



Swedish Society for Nature Conservation

## Report

Paths to Global Chemical Safety:  
The 2020 Goal and Beyond

**COIEL** Center for International  
Environmental Law



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Report to the Swedish Society for Nature Conservation  
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*“Despite considerable progress in international efforts to regulate hazardous chemicals, we may so far have addressed only the ‘tip of the iceberg.’*

*Much more needs to be done to reduce harmful effects from a range of chemicals, but also to effectively implement existing international commitments. Further, the present fragmented international chemicals regime complicates coordinated and effective action. A more “future proof” legally binding international framework is needed to address the full range of hazardous chemicals, including new and emerging challenges posed by such chemicals.”*

-- Atle Fretheim, Deputy Director General, Norwegian Ministry of the Environment

*“There is a significant gap between chemicals management today and the 2020 goal to achieve the sound management of chemicals globally. Even though we have just agreed upon a new convention for one hazardous chemical, mercury, we need to increase our efforts to address remaining challenges. Under the EUs REACH programme the list of severely hazardous chemicals are now as many as 138 chemicals and increasing.*

*I strongly believe in the need and potential for a global structure that enables proactive international leadership and decision making related to all chemicals of global concern.”*

-- Nina Cromnier, Director-General of the Swedish Chemicals Agency (KemI)

# Executive summary

At the UN Conference on the Human Environment in 1972, countries confronted the reality of dire threats to human health and the environment and pledged to respond. Over the subsequent four decades, these efforts have produced a set of multilateral environmental agreements (MEAs), including several that address specific chemical issues, such as ozone depletion, trade in hazardous waste, and persistent organic pollutants.

At the 2002 World Summit on Sustainable Development, heads of State from around the world proclaimed a goal of achieving the sound management of chemicals by 2020, which eventually resulted in a non-binding policy framework, the Strategic Approach to International Chemicals Management (SAICM). SAICM has provided a valuable forum for identifying emerging problems and launching cooperative action, including important initiatives on lead in paint and hazardous substances within the lifecycle of electronic products. Many countries, intergovernmental organizations, members of civil society, and other stakeholders are endeavoring to make progress toward the “2020 Goal.”

Two important global meetings in 2012 presented valuable opportunities to assess the progress made in achieving the 2020 Goal under existing international law on chemicals. In June 2012, the UN Conference on Sustainable Development, “Rio+20,” considered next steps on a host of environmental topics, including the sound management of chemicals. The third triennial session of the International Conference on Chemicals Management (ICCM3) in September convened to specifically address the sound management of chemicals under SAICM.

*Paths to Global Chemical Safety: The 2020 Goal and Beyond* analyzes global agreements for chemical safety with a special focus on SAICM and the three legally binding treaties—the Basel Convention, the Rotterdam Convention, and the Stockholm Convention. The very recent conclusion of negotiations over a treaty for mercury impeded detailed consideration of this instrument.

This study recognizes the progress that has been made, yet concludes that these four international agreements, even

if fully implemented, are unlikely to fully protect human health and the environment from the risks of dangerous chemicals. Structural shortcomings of the existing agreements and insufficient political will on the part of some governments and stakeholders contribute to this failure. A detailed analysis of treaty elements, principles, and approaches identified five overarching challenges:

## **Challenge 1: Supporting Implementation**

Capacity at the national level to meet international obligations for sound chemicals management is sorely needed, and the challenge of sound chemicals management is likely to grow for all countries.

## **Challenge 2: Ensuring Sustainable Finance**

With the costs of chemical pollution externalized, available financial and technical resources for developing, integrating, and maintaining chemicals regulatory structures remain inadequate.

## **Challenge 3: Filling Global Information Gaps**

The lack of basic health and safety information on chemicals in commerce, as well as information about the interaction of mixtures of chemicals to which people as ecosystems are exposed, undermines sound management by countries, businesses, and civil society.

## **Challenge 4: Expanding the Narrow Scope**

Only a narrow subset of chemicals that threaten human health and the environment can be subject to legally binding obligations under these four agreements.

## **Challenge 5: Avoiding a Treaty Thicket**

The expansion of international agreements narrowly focused on specific chemicals frustrates coordination and increases the burdens of compliance across the multiple instruments.

As a result of these challenges, chemicals continue to impose staggering health and environmental costs on present and future generations. By failing to adequately address the harmful effects of dangerous chemicals, the status quo inhibits the development and substitution of innovative, safer alternatives.

The study proposes two legal approaches, or paths, for overcoming these challenges. The first path takes advantage of existing agreements and programs, suggesting modifications to improve their effectiveness, to broaden the range of chemicals covered, and to develop compliance

procedures and adequate financial resources.

SAICM could be enhanced to better address many of these challenges. SAICM has the potential to build basic chemicals infrastructures in developing countries, raise awareness, and enable information exchange and technical assistance on a wide range of emerging policy issues that are not yet subject to legally binding obligations. The International Conference on Chemicals Management (ICCM) facilitates action on a wide array of chemicals and concerns, but the pace of activity has been slow and uneven. With adequate financial resources and specialized subsidiary bodies, the ICCM could make greater strides toward the 2020 Goal.

Among the legally binding chemicals and waste agreements, only the Stockholm Convention regulates the lifecycle of chemical production, use, and environmental release, including stockpiles and wastes. However, this treaty only applies to a short but growing list of persistent organic pollutants (POPs). The POPs Review Committee, a subsidiary body to the Stockholm Convention, has demonstrated that an independent scientific body can regularly evaluate chemicals and recommend global action. But expanding the scope of the Stockholm Convention to support legally binding, global obligations on chemicals management beyond its original mandate presents many challenges of its own.

The second path anticipates a new, legally binding framework to bring greater coherence, coverage, and coordination to international chemicals management. This framework could borrow common elements and commitments of the Basel, Rotterdam, and Stockholm Conventions, as well as SAICM, as part of a broader and more robust global approach that includes clear commitments, effective mechanisms to enable compliance, and other necessary elements to achieve the sound management of chemicals.

Within a new legally binding framework, the existing chemical conventions could function as protocols. The framework's governing body could decide to establish new protocols to broaden the scope of chemicals subject to

legally binding obligations. Under this framework, the ICCM could remain focused on the activities outlined under the first path. Subsidiary bodies for implementation and scientific advice could be established for common elements across present and evolving agreements. For example, going beyond administrative synergies, a future technical body could coordinate the functions of technical bodies under the Stockholm and Rotterdam agreements, as well as those under any future protocols.

It is important to recognize the daunting obstacles along either path. Whether the world commits to doing more with existing legal structures or develops new instruments, these options will take years to negotiate, adopt, and implement. Meanwhile, governments, intergovernmental organizations, civil society, and industry must maintain their commitment to existing agreements, even while they begin to consider what else will be needed to ensure chemical safety beyond 2020. Key challenges exist, and all stakeholders must engage and cooperate to achieve chemical safety.

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*About this study:*

*The study was commissioned by the Swedish Society for Nature Conservation and prepared by Baskut Tuncak and Daryl Ditz at the Center for International Environmental Law. The authors would like to thank Rachel Rivers for her research assistance. For additional information, contact: [btuncak@ciel.org](mailto:btuncak@ciel.org).*

# Acronyms

BRIICS	Brazil, Russia, India, Indonesia, China and South Africa
BRS	Basel, Rotterdam, and Stockholm
CBDR	Common But Differentiated Responsibilities
CIEL	Center for International Environmental Law
CLI	Country-Led Initiative
COP	Conference of the Parties
CRC	Chemical Review Committee
ECHA	European Chemicals Agency
FAO	Food and Agriculture Organization
GCC	Global Chemicals Convention
GEF	Global Environment Facility
GPA	Global Plan of Action
GPC	Global Panel on Chemicals
ICCM	International Conference on Chemicals Management
ICCM1	First session of the International Conference on Chemicals Management
ICCM3	Third session of the International Conference on Chemicals Management
IFCS	Intergovernmental Forum on Chemical Safety
IGOs	Intergovernmental Organizations
INC	Intergovernmental Negotiating Committee
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
IOMC	Inter-Organization Programme for the Sound Management of Chemicals
JPOI	Johannesburg Plan of Implementation
LRTAP	Long-Range Transboundary Air Pollution
MEAs	Multilateral Environmental Agreements
MOP	Meeting of the Parties
NGOs	Non-Governmental Organizations
OECD	Organisation for Economic Co-operation and Development
OEWG	Open-Ended Working Group
OHCHR	Office of the United Nations High-Commissioner for Human Rights
OPS	Overarching Policy Strategy
PBDEs	Polybrominated Diphenyl Ethers
PCBs	Polychlorinated Biphenyls
PIC	Prior Informed Consent
POPRC	Persistent Organic Pollutant Review Committee
POPs	Persistent Organic Pollutants
QSP	Quick-Start Programme
REACH	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
SAICM	Strategic Approach to International Chemicals Management
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technical Advice
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VOCs	Volatile Organic Compounds
WHO	World Health Organization
WSSD	2002 World Summit on Sustainable Development

# Section I. Introduction

## A. Scope of this Study

Over the past forty years, a set of global agreements has emerged to address specific issues in chemicals management. This study examines four principal global agreements for international chemicals management: the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal; the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade; the Stockholm Convention on Persistent Organic Pollutants; and the Strategic Approach to International Chemicals Management (SAICM).

Bearing in mind the stated objective of countries around the world to achieve the sound management of chemicals by 2020,<sup>1</sup> the study presents options under international environmental law for achieving this objective. In general, these agreements consider industrial chemicals and agricultural chemicals. This study does not consider chemical substances outside this scope, such as pharmaceuticals or radioactive materials. Although climate change and ozone depletion are issues of chemicals management, the scope of this study does not include greenhouse gases or ozone depleting substances within its scope and instead focuses on the principal agreements associated with achieving the “2020 Goal” of the sound management of chemicals. However, certain lessons are drawn from the Montreal Protocol to the Vienna Convention on Substances that Deplete the Ozone Layer. In addition, the very recent conclusion of negotiations over a treaty for mercury impeded detailed consideration of this instrument.

## B. Methodology

The analysis begins by exploring the trends and projections of the global chemicals industry and its potential role in the “green economy.” We trace the evolution of the global chemicals agenda from the 1972 Stockholm Declaration on the Human Environment, through the 1992 Rio Declaration

on Environment and Development, to the 2002 World Summit on Sustainable Development, which gave rise to the “2020 Goal” for achieving the sound management of chemicals.

Along this path, global instruments and institutions emerged and evolved. This analysis examines four key instruments for protecting human health and the environment from chemicals and waste. We assess the strengths and weaknesses of these agreements against core elements of effective treaties, including their institutional structures and the application of generally accepted principles of international environmental law. Looking at the four agreements together, the analysis identifies several unmet challenges that could prevent success in meeting the 2020 Goal.

Finally, we present two options that build upon existing agreements, institutions, and ongoing processes for improving coherence and financing across the four instruments, to better enable the sound management of chemicals throughout their lifecycle. The analysis concludes with a set of recommendations for national governments, intergovernmental organizations, industry, and civil society.

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<sup>1</sup> See Section II(B).

## Section II. The Global Chemical Industry in a Green Economy

### A. The Changing Context of the Global Chemical Industry

While chemistry has been part of life since the beginning, the modern chemical industry that emerged in the 19<sup>th</sup> century has grown into a powerful force in the global economy. Its products have enabled profound changes in agriculture, manufacturing, transportation, housing, energy, and public health. No one can deny that many comforts and conveniences of modern life owe much to the underlying science and ingenuity of the chemical industry. However, as the scale of the chemical industry has grown, so have questions about the adverse effects of chemicals on human health and the environment. The manufacture, distribution, and use of chemicals have given rise to risks from products, byproducts, wastes, and accidents.

Forty years ago, governments around the world were beginning to recognize the links between chemicals and serious adverse effects on health and the environment. This followed rising public concerns about flagrant pollution of the air and water, ushering in an era of pollution control and treatment. Some countries were already taking steps on high profile chemicals, such as the pesticide DDT and polychlorinated biphenyls (PCBs), which are both industrial chemicals in widespread use. Within a few years of the 1972 Stockholm Conference on the Human Environment, Japan, the European Community, and the United States adopted laws intended to create a more systematic approach to chemicals.<sup>2</sup> These approaches were intended to prevent future exposure to dangerous chemicals. They helped to establish registers of chemicals in commerce, processes for approving new chemicals, and limited legal authority to require testing and to restrict production and use.

The chemical industry at that time was much smaller and more highly concentrated in the wealthy, industrialized nations of Western Europe, North America, and Japan. According to the Organisation for Economic Co-operation and Development (OECD), worldwide chemical output in

1970 was valued at US\$ 170 billion, roughly one trillion U.S. dollars adjusted for inflation.<sup>3</sup> Today, the chemical industry is larger, more global, and in rapid flux.<sup>4</sup> Recent estimates place the turnover of the global chemical industry between US\$ 3 trillion – \$ 4.1 trillion in 2010, tripling in four decades.<sup>5</sup>

Despite profound economic changes over this period, the OECD share of chemical production remained relatively steady over latter decades of the 20<sup>th</sup> century. This picture is changing dramatically. The OECD's share of global chemical sales has fallen from 77 percent in 2000 to 63 percent in 2009, while the collective share of Brazil, India, Indonesia, China, and South Africa (BRIICS) has increased from 13 percent to 28 percent.<sup>6</sup> China now stands as the world's largest chemical producer, eclipsing the European Union and the United States.<sup>7</sup> Over the next two decades, worldwide chemical production is projected to double from 2010 to 2030, with 71 percent of this new production expected outside the OECD, especially among the so-called BRIICS countries.<sup>8</sup>

In addition to quantitative growth and geographic shifts in chemical production, the past half century has witnessed an explosion in the variety of chemical substances. Since each chemical has different properties, including the potential to cause adverse health and environmental effects, it is important to consider changes to the mix of chemicals in commerce. Unfortunately, these statistics are less readily available. Even the number and identity of chemicals in commerce is in dispute.<sup>9</sup> The chemical inventories established under national and EU law provide a rough

2 Japanese Chemical Substances Control Law was enacted in 1973, the European Council "Restrictions" Directive 76/769/EEC was adopted 27 July 1976, and the U.S. Toxic Substances Control Act was enacted October 11, 1976.

3 Organisation for Economic Cooperation and Development, OECD Environmental Outlook for the Chemicals Industry, 2001. <http://www.oecd.org/dataoecd/7/45/2375538.pdf>; Inflation-adjusted dollars derived from U.S. Bureau of Labor Statistics, 2012. [http://www.bls.gov/data/inflation\\_calculator.htm](http://www.bls.gov/data/inflation_calculator.htm).

4 The first pillar of the forthcoming *UNEP Global Chemicals Outlook* details these trends and indicators in chemical trade, use, production and disposal. More info available at: <http://www.unep.org/hazardoussubstances/UNEPsWork/Mainstreaming/GlobalChemicalsOutlook/tabid/56356/Default.aspx>.

