting found that several hundred tonnes of ODS smuggled from Vietnam to Laos and Cambodia, and reached to Thailand afterwards. The information exchange between North America and MEA REN led to the seizure of e-waste in India in of April 2010.In 2011, notifications between the United Kingdom and Pakistan concerning e-waste, the notifications between the Netherlands and Malaysia in July 2011 concerning PVS paste, are hard evidences for cooperation.

	4. Enforcement operations like Operation Sky Hole Patching, Inspection Month, Operation Demeter facilitated regional cooperation on combating illegal trade	From 1 September 2006 to 15 September 2010 during Operation Sky Hole Patching, 51 ODS seizures were detected, 730,026 Kg of ODS were seized including CFC-12, HCFC-123, HCFC-22. 33,971piececs of equipment containing ODS were seized. Some 339 waste seizures were made weighing 29,436,043 Kg. Seizures included used batteries, used computer monitors, used TV monitors, copper ash, electronic and telephone parts. Operation Demeter III, organized by the World Customs Organization in October and November 2013, seized 7,000 metric tonnes of waste, including used vehicle parts and tyres, textiles and e-waste. MEA REN has facilitated networking countries to participated in World Customs Organization's Operation Demeter, a global operation to combating waste trafficking, and INECE (The International Network for Environmental Compliance and Enforcement)'s Inspection Month to address waste trafficking.
Impact indicator	The real impacts of compliance promotion and enforcement actions and the ultimate change in the state of the environment	- Improved water quality - Improved air quality UN reports show ozone layer is recovering. Countries in the region have reported large seizures on hazardous waste. However, it is difficult to directly correlate the synergies built in MEA REN to improve the state of the environment.

Using the input-output-outcome-impact model, we can see that inputs are funds that provided by Swedish Government to implement MEA REN, participation of Customs focal point, MEA Representative, Ozone Officer, Representative of Basel/Rotterdam/Stockholm Convention, RILO, ROCB, BAN, PAN, and IMPEL.

The outputs (i.e. activities, work products, or actions) include annual network meetings, information exchange tools such as the e-forum, MEA REN Website,

Environmental Crime Media Updates, Newsflash and Country Information Sheet, improved Information Exchange with enforcement agencies and MEA Secretariats, improved Information Exchange between EU, North America and Asia, improved information exchange between governmental agencies and NGOs, a Desk Study on Trans-boundary Movement of Chemicals and Waste, implementation of iPIC, Operation Sky Hole Patching, PATROL, and Green Customs workshops.

The outcomes include: 1. Stakeholders cooperate with each other to address illegal trade in ODS, pesticide, waste and POPs in one go including sharing information and knowledge; 2. iPIC requires ozone officers in exporting and importing countries to exchange licenses and quota information before they issue permits; 3. Information exchange like inter-region information sharing and the desk study has led to identifying problems in trade and detaining of suspicious shipments; 4. Enforcement operations like Operation Sky Hole Patching, Inspection Month and Operation Demeter facilitated regional cooperation on combating illegal trade. The seizures made by enforcement operations prove as hard evidence of the successes brought by the synergized approaches.

The activities under MEA REN undoubtedly improved the environment in the Asia and Pacific region. UN reports show ozone layer is recovering. Countries within the region have repeatedly documented seizures of hazardous waste and ODS. However, it is difficult to provide direct evidence showing that synergies built in MEA REN have improved the state of the environment.

4.2 Impact of institutional changes brought by building synergies in China

Chapter 3 discussed the institutional changes brought by building synergies in China.

In China, since June of 2013, the Solid Waste Management Centre (a division level agency which implemented Basel Convention) and The Chemical Registration Centre (a division level agency which implemented Rotterdam Convention) have merged into a director general level agency--The Solid Waste and Chemicals Management. The merged Centre has more power, funds, human resources and mandate (Interview with an officer from Solid Waste Management Centre, 5 February

2014). The reason to set-up the merged Centre is to have a life-cycle management of chemicals .i.e. from the cradle to the grave (form production to waste).

In China, a new regulation on ODS was promulgated in January 2014. Severer penalties have been handed down to ODS trade offenders. In 2014, China Customs organized two Green Customs workshops with their own funds. The Shanghai Customs College is also in the process to include Green Customs program in its curriculum. This operation can be perceived that China Customs attached more importance on environmental issue.

Table 4-6 shows the impact on enforcement brought by institutional changes. Merged Solid Waste and Chemical Management can facilitate enforcement of licensing system because the Centre can manage chemicals and waste in a holistic way (from cradle to waste). The new Centre could facilitate the coordination between the Basel and Rotterdam Conventions. The information exchange became easier after the merger of the Solid Waste Centre and Chemicals Centre (Interview with an officer from Solid Waste Centre, 5 February 2015).

China enacted a new ODS Management Regulation in 2014. The new regulation gives harsh penalties to ODS smuggling. It is difficult to say that the new regulation is the outcome of building synergies or that of regional networking, but China did send the draft regulation to partners for comments. The report, Under the Counter, China's Booming Illegal Trade in Ozone Depleting Substances, in 2005, also pressured the Chinese Government.

China Customs launched the “Green Fence” operation to combat illegal trafficking in hazardous waste. Near one million tonnes waste were seized. UNEP provided training to China Customs under the regional enforcement network project enhancing the capacity of Chinese customs officers in addressing waste trafficking. China Customs worked together with the Ministry of Environmental Protection and the General Administration of Quality Supervision, Inspection and Quarantine in this operation.

Rotation of staff among the offices dealing with the Basel/Rotterdam/Stockholm Convention and Montreal Protocol facilitated domestic coordination and knowledge sharing. The respective experience on the Montreal

Protocol could be applied to the Stockholm Convention and other MEAs. One officer working on the Stockholm Convention said, (5 March 2013)

> *"As a doctor, if he accumulated experience in one field, it would be useful when he needs to diagnose another illness. The Stockholm Convention has a lot to learn from the Montreal Protocol, but it cannot be copied fully."*

China Customs organized two Green Customs workshops with its own funds. On one hand, it shows that China Customs recognize the benefits of a synergized approach on capacity building amongst the different MEAs. On other hand, it shows that the Green Customs initiative could be sustained.

One interviewee from the Ministry of Environmental Protection of China said the synergies among four MEAs have proven itself difficult,

> *"Because each agency has a clear-cut scope of mission and is responsible for its own duty. While I coordinated with China Customs, they complained that the focal points of the four MEAs contacted Customs separately. Why are the four focal points not coordinating amongst one another and then approaching customs in one go? They suggested that the Ministry of Environmental Protection should assign one team to coordinate issues such as training. But in reality, an audit does not allow funds for ODS to be used for other issues."*

This statement clearly shows the customs authority requests synergies among different MEAs. It shows that funds are a key barrier for building synergies. It also shows the need to have a coordination unit within the Ministry of Environmental Protection to coordinate enforcement related issues.

Table 4-6 Relations on changes brought by building synergies and enforcement effectiveness in China

Action	**Building synergies**	**Outcome**

Enforcement of licensing/permit	Merged Solid Waste and Chemical Management Centre in China in 2013	Yes, one Centre looks after two MEAs
Inspection of goods	Organize national Green Customs training and Shanghai Customs College is in the process to include GC in its curriculum	
Information exchange	Merged Solid Waste and Chemical Management Centre in China in 2013 Rotation of staff between the offices dealing with different MEAs	Yes, but only two MEAs focal points merged; Staff rotation increased personal contacts.
Domestic coordination	Merged Solid Waste and Chemical Management Centre in China in 2013 Rotation of staff between the offices dealing with different MEAs	Yes, better for the two MEAs (Basel/Rotterdam)
Cross border cooperation		
Enforcement operation	Launched Operation Green Fence	Much improved
Handling of seizures	Organize national Green Customs training and Shanghai Customs College is in the process to include GC in its curriculum	
Prosecution of offence	ODS Management Regulation in China enacted in 2014	Yes, severer penalty given, but not sure due to building synergies

Capacity building	Organize national Green Customs training and Shanghai Customs College is in the process to include GC in its curriculum Rotation of staff between the offices dealing with different MEAs	Yes, there were knowledge sharing, but fund is still a barrier
Data reporting		

We further use Young and Levy's concept on regime effectiveness to evaluate the changes brought by synergies

Table 4-7 Use Young and Levy's Concept to Evaluate Building synergies in China

Young and Levy concept on regime effectiveness	**Building synergies in China**	**Evidence**
(i) legal approach (Measurement of a regime's effectiveness is in what extent that contractual commitments are met)		
1.compliance of rules	1. MEA REN helped China in Compliance of four MEAs in certain extent. 2. Cooperation between Customs and Ministry of Environmental Protection promoted the compliance	China Customs proposed Operation Sky Hole Patching in 2006; China Customs organized Green Fence Campaign in 2013;

2. change of policies,	A new ODS regulation was issued but there was no clear evidence of the contribution of building synergies.	China MEP has sought comments from partners to its new regulation. But there is no strong evidence that the issuance of new regulation is due to building synergies.
3. set-up of programs.	no	
4. obligations have been written in treaties	Not applicable	
(ii)Economic approach		
5. measurement whether a regime lead the expected outcome in a cost efficient manner.	Green customs training reduced costs comparing training for different MEAs organized separately.	UNEP has organized Green Customs workshop in China in 2007 and 2011. China Customs organized two Green Customs workshop with its own funds in 2014.
(iii) normative approach	Not clear	
6. consider including normative principles like justice, stewardship and participation.		
(iv) Political approach		

7. changes of behaviour,	Ministry of Environmental Protect of China exchanges information with foreign countries proactively to prevent illegal trade in ODS; Enforcement operations facilitated inter-agency cooperation.	Ministry of Environmental Protection of China played the leading role in the informal Prior Informed Consent mechanism (iPIC) to prevent potential illegal trade in ODS China Customs proposed to launch Operation Sky Hole Patching to address illegal trade in ODS and hazardous waste; China Custom organized Green Fence Campaign
8. interests of actors,	China Customs prioritized environmental issue on their agenda	
9. policies and performance of institutions which lead to positive management of the problem	Inter-agency cooperation and capacity building helped to address illegal trade in chemicals and waste.	

On the compliance of rules, the participation of MEA REN helped China, to a certain extent, in the compliance of four MEAs. The cooperation between China Customs and the Ministry of Environmental Protection has also promoted the compliance. For change of polices, a new ODS regulation was issued, however there was no clear evidence showing that this is related to the building synergies. For the economic approach, China Customs organized the Green Customs training workshops that helped to reduce costs, compared with the cost

of organizing trainings for different MEAs separately. Behaviour changes could be observed in the implementation of iPIC to prevent potential illegal trade in ODS, proposing to launch Operation Sky Hole Patching, and the organization of the Green Fence Campaign. Overall, there were synergies approaches brought by MEA REN in China, however they were limited.

Table 4-8 Input-Output- Impact Model to Evaluate Effectiveness brought by Building synergies in China

Indicator	Measures	Environmental Compliance and Enforcement Examples
Input Indicator	*Resources (human, material, financial, etc.) used to carry out activities, produce outputs and/or accomplish results.* • One Customs officer, one Ozone Officer, on MEA Representative join the MEA REN project • China Customs assembled staff in its main ports to conduct Operation Sky Hole Patching; • China Customs organized the national wide Green Fence Campaign.	*- # of staff assigned to a task* *- $ spent per inspection* *- Ratio of # of staff to # of regulated facilities*

Output Indicator	• *Government activities, work products, or actions.* • Merged Solid Waste and Chemical Management Centre in China in 2013 • ODS Management Regulation in China enacted in 2014 • Initiated Operation Sky Hole Patching in 2006; • Launched Operation Green Fence in 2013; • Organize national Green Customs training and Shanghai Customs College is in the process to include GC in its curriculum	- *# of enforcement cases settled per year* - *# of fines issued per year*
Intermediate Outcome Indicator	*Measure progress towards achieving final outcomes, such as changes in behaviour, knowledge, or conditions that result from program activities.*	- *pounds of pollutants reduced through enforcement actions* China seized 7 ODS cases, weighed 61.5 tons, 55 waste cases, weighed 5933.1 tons.in operation Sky Hole Patching(Xi, 2009). China Seized almost one million tons of hazardous waste in Green Fence;
Outcome Indicator	*The real impacts of compliance promotion and enforcement actions and the ultimate change in the state of the environment*	- *improved water quality* - *improved air quality*

For this output-outcome-impact model (table 4-8), inputs include: one Customs officer, one Ozone Officer, one MEA Representative joining the MEA REN project; China Customs assembled staff in its main ports to conduct Operation Sky Hole Patching and; China Customs organizing the national Green Fence Campaign. The outputs include a merged Solid Waste and Chemical Management Centre in China in 2013, the ODS Management Regulation in China enacted in 2014, Operation Sky Hole Patching initiated, Operation Green Fence launched, and several national Green Customs training workshops organized. Therefore, there were some synergized activities observed but limited. The impact to improvement of environmental quality should be positive, but difficult to measure.