5 European Chemical Industry Council (CEFIC), "The European Chemical Industry in a Worldwide Perspective," 2011; and Oekom Research AG, Oekom Industry Focus: Chemicals (Oct. 2012).

6 UNEP, *Global Chemicals Outlook*, 9 (2012)

7 UNEP, *Global Chemicals Outlook*, 10 (2012)

8 Organisation for Economic Cooperation and Development, OECD Environmental Outlook to 2050: The Consequences of Inaction, 2012.

9 Richard Denison, "Talk about over-reaching: Anti-REACH screed gets nearly everything wrong" (August 26, 2009), available at: <http://blogs.edf.org/nanotechnology/2009/08/26/talk-about-over-reaching-anti-reach-screed-gets-nearly-everything-wrong/>

indicator. For example, under U.S. law, some 62,000 chemicals were identified in the original inventory in 1979. Another 22,000 new chemicals have since been added.<sup>10</sup> In 2008, over 140,000 substances were included in the preregistration under the EU's regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH); however, some of the substances included were duplicates and others are not expected to be registered.<sup>11</sup>

For the highest volume chemicals—those produced above 1000 metric tons per year—new information generated under the REACH regulation provides some indications about chemicals in commerce. According to the European Chemicals Agency (ECHA), over 4,300 chemicals have thus far been registered under REACH. This should include chemicals manufactured or imported in the EU above 1000 tons per year, and “substances of very high concern” at lower volumes.<sup>12</sup> Previously, the European Commission estimated that as many as 1,400 chemicals might meet the criteria for very high concern, which includes carcinogens, mutagens, reproductive toxicants, and other chemicals of equivalent concern.<sup>13</sup> Authorities estimate that roughly 30,000 chemicals are produced in or imported to the EU above one ton per year.<sup>14</sup>

The number of chemicals in commerce at smaller quantities is difficult to quantify, in part because of scant availability of public information. The Chemical Abstract Service maintains an authoritative database with more than 60 million unique chemical substances.<sup>15</sup> The vast majority of these chemicals are not commercially produced. This figure includes a vast array of polymers, pharmaceuticals, alloys, minerals, and genetic sequences, most of which are

not subject to conventional chemical regulation. Nonetheless, this is a reminder that the universe of chemicals of potential concern is likely on the order of thousands, a scale that cannot realistically be addressed one chemical at a time.

In the years since the 1972 Stockholm Conference on the Human Environment, scientific understanding of the behavior of chemicals in the environment and their effects on human health and ecosystems has greatly expanded. For example, it is now easier to predict how chemicals are transported by wind and water, and whether they are likely to persist or bioaccumulate in the environment and in people. Improvements in monitoring make it feasible to detect many chemicals of concern in products and in blood or breast milk, providing a more realistic picture of exposure.

In contrast with pharmaceuticals, industrial and agricultural chemicals are not deliberately tested on humans. Instead, scientists have relied on animal tests, extrapolations from similar chemicals, and other techniques to estimate the risk to people, but most substances have hardly been tested at all. New techniques are on the horizon for assessing the effects of chemicals, but these are not yet validated.<sup>16</sup> After four decades of chemical regulation, major data gaps persist for thousands of individual chemicals in widespread use.

In the real world, however, people are subjected to multiple exposures, often at key stages of human development, such as *in utero* and during breastfeeding. Information on the real effect of chemical mixtures, i.e. the “cocktail effect,” is also grossly insufficient. Scientific research is shedding light on the intricate subtleties of how chronic exposure to chemicals is manifested in health outcomes, such as cancer, birth defects, neurological development, and asthma. This has also cast doubt on the conventional toxicological paradigm that seeks thresholds for no observed effects as the basis for defining safety.<sup>17</sup>

10 U.S. Environmental Protection Agency. <http://www.epa.gov/oppt/existingchemicals/pubs/tscainventory/basic.html>.

11 European Chemicals Agency, Helsinki (March 27, 2009), available at [http://echa.europa.eu/documents/10162/13585/pr\\_09\\_03\\_list\\_prereg\\_substances\\_20090327\\_en.pdf](http://echa.europa.eu/documents/10162/13585/pr_09_03_list_prereg_substances_20090327_en.pdf).

12 European Chemicals Agency. <http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>.

13 Commission of the European Communities, *Strategy for a future Chemicals Policy*, COM(2001) 88, (2001).

14 See e.g. United Kingdom Health and Safety Executive (HSE) Operation Circular (OC 253/11) (2011), available at <http://www.hse.gov.uk/foi/internalops/fod/oc/200-299/253-11.htm>.

15 The Chemical Abstract Service, 2012. <http://www.cas.org/newsevents/releases/60millionth052011.html>.

16 National Academy Press, *Toxicity Testing in the 21st Century: A Vision and a Strategy* (2007).

17 For a detailed review of non-monotonic dose-response curves, see Laura Vandenberg et al., *Hormones and Endocrine Disrupting Chemicals: Low-Dose Effects and Nonmonotonic Dose Responses*, *Endocrine Reviews* (2012), doi: 10.1210/er.2011-1050.

What does this imply for the future of the global chemical industry? For one, this is a reminder that the concept of chemical safety is evolving and that past assertions or assumptions of safety could be challenged as new information is brought to light. It also suggests that the process of focusing on a single chemical could be overwhelmed as dozens or hundreds of substances are shown to cause adverse effects on health and the environment. This creates practical challenges for companies seeking to demonstrate the safety of the chemicals they rely on, for regulators charged with safeguarding public health and the environment, and for commercial and individual consumers who seek to reduce exposure to potentially dangerous chemicals.

This understanding helped to create the impetus for the field of “green chemistry,” which was well articulated in a seminal book by Paul Warner and John Anastas.<sup>18</sup> This promising approach to chemical synthesis and manufacturing aims to design chemicals that meet the functional demands of the market, but are also inherently safer and more resource- and energy-efficient. These changes can create safer jobs, produce healthier lives, and reduce economic costs to businesses from the use or generation of toxic chemicals.

A 2011 assessment of green chemistry’s market potential projected it could soar from an estimated US\$ 2.8 billion in 2011 to US\$ 98 billion by 2020.<sup>19</sup> To the extent that safer substitutes displace more dangerous substances in the market, this represents a positive step in the right direction. Yet, even at this rapid pace, green chemistry would amount to 2.1 percent of the 2020 market<sup>20</sup>; a positive contribution, but not a solution. It stands to reason that as long as the existing product mix is deemed acceptable under law, green chemistry will face difficulty breaking into a market dominated by large companies with sunk investments in

the status quo. Conversely, regulations that encourage safer chemicals help to create market opportunities for businesses with innovative solutions.<sup>21</sup>

Against this backdrop of a changing chemical industry and new understanding of potential threats, nations assembled in 2012 for a set of important international negotiations about sustainability, a green economy and the future of chemicals management. Forty years after the Stockholm Conference on the Human Environment, representatives from around the world gathered at the UN Conference on Sustainable Development in June of 2012 (Rio+20) to address two themes: a “Green Economy” and international environmental governance.<sup>22</sup> Three months later, participants in the Strategic Approach to International Chemicals Management (SAICM) gathered in Nairobi for the third meeting of the International Conference on Chemicals Management (ICCM3).

Both themes of Rio+20 are relevant to the future direction of the global chemical industry. The United Nations Environment Programme (UNEP) defines a Green Economy as “a system of economic activities related to the production, distribution and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks and ecological scarcities.”<sup>23</sup>

To the extent that the chemistry of today undermines human and ecological health, particularly in the developing world, it creates an obstacle to a truly sustainable economy and poverty reduction. And, if we are to fashion an effective international system to prevent such harm and to guide countries and companies onto a more sustainable path, we will need effective institutions and agreements to ensure a level playing field around the world.

18 Paul Anastas and John Warner, *Green Chemistry: Theory and Practice*, Oxford University Press (1998).

19 Pike Research, *Green Chemistry* (July 2011) available at: <http://www.pikeresearch.com/newsroom/green-chemical-industry-to-soar-to-98-5-billion-by-2020>.

20 Calculation based upon projected growth in turnover for the chemical industry to \$ 4.5 trillion (US) by 2020.

21 Center for International Environmental Law (CIEL), *Driving Innovation: How stronger laws help bring safer chemicals to market* (2013), available at: [http://ciel.org/Publications/Innovation\\_Chemical\\_Feb2013.pdf](http://ciel.org/Publications/Innovation_Chemical_Feb2013.pdf).

22 “Objective and themes of the United Nations Conference on Sustainable Development: Report of the Secretary-General,” A/CONF.216/PC/22, December 2010. <http://www.uncsd2012.org/rio20/content/documents/N1070657.pdf>.

23 UNEP, *Toward a Green Economy: Pathways to Sustainable Development and Poverty Eradication* (2011), available at: [www.unep.org/greeneconomy](http://www.unep.org/greeneconomy).

**Box 1: Global chemical trends—ten factors of concern**

1. Increasing volumes of chemical production, use, trade and disposal overall;
2. Increasing chemical production, use and disposal in developing countries, shifting away from highly industrialized countries;
3. Increasing development and adoption of new chemicals and materials with novel properties and unknown risks, such as nanomaterials;
4. Increasing extraction of metals, minerals, fossil fuels and other natural resources for chemical production, compounded by increasing use of chemicals for extraction;
5. Increasing likelihood of severe, anthropogenic climate change implicating greater use of chemicals for adaptation and the release of sequestered toxic chemicals;
6. Increasing integration of chemicals into common products, agriculture and manufacturing processes;
7. Increasing chemical emissions from major industrial sectors, including energy generation and cement production;
8. Increasing prospects for widespread and multifaceted exposures of people and environment to chemicals of high and unknown concern;
9. Increasing financial costs to chemical manufacturers and downstream chemical users due to higher insurance rates, loss of productivity, and a deterioration of goodwill; and
10. Increasing burden of diseases linked to chemical exposure on individuals and the public-at-large.

Sources: UNEP, Global Chemicals Outlook (2012); and UNEP, Climate Change and POPs: Predicting the Impacts (2011).

**B. Evolution of the Global Chemicals Agenda**

The 1972 UN Conference on the Human Environment in Stockholm helped to launch a global discussion on chemicals and waste that continues today. This laid the foundation for a series of international agreements to develop legally binding treaties and voluntary approaches. This section describes the origins of the three binding Basel, Rotterdam, and Stockholm Conventions, and of SAICM, the broadest global framework for sound management of chemicals, but one which, by design, imposes no binding obligations on States.<sup>24</sup>

The politically binding 1972 Stockholm Declaration on the Human Environment states that “[m]an has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations.”<sup>25</sup> Under Principle 22 of the Stockholm Declaration, States agreed to cooperate to further develop the international law regarding liability and compensation for the transboundary harms of

pollution.<sup>26</sup> In the ensuing years, States consequently adopted and ratified a number of agreements that address, either directly or indirectly, the risks arising from transboundary pollution.<sup>27</sup>

The discovery in the 1980s of large-scale dumping in African nations of hazardous wastes originating in developed countries led to the negotiation in 1989 of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, followed soon thereafter by the 1991 Bamako Convention, which addressed hazardous waste imports and transboundary movements specifically within Africa, and the 1992 OECD guidelines on the Transboundary Shipment

<sup>24</sup> “[s]tates shall cooperate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction.” The International Law Commission, established by the U.N. General Assembly in 1947, began work on the codification of state responsibility and international liability in 1957. After nearly 50 years, it produced the “Draft Articles on the Responsibility of States for Internationally Wrongful Acts” and the “Draft Articles on Prevention of Transboundary Harm from Hazardous Activities” in 2001, as well as the “Draft principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities” in 2006. See Larissa Kralj, *State Responsibility and the Environment*, Univ. Gent (2012), available at: [http://lib.ugent.be/fulltxt/RUG01/001/787/295/RUG01-001787295\\_2012\\_0001\\_AC.pdf](http://lib.ugent.be/fulltxt/RUG01/001/787/295/RUG01-001787295_2012_0001_AC.pdf)

<sup>25</sup> See, e.g., Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London, 1972); UNECE Convention on Long-Range Transboundary Air Pollution (Geneva, 1979).

<sup>24</sup> In total, there are approximately 40 global and regional agreements relating toxic chemicals and wastes.

<sup>25</sup> Stockholm Declaration on the Human Environment, Principle 1 (1972).

of Hazardous Wastes destined for recovery operations.<sup>28</sup> Entering into force in 1992, the Basel Convention was the first global, legally binding instrument on hazardous waste, and it traces its objective to Principle 6 of the 1972 Stockholm Declaration.<sup>29</sup>

### *The 1990s*

Twenty years after the Stockholm Declaration, the 1992 Earth Summit produced Agenda 21, a comprehensive plan to minimize human impacts on the environment, a high-level political statement (the Rio Declaration on Environment and Development), as well as three major legally binding instruments including: the Convention on Biological Diversity and the UN Framework Convention on Climate Change (UNFCCC).<sup>30</sup> Agenda 21 devotes chapters 19 and 20 specifically to the management of chemicals and wastes.

Chapter 19 of Agenda 21 recommended establishing an intergovernmental forum on chemicals risk assessment and management to increase coordination. This recommendation led to the Intergovernmental Forum on Chemical Safety (IFCS) in 1994 and the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) in 1995. The IFCS was established as a forum for discussing current and emerging issues of global concern that could provide policy guidance and develop strategies in a coordinated and integrated manner. The IOMC was established to strengthen cooperation and coordination between international organizations in chemical management.

28 The latter agreement was adopted by the Organization of African Unity to address perceived weaknesses of the Basel Convention with respect to hazardous waste imports into Least Developed Countries. The Bamako Convention entered into force in 1998. Because participation is limited to OAU members, it is not discussed here in detail. While technically non-binding, the OECD guidelines are followed widely by OECD countries, and are frequently translated into legally binding standards for private corporations engaged in waste trade between those countries.

29 See Basel Convention, preamble. Other agreements referenced in the Basel Convention preamble include: "the Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes adopted by the Governing Council of the United Nations Environment Programme (UNEP) by decision 14/30 of 17 June 3 1987; the Recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods (formulated in 1957 and updated biennially)...[and] the World Charter for Nature adopted by the General Assembly of the United Nations at its thirty-seventh session (1982) as the rule of ethics in respect of the protection of the human environment and the conservation of natural resources."

30 A third "Rio" Convention, the UN Convention to Combat Desertification, was adopted in 1994, following a recommendation contained within Agenda 21.

In 1989, the Food and Agriculture Organization (FAO) and UNEP joined an international code of conduct on pesticides with a set of guidelines on trade in chemicals to create a voluntary Prior Informed Consent (PIC) procedure.<sup>31</sup> This instrument sought to ensure that developing countries had the necessary information to enable informed decisions on the import of these chemicals.

Recognizing the need for mandatory controls, Agenda 21 called for a legally binding instrument to replace the voluntary PIC procedure.<sup>32</sup> The Rotterdam Convention, adopted in 1998, currently covers trade in 43 chemicals and established a mechanism for alerting countries of impending imports of these dangerous chemicals. Parties can use the Rotterdam Convention to establish an expanding list of chemicals that require prior informed consent to accelerate the adoption of national restrictions and voluntary product de-selection by consumers and downstream users.

The 1992 Earth Summit also laid the foundation for the Stockholm Convention on Persistent Organic Pollutants (POPs), which was approved in 2001 and entered into force in 2004. Chapter 19 in Agenda 21 called for, "Strengthening research on safe/safer alternatives to toxic chemicals that pose an unreasonable and otherwise unmanageable risk to the environment or human health and to those that are toxic, persistent and bio-accumulative and that cannot be adequately controlled."<sup>33</sup> The Stockholm Convention requires Parties to eliminate or restrict the production and use of POPs listed under the Convention and calls for the environmentally sound management of stockpiles containing these POPs.

Many international bodies were involved in the

31 Also worth noting, beginning in 1963, the FAO and WHO worked together to develop food standards, guidelines and related texts under the Joint FAO/WHO Food Standards Programme, Codex Alimentarius. The one of the main purposes of this Programme is protecting the health of the consumers, including preventing adverse effects due to food contaminants and pesticide residues.

32 Agenda 21, Chapter 19.36.

33 See also Agenda 21, Chapter 17.28 ((d) Eliminating the emission or discharge of organohalogen compounds that threaten to accumulate to dangerous levels in the marine environment... (g)

Cooperating with developing countries, through financial and technological support, to maximize the best practicable control and reduction of substances and wastes that are toxic, persistent or liable to bio-accumulate and to establish environmentally sound land-based waste disposal alternatives to sea dumping).

**Table 1: Evolution of the global chemicals agenda**

YEAR	ORGANIZATION	ACTIONS
1972	UN	1972 UN Conference on the Human Environment convenes in Stockholm, culminating in the adoption of the Stockholm Declaration on the Human Environment.
1989	UNEP	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal opened for signature. Entered into force in 1992.
1989	FAO, UNEP	Prior Informed Consent (PIC) procedure created to ensure that developing countries had the necessary information to enable informed decisions on the import of these chemicals.
1992	UN Conference on Sustainable Development	1992 Earth Summit produces the Rio Declaration on the Environment and Development and Agenda 21, laying the foundation for the Rotterdam and Stockholm Conventions.
1994	WHO	Intergovernmental Forum on Chemical Safety (IFCS) created.
1995	FAO, ILO, UNDP, UNEP, UNIDO, OECD, UNITAR, WHO, World Bank	Inter-Organization Programme for the Sound Management of Chemicals (IOMC) established.
1998	UNEP	Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention) signed. Entered into force 2004.
2002	UNEP	Johannesburg Plan of Implementation of the WSSD (Johannesburg Plan) adopted during the 2002 World Summit on Sustainable Development.
2003	UNEP	UNEP Governing Council launches mercury program, reiterating parties' commitment to reducing the use of heavy metals harmful to human health and the environment.
2004	UNEP	Stockholm Convention on Persistent Organic Pollutants (POPs), approved in 2001, entered into force.
2005	UNEP	UNEP Governing Council members agree to begin work around lead and cadmium, but no decision reached to pursue legally binding obligations.
2006	UNEP	Strategic Approach to International Chemicals Management (SAICM) adopted at the first International Conference on Chemicals Management (ICCM1).
2009	UNEP	UNEP Governing Council meeting held, during which U.S. drops its long-standing objection to a legally binding instrument on mercury.
2010	UNEP	Negotiations begin on a legally binding instrument on mercury.
2012	UN Conference on Sustainable Development	Rio+20 produces "The Future We Want," reaffirming the 2002 commitment to achieve the sound management of chemicals by 2020, as set out in the Johannesburg Plan of Action

development of the Stockholm Convention, a process which took twelve years to result in legally-binding obligations. In March 1995, the UNEP Governing Council invited the IOMC, the IFCS, and the International Programme on Chemical Safety (IPCS) to initiate an assessment process regarding an initial list of twelve POPs, i.e. the "dirty dozen."<sup>34</sup> The IFCS convened an Ad Hoc Working Group on POPs, which developed a work plan for assessing these substances, and recommended to the UNEP Governing Council and the World Health Assembly (WHA) that

immediate international action be taken on these dozen chemicals. In February 1997, the UNEP Governing Council endorsed the conclusions and recommendations of the IFCS.<sup>35</sup> The Governing Council requested that UNEP, together with relevant international organizations, prepare for and convene an intergovernmental negotiating committee (INC) with a mandate to develop, by the end of 2000, an international legally binding instrument for implementing international action, beginning with the twelve specified POPs. At present, 22 POPs are listed under

<sup>34</sup> UNEP Governing Council Decision 18/32.

<sup>35</sup> UNEP Governing Council Decision 19/13C.

the Stockholm Convention, while a few others are undergoing review for possible listing.

### *The 2000s*

Ten years following the 1992 Earth Summit, at the 2002 World Summit on Sustainable Development (WSSD), another high-level declaration was adopted by the global community, embracing the Johannesburg Plan of Implementation of the WSSD (Johannesburg Plan or JPOI). Paragraph 23 of the Johannesburg Plan renews the commitment of the parties to Agenda 21, setting the objective that, by 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.<sup>36</sup>

Approaching the 2002 WSSD, governments and other stakeholders called for greater priority setting and increased focus, coordination, and coherence in international chemicals management. Paragraph 23(b) of the Johannesburg Plan endorsed the further development of a “strategic approach to international chemical management” based on previous work by IFCS, in response to an invitation from the UNEP Governing Council/Global Ministerial Environment Forum in 2002. This set the stage for a series of preparatory meetings leading to the creation of SAICM.

Between 2003 and 2005, a series of negotiations ensued over the structure of SAICM. It was soon apparent that consensus on a legally binding instrument was unlikely. Some of the issues that remained unresolved after three preparatory committee meetings (PrepComs) included SAICM’s scope, financial considerations, and the principles and approaches to guide work on SAICM.<sup>37</sup> Ministers, heads of delegation, representatives of civil society, and the private sector expressed their commitment to SAICM in

2006 at the first meeting of the International Conference on Chemicals Management (ICCM1), praising SAICM’s participatory process and the importance of diverse stakeholders in achieving the sound management of chemicals. Three core documents constitute SAICM: the high-level political statement, known as the Dubai Declaration; the Overarching Policy Strategy; and the Global Plan of Action. These documents acknowledge the legally binding Conventions on chemicals and wastes, and the need to better align and integrate processes under the legally binding instruments. The fact that SAICM is nonbinding is emblematic of a recurring and broader problem of establishing international consensus on broader, more comprehensive agreements in the environmental context.

In the year following the 2002 WSSD, the UNEP Governing Council launched a mercury program in response to paragraph 23(g) of the Johannesburg Plan, which reiterates the parties’ commitment to reducing the use of heavy metals harmful to human health and the environment. In 2005, at the 23<sup>rd</sup> Session of the UNEP Governing Council, members agreed to begin work on lead and cadmium, especially on long-range environmental transport, to allow for better-informed future discussions on the topic. But no decision was reached to pursue legally binding obligations for these heavy metals.

### *Recent Developments*

At the 2009 UNEP Governing Council meeting, the U.S. Government dropped its long-standing objection to a legally binding instrument on mercury. Negotiations on a legally binding mercury treaty recently concluded. While addressing the threat from mercury is of great importance, expanding the scope of the treaty to include other heavy metals would require significant amendments to the treaty if and when it enters into force.

Over several years, the three chemical and waste MEAs have matured. In 2009, COP4 of the Stockholm Convention added nine additional POPs to the original twelve, the “dirty dozen.” Unlike the “dirty dozen,” some of these “new” POPs were in production and use in developed countries at the

<sup>36</sup> The full quote reads: “Renew the commitment, as advanced in Agenda 21, to sound management of chemicals throughout their life cycle and of hazardous wastes for sustainable development as well as for the protection of human health and the environment, inter alia, aiming to achieve, by 2020, that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment, using transparent science-based risk assessment procedures and science-based risk management procedures, taking into account the precautionary approach, as set out in principle 15 of the Rio Declaration on Environment and Development, and support developing countries in strengthening their capacity for the sound management of chemicals and hazardous wastes by providing technical and financial assistance.”

<sup>37</sup> See <http://www.saicm.org/documents/SAICM%20ICCM%20Press%20documents.pdf>.

time the decision was taken, illustrating the Convention's ability to stimulate global action to restrict or phase-out chemicals of concern, albeit chemicals that should have been better assessed before approval for use.

The Basel Convention also continues to develop. In 2011, COP10 of the Basel Convention passed a critical decision (the country-led initiative, or CLI, decision) to ensure that only 17 more ratifications are needed to allow the Basel Ban Amendment<sup>38</sup> to enter into force.<sup>39</sup> The Amendment's entry into force has been mired in controversy since 1995 over the number of ratifications necessary. The CLI Decision notes that a more systematic and comprehensive effort is needed to improve guidance on environmentally sound management of wastes and, to this end, suggests actions to complete the development of a framework for the environmentally sound management of hazardous and other wastes.

As these MEAs have matured, efforts have been made to streamline the functions of the secretariats and enhance the efficiency and reduce redundancies. To address inefficiencies and other challenges created by the use of multiple, disconnected instruments for chemicals and wastes management, the Conferences of the Parties (COPs) to the Basel, Rotterdam, and Stockholm Conventions have over the years adopted a series of identical decisions aiming at enhancing cooperation and coordination among the conventions to achieve greater efficiency.<sup>40</sup> The process applies at the global, regional, and national levels, focusing on: organizational issues in the field; technical issues; information management and public awareness issues; and decision-making.<sup>41</sup> As part of this effort, the next COP of these three Conventions will be held back-to-back-to-back over approximately two weeks in 2013.

Two important global meetings in 2012 presented valuable opportunities to assess the progress made in achieving the 2020 Goal under existing international laws on chemicals.

Ten years after the 2002 WSSD, Rio+20 produced an outcome document entitled *The Future We Want*. Language in the outcome document reaffirmed the commitment of governments to SAICM and the 2020 Goal, but the outcome document does not create any significant new goals, institutions, or arrangements to catalyze the achievement of the 2020 Goal. During the second opportunity to reassess progress toward the 2020 Goal, the third meeting of the International Conference on Chemicals Management (ICCM3), participants noted that "SAICM is not on track to achieve the 2020 goal."<sup>42</sup> Although consensus was reached on one new emerging policy issue, endocrine disrupting chemicals, the principle result from ICCM3 was to continue with the current slate of activities under SAICM towards achieving the 2020 Goal. Despite the opportunity presented by these two global conferences, very little was done to change the course or pace of efforts in achieving the 2020 goal.

While much has been accomplished on chemicals since Stockholm in 1972, major gaps remain. Looking ahead, at the 26<sup>th</sup> Session of the UNEP Governing Council in 2011, members noted "that further action may be needed to strengthen the sound management of chemicals and wastes globally up to 2020 and beyond."<sup>43</sup> This study explores what "further action" is necessary and what options are available. Section III analyzes four global agreements on chemicals: three legally binding instruments, the Basel, Rotterdam, and Stockholm Conventions, and the non-binding SAICM. Based on these findings, Section IV proposes possible ways forward in achieving the sound management of chemicals, in 2020 and beyond.

38 The "Ban Amendment" provides for the prohibition by certain listed countries (Parties and other States that are members of the OECD, EC, Liechtenstein) of all transboundary movements to non-listed countries of hazardous wastes covered by the Convention that are intended for final disposal, and of all transboundary movements to non-listed countries of certain hazardous wastes that are destined for reuse, recycling or recovery operations.

39 Decision BC-10/3: Indonesian-Swiss country-led initiative to improve the effectiveness of the Basel Convention, UNEP/CHW.10/28, available at: <http://archive.basel.int/meetings/cop/cop10/documents/28e.pdf>.

40 Basel Convention, History of the Synergies Process, available at: <http://www.basel.int/TheConvention/Synergies/HistoryoftheSynergiesprocess/tabid/2499/Default.aspx>.

41 Id.

42 SAICM, ICCM3 Report, SAICM/ICCM.3/24 (Advance), 59 (2012); and ICCM3 Draft Report, SAICM/ICCM.3/L.1/Add.1, 10 (2012).

43 UNEP GC-26/12.

## Section III: Analysis of Four Global Chemicals Agreements

In considering challenges and opportunities for improvement to international laws for chemicals management, the key elements of international environmental law inform the analysis. The first part introduces these core elements of a global chemicals agreement, with attention to three existing treaties on chemicals and SAICM, the broad but non-binding process. The second part concludes with a synthesis of the challenges presented by these four agreements, taken together, to meet the goal of ensuring the sound management of chemicals around the world in 2020 and beyond.

### A. Assessing the Core Elements

Legally binding global environmental agreements typically contain certain elements. These elements are:

- Objective(s), that define the overarching purpose;
- Obligations, that bind Parties to specific actions;
- Principles and approaches, that guide obligations, application, and future development;
- Institutions, that are responsible for governance;
- Implementation mechanisms, that assist Parties to meet obligations; and
- Decision-making processes, that enable changes or adjustments to the agreement or its implementation.

This section explores the purpose of these elements, how they are reflected in three chemicals and wastes MEAs and SAICM, and, if applied, the effectiveness of their application in protecting human health and the environment from hazardous chemicals.

### 1. Objective(s)

The intent of the Parties in entering into an agreement is typically set out in a clear statement of objectives. An objective serves to acknowledge a problem of shared international concern, generally in the preamble or in a separate article. Under the Vienna Convention on the Law of Treaties, States have a duty to not defeat the treaty's "object and purpose," even if they have signed but not ratified a treaty, or have taken a reservation to the treaty.<sup>44</sup> In the case of global agreements for chemicals and wastes, the objective is typically not agreed to until negotiations conclude, reflecting the difficulty in agreeing upon a common goal.

The current objective of global efforts on the sound management of chemicals is "to achieve the sound management of chemicals throughout their life-cycle so that, by 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment" (i.e. the "2020 Goal").<sup>45</sup> This objective reflects the objective contained in Paragraph 23 of the JPOI from the 2002 World Summit on Sustainable Development.<sup>46</sup> The 2020 Goal is only referenced in non-binding agreements.

The objectives of existing legally binding chemicals and wastes MEAs are much narrower than the broad SAICM objective. For example, the objective of the Stockholm Convention is not to eliminate POPs through applying the precautionary principle so as to protect human health and the environment, but rather "to protect human health and the environment from persistent organic pollutants."<sup>47</sup> The

<sup>44</sup> Vienna Convention on the Law of Treaties, Articles 18 and 31(1).

<sup>45</sup> SAICM OPS para. 13.

<sup>46</sup> "Sound management of chemicals throughout their life cycle and of hazardous wastes for sustainable development as well as for the protection of human health and the environment, *inter alia*, aiming to achieve, by 2020, that chemicals are used and produced in ways that lead to the *minimization of significant adverse effects on human health and the environment*, using transparent science-based risk assessment procedures and science - based risk management procedures, taking into account the precautionary approach, as set out in principle 15 of the Rio Declaration on Environment and Development, and support developing countries in strengthening their capacity for the sound management of chemicals and hazardous wastes by providing technical and financial assistance..." (emphasis added).