An officer from the Ministry of Environmental Protection (MEP) in China stated,(17 March 2013)

> *"In the EU, customs, police, transport agencies cooperate closely with environment agencies. But in China, the cooperation is rare. In China, chemicals and waste are not priority for MEP. All levels of environmental agencies pay little attention to chemicals and waste. MEP has an environmental enforcement team, but they focus on air and water. There is little attention paid with respect to transboundary movement of chemical and waste. The cooperation between the Solid Waste Centre and foreign countries is mainly intelligence exchange. In the EU, environmental agencies could analyse intelligence and enforce laws, but in China, we only rely on the cooperation with the EU, and pass the intelligence on to customs. In the EU, customs and environmental agencies cooperate closely. In China, customs are too busy to talk to us. In MEP, the enforcement team has limited knowledge, experience and administrative enforcement ability. For many years, MEP has not included transboundary movement of chemical and waste on its agenda. Only in recent years, when foreign Ministries of Environment approached us, MEP subsequently began to do the work. Customs needs MEP to identify the character of waste. However it is difficult for MEP to identify waste due to the absence of a legal framework. MEP only has the Solid Waste Pollution Prevention*

Research Institute. Identification of waste needs funding. China Customs has a laboratory and the Quality Inspection Bureau has one inspection Centre, but that is all. So it is difficult for waste identification. Technical methods and standards are not consistent. In foreign countries, especially within the EU, the legal system is different. MEP could bring cases to court. In China, it is only customs that takes on this role. There is no inter-agency coordinating mechanism; many things have to be done through personal relationships.

For the three ministries (Ministry of Environmental Protection, the General Administration of China Customs, the General Administration of Quality Supervision，Inspection and Quarantine), waste is not their priority. So there is no adequate staffing, funds, or capacity, this includes identification. The three ministries have the intention to cooperate, but funds are limited. Therefore a short-term operation is feasible, but long-term cooperation is difficult.

In Japan, the Ministry of Environment has 10% of its staff dedicated to waste issues, so does the U.S. But in China, no more than 1% staff is involved in waste issues. They (Japan and U.S.) have already sorted out the problem on waste and air, so they focus on waste and chemicals. Synergies may bring more funds for waste"

A Chinese Customs officer said, (6 March 2013)

"Currently, ODS cases have been diminishing due to training and enforcement operation, such as Sky Hole Patching. The Chinese Government enacted a revised ODS regulation, so the law is being improved and cracking down on smuggling has been enhanced. However, ODS has not been classified as a crime with regards to the importing and exporting of prohibited goods."

The statement confirmed the impact and challenges that China Customs faces in its enforcement operations and strengthened regulations on combating illegal trade. But the interviewee has also highlighted,

"With regard to illegal trade in POPs and pesticides, we do not know our entry point. Pesticides should follow the practice of ODS.

> *Nowadays we punish pesticide smuggling mainly relying on tax evasion. The key challenges are law related. The Supreme Court and Supreme Prosecutor should have a clear explanation on environmental crime. An Inter-ministerial liaison meeting is critical. A leading agency and a coordination office is quite important. They can organize trainings, provide funds and coordinate enforcement activities. ODS has a coordination office, but waste does not have this kind of attention. UNEP should enhance the coordination among various MEAs."*

His statement confirms the observation from the implementation of MEA REN. Law and regulations lay legal basis and are fundamental for combating illegal trade. A coordination agency is critical. The coordination at the global, regional and national levels are all needed. For China, ODS trade control scored successes. But China Customs does not have a clear picture for pesticides and POPs. This is consistent with the opinion from the Secretariats of the Rotterdam and Stockholm Conventions who do not see illegal trade is an issue. For the importance of law and regulation, another interviewee from China Customs shares the same opinion in the interview: (25 March 2013)

> *"Pesticides are unique. In China, there are no laws regulating pesticide smuggling. Illegal trade includes lack of registration or use of another company's license. There is no regulation to punish these kinds of illicit activities."*

An officer from an international organization stated in an interview (19 March 2014):

> *"Last year, China conducted Operation Green Fence. This should be a good opportunity for the cooperation between China customs and the Ministry of Environmental Protection (MEP). However, customs rushed ahead and complained to MEP too detailed in procedures of repatriation. MEP complained that MEP should take the lead in the operation. They gave instruction and customs to implement. Therefore, there is a need for a higher level of coordination, such as Deputy Prime Minister to take lead. China does not have good institution arrangement. Looking back, customs did not follow the*

guideline of the Basel Convention. This caused trouble for its Netherlands counterpart, because the environmental agencies were not informed. The taking back procedure is the reverse procedure of exporting waste."

This comment revealed the challenges of inter-agency cooperation. It is worth applauding that the Chinese Government launched enforcement operations to combat illegal trade, but the coordination between China Customs and the Ministry of Environmental Protection needs further improvement.

Another interviewee from Ministry of Environmental Protection stated (12 March 2013)

"Synergy among national focal points has not started yet in China. However, accidently, national focal points from the Basel/Rotterdam/Stockholm Conventions are all under the Pollution Prevention Department. But actually, synergy has not started yet…. At the national level, synergy is not objective. Problem solving is the objective."

From the above statement, together with the observation of the synergized process in China, we can conclude that the synergies among chemical and waste related MEAs are limited. Political will on addressing illegal trade in chemicals and waste is inadequate. The inter-agency cooperation should be improved.

4.3. Impact of institutional changes brought by building synergies in Thailand

Synergies process on Chemicals and Waste related MEAs in Thailand have not officially begun (table 4-9). A joint Meeting of the Sub-Committee for Basel, Sub-Committee for Rotterdam and Sub-Committee for Stockholm, in Thailand was held in 2010. A working group was set-up to discuss the synergies issue in July 2014. To a certain extent, these actions promoted domestic coordination and information exchange among the Basel/Rotterdam/Stockholm Conventions and the Montreal Protocol in Thailand.

There was staff rotation in different offices dealing with different MEAs. This facilitated information exchange on different MEAs and knowledge transfer. The

Pollution Control Department organized trainings for customs officers on combating illegal trade using funds from SCAIM[8].

Thailand has a National Environmental Board, which plays an important role in coordinating different ministries. The National Environmental Board looks after different acts including mandates, quality, and emission. Thailand has also established a National Committee on Chemical Safety, that has also facilitated the coordination among different governmental agencies, industries and NGOs on chemical safety issue.

[8] Interview with an officer from Pollution Control Department of Thailand, 28 March 2012.

Table 4-9 Relations on changes brought by building synergies and enforcement effectiveness in Thailand

Action	**Building synergies**	**Outcome**
Enforcement of licensing/permit		
Inspection of goods		
Information exchange	Joint Meeting of Sub Committee for Basel, Sub Committee for Rotterdam and Sub Committee for Stockholm in Thailand in 2010 Rotation of staff between the offices dealing with different MEAs	Yes, there was some information exchange, but just but only occasionally
Domestic coordination	Joint Meeting of Sub Committee for Basel, Sub Committee for Rotterdam and Sub Committee for Stockholm in Thailand in 2010	The joint meeting was organized just once for several years
Cross border cooperation		
Enforcement operation		
Handling of seizures		
Prosecution of offence		
Capacity building	Rotation of staff between the offices dealing with different MEAs Training customs officers using funds from SAICM	Yes, there were knowledge sharing, but fund is still a barrier
Data reporting		

Table 4-10 Use Young and Levy's Concept to Evaluate Building synergies in Thailand

Young and Levy concept on regime effectiveness	**Building synergies in Thailand**	**Evidence**
(i) legal approach (Measurement of a regime's effectiveness is in what extent that contractual commitments are met)		
1.compliance of rules	MEA REN helped Thailand in Compliance of four MEAs in certain extent.	
2. change of policies,		
3. set-up of programs.		
4. obligations have been written in treaties	Not applicable	
(ii)Economic approach		
5. measurement whether a regime lead the expected outcome in a cost efficient manner		
(iii) normative approach		
6. consider including normative principles like justice, stewardship and participation.		
(iv) Political approach		
7.changes of behaviour,	Sub-committees for Basel/Rotterdam/Stockholm Conventions have been	

	discussing building synergies issue. Participated in Operation Sky Hole Patching	
8.interests of actors,	Customs prioritized environmental issue on their agenda	
9.policies and performance of institutions which lead to positive management of the problem	Inter-agency cooperation and capacity building helped to address illegal trade in chemicals and waste.	

Using Young and Levy's concept on regime effectiveness (table 4-10), there are limited activities observed on the impact brought by the synergies process: MEA REN helped Thailand, to a certain extent, in the compliance of four MEAs. Sub-committees for the Basel/Rotterdam/Stockholm Conventions have been discussing the building synergies issue. Thailand participated in Operation Sky Hole Patching to combat illegal trade in ODS and waste. Inter-agency cooperation and capacity building helped to address illegal trade in chemicals and waste.

Table 4-11 Input-Output- Impact Model to Evaluate Effectiveness brought by Building synergies in Thailand

Indicator	Measures	Environmental Compliance and Enforcement Examples
Input Indicator	*Resources (human, material, financial, etc.) used to carry out activities, produce outputs and/or accomplish results.* National Environment Board National Committee on Chemical Safety One Customs officer, one Ozone Officer, one MEA Representative joined the MEA REN project Thai Customs assembled its staff to participated in Operation Sky Hole Patching;	*- # of staff assigned to a task* *- $ spent per inspection* *- Ratio of # of staff to # of regulated facilities*
Output Indicator	*Government activities, work products, or actions.* National Environment Board coordinates environmental issue in a holistic way. National Committee on Chemical Safety coordinates activities among governmental agencies, industries, academia, NGOs Participated in Operation Sky Hole Patching in 2006; Sub-committees for Basel/Rotterdam/Stockholm Conventions have been discussing building synergies issue.	*- # of enforcement cases settled per year* *- # of fines issued per year*
Intermediate Outcome Indicator	*Measure progress towards achieving final outcomes, such as changes in behaviour, knowledge, or conditions that result from program activities*.	*- pounds of pollutants reduced through enforcement actions* Thai customs reported some seizures in operation Sky Hole Patching in 2006; Thai customs reported a number of seizures in MEA REN workshops.

Outcome Indicator	*The real impacts of compliance promotion and enforcement actions and the ultimate change in the state of the environment*	*- improved water quality* *- improved air quality*

Inputs from the National Environment Board and National Committee on Chemical Safety are in place. One Customs officer, one Ozone Officer and one MEA Representative joined the MEA REN project, with the Thai Customs assembling its staff to participate in Operation Sky Hole Patching. Outputs include: the National Environment Board coordinating on environmental issue in a holistic way, the National Committee on Chemical Safety coordinating activities amongst governmental agencies, industries, academia and NGOs. Thailand participated in Operation Sky Hole Patching in 2006. Sub-committees for the Basel/Rotterdam/Stockholm Conventions have been discussing the building synergies issue. Outcomes include: Thai customs reported some seizures in Operation Sky Hole Patching in 2006 and Thai customs reported a number of seizures at MEA REN workshops.

One officer from the Pollution Control Department said (8 April 2014),

> *"The Pollution Control Department acts as a secretary and shares information, but implementation MEAs is with the Department of Industrial Works, Department of Agriculture, or Department of Public Health. The Department of Industrial Works has different bureaus to deal different MEAs. Basel is under the Industrial Waste Bureau. Montreal is under the Hazardous Substances Bureau. They don't talk to each other. This is because of Thai bureaucracy. Plus uncertain political situations, ministers come and go and have limited time to dedicate towards synergy issues. Many police officers request assistance from us. No problem for this, as there are no issues related to cooperation with customs and the police. There are a number of good people. Customs is at the Centre for action and deal with the Pollution Control Department and Department of Industrial Works."*

4.4 Limited building synergies between Montreal Protocol and Basel/ Rotterdam/ Stockholm Conventions.

The MEA REN facilitated the implementation of the four MEAs, but due to the Montreal Protocol having its own financial mechanism and at the secretariat level, Ozone Secretariat was excluded in the synergies process. At national level, there are no intentions to synergize National Ozone Unit with other agencies.

The MEA REN project linked the Montreal Protocol with the Basel/Rotterdam/Stockholm Conventions, and shared the best practice of the Montreal Protocol with the Basel/Rotterdam/Stockholm Conventions. This is a pilot that demonstrates that the four MEAs could work together with the donors and UN. However, though the customs authorities are calling for synergies amongst the respective MEAs, the interviews with officers from MEA secretariats, UNEP and national focal points of these MEAs tell a different story: there is no will to synergize the Montreal Protocol with the other three MEAs (Interview, 1 Mar 2013).

4.5 Summary of building synergies likely improve enforcement effectiveness

MEA REN provided a platform for synergizing Basel/Rotterdam/Stockholm Conventions and Montreal Protocol. There were synergies occurred in information exchange, cross border cooperation, enforcement operation and capacity building.

However, some recommendations of MEA REN workshops became wish list or lip cooperation such as punishment of offence and proper labelling of chemical, data reporting due to various difficulties.

Using Young and Levy's concept on regime effectiveness, it is observed that: 1. The improved licensing system, information exchange, inter-region and inter-agency cooperation, and enhanced enforcement operation and cross border cooperation promoted countries in compliance of chemical and waste related MEAs; 2. There is little evidence of policy change under MEA REN; 3. For setting-up new programs, PATROL project was established; MEA REN project was extended to Phase II in 2012; 4. For obligations written in treaties, iPIC and Operation Sky Hole Patching were highlighted in the Meeting of the Parties of the Montreal Protocol documents; 5. The MEA REN helped to reduce regional meetings on combating illegal trade in chemicals

and waste and the Green Customs training has also helped to reduce training costs; 6. For normative approach, the MEA Secretariats, Regional Offices, the World Customs Organization, UNEP, customs authorities and environmental focal points worked together in the MEA REN project to address illegal trade in a coordinated manner; 7. iPIC and PATROL projects could be recognized as behaviour changes of participating countries; 8. Customs prioritized environmental issues on their agenda, with environmental issues becoming the second most important item to RILO (the first is drug). This could be seen as a change of interests in the actors; 9. Inter-agency cooperation and capacity building helped to address illegal trade in chemicals and waste. Therefore, we can say that building synergies brought by MEA REN has improved enforcement of chemical and waste related MEAs.

Using Young and Levy's concept to evaluate changes in China, we can observe, to a certain extent, that the participation of MEA REN helped China in the compliance of four MEAs. The cooperation between China Customs and the Ministry of Environmental Protection has also promoted compliance. For change of polices, a new ODS regulation was issued, but the evidence showing that is related to building synergies is uncertain. From an economic approach, China Customs organized the Green Customs training workshops that helped to reduce costs by correlating trainings between the different MEAs. Behaviour changes could be observed in the implementation of iPIC, proposing to launch Operation Sky Hole Patching, and the organization of the Green Fence Campaign. Overall, there were synergies approaches brought by MEA REN in China, but limited.

Using Young and Levy's concept on regime effectiveness to observe Thailand, there are limited activities observed on the impact brought by the synergies process: MEA REN helped Thailand, to a certain extent, in the compliance of four MEAs. Sub-committees for the Basel/Rotterdam/Stockholm Conventions have been discussing synergy-building issues. Thailand participated in Operation Sky Hole Patching. Inter-agency cooperation and capacity building helped to address illegal trade in chemicals and waste. However, it is worth noting that Thailand has a National Environment Board and a National Committee on Chemical Safety, which has the capability to coordinate on environmental issues between governmental agencies, industries, academia and NGOs in a holistic way.

CHAPTER 5 KEY BARRIERS TO AND SUCCESSFUL FACTORS IN BUILDING SYNERGIES AND BUILD A SYNERGISTIC MODEL

This chapter is to answer the research question: "why would building synergies likely improve environmental enforcement effectiveness?" And "would it be possible to build a model on synergizing chemical and waste related MEAs to improve enforcement effectiveness?" It discusses Drivers-Pressures-State- Impact-Response model in section 5.1, explores key barriers for building synergies in section 5.2, and discusses key factors: i.e. why building synergies could improve enforcement effectiveness in section 5.3.

5.1 Drivers-Pressures-State- Impact-Response Model

Based on the pressure-state-response (PSR) model created by Anthony Friend in the 1970s, and subsequently adopted by the Organization for Economic Cooperation and Development's (OECD) State of the Environment Group, the European Environmental Agency developed the Drivers-Pressures-State- Impact-Response (DPSIR) Model to structure its work on environmental policy and reporting(ISTAT, F. Falcitelli, A. Femia, & A. Tuolini, 2003) . The model described the various causal of links between human activities and environmental degradation. Human's activities such as economic development and consumption (driving forces) cause direct stress to natural environment such as discharge of waste water, solid waste and polluted air (pressures). Consequently, the condition of natural environment has worsened due to the discharge of the pollutants (state). The damaged environment causes negative impacts to human health as well as economic loss (impact). Actions (response) should be taken to change human activities, reduce the pressure to natural environment, restore the good state of environment, and mitigate the negative impact to human health and the environment (see figure 5.1)

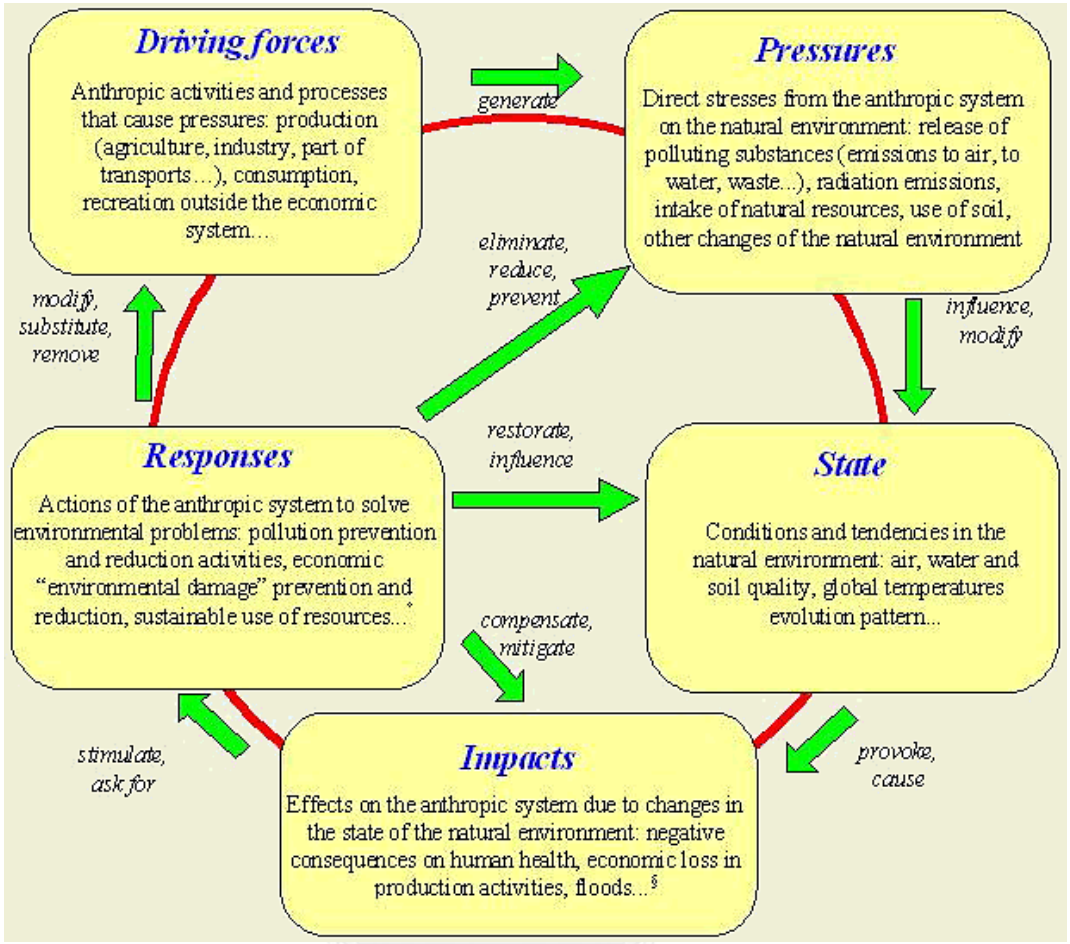

Figure 5-1 Model of Driving forces-Pressures-State-Impact-Responses (Source: ISTAT, C. Costantino, F. Falcitelli, A. Femia, A. Tuolini, OECD-Workshop, Paris, May 14–16, 2003)

The researcher applies the DPSIR model to discuss building synergies on chemicals and waste related MEAs, as described below. Increased illegal trade caused by increased generation of waste and chemicals and other factors, and ineffectiveness of enforcement of MEAs caused by proliferation of MEAs are the driving forces for building synergies to improve enforcement effectiveness. Pressure from donors has pushed to international organizations to improve efficiency due to budget constraints. While pressure from the public has encouraged international organizations and governments to address environmental challenges. The state of the enforcement of MEAs is that it is ineffective due to duplication and overlap of MEAs, and illegal trade

in chemicals and waste is increasing. The impact is that the damage to human health and the natural environment is due to the ineffectiveness of MEA enforcement.

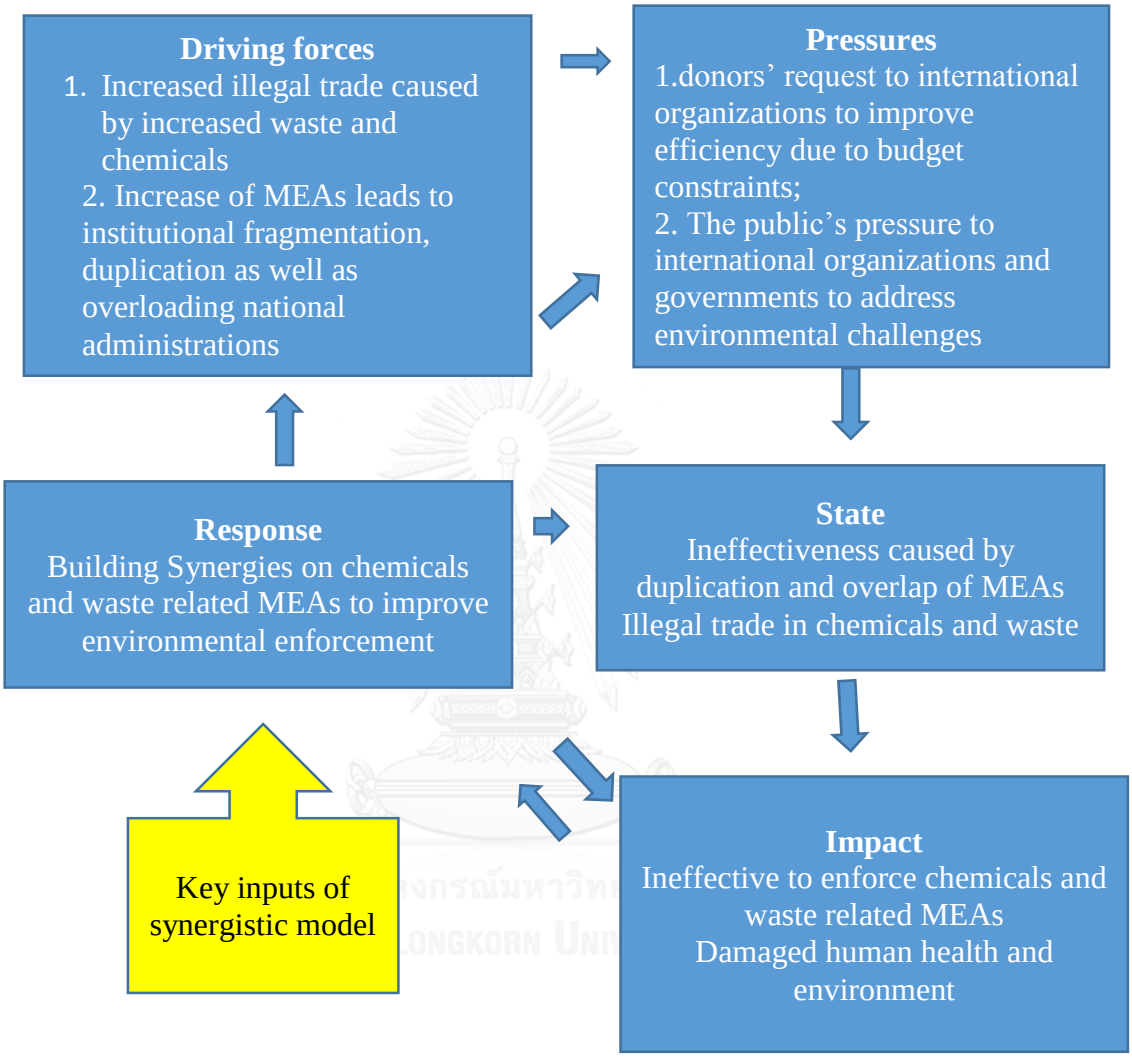

Figure 5-2 Modified DPSIR Model 1 on Building Synergies

Section 5.2 explores the key barriers for building synergies, while section 5.3 explores the successful factors in building synergies so that the synergies model could be further developed.