<sup>47</sup> Stockholm Convention, Article 1. The European Union, supported by G-77/China, Norway and many other countries advocated for the former formulation, recognizing that certain hazardous chemicals, such as POPs, have properties that make ensuring the sound management of these chemicals throughout their lifecycle so as to protect human health and the environment exceedingly difficult, if not impossible.

objective of the Basel Convention is “to protect, by strict control, human health and the environment against the adverse effects which may result from the generation and management of hazardous wastes and other wastes.”<sup>48</sup> The Rotterdam convention aims to “to protect human health and the environment from potential harm [from certain hazardous chemicals in international trade] and to contribute to their environmentally sound use.”<sup>49</sup>

While the four agreements share a similar objective to protect human health and the environment, only SAICM has the broad scope to cover the full range of chemicals in commerce throughout their life-cycle. Naturally, SAICM’s Overarching Policy Strategy (OPS) does embrace the broad objective of the 2002 WSSD, since SAICM was a direct result of the 2002 document. But even SAICM’s objective may fall short of protecting human health and the environment from hazardous chemicals, as the full objective is heavily qualified. For example, the full objective is to “minimize significant adverse effects,” not for the elimination of these effects, and what constitutes a “significant adverse effect” is undefined.<sup>50</sup> In addition, the OPS specifies five more specific objectives in relation to the 2020 Goal, namely risk reduction, knowledge and information, governance, capacity-building and technical cooperation, and illegal international traffic.

## 2. Obligations

Treaties generally contain basic obligations that the Parties agree to undertake, in effect, surrendering a degree of national sovereignty in exchange for concerted action. Some obligations are very general while others are more specific. Precise treaty obligations enable compliance, and thus achievement of the overall objective of the treaty. Part of the reason for the relative success of the Montreal Protocol in reducing the use and release of ozone depleting substances is that the Parties agreed to precise obligations for the phase-out of these chemicals.

Typical environmental treaty obligations include: (a)

national measures to address the problem; (b) exchange of information, including reporting requirements; (c) technical assistance and the transfer of technology; and (d) financial assistance. These are each explained in turn below. As SAICM is a voluntary process and not legally enforceable, the analysis below does not consider obligations under SAICM, if any. But, SAICM is none the less making contributions with respect to the obligations under the Basel, Rotterdam, and Stockholm Conventions. These contributions are described below where relevant.

### *a. Commitment to take national measures*

International treaties usually contain an obligation to adopt national policies and measures to prevent or remedy a problem. Regarding existing obligations, SAICM’s OPS notes that, as of 2006, “[m]any countries have not ratified or implemented regional and global legally binding instruments and other relevant initiatives.”<sup>51</sup> At present, the Stockholm, Rotterdam and Basel Conventions enjoy nearly universal ratification, but capacity for implementation remains a challenge.<sup>52</sup> The United States remains a notable exception to the ratification of these three Conventions.

The global chemical issues of concern for which obligations exist in legally binding chemicals and wastes conventions do not cover the full extent of the health and environmental impacts of toxic chemicals.<sup>53</sup> The three global, legally binding chemicals and waste conventions were never designed to address all chemicals of global concern. Thus, many issues and chemicals of concern fall outside the scope of key existing legally binding MEAs because they do not meet the established criteria. Some of the orphan issues that are not necessarily addressed by

51 SAICM OPS para 9(b).

52 The Basel Convention has 179 Parties. See <http://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/1290/Default.aspx>. The Rotterdam Convention has 150 Parties. <http://www.pic.int/Countries/Statusofratifications/tabid/1072/language/en-US/Default.aspx>. The Stockholm Convention has 178 Parties to the Convention. See <http://chm.pops.int/Countries/StatusofRatifications/tabid/252/Default.aspx>.

53 As discussed above, the only global agreement that reflects the objective set by at the 2002 WSSD is the SAICM OPS, and even this is insufficient for the task at hand.

48 See Basel Convention Preamble.

49 Rotterdam Convention, Article 1.

50 See footnote 36.

legally binding MEAs under a full life-cycle approach include<sup>54</sup>:

- Carcinogens;
- Mutagens;
- Reproductive toxicants;
- Chemicals that only have evidence of persistence and/or bioaccumulation (both organic and inorganic);
- Nanomaterials;
- Toxic heavy metals such as lead and cadmium;
- Combination effects of mixtures of chemicals in humans and the environment;
- Toxicants released or produced through the extraction of natural resources;
- Active pharmaceutical ingredients, pharmaceutical metabolites, and industrial chemicals in medical devices;
- Substances with epigenetic effects;
- Radioactive substances; and
- Endocrine disrupting chemicals.

Many proponents of SAICM sought to create a more encompassing structure to cover these issues left unaddressed by existing MEAs throughout their life-cycle. The end result was a broad framework, but in exchange for non-binding “obligations,” a litany of possible actions without prioritization, and little funding relative to the challenges at hand. SAICM’s Global Plan of Action (GPA) lists over 270 activities to implement the OPS, which expanded to include additional activities at the third meeting of the International Conference on Chemicals Management (ICCM3). Despite the scope of SAICM, funding available under its Quick Start Program to help developing countries with these activities from 2006-2010 was only approximately US \$31 million (see discussion “financial assistance” below).

Activities are ongoing on five issues as emerging policy issues to build awareness and capacity at the national level. The four emerging policy issues are: endocrine disrupting chemicals; lead in paint; chemicals in products; nanotechnologies and manufactured nanomaterials; and hazardous substances within the life-cycle of electrical and electronic products.<sup>55</sup> These issues are vitally important, but dozens of critical issues, chemicals, and classes of chemicals remain unaddressed.

If legally binding obligations are desired at the global level for the full life-cycle of these chemicals, chemicals with these properties or any of these “orphan issues,” there is no existing global agreement of sufficient breadth to enable parties to create obligations to address these issues of global concern under existing provisions.

#### *b. Exchange of information, including reporting requirements*

One way in which these issues are explored is through the exchange of information. Knowledge, information, and public awareness are basic needs for decision-making for the sound management of chemicals.<sup>56</sup> Obligations in MEAs frequently address education, training, and public awareness; cooperation in scientific research; and the exchange of relevant scientific, technical, socioeconomic, and legal information. These provisions are relatively uncontroversial.

However, obligations of Parties to report on their activities, including national contributions to a global problem and the measures taken in response, are sometimes controversial.<sup>57</sup> Reporting requirements serve several important functions in global chemical agreements. First, reporting can generate essential information on production, use, and releases of hazardous chemicals necessary to guide action. This requirement can also promote transparency

<sup>54</sup> There is, however, the possibility that certain carcinogens, mutagens, or reproductive toxicants that are persistent, bioaccumulative and show evidence of long-range environmental transport could qualify under the Stockholm Convention, provided they meet the minimum requirements of each of these four elements.

<sup>55</sup> A fifth area of activity, “managing perfluorinated chemicals and the transition to safer alternatives” is ongoing but not technically an emerging policy issue.

<sup>56</sup> SAICM OPS para 8.

<sup>57</sup> Another controversial issue is the treatment of confidential business information, particularly as it relates to chemical use, as well as health and safety information. This issue warrants a separate analysis and is not discussed in the current study.

and pressure Parties to improve performance over time. Reporting also encourages Parties to review existing policies, potentially enabling planning, coordination, and advocacy at the national level. Reporting may also accelerate progress towards meeting the objective of the agreement, as Parties learn from each other's experiences.

The Basel, Rotterdam, and Stockholm Conventions each contain reporting requirements. The Basel Convention requires information of both exporting and importing parties, including disposal methods and disposals which did not proceed as planned.<sup>58</sup> The Rotterdam Convention imposes reporting requirements regarding: (1) action(s) a Party has taken to ban or severely restrict a chemical in its jurisdiction; and (2) a decision to import a chemical listed under the Convention.<sup>59</sup> The Rotterdam Convention also compels Parties to exchange information on proposed shipments and the affirmative approval by the recipient. Under the Stockholm Convention, "[e]ach Party shall report to the Conference of the Parties on the measures it has taken to implement the provisions of this Convention and on the effectiveness of such measures in meeting the objectives of the Convention."<sup>60</sup> Before the last meeting of the Conference of the Parties to the Stockholm Convention, the secretariat received national reports from 74 Parties (43% of total Parties), with Parties expressing difficulty in gathering the information and data required.<sup>61</sup>

The second meeting of the ICCM agreed on twenty indicators to measure SAICM implementation, and subsequent evaluation at the third meeting of the ICCM. A summary of the findings presented at ICCM3 showed that most of the Parties activities focused on obligations stemming from legally-binding instruments either in force or under negotiation.<sup>62</sup> This was true for all five of the indicators developed, namely risk reduction, knowledge and information, governance, and capacity building and

technical cooperation. For example, according to the SAICM Secretariat's summary of key findings:

*"Significant levels of activity on risk reduction on pesticides, persistent organic pollutants (as defined under the Stockholm Convention) and mercury or mercury-containing sources were also recorded....The associated high level of activity for implementation of the Stockholm Convention...may have influenced the high level of reported activity on persistent organic pollutants and, similarly, the current international focus on mercury may have contributed to the high level of activity reported on mercury."*

#### c. Technical assistance and the transfer of technology

Following from the principle of "common but differentiated responsibilities," which recognizes differing responsibilities and capacities of countries, many MEAs contain an obligation on developed country Parties to cooperate in scientific research, technical assistance, and the transfer of technology. These provisions recognize that developing countries often lack the financial and technical resources needed to develop, access, and adopt technologies that are safer for the environment and human health; and the responsibility of Parties who used and benefited from unsustainable technologies to encourage others to pursue sustainable development, rather than a repeat of past mistakes.

Implementation of technical assistance and technology transfer provisions can facilitate compliance and speed success in achieving objectives. If successfully implemented, these obligations can help overcome concerns that MEAs will serve as a barrier to the access of less-expensive technologies.

Many global agreements for chemicals and wastes have provisions for cooperation, technical assistance, and the transfer of technology.<sup>63</sup> The Parties to the Basel Convention established regional centers to facilitate capacity building and the transfer of technology for the environmentally

<sup>58</sup> See Basel Convention Article 13(3).

<sup>59</sup> See Rotterdam Convention Articles 5 and 10.

<sup>60</sup> Stockholm Convention, Article 15.

<sup>61</sup> Stockholm Convention, *Frequently Asked Questions on Reporting Requirements* (2011)

<sup>62</sup> Summary report on progress in implementation of the Strategic Approach, SAICM/ICCM.3/4, pp 6-7.

<sup>63</sup> See Basel Convention Article 10 and 14; Rotterdam Convention Preamble and Article 16; and Stockholm Convention Article 12. See also SAICM OPS Section D, para 17.

sound management and minimization of hazardous wastes and other wastes. Similarly, the Parties to the Stockholm Convention established fifteen regional centers to aid Parties in implementing obligations under the Convention. Parties to the Basel and Stockholm Conventions have collocated Regional Centers to increase efficiency. Regional centers are, however, just one of the many actors that may aid in the transfer of technology and provision of technical assistance. Intergovernmental organizations, developed countries, civil society NGOs and industry, research institutions and universities, and secretariats can each contribute to this effort, and in some cases should do so to a greater degree.<sup>64</sup>

#### *d. Financial assistance*

An obligation of developed country Parties to provide financial assistance to developing countries derives from the principle of cooperation among States, a recognition of differing capacities and the historical responsibility of certain States that have disproportionately contributed to environmental problems. Many international agreements impose obligations on developed country Parties to provide financial assistance to developing country Parties.<sup>65</sup> These agreements recognize that implementation of the agreement by developing countries will depend on the effective implementation of developed country Parties' financial obligations.

Of the three legally binding agreements, the Stockholm Convention has the strongest language regarding the obligations of developed countries to "provide new and additional financial resources to enable developing country Parties and Parties with economies in transition to meet the agreed full incremental costs of implementing measures which fulfill their obligations under this Convention."<sup>66</sup> The Stockholm Convention calls for the creation of a "mechanism" for adequate and sustainable financial

resources to be created and implemented.

Despite the relatively strong language of the Stockholm Convention, financial assistance is a mere fraction of estimated needs. The Global Environment Facility (GEF), which operates the Convention's financial mechanism, committed US \$425 million to projects in the POPs focal area from the adoption of the Stockholm Convention in May 2001 through 2010, leveraging approximately US\$ 700 million in co-financing to bring the total value of the GEF POPs portfolio to US \$1.1 billion.<sup>67</sup> For the period of 2010-2014, the Stockholm COP developed a "Financial Needs Assessment"<sup>68</sup>—the first assessment of the costs of implementing obligations relating to newly listed POPs. The needs assessment determined that the full resources estimate for developing countries totaled approximately US \$4.5 billion from 2010-2014, or four times the amount committed to the financial mechanism since 2010.<sup>68</sup>

While the other chemicals and waste agreements reference the importance of financial resources, the Basel Convention, the Rotterdam Convention, and SAICM each lack a mandatory financial mechanism.<sup>69</sup> Instead, these operate by way of a variety of trust funds. Both the Rotterdam and Basel Conventions created two funds, one for assessed contributions and one for voluntary contributions.

The predictability of these voluntary funds is an issue. For example, the Basel Convention's Trust Fund is the larger of the two Basel funds. In 2011, US\$ 4,680,132 was pledged to the Fund, but at the end of April 2012 only US\$ 2,107,155

<sup>64</sup> See e.g. Stockholm Convention Decision 1/15.

<sup>65</sup> See e.g. UNFCCC, Montreal Protocol on Substances that Deplete the Ozone Layer, Convention on Biological Diversity (CBD), and others.

<sup>66</sup> Stockholm Convention, Article 13(2).

<sup>67</sup> Report of the GEF to the FIFTH Meeting of the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants, Global Investment Facility (2011), para 4.

<sup>68</sup> Stockholm Convention, COP 4, Report on the assessment of funding needs of Parties that are developing countries or countries with economies in transition to implement the provisions of the Convention over the period 2010-2014, UNEP/POPS/COP.4/27, at 7, Table 2.

<sup>69</sup> Rotterdam Convention, preamble ("Taking into account the circumstances and particular requirements of developing countries and countries with economies in transition...providing financial assistance and promoting cooperation among the Parties"); Basel Convention, article 14 ("The Parties shall decide on the establishment of appropriate funding mechanisms of a voluntary nature...[and] shall consider the establishment of a revolving fund..."); and SAICM GPA para. 19 ("The Strategic Approach *should* call upon existing and new sources of financial support to provide additional resources...[and] *should* include the mobilization of additional national and international financial resources, including through the Quick Start Programme and other measures set out in this paragraph...") (emphasis added).

had been collected, less than half the pledged amount.<sup>70</sup>

The SAICM Quick Start Programme (QSP) is the only funding vehicle for SAICM implementation, and is a voluntary fund.<sup>71</sup> The QSP was intended to be a first step, to accelerate preliminary planning, not the robust mechanism required to fully implement the Global Plan of Action, activities on emerging policy issues, and other elements of SAICM's work programme.<sup>72</sup> Slated to expire in 2013, the ICCM3 decided to both extend the QSP through 2015, and to broaden the range of activities under the QSP to include implementation activities.