5.2 Key barriers for building synergies

Each MEA has its own legal status. Each organization has its own mandate. Building synergies are easier said than done. After interviewing key informants and reviewing MEA REN documents, the researcher triangulated the statements of the

interviewees with the findings in reviewing the MEA REN documents, and identified the following barriers for building synergies:

5.2.1 Turf war

Almost all of the interviewees pointed out that each organization undertakes its tasks according to related institutional arrangement including its mandate, scope of work and power. One officer from the Ministry of Environmental Protection said (1 March 2013),

> *"Because each agency has a clear-cut scope of mission and is responsible for its own duty. The reason for the success of the Montreal Protocol is that Ministry of Environmental Protection is the leading agency in the ODS committee which composes of 18 ministries. The Ministry of Environmental Protection can control the ODS issue fully."*

It is natural for an organization to control its power, protect its territory, compete for resources, and prevent others' from interfering. Therefore the National Ozone Unit only deals with ozone related work according to respective regulations and laws. The focal point for the Basel Convention only undertakes waste related work. The customs allocates its resources according to its own priorities. The structure of an organization and different line of manager make it difficult to seek cooperation between different branches.

5.2.2 Funds

The interviews from governments highlighted that normally each organization and its branches has its own source of funds or sub-allocated funds. The funds only can serve the purpose of its own work, such as the funds received from the Multilateral Fund for the Implementing Montreal Protocol is only able to support ozone related work according to its approved business plan or project. If the work is not ozone related, it is not permitted to use resources from the Multilateral Funds for the Basel Convention. Therefore it is difficult to organize trainings in a coordinated manner like Green Customs training if there is no external funds, or customs does not have funds to do so

or no willingness to do it. “Because different source of funds, Secretariats of MEAs would not allow their funds to be used for other convention. Audit will not allow this.” said by an interviewee from Ministry of Environmental Protection of China (1 March 2013).

5.2.3 Information is power

Several interviewees from NGOs said that to share information is always a challenge. Information is power. Decision making relays on information is needed. “Once he controls information, he will gain power. Because the competition for funds or competition for promotion, people will not share the information they have,” said one NGO officer from the United Kingdom (10 July 2013). Several interviewees from governmental agencies confirmed this viewpoint. Because of competition for resources or promotion, it is also not uncommon to withhold information from other colleagues, other sub-branches or organizations. The organizational structure makes the information sharing difficult. Thus, routine meetings become important.

5.2.4 Lack of binding laws and political intention.

A few interviews pointed out that in terms of legislation, each MEA is independent. One interviewee from China said (8 March 2013),

> *“The main barrier is the independence of each MEA. In terms of legislation, each MEA is independent. Each party’s wish is to, at the condition of recognizing the independence of each MEA, improve efficiency, reduce double work, share information, and reduce costs.”*

Addressing independence of each MEA is a challenge for building synergies. It is worth researching at the current arrangements of MEAs, how to address the independence of each MEA especially from legislation aspect.

5.2.5 Inter-agency cooperation is time consuming and troublesome.

Most interviews from governmental agencies pointed out that it may be easy to issue regulations and rules together with other ministries, but when implementing the regulations and rules, it is quite difficult.

> *"Inter-agency cooperation always costs time and needs more effort for coordination… It is easy to issue a regulation together with other ministries. However when implementing the regulation, it is quite difficult. Whether that is possible for environmental officers to join the action of customs, and vice versa."* said one interviewee from Ministry of Environmental Protection of China (7 March 2013).

5.2.6 Communication

One interviewee from an enforcement authority said that communication channels are not clear. Embassies could help, but formal channel communication is very time consuming. Language is also an issue. Several other interviewees from different governments confirmed this viewpoint.

5.2.7 Staffing

Several interviewees from international organizations said that talking about integration, at program level is easy, but an institutional arrangement is difficult. Human resources are an important reason. One interviewee from Thailand said that heads of divisions might lose their jobs after synergy. Another pointed out that once staff has changed, trust should be built again.

5.2.8 Capacity

Several interviewees pointed out that individual ability is important. Officers should know conventions well. If they do not know, they will not know how to intervene. The MEAs are very much related. But officers should know what the differences between them. Moreover, it is normal that environmental officers do not understand logistics and border control. Customs officers know little regarding chemicals and hazardous goods. However, customs officers are responsible in the implementation of various laws and regulations.

Furthermore, if one division is responsible for four MEAs, the workload will increase dramatically and heavily. One interviewee from the Department of Industrial Works of Thailand said (9 April 2014),

"It is impossible to designate one national focal point for all MEAs. It depends on the country's institutional structure. Some countries may designate one agency to look after many MEAs, but there is too much of a workload. For example, in the Montreal Protocol, only reporting Article 7 data[9] *already requires a lot of work. If the focal point is also responsible for other conventions, it is difficult for him/her to complete the tasks. So if officers do not have the capacity, synergies is just superficial".*

5.2.9 Personality or unwillingness for synergy

If the officers were professional, the cooperation would be smooth. One interviewee from Thailand pointed out, "When someone has a big ego, the willingness for cooperation is not there, it is difficult to share information and cooperation". (8 April 2014). This is personal opinion, but we can see the challenges brought by fragmentation of regimes.

5.2.10 Lack of awareness

One interviewee from media said, (22 April 2014)

" Public does not know about the MEAs. It has gotten a little bit better, but the MEA Secretariats should be more be more proactive in communication, and should use social media like twitter and Facebook. The information they send may be part of sea of information, but you need to be in the sea, otherwise you do not exist. Threats of environmental crime should be highlighted. Like bird flu, is related public health, and should be shared with the public. Unfortunately, governments and international organizations are not oriented to communications or are too busy working on their own, label the information as confidential or share it within a closed circle. Clear messages should be given on emerging dangers. Governments are rarely transparent and the public is ill-informed.

[9] Data reporting required by Montreal Protocol: "2.Each Party shall provide to the Secretariat statistical data on its production, imports and exports of each of the controlled substances"—from Ozone Secretariat Website.

Out of sight, out of mind. For example, the Malaysian flight incident demonstrated to the public on the huge amount of garbage on the sea. Environmental agencies should allow media to assess key persons. Scientists should also be proactive. Like bicycles you should take action. Human interests should be highlighted, such as children and women suffering from waste. Media should have the ability to document these crimes."

It is clear that the Chemicals and Waste related MEA Secretariats and related implementing agencies should improve awareness raising to the public, policy makers and enforcers. Communication approaches with the public should be improved. The importance of regulation issues by the MEAs and the latest developments of the MEAs should be publicized timely.

5.2.11 Incentive

Several interviewees from customs said that if customs can auction seized goods, there would be an incentive for them. Otherwise storage of goods that they do not know how to handle is costly and frustrating.

5.2.12 Different culture between countries is one issue.

One interviewee from the EU (21 March 2014) pointed out there are even more challenges on building synergies between continents, such as different cultures and politics. For example, the cooperation between China and the EU also involves human rights issues. If somebody penalized for waste trafficking, that person(s) would mostly likely face capital punishment and the cooperation would likely stop.

5.2.13 Economy development overweighs environmental protection

Several interviewees from the respective environmental agencies from China mentioned that in China, waste is good resource. China is world factory and needs large quantity of resources. So China needs to import waste. One officer from RILO mentioned that in Korea, hazardous material and chemicals are exported from Korea.

Export is good for Korea, the economy relies on export, so Korea Customs does not pay too much attention to exportation. They do not control exportation tightly.

5.2.14 Everybody's work is nobody's work.

One interviewee said that it also should be careful on synergy issues. If everyone should be involved within one task, then everybody's work is nobody's work.

5.2.15 Synergies are concerning different levels.

For enforcement, the Basle Convention is clear, but the Rotterdam Convention and Stockholm Convention have not gone so far. Within each country, the criminal penalty on environmental offences is not same.

5.2.16 Geographical locations and financial mechanism make it difficult to synergize the Montreal Protocol with the Basel/Rotterdam/Stockholm Conventions.

One interviewee from the OzonAction Programme pointed out that the Stockholm /Rotterdam /Basel Convention Secretariats are in Geneva, but the Ozone Secretariat is in Nairobi. The chemicals have been always integrated with waste, but ODS is always related to air related convention. Even terms between different MEAs are different. The Montreal Protocol has the Meeting of the Parties (MOP), Technology and Economic Assessment Panel (TEAP), but the Basel Convention has Conference of the Parties (COP) and Implementation & Compliance Committee. The terms should be unified. The Montreal Protocol is more mature and could be a teacher.

5.3 Why could building synergies happen?

Vanni (2014) argued that the relation of trust is the foundation to work cooperatively. Mutual trust is critical to reduce transaction costs between people. Trust is linked with reputation. Ostrom (2007) observed the reputation in previous collective action situations provides the basis for people to decide to trust others or not. The joint action of reputation, trust and reciprocity reinforce each other and can increase the level of cooperation. Consequently, collective action could bring more benefits.

The researcher interviewed the officers who implemented the chemicals and waste related MEAs at the global, regional and national levels and found the following:

5.3.1. Reputation /International pressure plays an important role in building synergies;

While China Customs hosted the Regional Intelligence Liaison Office for the Asia and the Pacific (RILO A/P), it did wish to demonstrate the leadership and the good image. This was the incentive for China Customs to promote the Operation Sky Hole Patching. Operation Sky Hole Patching received worldwide attention. Media around the world reported on this, first of its kind, operation. This did encourage RILO, China Customs and other customs administrations to take more proactive actions to address illegal trade. The success of Operation Sky Hole Patching has been highlighted in various international conferences and reports. Customs authorities did not request funds to support this operation. The World Customs Organization organized enforcement operations Demeter I, II and III following the best practices of Project Sky Hole Patching to combat illegal traffic of hazardous waste around the world.

In the international conference, countries care about their image and reputation. In Asia, especially, saving one's face is very important. People are not willing to lose face and are willing to take action in order to save face. That's the reason that they can take action to respond recommendations and commit their obligations. While the desk study conducted by MEA REN identified the problematic trade, countries could take action to exchange data. The case discussed in section 4.1.3.5 (Desk Study on the Trans-boundary Movement of Chemicals and Waste) revealed clearly how data exchange could help Cambodia, Laos, Thailand and Vietnam to identify the reason for trade data discrepancies and the smuggling routes for ODS. UNEP circulated iPIC information sheets among networking countries, those countries that have not joined the mechanism were under pressure. The Montreal Protocol does not have a Prior Informed Consent mechanism like the Basel and Rotterdam Conventions, however, due to networking of ozone officers and the concerns of international reputation, participating countries do make this iPIC mechanism successful.

One interviewee highlighted that the

"International pressure is important. If UNEP or ministers of foreign countries say Thailand should strictly implement a MEA, this will have

important impact. There is clear evidence, it will press (the country) for action. Public disclosure is important. There should be reporting in the news, other mainstream media, TV and newspapers."

Another interviewee stated,

"UNEP has nominated the World Customs Organization Regional Office for Capacity Building (WCO ROCB) to the Ozone Award issued by the U.S. Environmental Protection Agency. This is a big encouragement for the ROCB. Therefore, in the future, the environmental enforcement award is quite important. Through this, enforcement officers feel their work has been recognized. This is more important than financial gain. Reputation has played an important role in the cooperation amongst the respective parties. People need to be respected. Like Ostrom's research outline, even for public goods and people can take collective action. Therefore if agencies can do this, countries can do the same."

When Environmental Investigation Agency released the report: Under the Counter—Booming Illegal ODS Trade in China in 2006. It did give pressure to Chinese government. China subsequently issued a new regulation to strengthen ODS management. Many organizations, including EIA, applauded the progress.

5.3.2. Reciprocity

Most of the interviewees highlighted that organizations need each other's assistance to reach a common goal. This conforms Ostrom's collective action theory: one key element is reciprocity. This is also consistent with Oliver (1990)' proposition that "Motives of reciprocity emphasize cooperation, collaboration, and coordination among organizations… IORs occur for the purpose of pursuing common or mutually beneficial goals or interests."

Customs itself cannot do everything; they need other organization's support. Parmigiani and Rivera-Santos (2011) stated,

"organizations partner with others to more effectively accomplish tasks and reinforce inter-organizational and interpersonal relationships.

These partnerships enable them to gain powerful allies, improve their reputations, legitimacy, become connected with other more distant organizations, and gain access to greater and more diverse sources of social capital".

Synergized capacity building such as Green Customs Initiative reduced the training costs. The technical support from environmental agencies to customs authorities also reduced the enforcement costs. For example, when customs officers identify or test chemicals and waste, the assistance from environmental officers is critical. The assistance provided by European countries to Asian countries in monitoring suspicious waste shipments has indubitably helped Asian countries target illegal shipments. Therefore, from an economic aspect, stakeholders need other's help.

5.3.3. Respect

Several interviewees highlighted that respect is very important. It is important to give credit to others in order to facilitate cooperation. One interviewee from the Netherlands said,

"If you want to have successful seizures, you can make your own agency more famous. You need to cooperate. If you only respect yourself, only consider yourself and own goals, this will not lead to success. So you need to make compromise. When you bring media, you have to give credit, give success to others." (21 Mar 2014)

5.3.4. Trust

One of the key elements for Ostrom's collective theory is trust. The MEA REN project networked with various actors. The platform provides opportunities for officers from governmental agencies, international organizations and

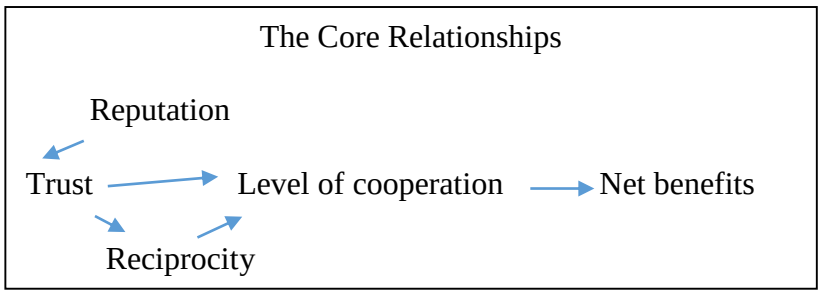

Figure 5-3 Ostrom's Collective Action Theory (Source: Ostrom, 1998)

NGOs to discuss common interested issues. This could be considered as heterogeneity of participants according to Ostrom. The face-to-face meetings built trust amongst the participants, which then laid the foundation to exchange information and cooperation. Annual meetings and e-forums provided the "information regarding past actions." One interviewee stressed that,

> *"trust is the key factor for cooperation. Taking the tiger issue as an example, some years back, there were some NGOs involved in tiger conservation. One officer from the Conservation International was nominated as a coordinator. She maintained neutrality and coordinated fundraising, information exchange and other activities amongst the NGOs. This worked very well until the World Bank showed interests in the tiger issue and the NGO collation fell apart. The synergy really helped to share information, and coordinate activities among different organizations…. An MOU is important for formal cooperation. But if you know someone in an agency, it helps a lot."*

5.3.5. Consensus

Most of the interviewees agreed that environment protection is really important; people are willing to cooperate, so there is common base or consensus. One UNEP officer (interviewee) said,

> *"Environmental officers should give more information on risk profiles. This will help customs officers to understand the risk to human health. The environment is important to everyone, so there is a common base or consensus, and people are willing to cooperate."*

During the preparation for Operation Sky Hole Patching, the Head of RILO has pointed out that comparing the combating of illegal trade in vehicles, gasoline etc. it is easier to reach a consensus among customs authorities on environmental issue, because environmental protection is a common issue[10]. Environmental issues are related to global governance, thus donors are more concerned about the global environmental issues and want to address transboundary problems.

[10] Personal communication of the author with the RILO Head.

5.3.7. Enthusiasm to work, tackling challenges, personal interests and self-achievement could be incentives for cooperation.

Several interviewees highlighted that a dedicated person would play a very important role to move cooperation ahead. In many scenarios, when the organization structure, institutional setting, or the conditions are not ready, it is extremely critical if some innovative or passionate people could explore the possibility to initiate new approaches, such as the launch of the Green Customs Initiative, set-up of MEA REN, and the launch of PATROL (Partnership Against Transnational Organized Crime Through Organized Law Enforcement) project. Personal influence is very important in cooperation. One interviewee from Ministry of Environmental Protection of China said, "for myself, enthusiasm to work, taking challenges, being interested in the issue, and self achievement are my incentives to cooperate." Another interviewee from an NGO said, "When a key person leaves an agency, it always causes problems."(11 March 2014).

Another interviewee highlighted that the institutional setting is important, but the individual person is also critical. There are so many hidden agendas like just let it go (not professional, no compliance). Systems can facilitate compliance.

5.3.8. Norm

The experimental studies of Bohnet, Frey and Huck (1999), Cardenas, Stranlund and Willis (2000) have confirmed the notion that external rules and monitoring can encourage cooperative behaviour. Ostrom (2000) further elaborated

> "*These studies typically find that a social norm, especially in a setting where there is communication between the parties, can work as well or nearly as well at generating cooperative behaviour as an externally imposed set of rules and system of monitoring and sanctioning. Moreover, norms seem to have a certain staying power in encouraging a growth of the desire for cooperative behaviour overtime, while cooperation enforced by externally imposed rules can disappear very quickly."*

During the implementation of the MEA REN project, the network meetings and e-forum had facilitated communications between the parties. The mechanism

related to informal Prior Informed Consent on import and export of ODS (iPIC) has the potential to be well implemented, even the mechanism was not written in Montreal Protocol and its decisions of Meeting of Parties. Presently, no agency or mechanism exists that enables a party to be punished for noncompliance with iPIC. However more and more countries continued to join this mechanism. This does prove that norm plays a very important role in collective action, and in building synergies in the context of this research.

In summary, the barrier for building synergies included turf wars among different actors, funds, information is power, lack of binding law, dependence on political intention, inter-agency cooperation is time consuming and troublesome, communication among actors, staffing, capacity to handle different MEAs, personality or lack of willingness for synergy, poor awareness, few incentives, different cultures between countries, economic development overweighs environmental protection, everybody's work is nobody's work, synergies are concerning different levels, geographical location and financial mechanism all make it difficult to synergize the Montreal Protocol with the Basel/Rotterdam/Stockholm Conventions.

However, based on the analysis from the progress of MEA REN, synergies could incur in information exchange, enforcement operation, cross-border cooperation and capacity building. These are because reputation/international pressure played an important role in building synergies. It is easy to reach a consensus on addressing environmental crime by comparing it to combating illegal trade in other commodities. Like Ostrom explored, actors care about their reputation. Trust could bring reciprocity. Increased trust could increase the level of cooperation, and lead to increased benefit. This is also consistent with Oliver's proposition that the "Motives of reciprocity emphasize cooperation, collaboration, and coordination among organizations". Moreover, it was found that norms, enthusiasm to work, accepting challenges, personal interests and self-achievement could be incentives for cooperation.

5.4. Enforcement chain

Illegal trafficking in chemicals and waste is one of the most increasing environmental concerns. There is a need to enhance the whole enforcement chain, i.e. from lawmakers, environmental inspectors, customs, police, prosecutors to the judge. A comprehensive legislation and regulation on control of chemicals and waste should be in place. Better enforcement and compliance of Chemical and Waste MEAs should be promoted. Offenders should be penalized. Cases should be brought to court. Therefore, awareness should be raised from the lawmakers to judges. There should be capacity building for both lawmaker and judges (see figure 5.4).

Figure 5-4 Enforcement chain

5.5 Problem tree of environmental enforcement

The key factors causing illegal trade in chemicals and waste include the limited understanding of policy makers, enforcement officers and the public on this issue. High profits in smuggling of waste and chemicals, acceleration of waste generation, ineffective trade control and inadequate legislation, especially low penalty on offence also greatly contribute to the illegal trade in chemical and waste. Profits in the smuggling of chemicals and waste are extremely high because high disposal costs of waste and strict regulation in developed countries, high demand for resources in developing countries and black market caused by trade control.

There are several factors that relate to ineffective trade control. They include weak enforcing license system, inappropriate inspection of goods and documents, poor detection/investigation of smuggling and ineffective handling of seized goods. Globalization and trade facilitation has also put immense pressure on customs. Every

year, more than 420 million containers move around the world, but customs officers only physically inspect about 2% of the containers. This is mostly due to limited facilities and human resources(UNODC, 2015).

Lack of information exchange is a barrier to enforcing a license system, investigation/detection of smuggling and handling of seized goods. The information exchange between importing and exporting countries, between customs authorities and environmental agencies is a key for effective trade control.

Poor inter-agency coordination within a country and cross-border coordination could also cause negative impacts on enforcing a licensing system, investigation of criminal syndicates and handling of seized goods especially repatriation of seized shipments. The key reason for the lack of information exchange and poor inter-agency cooperation is a lack of trust and lack of coordinating mechanisms.

Most of developing countries lack of resources and expertise on control of trade in chemicals and waste. Poor abilities in identifying chemicals and waste further lead to inappropriate inspection of goods and documents, poor detection and investigation of smuggling and ineffective handling of chemicals and waste.

The problem tree below (figure 5.5) illustrates the cause, problem and effect regarding illegal trade in chemicals and waste.