The total contributions to the QSP from 2006-2010 were a mere US \$31,306,358.<sup>73</sup> The number of projects and amounts requested are likely more a function of funds available, and not indicative of overall needs in terms of implementing the strategic approach. While it is difficult to estimate the total needs for SAICM implementation due to the non-binding nature of the agreement, broad objectives, and several hundreds of activities under the GPA, it is reasonable to presume that the amount greatly exceeds the US \$31 million in QSP contributions, and is likely to be much more than US \$4 billion estimate for implementation of POPs listed under Stockholm Convention between 2010 and 2014. Civil society has pointed out that only 0.1 percent of the chemical industry's turnover could yield US\$ 3-4.1 billion per year to support the sound management of chemicals.<sup>74</sup>

It is important to note that the costs of chemical pollution and their adverse effects remain externalized to a large degree (see Section III(3)(d)). The chemical industry is not required to internalize the costs of pollution, including the healthcare costs of hazardous chemicals and the escalating

cost of ensuring the sound management of chemicals.<sup>75</sup> To avoid the slow pace and high costs of addressing chemicals individually, financial resources for developing, integrating, and maintaining comprehensive regulatory systems at the national level is essential.

In 2006, governments and private industry stated their intention to mobilize necessary financial resources, declaring that “[w]e will continue to mobilize national and international financing from public and private sources for the life-cycle management of chemicals...[and] will work towards closing the gaps...in the capacity to achieve sustainable chemicals management ... through partnerships, technical support and financial assistance.”<sup>76</sup>

To help close the funding gap for implementation of the Basel, Rotterdam, and Stockholm Conventions (BRS Conventions) and greater action under SAICM, UNEP Executive Director Achim Steiner launched the Consultative Process on Chemicals Financing. UNEP presented the Executive Director's draft proposal on an “integrated approach to financing the sound management of chemicals” at ICCM3, describing three key elements: mainstreaming, industry involvement, and external financing.<sup>77</sup> The final proposal aims “at a minimum [to] encompass existing instruments and international policy frameworks on chemicals and wastes and anticipate the needs of future instruments or frameworks.”<sup>78</sup> During ICCM3 there was considerable disagreement about whether to have a fund modeled on the Montreal Protocol's Multilateral Fund, as opposed to the Global Environment Facility hosting the dedicated external fund. An expert on financial mechanisms for international environmental protection noted at ICCM3 that the “cluster” of treaties for the sound management of

70 Trust Fund For The Basel Convention On The Control Of Transboundary Movements Of Hazardous Wastes And Their Disposal (BC) Status of contributions as at 30 April 2011 available at: <http://www.basel.int/Portals/4/Basel%20Convention/docs/convention/contributions/20110430bc.pdf>.

71 At the end of November 2012 when the Quick Start Programme is scheduled to stop collecting voluntary funds, the ICCM will be forced to develop another financial mechanism capable of assisting developing country parties and parties with economies in transition as they attempt to implement SAICM.

72 ICCM1, Resolution I/4, ¶ 7 (2006).

73 Summary Table of QSP Funds Contributions 2006-2010, available at: <http://www.saicm.org/documents/qsp/summary%20QSP%20TF%20contributions%2006.01.11.pdf>.

74 See Chemical Watch, *UNEP: SAICM and the case for sound chemicals management* (Feb. 2012).

75 See also Section III for a discussion of the polluter pays principle.

76 SAICM Dubai Declaration para. 16-17 (emphasis added).

77 See UNEP/GCSS.XII/8 para. 5-11. See also UNEP/GCSS.XII/INF/7. Four key funding tracks were delineated, namely: (1) the mainstreaming of sound management of chemicals and waste; (2) industry involvement (both public and private partnerships and the use of economic instruments at the national and international levels); (3) new trust funds similar to the Multilateral Fund for implementation of the Montreal Protocol; and (4) either the establishment of a new GEF with a focus on sound management of chemicals and waste, expansion of the existing GEF with a chemicals focal area, or the establishment of a new GEF trust fund. The draft proposal will be refined based on input received at ICCM3, and presented to the thirteenth session of the UNEP Governing Council.

78 See UNEP/GCSS.XII/8 para. 5-11. See also UNEP/GCSS.XII/INF/7.

chemicals impedes financial assistance at greater levels.<sup>79</sup>

While, the lack of mandatory funding mechanisms creates uncertainty and instability within the conventions to assist parties in coming into or maintaining compliance, the “integrated approach,” if implemented, could make important strides to close the funding gap. However, further clarification of the three elements—mainstreaming, industry involvement, and external financing—is necessary.

### 3. Principles and Approaches

Several principles and approaches permeate international environmental law.<sup>80</sup> Besides ensuring that the Parties’ actions are consistent with these principles, the principles themselves do not impose any additional obligations or commitments. Rather, these principles set forth common standards to guide the application and future development of a treaty. Principles in MEAs vary in their formulation and often overlap with each other. Here are a set of key principles and approaches in chemicals and wastes MEAs: (a) prevention; (b) inter-generational equity; (c) cooperation among States, including the principle of common but differentiated responsibilities; the polluter pays principle; precaution; substitution; special needs of the most vulnerable; (d) a life-cycle approach; (e) elements of good governance, such as transparency, accountability, and public participation.

#### *a. Prevention*

A concept that deals with how harm to human health and the environment can be averted, prevention recognizes that the economic and social costs of avoiding damage and injury are nearly always less than the costs of repair, treatment, or compensation after they happen. A 2004 study estimated the cost of late action on polychlorinated biphenyls (PCBs) in the EU during the years of 1971-2018 would reach approximately 15 billion Euros.<sup>81</sup> The Swedish

Chemical Agency (KEMI) recently concluded that the socio-economic cost of fractures caused by high concentrations of cadmium in food, roughly speaking, amounts to approximately 643 million USD (4.2 billion SEK) per year.<sup>82</sup> Prevention is at the core of many of Agenda 21’s chapters on chemicals and waste management, as well as the chapter on protecting and promoting human health.<sup>83</sup> Several environmental agreements are informed by the concept of prevention.<sup>84</sup> The Basel Convention required prevention of and punishment for illegal shipments of hazardous waste, and the Ban Amendment (yet to enter into force) is designed to prevent shipments to non-OECD countries. The Stockholm Convention also contains preventative measures to reduce or eliminate the release of POPs, as well as procedures for including additional POPs.

However, no global agreement creates a minimum standard of data to be provided before a chemical is introduced into the market. While the Stockholm Convention requires that “[e]ach Party that has one or more regulatory and assessment schemes for new pesticides or new industrial chemicals shall take measures to regulate with the aim of preventing the production and use of new POPs,” this does not apply to all countries, is subject to interpretation, and applies only to POPs as defined by the criteria of Annex D of the Stockholm Convention.<sup>85</sup> Moreover, the Stockholm Convention provides “specific exemptions” to listed POPs for certain uses where suitable alternatives are not yet available, despite the substantial challenge of ensuring the sound management of POPs, and for certain “acceptable purposes” without any specified expiration.<sup>86</sup> These provisions try to balance competing social and environmental considerations.

#### *b. Inter-generational equity*

The concept of inter-generational equity recognizes that the

79 ICCM3, communication during contact group on finance.

80 For an analysis of principles and approaches in international chemicals management, see Daniel Magraw and Glenn Wisser, *Principles and Approaches of Sustainable Development and Chemicals Management for a Strategic Approach to International Chemicals Management* (SAICM) (2005).

81 Jenny von Bahr and Johanna Janson, *Cost of Late Action – the Case of PCB* (2004).

82 KEMI, Fractures for billions from cadmium in food (30 Oct. 2012), available at: <http://www.kemi.se/en/Content/News/Fractures-for-billions-from-cadmium-in-food/>.

83 See Agenda 21, chapters 6, 19 and 20.

84 See e.g. UNFCCC (art. 2) and Montreal Protocol on Substances that Deplete the Ozone Layer (“preventing further damage to the ozone layer...”).

85 Stockholm Convention, Art. 3(3).

86 See also “substitution” below.

present generation has an obligation to take into account the long-term impacts of its activities and to sustain the global environment for the benefit of future generations.<sup>87</sup>

The risks chemicals pose to future generations are still being discovered. Certain toxic chemicals, once released, persist in the environment for long periods of time, or forever, resulting in exposures for many generations. Scientific evidence shows very low levels of exposure to certain types of chemicals, endocrine disruptors, during critical stages of development to interfere with hormone signaling, resulting in an increased likelihood of a myriad of adverse effects including cancer, impaired reproductive systems, diabetes, obesity, and mental diseases. Other studies show that a parent's exposure to certain chemicals can be passed down to unborn generations through changes to genetic material, known as epigenetics.<sup>88</sup> Both reproductive and mutagenic toxicants increase the likelihood of adverse developmental effects in future generations, such as cancer, deformities, and reduced intellectual capacity. Exposure to toxic chemicals through stockpiled stores or through improperly disposed wastes can cause direct effects on the health of future generations. For these reasons, the principle of inter-generational equity is a necessary component of any chemicals management strategy.

The SAICM Dubai Declaration expresses determination to protect unborn children from chemical exposure.<sup>89</sup> The Stockholm Convention preamble clearly recognizes the health concerns on future generations from exposure to POPs. Neither the Basel nor the Rotterdam Convention makes explicit reference to considerations of inter-generational equity, although it may be argued that they are implicit.

At present, the current array of chemicals and wastes

MEAs are not designed to address all chemicals that give rise to inter-generational inequities. For example, persistent and bioaccumulative chemicals that are without clear evidence of adverse effects would not qualify for listing under the Stockholm Convention, although exposure to these chemicals by future generations is likely, as is our potential to better understand the toxic effects of chemicals over time.

#### *c. Polluter pays principle*

Environmental and social costs of goods and services that are not reflected in their market price are known as externalities. The polluter pays principle seeks to ensure that those who bear responsibility for pollution also bear the full environmental and social costs of their activities through the use of market and/or regulatory instruments to internalize these costs. Agenda 21 recommends: (1) the integration (internalization) of social and environmental costs into economic activities; and (2) the incorporation of environmental costs in the decisions of producers and consumers.<sup>90</sup>

Principle 16 of the Rio Declaration states that “[n]ational authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.”<sup>91</sup> The 2002 WSSD JPOI reaffirms the importance of implementing the polluter pays principle.<sup>92</sup>

Recent analyses by UNEP highlight the cost of inaction on human health and the environment, with large burdens falling on individuals and government budgets. These reports conclude that “the vast majority of human health costs of chemical production, consumption and disposal are not borne by chemical producers, or shared down the value-chain. Uncompensated harms to human health and the environment are market failures that need to be

<sup>87</sup> The concept is at the heart of the 1987 Brundtland Report, and later embraced by the 1992 Earth Summit, where it was captured by Principle 3 of the Rio Declaration (“The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations”), and in Chapter 19.2 of Agenda 21 (Stating that chemical contamination causes “grave damage to human health, genetic structures and reproductive outcomes”).

<sup>88</sup> Epigenetics refers to heritable changes in gene expression or cellular phenotype caused by mechanisms other than changes in the underlying DNA sequence, such as the addition of chemical groups to DNA (e.g. DNA methylation) and histone protein modification.

<sup>89</sup> Dubai Declaration, Para 24.

<sup>90</sup> Agenda 21, chapter 8.31. The second element also reflects the user pays principle.

<sup>91</sup> Rio Declaration, Principle 16.

<sup>92</sup> WSSD JPOI, para 15(b).

corrected.”<sup>93</sup> Some of these findings include:

- US\$ 236.3 billion in global environmental costs from anthropogenic activity producing volatile organic compounds (VOCs);
- The total overseas development assistance (ODA) to general healthcare for sub-Saharan Africa is exceeded by the cost of inaction related to current pesticide use (US\$ 6.2 billion), with projected costs rising to US\$ 90 billion for sub-Saharan Africa from 2015-2020;
- US \$ 108 billion in IQ-based lost economic productivity due to children’s exposures to lead in Africa, Latin America, and South East Asia; and
- US\$ 634 million per year in lost productivity of commercial fisheries in China due to acute water pollution.

Most of the chemicals responsible for these costs are not covered by global legally binding treaties agreements. The Stockholm Convention and the SAICM GPA make reference to Principle 16.<sup>94</sup> However, neither of these agreements, nor the Basel and Rotterdam Conventions, has operationalized the polluter pays principle.

#### *d. Precaution*

The precautionary principle provides that the absence of full scientific certainty shall not be used as a reason for postponing decisions where there is a risk of serious or irreversible harm.<sup>95</sup> Most international treaties consider action mandatory in cases of environmental threats and uncertainty. It may be seen as shifting the burden of scientific proof from those who support reducing or prohibiting an activity to those who wish to continue the activity. Agenda 21 calls for a precautionary approach in many chapters, including chapter 19 on chemicals. Precaution is warranted both during assessment of risks, and in the development of management strategies.

The Stockholm Convention repeatedly calls for the application of a precautionary approach.<sup>96</sup> Scientific uncertainty was not a significant issue in listing the first twelve chemicals under the Stockholm Convention, as these POPs were already heavily restricted, if not banned, by most developed countries and their dangers were already well-acknowledged. However, during negotiation of the Stockholm Convention text, considerable debate ensued around the inclusion of the precautionary principle in the objective of the convention, as well as in sections detailing procedures for listing additional POPs.<sup>97</sup>

The application of the precautionary approach is, as are all principles, in the hands of the Parties. If Parties wish to nominate chemicals for consideration as POPs, then they must submit indication of adverse effects, actual or potential, to human health or the environment. In doing so, chemicals that are persistent and bioaccumulative, even those to a high degree, cannot be listed under the Convention until toxicity or ecotoxicity data is available—despite the accumulation of potentially harmful substances in humans and the environment – which is in contradiction with the principle.<sup>98</sup>

A recent decision by the Stockholm Convention’s technical body, the POPs Review Committee (POPRC, see Section III(4)(c)), illustrates both the importance of the precautionary principle, and the continued challenge in ensuring its effective implementation. At the eighth meeting of the POPRC, the Committee decided to delay consideration of short-chain chlorinated paraffins for three additional years.<sup>99</sup> Despite six years of deliberation and agreement that this class of meets all four POPs criteria under the Convention, the Committee decided to delay further action until more data become available due to the opposition of a few countries, thereby blocking consensus. The POPRC decision allows the lack of full scientific certainty to further delay decisions, resulting in the continued use, production

<sup>93</sup> UNEP Cost of Inaction (2012); and UNEP Global Chemicals Outlook (2012).

<sup>94</sup> See Stockholm Convention, preamble; and SAICM GPA activity no. 182.

<sup>95</sup> See e.g. Rio Declaration, Principle 15.