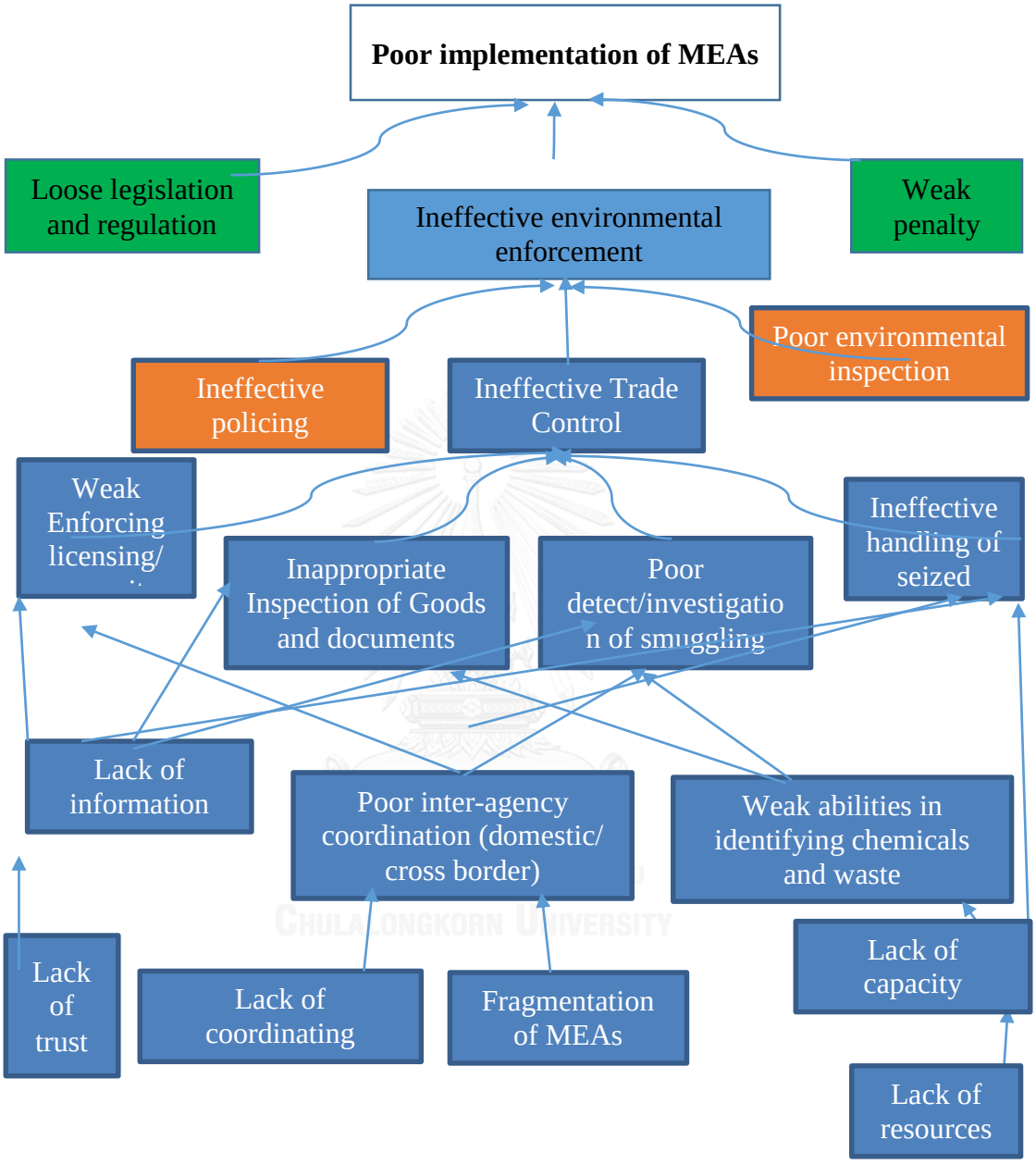

Figure 5-5 : Problem tree of environmental enforcement

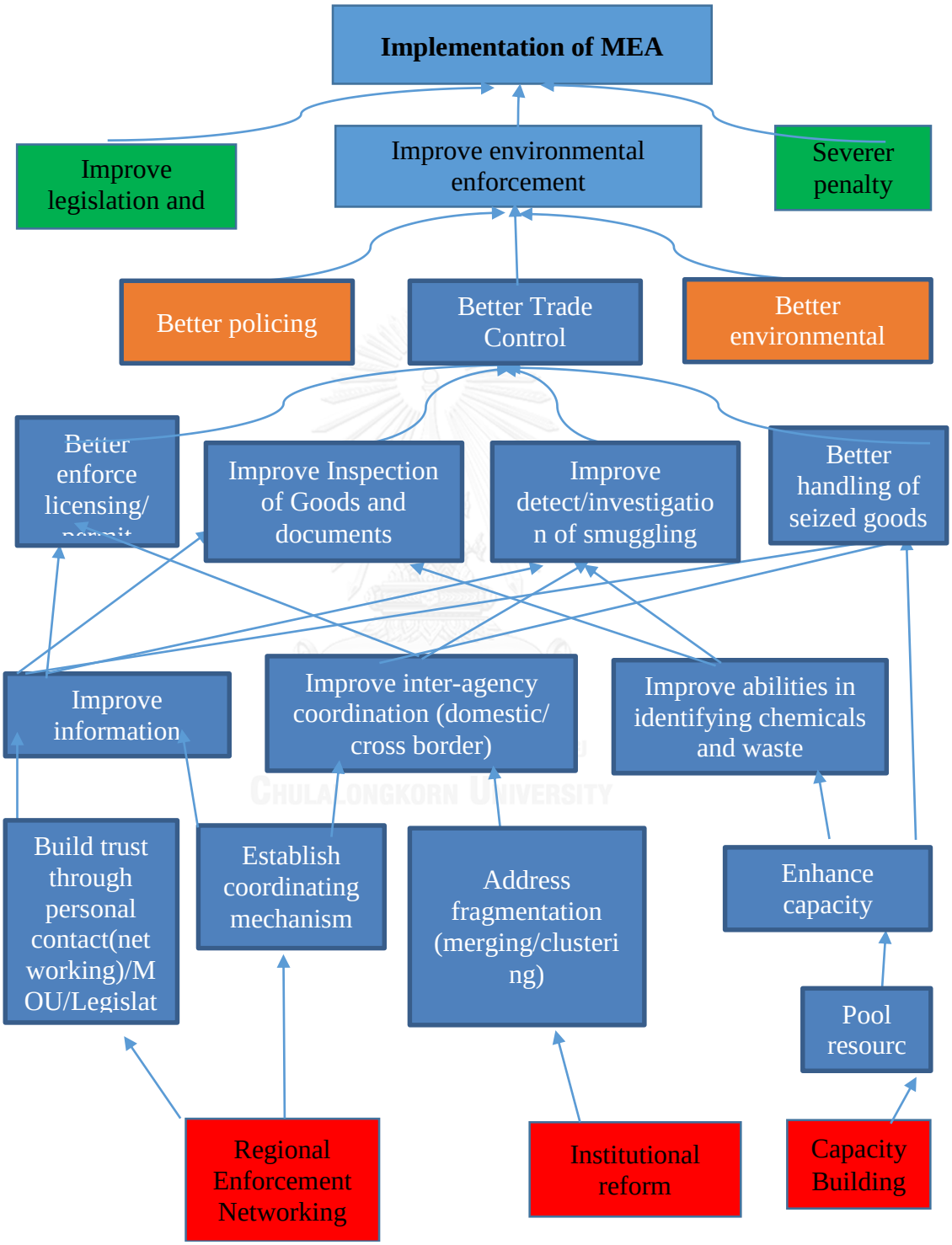

Figure 5-6 Diagram on how to address problems of environmental enforcement

Figure 5.6 shows how to tackle problems related to environmental enforcement. Trust could be built through personal contact, MOU and legislation. Networking could facilitate personal contact. Establishment of a coordinating mechanism and by addressing fragmentation could improve inter-agency cooperation. Trust and coordination mechanism could improve information exchange. With improved information exchange and inter-agency cooperation would likely improve the enforcement of the licensing system, inspection of goods and documents and detect/investigation of smuggling.

On the other hand, pooled resources could enhance capacity building, so that enforcement officers could identify chemicals and waste and handle seized goods in a better way. Improved handling of seized goods, higher quality of detection/investigation of smuggling, closer inspection of goods and documents and better enforced licensing system will lead to better trade control, and contribute to environmental enforcement.

5.6 Model on Synergizing Chemical and Waste MEAs to Improve Environmental Enforcement

In summary, the regional enforcement networks, institutional reform, and capacity building are key factors to build synergies in improving enforcement. Based on the study of the MEA REN project and the synergies built on chemicals and waste MEAs in China and Thailand, the following model (figure 5.7) was developed to build synergies on chemical and waste related MEAs in order to improve environmental enforcement.

The inputs are: institutional reform, regional/global enforcement networking, and capacity building. The impacts include improved licensing system, trade control, and cross-border cooperation, as well as reduced illegal trade.

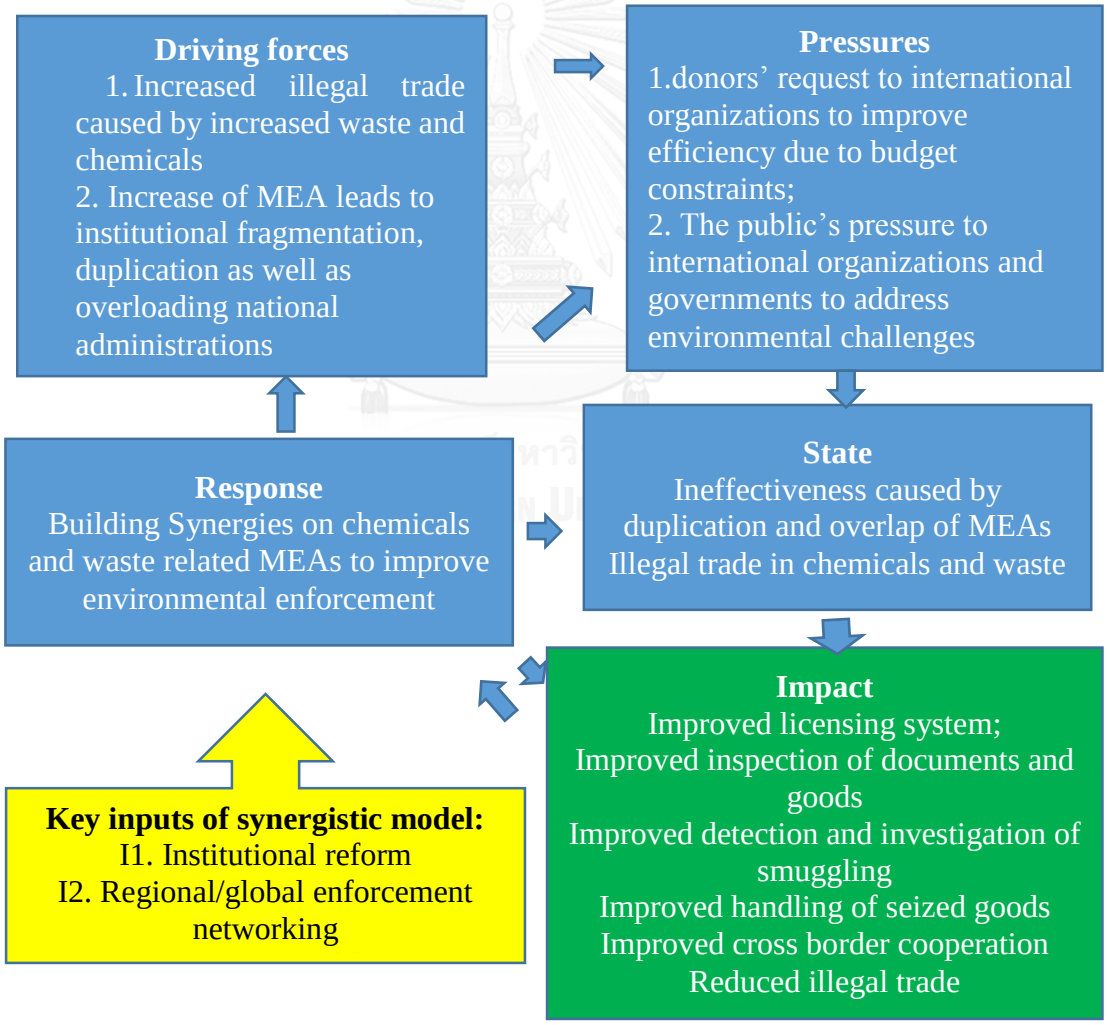

Figure 5-7 Model on Building Synergies to Improve Environmental Enforcement

I1: Institutional reform

Customs should establish an environmental unit or a task-force on environment in order to address environmental crime in a more effective way. Philippine Customs has set-up the Environmental Unit which has greatly promoted the enforcement of environment agreements.

The Environmental Agency should set-up an environmental enforcement unit like environmental police or expand the environmental inspection agency to include cross-border issues. Moreover, environmental agency should adjust its organization structure to synergize the work on chemicals and waste.

Synergies should be built on MEAs at the national, regional and global levels to reduce overlap and increase coordination and cooperation. Laws and regulations should be enacted in order to improve the enforcement and compliance of MEAs.

I2: Global/ Regional enforcement network

A regional enforcement network such as the MEA REN should be sustained as a coordination centre or secretariat to coordinate activities among stakeholders. An inter-agency MOU on sharing information and intelligence should be promoted; Regular liaison mechanism should be established at the national level; Enforcement agencies like RILO should prioritize information sharing on environmental crime;

Trust should be explored through networking, meetings and collaborations. IMPEL (The European Union Network for the Implementation and Enforcement of Environmental Law) is an international non-profit association of the environmental authorities of the European Union Member States to implement and enforce environmental laws. It has 48 members from 34 countries.

The IMPEL enhances capacity building, information exchange and experiences on enforcing European environmental legislation while promoting international enforcement collaboration. Members of IMEL pay fees and meet regularly to exchange information, implement projects and conduct operations. The Asian countries should learn from this best practice of IMPEL and work to make the MEA REN sustainable.

Environmental agencies including MEA secretariats and the national environmental authorities should further support repatriation of seized goods. More operations are needed in developing countries in order to raise awareness, establish liaison mechanism, information sharing, and address environmental crime.

I3: Capacity Building

To improve the enforcement of MEAs, capacity building is key because capacity building can help enforcement officers to identify chemicals and waste, inspect documents and goods, enhance detection and investigation of goods, and handle seized shipments.

Donors should consider to maximize the use of funds and promote synergy building on capacity building. Green customs initiatives should be promoted and expanded. Including MEA curricula into customs training institutes' should be prioritized.

The main impacts from the synergistic model include the following:

1: Improved licensing system

A licensing system is critical to regulate producers, importers, exporters, brokers and quantity for production and trading. A synergized process of licensing system could facilitate information exchange similar to what has been discussed on iPIC, so that the information of registered traders could be shared. Licensing officers could cross-check related information with their counterparts to prevent potential illegal trade. Synergized licensing systems can also improve the information exchange between customs authorities, environmental agencies and trade regulating agencies.

2: Improved inspection of documents and goods

Due to the complexity of chemicals and waste, it is always a challenge for enforcement officers to review documents and identify whether the substances are under control of MEAs or not. Different trade names, chemical abbreviation, codes, etc. make it extremely difficult to identify banned substances. Synergies processes like information exchange, capacity building and inter-agency cooperation could help enforcement officers in this regard.

3: Improved detection and investigation of smuggling

The synergies process like the technical support provided by environmental experts, or information exchange between importing and exporting countries, can facilitate detection and investigation of smuggling cases.

4: Improved handling of seized goods

According to the Basel Convention, an exporting country should take the responsibility of repatriating seized shipments. It is not easy to handle seized ozone depleting substances, such as CFCs which are banned in the market so could not be resold, like banned pesticides. The Synergies process, such a task force in customs, or an enforcement unit in environmental agencies could facilitate the handling of seized goods. Information exchange is also critical for this issue.

5: Improved cross border cooperation

To implement MEAs which have trade control provisions, it is always important to have smooth cross border cooperation. A country alone can not control international trade efficiently. A synergies process, like regional enforcement networking, could improve cross border cooperation.

6: Reduced illegal trade

The above mentioned outputs will help countries to combat illegal trade effectively and reduce illegal trade in the end.

5.6.1. Model on Institutional Reform (figure 5-8)

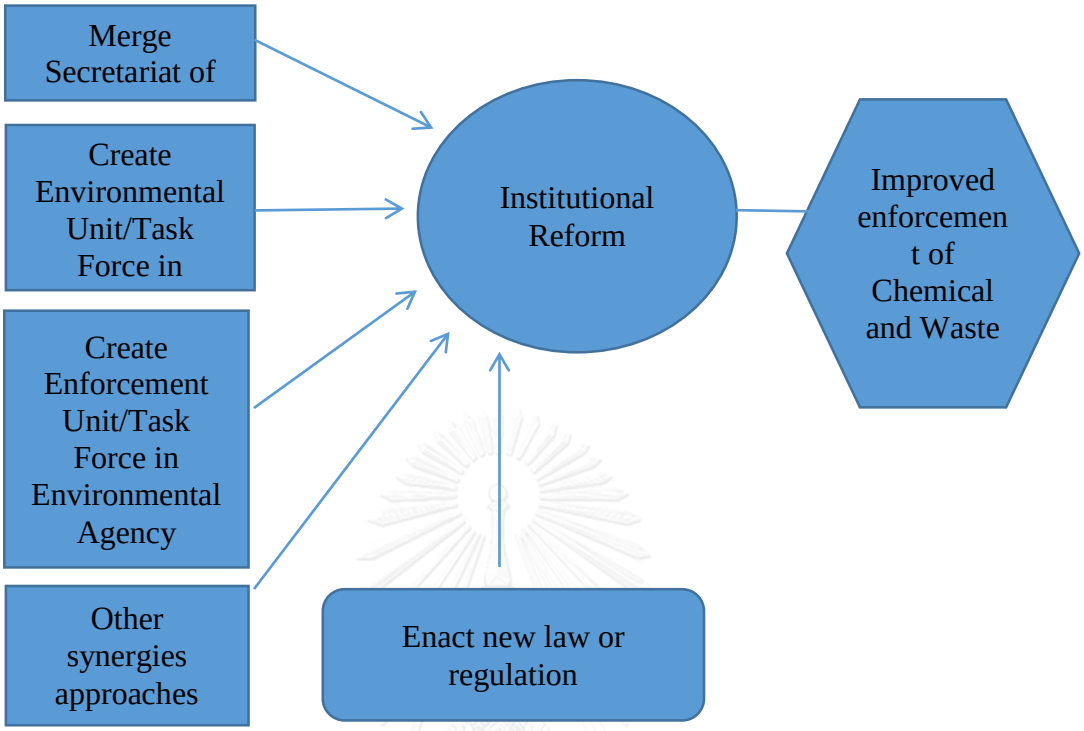

Figure 5-8 Institutional reform model

The Basel/Rotterdam/Stockholm Convention Secretariats have merged. It is worth exploring to merge Secretariats of other chemical and waste related MEAs in the future.

Customs should establish an environmental unit or a task force on the environment in order to address environmental crime in a more effective way. A good example set by the Philippine Customs shows the effectiveness of the environmental unit. In the Netherlands, the task force on the environment has pooled the experts within customs and could provide technical, timely support to their colleagues.

An Environmental agency should set-up an environmental enforcement unit like environmental police or expand environmental inspection agency to include cross border issues. The Environmental Inspection Bureau in China has only focused on domestic pollution cases. Their mandate should be expanded to include cross border issues. Moreover, an environmental agency should adjust its organization structure to synergize the work on chemicals and waste. If a leading agency is in charge, all the

chemicals and waste, the enforcement on chemicals and waste could be conducted in a harmonized manner.

Synergies should be built on MEAs at the national, regional and global levels to reduce overlap and increase coordination and cooperation. Laws and regulations should be enacted in order to improve the enforcement and compliance of MEAs.

5.6.2 Model on global/regional enforcement networking (figure 5-9)

A Regional/Global enforcement network is critical for environmental enforcement. The network could link MEA Secretariats, the World Customs Organization, Interpol, UNEP and their regional offices and NGOs. Information exchange, inter-agency and inter-regional cooperation could be facilitated through networking.

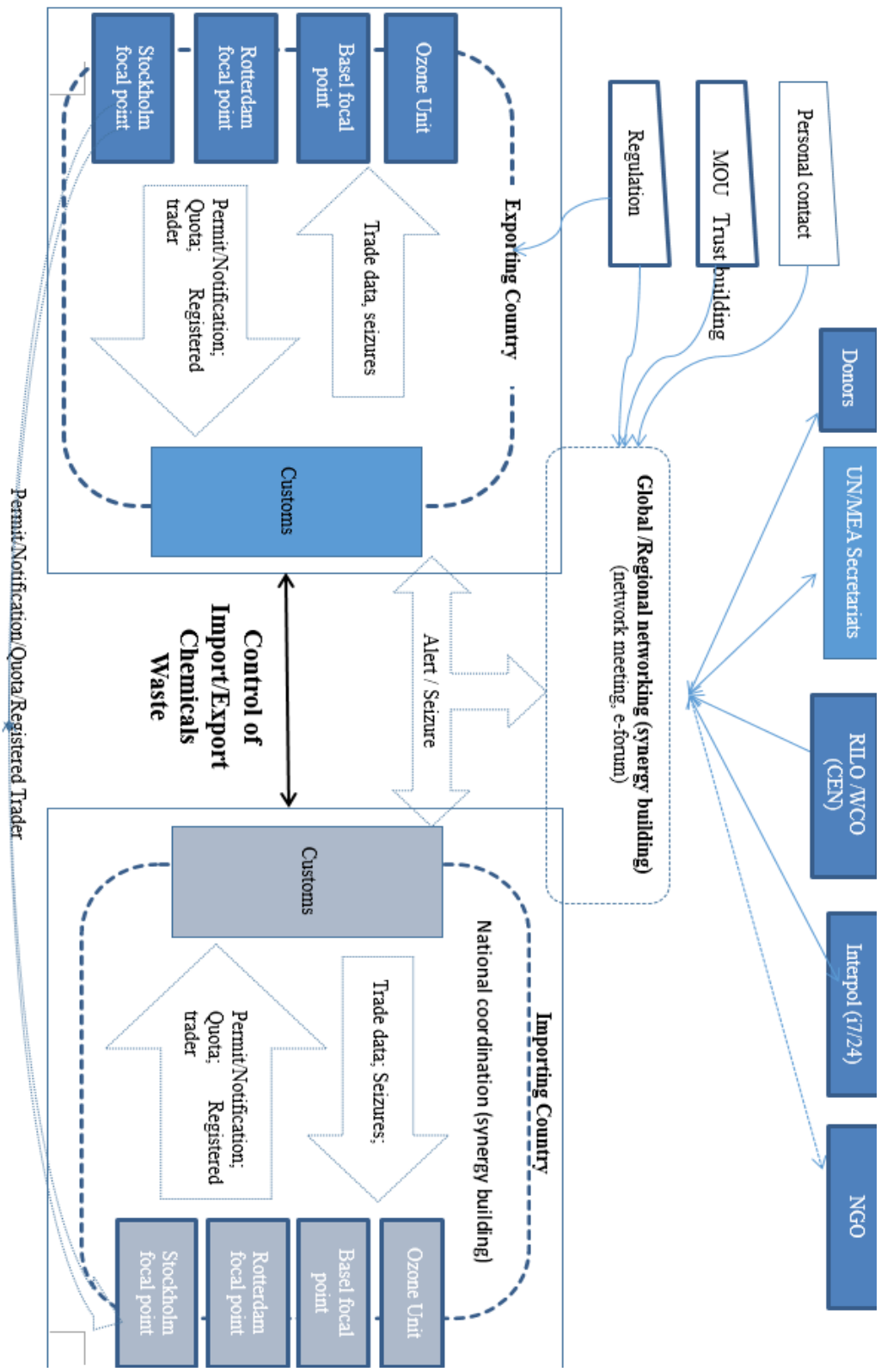

Figure 5-9 illustrates the model on global/regional enforcement networking

At domestic level:

Environmental agencies should send information on licenses, quotas, registered traders, etc. to Customs, in addition to information related to notifications on import and export of waste and chemicals. Customs should share all trade data and seizure information to the Environmental agency. The Basel/Rotterdam/Stockholm Convention and Montreal Protocol have already regulated the information exchange on trade data, but it was only suggested to report seizure information. The Customs and Environmental agencies should work together in identifying suspicious shipments, bringing cases to the court and repatriating seized goods.

At Regional/global Level:

Among customs:

Information should be shared between importing countries and exporting countries. Information should also be shared between customs administrations, the World Customs Organization and Interpol. Customs should give more attention to seizure reporting on environmentally sensitive commodities. Currently, there is limited reporting on waste and chemicals. RILO must play a more proactive role in this regard. More analysis on chemical and waste related cases should be conducted. More seminars and training on environmental crime should be organized.

Networking has the potential to facilitate enforcement operations among customs administrations. During the operations, customs administrations could provide mutual assistance in monitoring, detecting and investigating cases.

Among environmental agency:

Information should be shared between importing countries and exporting countries. The mechanism like informal Prior Informed Consent (iPIC) has greatly prevented illegal trade in ODS through information exchange between the ozone officers in importing and exporting countries. The EU-China and China-Japan MOUs on waste shipments have also prevented suspicious shipments from EU and Japan to China. Therefore, environmental agencies should coordinate in a better way to exchange information with importing or exporting countries to address environmental crime.

Among customs and environmental agency:

A regional network, like the Regional Enforcement Network, can promote the information and intelligence exchange between the customs authority and the environmental agency, NGOs and governmental agencies, as well as within respective regions.

Key factors:

Trust building is key for information exchange and cooperation. There are three levels for information exchange and cooperation: personal contact; MOUs between two agencies; and regulation. Networking offers the potential to provide a platform for personal contact. Whenever you encounter any issue, you know with whom to contact and receive a timely response. However, an MOU could institutionalize the information exchange and cooperation and elevate the cooperation to a higher level; Regulation is the highest level to guarantee information and knowledge exchange and cooperation. Personal contacts, MOUs, and regulaitonare independent variables. They are the inputs of the model.

5.6.3 Model on Capacity Building

The following session is to elaborate capacity building model.

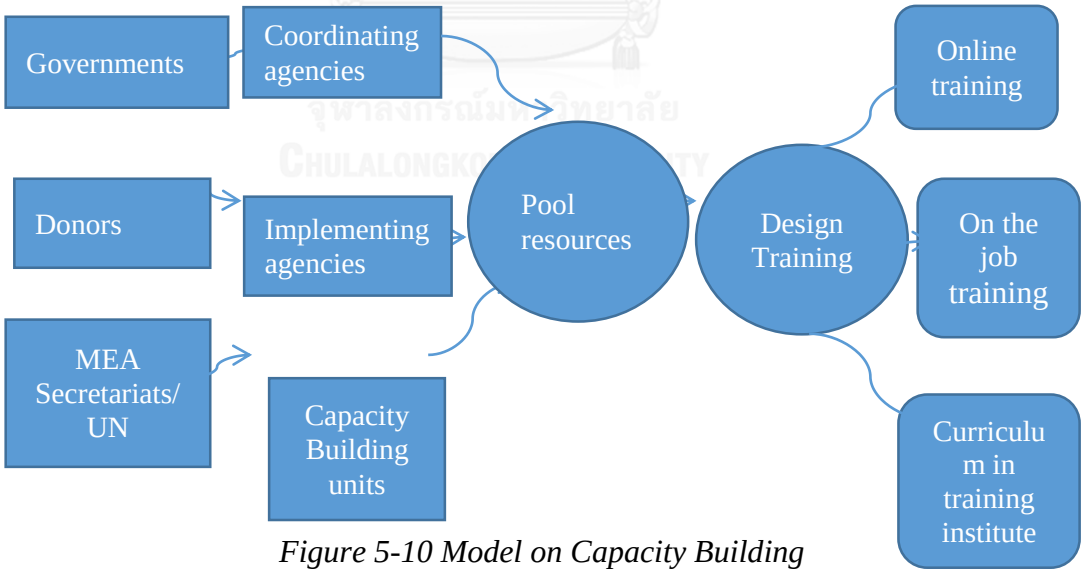

Figure 5-10 Model on Capacity Building

Figure 5-10 illustrates the model of Capacity Building on Environmental Enforcement. Governments, donors and MEA Secretariats provide sources for capacity building. Governments should set a coordinating agency to pool their resources to

promote coordination and cooperation among different agencies in capacity building. Donors, through implementing agencies, should consider maximizing the use of funds and promote best practices, like the Green Customs Initiative, so that training on different MEAs could be conducted in an integrated way. The MEA Secretariats/UN, through their capacity building units or officers, should provide technical support including updates on MEAs, training materials, guidelines, tools etc. Governments, donors, MEA Secretariats/ UN are inputs into the capacity building model. The change of the inputs can have an impact on the outputs.