<sup>96</sup> Stockholm Convention preamble, Article 1, Article 8 and Annex C.

<sup>97</sup> Earth Negotiations Bulletin, Summary of the Fifth Session of the Intergovernmental Negotiating Committee for an International Legally Binding Instrument for Implementing International Action on Certain Persistent Organic Pollutants, vol. 15 no. 54 (15 Dec. 2000).

<sup>98</sup> See Stockholm Convention, Annex D para (e).

<sup>99</sup> For the hazards and uses of short-chain chlorinated paraffins, see UNEP/POPS/POPRC.8/6.

and release of a highly-toxic, persistent chemical.

Proportionality in international law captures the notion that a regulation or other risk management strategy should correspond in amount and degree to the injury suffered or to be avoided.<sup>100</sup> An overly strict application of proportionality hinders, or may even render impossible, a precautionary approach, where the full magnitude of potential injuries may not be known. Thus, MEAs do not require formal cost-benefit balancing or strict application of proportionality. While the Stockholm Convention does ask for a balancing approach to numerous socio-economic factors in Annex F, including technical feasibility and cost, these are not strictly applied.

Under SAICM's "emerging policy issues," precautionary approaches to novel issues that have poorly characterized risks or budding evidence of harms can be explored. Some of these issues, for example manufactured nanomaterials, represent new technologies that often have unique properties whose interactions with humans and the environment are insufficiently understood. SAICM's non-binding nature provides a less-threatening forum to discuss the risks and precautionary measures for nanomaterials and other emerging or orphan issues.

#### *e. Substitution*

Chemicals with inherent hazardous properties should be avoided if less dangerous products or processes can be used instead. Efforts have been made to identify priority chemicals for substitution by downstream users.<sup>101</sup> Substitution can be enabled through the use of alternative chemicals, or through the use of alternative technologies that eliminate the use of a hazardous chemical. Chapter 19 of Agenda 21 recommends strengthening research on safe and safer chemicals and reducing risk by using safer and non-chemical technologies.<sup>102</sup>

<sup>100</sup> Proportionality in international law captures the notion that a regulation or other risk management strategy should correspond in amount and degree to the injury suffered or to be avoided. In other words, action must be necessary to protect human health and the environment, using the least-restrictive means to accomplish its objectives.

<sup>101</sup> For example, see the 378 substances identified in the SIN List by the International Chemical Secretariat (ChemSec), available at: [www.sinlist.org](http://www.sinlist.org)

<sup>102</sup> See Agenda 21, chapters 19.21, 19.44 and 19.49.

Substitution is a component of the Stockholm Convention. Chemicals proposed for elimination or restriction are evaluated for socio-economic considerations, including the technical feasibility, costs (including environmental and health costs), efficacy, risk, availability, and accessibility of alternatives.<sup>103</sup> Moreover, Parties are required to "encourage and/or undertake appropriate research [and] development" on POPs and, where relevant, to their alternatives and to candidate POPs.<sup>104</sup> The Rotterdam Convention also takes note of the importance of informing the public about alternatives.

The Stockholm Convention does provide for specific exemptions and acceptable purposes for production and uses of certain POPs. There is no deadline to cease production and use of POPs listed for restriction in Annex B with acceptable purposes, and specific exemptions for POPs listed for elimination or restriction (Annexes A and B) can be renewed every five years by consensus among the Parties. The absence of a firm deadline for POPs with specific exemptions, and no deadline for those POPs with an acceptable purpose, raises the question of how effectively the Stockholm Convention incentivizes the development and adoption of substitutes for these substances.

Moreover, risk-related information necessary for decisions on whether to ban or restrict the use of a chemical differs from the information to enable substitution by downstream users. The information provided to or generated by the Stockholm Convention's technical body, the POPs Review Committee or POPRC,<sup>105</sup> only facilitates the substitution of POPs nominated for restriction or elimination under the convention.

#### *f. Special needs of the most vulnerable*

Principle 6 of the Rio Declaration states that "[t]he special situation and needs of developing countries, particularly the least developed and those most environmentally

<sup>103</sup> Stockholm Convention Annex F(b).

<sup>104</sup> Stockholm Convention, Article 11.1.

<sup>105</sup> The Persistent Organic Pollutants Review Committee (POPRC) is a subsidiary body to the Stockholm Convention in charge of reviewing chemicals proposed for listing in Annexes A, B or C.

vulnerable, shall be given special priority.” Five groups are recognized as being particularly vulnerable: (1) women; (2) children;<sup>106</sup> (3) workers in certain occupational settings;<sup>107</sup> (4) indigenous peoples and local communities;<sup>108</sup> and (5) developing countries.<sup>109</sup>

Global chemicals and wastes agreements have provisions relating to vulnerable populations. For instance, the Basel Ban Amendment is designed to address the challenge of protecting vulnerable countries from unwanted hazardous waste imports. The Stockholm Convention was motivated by the evidence of high exposure to POPs by indigenous communities in the Arctic, and requires consultation and awareness-raising for women and children.<sup>110</sup> The high-level declaration of SAICM recognizes “... the need to make special efforts to protect those groups in society that are particularly vulnerable to risks from hazardous chemicals or are highly exposed to them.”<sup>111</sup> Unfortunately, current global agreements have little impact on reducing or eliminating the full spectrum of dangerous chemicals to which women, children, workers, and other vulnerable populations are exposed.

#### *g. Life-cycle approach*

A life-cycle approach to chemicals management brings a

106 Chapter 19.22 of Agenda 21 identifies women and children to be at “greatest risk.” Evidence shows that hazardous chemicals to which people are exposed through air, water, food and products are found in breast milk, blood and can cross the placenta. During critical developmental windows, children *in utero* depend entirely on the environmental health of their mother before birth. After birth, children are impacted by the stewardship of previous generations, and the choices made by their caregivers regarding the nourishment they receive and the products to which they are exposed. Unfortunately, the lack of information on chemicals in products can prevent other businesses, women, and other decision-makers from making informed decisions about the foods they eat or the products they buy.

107 See e.g. International Labour Organisation Convention concerning Safety in the use of Chemicals at Work (no. 170).

108 Hazardous chemicals may bioaccumulate and biomagnify in traditional food sources of indigenous peoples and local communities, such as fish and marine mammals. Other chemicals may have adverse consequences for biodiversity on which indigenous peoples and local communities depend. Communities in the arctic are at much greater risk from persistent and bioaccumulative chemicals, given the northerly migration and accumulation of these chemicals.

109 Chapter 19 of Agenda 21 repeatedly acknowledges the vulnerability of those in less-developed countries. To a greater extent than industrialized countries, less-developed countries lack necessary prevention measures, awareness, and enforcement procedures to protect from the toxic chemicals. Deadly practices from the dismantling of ships, the recovery of metals from electronic waste and chemicals used in manufacturing processes have been well documented. Illegal trade in hazardous goods continues to expose residents in less-developed countries to hazardous chemicals. See e.g. Chuckwuka N. Eze, *The Proba Koala Incident in Abidjan, Code d’Ivoire: A critique of the Basel Convention Compliance Mechanism* (2008).

110 See Stockholm Convention Articles 7 and 10.

111 Dubai Declaration, para 24 (2006).

holistic, cradle-to-grave (or cradle-to-cradle) perspective. A full life-cycle approach is a necessary complement to complete and accurate information on the hazards of individual chemicals, as well as mixtures of chemicals, in attempting to assess potential risks presented by hazardous chemicals. The full life-cycle of a chemical includes: research and development; extracting and processing raw materials; manufacturing, transportation and distribution; use, re-use, and maintenance; and recycling or final disposal. This approach uncovers stages of the chemical life-cycle that may otherwise fall through the cracks under existing, uncoordinated schemes. There are, however, certain chemicals – such as toxic chemicals that persist for long periods of time – for which it is difficult, if not impossible, to guarantee the sound management throughout their complete life-cycle.

Chapters 19 and 20 of Agenda 21 encouraged governments in cooperation with others to adopt policies and undertake activities that take into account the entire life-cycle of chemicals and a cradle-to-grave approach to the management of hazardous wastes. Paragraph 23 of the 2002 WSSD JPOI included the life-cycle approach as a key tool to achieving the 2020 Goal of minimizing significant adverse effects on human health and the environment.

The three legally binding global conventions apply at different stages of a chemical’s life-cycle to varying degrees, and chemicals listed under one convention are not necessarily listed in other conventions. In principle, the Stockholm Convention governs the full life-cycle of listed POPs, regulating intentional and unintentional production, use and disposal of POPs, and the management of POPs-containing stockpiles and waste listed under the convention.<sup>112</sup> However, at the fourth meeting of the COP (COP4) Parties adopted a decision to allow the recycling of products containing two newly listed POPs, polybrominated diphenyl ethers (PBDEs), thereby prolonging exposure as

112 See “life-cycle approach” discussion below, regarding the specific exemption for recycling of PBDE-containing products as to whether the implementation of Stockholm has been truly a life-cycle approach.

these chemicals are reintroduced in recycled products.<sup>113</sup>

One pillar of the Basel Convention—environmentally sound management of wastes—calls for the minimization of hazardous waste generation. The Basel Convention has been working to minimize the use of hazardous substances in electrical and electronic products since 2002, but the current provisions of the Convention have very limited powers to do so.<sup>114</sup> In a 2011 workshop on hazardous substances within the life-cycle of electrical and electronic products, the Executive Secretary of the secretariat for the Basel Convention “emphasized that a weak link in the life-cycle approach was the up-stream level where efforts have to be further strengthened towards reducing the harmful substances in [electrical and electronic equipment].”<sup>115</sup> At the national level, relevant agencies, departments or ministries for waste are not integrated with counterparts working on environmentally sound designs, impeding the development of products and processes that are benign by design.

Participants at the workshop recognized the importance of SAICM in playing a coordinating role, and made several recommendations, including: (1) a broad set of stakeholders identify tools and best practices that advance design for hazardous chemical reduction, elimination, and substitution; (2) international agencies should compile and communicate lists of chemicals of concern to human health or the environment; and (3) governments should consider adopting policy instruments, and intergovernmental organizations should promote actions that support hazardous chemical reduction, elimination, and substitution in electrical and electronic products.<sup>116</sup>

The Rotterdam Convention applies primarily during international trade in products. While the Rotterdam

Convention does ask Parties to provide technical assistance and training in the development of capacity to manage chemicals throughout their life-cycle, it merely recommends that Parties provide technical assistance.<sup>117</sup>

#### *h. Good governance*

Good governance is a concept that reflects the importance of transparent, accountable, and honest decision-making and oversight at any level of government for the public interest. Good governance implies that civil society has a right to participation and information, fair treatment by States and international organizations, and that business enterprises should be subject to effective accountability.

International instruments recognize the importance of good governance.<sup>118</sup> The Rio declaration states in its Principle 10 that environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual should have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States should facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, should be provided.<sup>119</sup>

While the global chemicals treaties do not contain explicit mention of “good governance,” in their calls for transparency and participatory chemicals management processes, the chemicals treaties implicitly rely on good governance practices among their Parties. The Stockholm Convention includes requirements that each Party shall,

<sup>113</sup> Stockholm Convention, decisions SC-4/14 and SC-4/18.

<sup>114</sup> Basel has developed partnerships to address used or end-of-life mobile phones (Mobile Phone Partnership Initiative -MPPi) and computers (Partnership for Action on Computing Equipment - PACE), and technical guidelines and two region-wide programs in Africa and Asia.

<sup>115</sup> Report of the International workshop on hazardous substances within the life-cycle of electrical and electronic products, held in Vienna, from 29 to 31 March 2011, SAICM/OEWG.1/INF/7, p 4 (2011), available at: [http://www.saicm.org/documents/OEWG/Meeting%20documents/OEWG%20INF%207\\_Report%20e-waste%20workshop.pdf](http://www.saicm.org/documents/OEWG/Meeting%20documents/OEWG%20INF%207_Report%20e-waste%20workshop.pdf).

<sup>116</sup> Report of the International workshop on hazardous substances within the life-cycle of electrical and electronic products, held in Vienna, from 29 to 31 March 2011, SAICM/OEWG.1/INF/7, pp 14-15 (2011), available at: [http://www.saicm.org/documents/OEWG/Meeting%20documents/OEWG%20INF%207\\_Report%20e-waste%20workshop.pdf](http://www.saicm.org/documents/OEWG/Meeting%20documents/OEWG%20INF%207_Report%20e-waste%20workshop.pdf).

<sup>117</sup> Rotterdam Convention, Article 16.

<sup>118</sup> See e.g. WSSD, Johannesburg Plan of Implementation para. 4 (2002) (“Good governance within each country and at the international level is essential for sustainable development. At the domestic level, sound environmental, social and economic policies, democratic institutions responsive to the needs of the people, the rule of law, anti-corruption measures, gender equality and an enabling environment for investment are the basis for sustainable development.”).

<sup>119</sup> See also the Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters adopted by the Governing Council of the United Nations Environment Programme in decision SS.XI/5, part A of 26 February 2010.

within their capabilities, promote and facilitate provision to the public of all available information on persistent organic pollutants and ensure that the public has access to this information and that the information is kept up-to-date.<sup>120</sup> It also states that the Parties of the Stockholm Convention shall, within their capabilities, promote and facilitate public participation in addressing persistent organic pollutants, including their health and environmental effects, and in developing adequate responses including opportunities for providing input at the national level regarding implementation of the Convention.<sup>121</sup> The Basel and Rotterdam Conventions also contain provisions regarding the responsibility of Parties to promote the dissemination of information regarding the hazardous substances and wastes, with an eye towards transparency and participation.<sup>122</sup>

Under SAICM, signatories to the Dubai Declaration “will work towards effective and efficient governance of chemicals management by means of transparency, public participation and accountability involving all sectors of society, in particular striving for the equal participation of women in chemicals management.”<sup>123</sup> A unique feature of SAICM is its participatory structure, allowing greater input by non-state stakeholders, although governmental participants retain control of most key decisions under its Rules of Procedure.

*i. Cooperation among States, including CBDR, and partnerships w/ non-state actors*

The general duty of States to cooperate is a premise of international law that applies at the national, regional, and global levels. Specific agreements may elaborate upon the general duty, regarding the topics to which they apply. Principle 7 of the Rio Declaration links the principle of “common but differentiated responsibilities” (CBDR) to the

duty to cooperate.<sup>124</sup> Reference to the CBDR principle is found throughout international environmental agreements negotiated in the past two decades.<sup>125</sup>

CBDR recognizes the different contributions States may have made to creating (and possibly deriving some benefit from) the environmental problem in question, and the varying technical and financial abilities of States to help the global community to prevent or otherwise address the problem. Rooted in equity, the principle recognizes that varying standards and obligations may be appropriate for different countries, encouraging full participation and implementation in pursuit of effectively addressing issues of global concern.

Among the three legally binding global chemical agreements, only the Stockholm Convention refers to Principle 7 of the Rio Declaration.<sup>126</sup> However, many of the provisions found in the chemicals and wastes MEAs are rooted in the concept of CBDR. Provisions for technical assistance, the transfer of technology, and financial assistance flow directly from the concept of CBDR.<sup>127</sup> The prior informed consent requirements of Basel and Rotterdam Conventions are designed to protect developing countries from illegal trafficking and otherwise unauthorized shipment of wastes and pesticides, recognizing these countries are more vulnerable to the export of dangerous substances. These provisions aim to foster cooperation to prevent harm to human health or the environment, in recognition of the principle of CBDR.

However, the continued transfer of bulk chemicals manufacturing capacity from industrialized to emerging economies challenges earlier distinctions between industrialized and developing countries (see Section II).

124 See Rio Declaration, Principle 7: “States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth’s ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit to sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.”

125 *Id.* See also WSSD JPOI, paras 2 and 23(a) (2002); and SAICM OPS, para 19 (2006).

126 Stockholm Convention, preamble.

127 See previous discussion of these topics above. The SAICM Overarching Policy Strategy is the only chemicals agreement to make specific reference to the concept of CBDR (invoking Principle 7) in the context of financial considerations.

120 See Stockholm Convention on Persistent Organic Pollutants (POPs), Article 10.

121 See Stockholm Convention on Persistent Organic Pollutants (POPs), Article 10.

122 See e.g. Basel Convention, Article 4(2)(h) and Rotterdam Convention, Article 15(2).

123 Dubai Declaration, para 18 (2006).

Interestingly, the Rotterdam Convention distinguishes Parties based on their status as an importer or exporter of a chemical, instead of an economic indicator of development status.

#### 4. Institutions

Institutions are essential to the smooth functioning of international agreements, providing support for implementation and further development to achieve objectives. Institutional arrangements vary both in terms of their structure and function. In environmental agreements, typical institutions include: (1) a governing body; (2) a secretariat; and (3) subsidiary bodies for technical or scientific advice, implementation, and finance. Institutional arrangements specifically for implementation are discussed separately below.

##### *a. Governing body*

A governing body is central to international environmental agreements and its functions are generally defined in the convention. This institution may be referred to as the “meeting of the parties,” “conference of the parties,” or “executive body.” This body provides a space for negotiation towards the development and implementation of agreements, maintaining the attention of both governments and the broader international community.

The authority of the governing body is limited to specific functions. These functions include: approving rules of procedure and financial rules; developing methodologies for reporting; reviewing national reports; establishing subsidiary bodies; making recommendations; reviewing the adequacy of measures undertaken to meet the agreement’s objective; authorizing additional negotiations; and adopting amendments or additional agreements such as a protocol.

The Basel, Rotterdam, and Stockholm Conventions each have as the governing body a conference of the parties (COP), consisting of countries that have ratified or otherwise accepted obligations under the Convention. Accredited intergovernmental and non-governmental organizations (IGOs and NGOs, respectively) are allowed to intervene and

observe proceedings at COPs. The International Conference on Chemicals Management (ICCM) serves this role in the context of SAICM. The ICCM provides greater participatory rights to IGOs and NGOs relative to the procedures of the Basel, Rotterdam, and Stockholm Conventions, although final decision-making authority rests with country Participants.

##### *b. Secretariat*

Secretariats are generally established by the Convention. The function of a secretariat varies widely, ranging from administrative tasks to more substantive functions. These substantive functions may include important roles such as the preparation of reports, monitoring compliance with treaty obligations, and providing advice to Parties. Administrative tasks range from arranging and facilitating meetings under the agreement, to transmitting reports, to coordinating with other international stakeholders.

UNEP performs the secretariat functions for the legally binding Basel and Stockholm Conventions, and jointly performs this function with the FAO under the Rotterdam Convention. For SAICM, UNEP and the World Health Organization (WHO) were expected to “take lead roles in the secretariat in their respective areas of expertise in relation to the Strategic Approach, with UNEP assuming overall administrative responsibility.”<sup>128</sup> A new strategy was considered at ICCM3 to increase the role of the health sector in SAICM.<sup>129</sup> Widely supported, this proposal was unfortunately overshadowed by the revelation at ICCM3 that WHO would withdraw from an understaffed SAICM Secretariat one month after the conclusion of ICCM3.<sup>130</sup>

##### *c. Subsidiary body for scientific and technical advice*

Scientific bodies are often established under international agreements to review evidence and provide technical advice or recommendations. The role, composition, and function

<sup>128</sup> SAICM OPS para. 29.

<sup>129</sup> SAICM/ICCM.3/20

<sup>130</sup> Earth Negotiations Bulletin, Summary of the International Conference on Chemicals Management: 17-21 September 2012, vol. 15 no. 196 (24 Sept. 2012).

of scientific bodies can vary widely. Scientific bodies may be *ad hoc* or permanent, and may operate under the direction of the governing body as a subsidiary body, or independently. Because the mandate of a scientific body can necessitate considerable breadth of expertise, ancillary bodies may be created to provide expertise on more narrowly defined issues. Scientific bodies may be composed of either formally nominated independent experts or Party representatives, similar to other meetings under the agreement. In the case of the former, the nomination and selection may be made by the COP or through another body.

The Stockholm Convention and the Rotterdam Convention each have a “committee” to review technical information and provide input to the COP for further action, the POPs Review Committee (POPRC) and Chemical Review Committee (CRC), respectively. However, the POPRC’s expertise centers on chemical properties, not socio-economic considerations or the efficacy of substitutes. The Rotterdam CRC is focused more on regulatory requirements rather than technical criteria. The Basel Convention’s Open-ended Working Group (OEWG) is mandated to “advise the Conference of the Parties on issues relating to policy, technical, scientific...and other aspects of the implementation of the Convention... including identification of the specific needs of different regions and sub-regions for training and technology transfer.”<sup>131</sup> In this role, the Basel OEWG serves as more of a political than technical body. Because none of these bodies are decision-making bodies, evidence-based recommendations by these bodies must be approved by the COP, which may decide otherwise for political or other reasons.

#### *d. Financial mechanism*

Financial mechanisms, including trust funds, may be governed by an executive body. This executive body is typically a subsidiary body of the governing body and is typically composed of members representing developed and developing countries. Only the Stockholm Convention has

a mandatory financial mechanism, and it does not have an executive body.

## 5. Implementation Mechanisms

To ensure that Parties meet their respective obligations under the convention, international agreements often use various procedures for implementation. These may consist of a combination of reporting requirements, review processes, financial and technical assistance, dispute settlement, and non-compliance procedures. This section explores implementation bodies and non-compliance procedures. Implementation bodies may be established under direction of the governing body. Like scientific bodies, the role, composition, and function of implementation bodies can vary widely.

### *a. Subsidiary body for implementation*

The principle function of a subsidiary institution or body for implementation is to review reports submitted by parties and determine the overall effectiveness of the Parties’ progress. In addition, the implementation body may give advice to the COP on financial matters to help implement commitments, including advice to the COP on guidance to the financial mechanism. Questions of non-compliance may be addressed by the subsidiary body for implementation, or by a separate body.

Chemical and wastes MEAs provide general obligations for reporting on the implementation of obligations under the convention. The Stockholm Convention requires reports by Parties on measures taken and their effectiveness, as well as statistical information regarding production, import, and export of chemicals listed for elimination or restriction.<sup>132</sup> Neither Rotterdam nor the Stockholm Conventions have subsidiary bodies for implementation.

The Basel OEWG assists “Parties in developing and keeping under continuous review the implementation of the Convention’s work plan, specific operational policies and decisions taken by the Conference of the Parties for the

<sup>131</sup> Basel Convention decision VI/36 (Institutional arrangements).

<sup>132</sup> Stockholm Convention Article 15.

implementation of the Convention.<sup>133</sup> The 2012-2013 Basel Convention Working Group Review is focused on: national reporting; national legislation; illegal trafficking; insurance, bond, and guarantee; and a control system to improve the implementation.<sup>134</sup>

#### *b. Compliance procedures*

The role of a compliance mechanism within a chemical framework convention is to assist Parties in complying obligations under the convention, and to facilitate in the implementation of requirements under the convention.<sup>135</sup> MEAs widely regarded as the most effective also impose meaningful penalties for noncompliance in appropriate circumstances, such as restrictions on the Party's ability to trade in products covered by the convention. Compliance mechanisms within chemical frameworks enable Parties to seek assistance if they are unable to meet their obligations, and allow affected third parties to bring issues of non-compliance to the attention of the COP.<sup>136</sup>

The COPs to the Basel, Rotterdam, and Stockholm Conventions acknowledge the importance of effective compliance mechanisms within the frameworks; however, not all the conventions have developed a compliance mechanism. When a compliance mechanism is not established before a Convention enters into force, its development afterwards can prove very challenging. For example, under the Stockholm Convention, the nature of the relationship between financial resources and compliance impeded the adoption of a compliance mechanism.

In 2002, the Basel Convention developed and adopted the Mechanism for Promoting Implementation and Compliance.<sup>137</sup> The mechanism is also intended to facilitate and assist in compliance. The mandate for the mechanism states that it shall be non-confrontational, transparent, cost-

effective, and preventive in nature, simple, flexible, non-binding, and oriented in the direction of helping parties to implement the provisions of the Convention.<sup>138</sup> The Committee offers non-binding advice, and facilitates meeting compliance. Reflecting its non-binding nature, the Basel compliance mechanism does not include any language regarding penalties or enforcement.

A proposed and un-adopted mechanism for the Stockholm Convention includes a Compliance Committee to receive submissions by Parties unable to comply, affected Parties, and the secretariat. The Committee would be responsible for providing advice and non-binding recommendations to facilitate bringing the non-compliant Parties back into compliance. In cases of repeated non-compliance, a party's rights and privileges under the Convention may be suspended.<sup>139</sup> Unlike the Basel Convention's compliance procedures, the Stockholm and Rotterdam mechanisms propose suspension of access to benefits under the Convention or other acts by the COP to force compliance.

Very similar to the most recent Stockholm Convention proposal, the Rotterdam Convention has proposed procedures and mechanisms on compliance, also un-adopted by the respective COP.<sup>140</sup> The Rotterdam Convention has made strides in facilitating compliance by creating reporting requirements, which helps to enable the determination of whether Parties are in non-compliance. The Convention initially did not stipulate any reporting obligations. After a revision by the fourth meeting of the Rotterdam COP in 2008, Articles 10 and 11 now determine that Parties must provide the secretariat with specific information on certain chemicals.<sup>141</sup>

<sup>138</sup> Basel Convention decisions VI/12, para 2.

<sup>139</sup> Stockholm Convention, COP 4, SC-4/33, [[Non-compliance][Compliance] procedures under Article 17 of the Stockholm Convention, para 27(e).

<sup>140</sup> See Rotterdam Convention, RC-5/8 Procedures and mechanisms on compliance with the Rotterdam Convention.

<sup>141</sup> Nils Goeteyn and Frank Maes, Compliance Mechanisms in Multilateral Environmental Agreements: An Effective Way to Improve Compliance? 10 Chinese J. Int'l. L. (2011), 791-826, at 809, (citing UNEP, Compliance Mechanisms under Selected Multilateral Environmental Agreements, Nairobi (2006) 62. See also Report of the Conference of the Parties to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade on the work of its fourth meeting, UNEP/FAO/RC/COP.4/24).

<sup>133</sup> Basel Convention decision VI/36 (Institutional arrangements).

<sup>134</sup> Basel Convention, Work Programme (2012-2013), available at: <http://www.basel.int/TheConvention/ImplementationComplianceCommittee/WorkProgramme/tabid/2288/Default.aspx>.

<sup>135</sup> See e.g. Stockholm Convention, article 17; Rotterdam Convention, article 17; Basel Convention decision VI/12; and Rotterdam Convention decision 5/8, para 1. See also: Basel Convention, The Mechanism for Promoting Implementation and Compliance, para 1.

<sup>136</sup> *Supra* note 1 para 17, note 2 para 17, note 3 para 9.

<sup>137</sup> Basel Convention decisions VI/12 and VI/13.

The absence of a compliance mechanism in both the Rotterdam and Stockholm Conventions is a critical barrier to both the effective and efficient implementation of these conventions. It also illustrates the resistance of Parties to measures to promote accountability under international treaties, whether it is for pledged contributions or to take preventative action. Without an effective compliance mechanism, adjustments cannot easily be made to ensure objectives of a convention are met. Some developed countries argue that a compliance mechanism would better enable the mobilization of financial resources, while simultaneously resisting compliance procedures relating to the financial obligations themselves. Moreover, without a compliance mechanism, the need for the transfer of technology and technical assistance may go unnoticed.

## 6. Decision-making Processes

Decisions by the governing body of an agreement need not be made by consensus, as a super majority may be sufficient depending upon the rules of procedure. Indeed, clear procedures for non-consensus decision making are a common characteristic of effective MEAs. When consensus is required, the resistance of any one country can obstruct global obligations, despite the willingness of all other countries to accept the obligation. Another reason for the relative success of the Montreal Protocol is where a two-thirds majority is in favor of a decision, and a majority of both industrialized and developing countries are present and voting, then that decision cannot be blocked by a few countries voting against.<sup>142</sup>

New commitments under an agreement will require either an amendment to the convention or the creation of a new instrument, such as a protocol. Agreements will typically provide a means of doing so, requiring a certain number of Parties to agree to the modification. Parties are not always obligated to abide by amended provisions. This is the case with the Stockholm Convention, which allows non-consensus decision-making by the Parties on the listing

of new POPs. Where consensus is required, further development of legally binding chemicals treaties has been stalled, as recently illustrated by under Rotterdam Convention in the failure to list chrysotile asbestos under the Convention. However, even in the case of agreements without legally binding obligations, consensus can be difficult, as illustrated by the inability to approve new emerging policy issues at the SAICM Open-Ended Working Group in 2011.

## B. Challenges in Achieving the 2020 Goal

The above analysis of core elements of individual global chemical agreements reaches the same conclusion that motivated SAICM, namely that “the existing international policy framework for chemicals is not adequate and needs to be further strengthened.”<sup>143</sup> This understatement emphasizes the enormity of the challenge, the significance of the risks presented and the limitations of the existing global chemicals instruments.

SAICM was developed to help close the gap between what is needed to protect human health and the environment from chemicals and the measures available under existing legally binding instruments. However, six years later and only eight years from the 2020 Goal, the international policy framework remains inadequate and unlikely to achieve this important objective.

In some ways, the challenges are growing. Chemical production, use, and disposal are on the rise, and spreading quickly in the developing world. Meanwhile, many countries and other stakeholders express frustration with international environmental agreements and the political processes from which they spring. Many observers doubt whether there is a strong commitment to bold action, but chemicals policy has improved in a number of ways, albeit with evident insufficiency. Rather than excusing inaction, these realities warrant renewed focus on the profound risks of chemicals to present and future generations. Proposals have been made to strengthen the global framework for

<sup>142</sup> Montreal Protocol, Article 2, 9(c).

<sup>143</sup> SAICM OPS para 6(a).

chemicals management.<sup>144</sup> Below we identify five challenges that must be overcome to ensure the sound management of chemicals by 2020.