Some outputs of the capacity building model could be online trainings, on the job training, and curriculum development in training institutes. Enforcement training institutes should include training on environmental issues within their curriculum so that the training could be sustained. With the right trainees selected, quality design and development of the training curriculum, full participation and regular follow-ups on the progress of the training can ensure its success.

Chapter 6 Conclusions and Recommendations

This chapter includes main results of the research (section 6.1), how the theories are extended (section 6.2), future research questions (section 6.3) and recommendations to key agencies (section 6.4).

6.1. Main results of the research

The proliferation of multilateral environmental agreements (MEAs) led to institutional fragmentation, duplication as well as overloading the national administration and likely caused ineffectiveness of MEAs implementation. The MEA REN, which was a pilot project aiming at strengthening enforcement of four chemical and waste related MEAs (Basel/Rotterdam/Stockholm Conventions and Montreal Protocol) in Asia, had proven the claim that building MEA synergies could improve enforcement effectiveness.

Synergies built through the MEA REN brought the following impacts:

1. The MEA REN improved the licensing system for the Montreal Protocol through iPIC, facilitated information exchange, improved inter-region and inter-agency communications, enhanced enforcement operation on combating illegal trade, and facilitated cross-border cooperation. Those synergized approaches, initiated by MEA REN, promoted countries to be in compliance with the chemical and waste related MEAs.

2. MEA REN helped to set-up the PATROL project, which synergized the activities in combating trafficking in persons, drugs, ozone depleting substances, waste, wildlife and timber in the Greater Mekong Sub-region. The extension of MEA REN project is also evidence of the success of the synergies process.

3. The iPIC and Operation Sky Hole Patching were highlighted in the documents from the Meeting of the Parties of the Montreal Protocol. These documents could be interpreted as obligations written in treaties.

4. The MEA REN helped to reduce regional meetings on combating illegal trade in chemicals and waste because the project promoted the synergized process on dealing with different chemicals and waste in one go. The green customs training were

also found to reduce costs by combining trainings organized by individual MEA Secretariats.

5. The MEA Secretariats, Regional Offices, the World Customs Organization, UNEP, customs authorities and environmental focal points worked together in the MEA REN project to address the illegal trade in a coordinated manner. In other words, various actors participated in one project to address different issues and scored successes.

6. The iPIC and PATROL project could be recognized as behavioural changes of participating countries, because countries started to check permits and registered importers and exporters of ODS, and included chemicals and waste in the Border Liaison Office mechanism. These sorts of practices did not happen prior to the synergies process.

7. Customs have now prioritized environmental issues on their agenda; Environmental concerns have become the second most important issue to RILO (the first are drugs). This could be seen as a change of interests of the respective actors.

8. Inter-agency cooperation and capacity building have helped to address illegal trade in chemicals and waste. Therefore, we could conclude that building synergies through MEA REN did in fact improve the enforcement of chemical and waste related MEAs.

The research identified barriers for building synergies which included turf wars among different actors, funds supplying and competition, power of information, lack of binding laws and only depending on political intention, time consuming and trouble causing of inter-agency cooperation, communication among actors, staffing, capacity to handle different MEAs, personality or no willingness for synergy, lack of awareness, no incentive, different culture between countries, economy development overweighing environmental protection, geographical location, and financial mechanism.

The need for synergy building arises is because the reputation/international pressure plays an important role in building synergies. It is easy to reach a consensus on addressing environmental crime compared with the combating of illegal trade in other commodities. The trust could bring reciprocity. Increased trust could increase the level of cooperation, and lead to increased benefits. This is also consistent with Oliver's

proposition that “Motives of reciprocity emphasize cooperation, collaboration, and coordination among organizations”. Moreover, it was found that norms, enthusiasm to work; taking challenges, personal interests, and self-achievement could be incentives for cooperation.

The study built a model synergizing chemical and waste MEAs to improve environmental enforcement. Institutional reform, regional/global enforcement networking, and capacity building are the main inputs for this model. The impacts included improved licensing system, improved inspection of documents and goods, improved detection and investigation of smuggling, improved handling of seized goods, improved cross-border cooperation, and reduced illegal trade.

6.2. How theories are extended

The research confirmed that clustering of chemicals and waste related MEAs by functions did improve the implementation of these MEAs. The study explored that how different MEAs built synergies in functions while also promoting effectiveness and efficiency. The research discussed how Montreal Protocol and Basel/Rotterdam/Stockholm Conventions could work together. The successful factors in building synergies identified in this research provided evidences for further cooperation and coordination among stakeholders. The research on Thailand and China has also revealed the barriers in clustering. Intuitional reform is easier said than done.

Biermann suggested five research and governance challenges, namely “the problems of the overall architecture of earth system governance, of agency beyond the state, of the adaptiveness of governance mechanisms and of their accountability and legitimacy, and of the modes of allocation in earth system governance—in short, the five A’s of earth system governance research” (F Biermann, 2007). The MEA REN is a case demonstrating how a regional project can network stakeholders to work together on four MEAs. The case shows that governments, international agencies and NGOs can set up new mechanisms, rules, and programs. They can initiate new approaches such as enforcement operations in spite of barriers such as turf wars and limited funds and etc. The case proves that it is possible for agencies beyond the state to play important roles. As well, coordination and synergies could occur among existing MEAs and their related

agencies. This research revealed that in the current fragmented status of environmental governance, what are the key issues to improve governance.

This research has applied Ostrom's collective action theory. It further confirmed that collective action theories could be applied in international cooperation. Countries similar to individuals, care about their image and reputation. Self-governance can occur among countries. Norms play an important role in international cooperation. Mechanisms could be developed even though they are not written in international treaties. Therefore, collective action does not only occur at the community level.

6.3 Future research questions

At the global level, the Basel/Rotterdam/Stockholm Convention Secretariats were merged in 2013. Coordinated activities have also been implemented in respect to administrative issues, fundraising, training programmes, and joint meetings, including joint Conferences of the Parties. However, at the national level, the synergies process has just begun. The MEA REN is only a pilot project exploring how to synergize chemical and waste related MEAs by functions. It is worth further studying at the national and regional levels, what organization reform should be. It also should be researched whether new chemicals and waste-related MEAs, such as, the Minamata Convention on Mercury, could be synergized with the existing MEAs. Clustering of MEAs by functions should be further researched. The lessons learnt of the implementation of MEA REN should be further explored for the creation of future environmental conventions.

Further works are needed to explore how the chemicals and waste agenda can be synergistically implemented in conjunction with the Sustainable Development Goals (SDGs), and what the relationship between building synergies and revitalization of global partnership for sustainable development.

Environmental enforcement should be further researched including the strengthening of the whole enforcement chain, engaging enforcement authorities in environmental issues .The application of Ostrom's collective action theory in international cooperation should be further explored.

6.4. Recommendations to key agencies

1. Customs authorities should involve environmental agencies in their enforcement activities. Environmental agencies should invite enforcement authorities to their meetings and training;
2. Customs authorities should set up an environmental unit or task force within their agencies; Environment agencies should establish an enforcement unit or task force.
3. New convention secretariats should consider to merge with existing related MEAs or set up coordinating mechanisms with existing MEA Secretariats.
4. Building synergies should be explored at regional levels among regional offices or centres of related MEAs and law enforcement organizations.
5. China could consider the best practice of Thailand, such as the National Environmental Board which can coordinate environment related issues in a holistic manner.
6. Thailand can consider the practice of China to merge Solid Waste Management Centre and Chemicals Registration Centre into one Centre in order to have a life cycle management of chemicals.
7. The Regional Enforcement Network should be duplicated in other regions in order to promote combating illegal trade in chemicals and waste.
8. Donors should consider the cost efficiency in capacity building and should promote approaches such as Green Customs Initiative.
9. Enforcement agencies should include environmental issues into their curriculum in their training Centres or colleges.
10. International organizations and Government agencies should improve their communication with media and the public in order to raise awareness.

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APPENDIX

APPENDIX A

QUESTION LIST FOR FOCAL POINTS OF MEAs

1. When did the building synergies on the Basel/Rotterdam/Stockholm Conventions take place in your country?

2. What are the main changes of institutional and administrative arrangement brought by the building synergies?

3. What are the key elements and factor for the building synergies?

4. What are the main barriers and obstacles for the building synergies?

5. What are the impacts and outcomes of the building synergies? I.E. did the building synergies reduce reporting burden and improve the coordination with customs and police?

6. Do you think Montreal Protocol could be built synergies with the Basel/Rotterdam/Stockholm Conventions?

7. With regard to mercury issue, do you think there is a need to create a new convention?

8. Did the regional enforcement projects facilitate the building synergies for the Chemical and Waste MEAs?

APPENDIX B

QUESTION LIST FOR OFFICERS OF MEAs SECRETARIATS AND REGIONAL OFFICES

1. When did the building synergies on the Basel/Rotterdam/Stockholm Conventions take place in your Secretariat or your Centre?

2. What are the main changes of institutional and administrative arrangement brought by the building synergies?

3. What are the key elements and factor for building synergies?

4. What are the main barriers and obstacles for building synergies?

5. What are the impacts and outcomes of building synergies?

6. Do you think the Montreal Protocol could build synergies with the Basel/Rotterdam/Stockholm Conventions?

7. Did the regional enforcement projects facilitate building synergies for the Chemical and Waste MEAs?

APPENDIX C

QUESTION LIST FOR INFORMANTS OF CUSTOMS

1. Did you observe the building synergies of the Basel/Rotterdam/Stockholm Conventions in your country?

2. How could the building synergies improve control of commodities regulated by the Basel/Rotterdam/Stockholm Conventions?

3. Do you think there is a necessity to synergize Montreal Protocol with the aforementioned three conventions?

4. What are the main obstacles and challenges to control the trade regulated by the four MEAs?

5. Is there training programme in your country related to the four MEAs?

6. How to further improve the cooperation between customs and environmental agencies?

APPENDIX D

QUESTION LIST FOR ACADEMIA

1. What are the key elements and factor for building synergies?
2. What are the main barriers and obstacles for building synergies?
3. What are the impacts and outcomes of building synergies?
4. Do you think Montreal Protocol could build synergies with the Basel/Rotterdam/Stockholm Conventions?
5. With regard to new chemicals, do you think there is a need to create a new convention to address them?

APPENDIX E

QUESTION LIST FOR INFORMANTS OF NGOs

1. What's your view on building synergies among Basel/Rotterdam/Stockholm Conventions?

2. What are the main obstacles for building synergies?

3. Is there a shift of your work regarding building synergies on Chemical and Waste MEAs?

4. Does building synergies help your work in the role in environmental governance?

APPENDIX F

QUESTION LIST FOR INFORMANTS OF MEDIA

1. What's your view on building synergies among Basel/Rotterdam/Stockholm Conventions?
2. What are the main obstacles for building synergies?
3. How to raise awareness on Chemical and Waste MEAs?
4. Does building synergies help improve environmental governance?

VITA

Mr. Ning Liu was born in Xinjiang, China on 3 December 1968. He obtained his Bachelor's Degree in English Language and Literature from Central South University, China in 2001. He received a Master's Degree in Environmental and Natural Resources Economics from Chulalongkorn University in 2010. Currently, he has been studying in the Doctor of Philosophy Program in Environment, Development and Sustainability (EDS) at Chulalongkorn University. His main research interests include environmental governance, environmental enforcement and multilateral environmental agreements. During the study, he has received a thesis grant from the Graduate School, Chulalongkorn University and tuition scholarships from the EDS Program.

Mr. Ning Liu works with United Nations Environment Programme Regional Office for Asia and the Pacific as Programme Officer. He has been working on a regional enforcement network project to assist countries in Asia to combat illegal trade in chemicals and waste for eight years. From April 2013 to October 2014, he had worked as Deputy Director of Freeland, an international non-governmental organization which works on environmental conservation and on human rights. From April 2008 to May 2009, Liu had worked with the General Administration of China Customs. From 2004 to 2005, Liu had worked with the World Customs Organization Regional Intelligence Liaison Office for Asia and the Pacific (WCO RILO A/P) as Intelligence Analyst.

Mr. Ning Liu has published in various professional and academic journals including:

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- Book chapter: Liu, Ning et al. (2016). Illegal Trade in Ozone Depleting Substance. In L. Elliott & W. Shaedla (Eds), Handbook on Transnational Environmental Crime. London: Edward Elgar Publishing.