### 1. Supporting Implementation

A major driving force for the establishment of SAICM was “the recognition of the growing gaps between the capacities of different countries to manage chemicals safely, the need to improve synergies between existing instruments and processes and the growing sense of urgency regarding the need to assess and manage chemicals more effectively.”<sup>145</sup> Capacity at the national level remains sorely needed for compliance with international obligations and for bottom-up leadership towards global sustainability.

Laws and institutions for the sound management of chemicals at the national level require personnel, implementation, enforcement, and compliance procedures. The SAICM QSP seeks in part to support initial capacity building and implementation activities in the Global South. In addition, UNEP’s LIRA Guidance initiative, currently in a test phase, seeks to enable Parties to comply with global obligations by assisting governments in building legislation and sustainable institutions at the national level, including measures for financing certain costs.<sup>146</sup>

The success of international measures to ensure chemical safety depends upon the implementation of obligations at the national level. Compliance procedures, which, among many other things, can provide opportunities for the transfer of technology, technical assistance, and other forms of assistance to help Parties comply with obligations under treaties, are notably absent from the Stockholm and Rotterdam Conventions. Improved monitoring, verification, and enforcement mechanisms are needed, especially under the Basel Convention, which does have a compliance

mechanism in place. National reporting is important for all environmental agreements. It is, however, especially important for evaluating the effectiveness of SAICM, whose non-binding structure is a challenge for compliance mechanisms, which depend on concrete obligations. Where the opportunities for technical and financial assistance presented by compliance procedures provide less of an incentive to industrialized countries, penalties may better ensure compliance by these countries with international obligations.

Noting the importance of good governance for promoting transparency, accountability and effectiveness, existing and proposed compliance measures do not enable non-Parties or non-State actors to submit information regarding compliance to the relevant body. The Compliance Committee of the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) recognizes the importance of public participation in the review of compliance by Parties with their international obligations. The Aarhus Convention’s procedures allow submissions to the Compliance Committee by non-Parties and non-State actors.

### 2. Ensuring Sustainable Finance

Financial resources, in particular the internalization of costs by the chemical industry, are vital to achieving the 2020 Goal. Sadly, without adequate financial resources, present and future generations are destined to pay a high price in terms of harm to human health and the environment, a likely impediment in efforts towards poverty reduction. Without adequate measures for chemical safety, these costs will continue to mount.

The polluter pays principle, a pragmatic approach to containing, if not lowering, the cost of sound chemicals management, has not been implemented by most Parties and stakeholders to the global agreements on chemicals and wastes. The global chemical industry is among the world’s largest industries, consuming tremendous amounts of water and electricity, as well as raw materials in the synthesis of

<sup>144</sup> See e.g. the Swedish Government’s “8 Actions in 8 Years” initiative and *Declaration of Intent – towards the 2020 goal for Sound Management of Chemicals*, available at: <http://www.sweden.gov.se/content/1/c6/19/24/08/77cbf68a.pdf>

<sup>145</sup> SAICM OPS, Statement of Needs, para 3 (2006).

<sup>146</sup> Formally the “UNEP Guidance on the Development of Legal and Institutional Infrastructures and Measures for Recovering Costs of National Administration,” the LIRA Guidance aims to provide support to national chemicals management policymakers to strengthen national legislation and institutional set-ups for achieving sound management of chemicals, including measures for financing necessary administrative support.

various products.<sup>147</sup> The production cycle includes manufacturers, formulators, and downstream users of chemicals. Given the scale of the chemical industry, the internalization of costs along the chemical production cycle, e.g. through measures for pollution prevention and sound chemical management, is critical to global efforts to reduce the risks of hazardous chemicals. Incorporation of these costs in the decisions of downstream businesses and consumers is consistent with Agenda 21.

Examples of incentives to use safer alternatives by internalizing costs include, for example, a tax by the Danish government on PVC and certain phthalates. Mainstreaming capacity building for sound chemicals management through national development strategies also holds promise, although this may require fresh thinking on the part of donors and recipients. Assistance to developing countries for the development of effective national chemicals regimes through UNEP's LIRA Guidance initiative provides an opportunity for the internalization of some costs.

Working in conjunction with compliance mechanisms, reliable contributions by industrialized countries to a mandatory financial mechanism encourage developing countries to assume ambitious and verifiable commitments to take positive actions on chemicals. Adequate financial resources provide industrialized countries with the greater likelihood of a level playing field globally—reducing the risk of “free-riding” and enabling the adoption of safer technologies. While Parties are not obliged to create a mandatory financial mechanism, without such a mechanism the potential effectiveness of an environmental agreement is undermined.

At the moment, financial resources for implementing the chemicals and waste agreements are inadequate and unpredictable. For the Stockholm Convention, financing from the GEF plus co-financing since 2001 amounted to US \$1.1 billion. To put this in perspective, an estimated US \$4 billion will be needed for the period 2010-2014. For SAICM, QSP contributions total just over US \$30 million. Given the

enormous range of activities in the GPA, this represents a small down payment on the costs of achieving the 2020 Goal.

Unpredictable resources, such as the voluntary funds for SAICM, Basel, and Rotterdam implementation, make long-term strategies difficult to develop and implement. Funding provided to the Basel Convention is less than half of what was promised. SAICM's non-binding structure presents a challenge for predictable resources, because, to date, only legally binding instruments have mandatory financial mechanisms. Moreover, the current mandate of SAICM, through 2020, raises the question of the availability of financial resources beyond 2020 and how to ensure that meaningful activities continue as this date approaches. The UNEP Executive Director's integrated approach to chemicals financing could help to resolve some of these issues, although the final details of this plan are not yet available and its implementation will depend on the commitment of governments.

### 3. Filling Global Information Gaps

Ideally, international policy on chemicals will be based on full information about the health and environmental properties of all chemicals. This is a critical component of enabling sound management at all levels, including substitution of hazardous substances. At present, the global legal framework does not require this information to be generated or made available, nor does it encourage its generation and dissemination. By-and-large, the current system continues to presume the innocence of a substantial number of chemicals. In fact, the data gaps are so expansive that it would likely take decades to generate full information using the best existing scientific methods. The problem is further compounded by the complexity of chemicals in international commerce, particularly for mixtures and articles. Under SAICM, some important progress is being made on urgent issues such as lead in paint, hazardous substances in the lifecycle of electronic products, and chemicals in products. These efforts illustrate the positive potential for cooperative work under a non-binding

<sup>147</sup> See American Chemistry Council, *The Business of Chemistry* (2010).

agreement to highlight problems and suggest improvements.

Several countries are coming to recognize the fundamental problems created by the dearth of basic information on the environmental and health properties of chemicals in commerce. Efforts by the European Union to require some such information, and to make it more publicly available, are a welcome development. Some countries are already adopting comparable requirements, and others are preparing to make use of the information as it becomes available. Despite its non-binding nature, SAICM could be a vehicle for facilitating the exchange of information from a variety of sources. For example, the SAICM Global Plan of Action includes implementation of the Globally Harmonized System of Classification and Labeling of Chemicals. However, there is no global collection point or portal to facilitate access to basic health and safety information on all chemicals that could build on national or regional efforts from around the world by those in a position to contribute. Legitimate confidential business information could be protected, while also ensuring transparency and public access to health and safety information.

While the scope of SAICM is very broad, it does not have a strong mechanism for assessing progress on the 2020 Goal. In contrast, the Scientific Assessment Panel under the Montreal Protocol produces a report every four years documenting the state of the ozone layer, based on contributions from an ad hoc steering group of international researchers.<sup>148</sup> Similarly, the Intergovernmental Panel on Climate Change (IPCC) provides scientific assessment of the dangers presented by the continued emission of greenhouse gases.<sup>149</sup> If SAICM or another participatory platform was charged with providing credible scientific information on progress toward sound management of chemicals, with timely updates and without using the lack of full scientific certainty for delay, it could serve as a powerful barometer of the overall effectiveness of activities

towards chemical safety.

#### 4. Expanding the Narrow Scope

The scope of the three legally binding instruments is, by design, limited to some aspects of a narrow subset of chemicals that threaten human health and the environment. Several tens of thousands of chemicals are in commerce. These existing treaties were not intended to address the full spectrum of chemicals that threaten human health and the environment. From a full life-cycle perspective, an even smaller sliver of chemicals are captured by the Stockholm Convention, the only legally binding instrument with explicit attention to the full life-cycle of chemicals. Although the Basel Convention does provide some protection from transboundary movement of waste, its provisions are not sufficient to automatically restrict the production and use of chemicals which meet the criteria set forth in the convention for hazardous waste and other waste.

SAICM has an extensive scope with many aspirations, objectives and activities listed under its three core documents, but no legally binding obligations to ensure that States and other stakeholders take action on the spectrum of aforementioned “orphan issues”. In considering future activities under SAICM, both financial resources and institutional arrangements present obstacles in developing and implementing projects for unaddressed issues.

To the extent that chemicals of global concern are not addressed through global, legally binding obligations, safer substitutes can remain at a competitive disadvantage if they are more expensive; and continued production and use of the hazardous substance prevents complete realization of economies of scale for the safer alternative(s). Expanding the scope of chemicals covered throughout their life-cycle under legally binding instruments and requiring adequate information for all chemicals could help to avoid the potential entry of substitutes with similar or different adverse effects, i.e. regrettable substitution.

<sup>148</sup> Ozone Secretariat, Scientific Assessment Panel, webpage, [http://ozone.unep.org/Assessment\\_Panels/SAP/](http://ozone.unep.org/Assessment_Panels/SAP/).

<sup>149</sup> IPCC, <http://www.ipcc.ch/>.

## 5. Avoiding a Treaty Thicket

International law on chemicals, indeed international environmental law in general, is commonly characterized by long years of negotiation, adoption, ratification, entry into force, and implementation between an initial mandate and the eventual functioning of the instrument. The UNEP Governing Council mandate to begin negotiations on the Stockholm Convention in 1995 culminated in adoption of the Convention in 2001, entry into force in 2004, and the first amendment to list additional POPs in 2009, a span of fourteen years.

Legally binding agreements on chemicals and waste tend to be tightly constrained, to simplify the task of reaching agreement, and, in theory, their costs. Each new agreement imposes new obligations, and necessitates a set of procedural requirements that is likely to increase the challenge of coordinating efforts, and potentially costs, with or without *post hoc* efforts to build a coherent international regime for chemical safety. As a result, there are practical limits to the number of narrowly defined agreements that can be successfully envisioned, negotiated, and implemented.

The mercury negotiations together with the three existing MEAs and SAICM created a saturated schedule in 2011, with eight important negotiations and meetings lasting about a week each, not including the substantial amounts of time and resources required to prepare for and travel to the meetings.<sup>150</sup> The development of narrow instruments for chemicals and wastes is especially challenging for developing countries with limited resources to facilitate coordination and information exchange at the national level. Even assuming the clustering of relevant meetings and the entry into force of the mercury treaty, it does not appear feasible to continue negotiating additional legally binding instruments on narrow but urgent topics, such as lead or cadmium. Others are wary of the high costs, estimated at US \$20 million, for negotiations towards a

treaty on just one substance, mercury.<sup>151</sup> This proliferation of international environmental agreements, and the corresponding burdens, have given rise to the notion of “treaty fatigue,” a sentiment that inhibits countries, intergovernmental institutions, and many interested others for pursuing new instruments. And yet, the existing suite of agreements appears to fall short of what is needed to address the present and foreseeable challenges.

While these are significant, system-wide challenges towards achieving the sound management of chemicals, international legal instruments present opportunities to address these challenges and make important progress towards this objective. The following section describes two approaches for building on existing agreements to help resolve these fundamental challenges.

<sup>150</sup> Negotiations were held in 2011 on 24–28 January (Mercury INC2), 28 March – 1 April (Rotterdam CRC), 25–29 April (COP5 Stockholm), 20–24 June (COP5 Rotterdam), 10–14 Oct. (Stockholm POPRC), 17–21 Oct. (COP10 Basel), 31 Oct. – 4 Nov. (Mercury INC3), and 15–18 Nov. (SAICM OEWG).

<sup>151</sup> Negotiations for the three chemicals and waste treaties cost between US \$3.2 million and US \$6.5 million. Study on options for global control of mercury, UNEP(DTIE)/Hg/OEWG.1/2 (2007).

## Section IV: Possible Ways Forward

Serious problems stand in the way of sound management of chemicals on a global scale—implementation challenges at the national level, insufficient financial resources, the narrow scope of chemicals and issues addressed, a lack of necessary information, and the resistance to additional global agreements. Many of these stem from the incremental and piecemeal approach taken by the international community, resulting in an incoherent and fragmented system that does not ensure success in reaching the 2020 Goal.<sup>152</sup>

To achieve the shared objective of protecting human health and the environment within the context of a Green Economy, countries, intergovernmental organizations, businesses, and civil society must push the bounds of the existing international agreements. This section explores two potential approaches, one built on the existing agreements and a second that envisions a new international framework.<sup>153</sup>

### A. Enhancing Existing Agreements

The first approach is restricted to modification or amendment of existing agreements to embrace a wider range of chemicals that warrant global action. Without some changes to the existing chemical and waste conventions, only a small number of potentially hazardous chemicals would be addressed on a global scale. This discussion centers on two agreements: the Stockholm Convention, because of its life-cycle approach and legally binding obligations; and SAICM, because of the breadth of issues, flexibility, and openness to diverse stakeholders.

Treaties are typically altered through amendments or protocols. An amendment alters the core provisions of an agreement. In contrast, protocols are an agreement derived from a pre-existing agreement, such as a Convention, that elaborate substantive commitments, procedures, or mechanisms. Protocols may be adopted concurrently or subsequent to the Convention, even if the Convention does

not explicitly provide for them.<sup>154</sup> For example, specific commitments to reduce ozone depleting substances were first made under the Montreal Protocol, not the parent Vienna Convention on Ozone Depleting Substances. Following the adoption of the Montreal Protocol, the 1990 London Amendment adjusted the emissions schedule for ozone depleting substances and also amended the Protocol to create its financial mechanism, the Multilateral Fund.

Among the legally binding chemicals and waste agreements, only the Stockholm Convention regulates chemical production, use, and release of certain chemicals, and the management of POPs-containing stockpiles and wastes. However, the scope of the Convention is limited to those chemicals with POPs characteristics.<sup>155</sup> While this has led to the successful addition of ten POPs chemicals and mixtures to the treaty's original "dirty dozen," and may capture others, the scope of the Convention is intentionally narrow.

As a matter of law, the Convention's machinery could be used for other purposes. A protocol or amendments to the Stockholm Convention could capture other chemicals worthy of global action, for example, phthalates, lead, or cadmium, and, in theory, have no limitation on the chemicals within its scope. This would, however, be an extreme departure from the objectives of Stockholm, and the evidence and motivations that led to its adoption.

Applying the Stockholm Convention to address a larger set of chemicals raises significant political, legal, and technical challenges. Some Parties are likely to resist broadening the scope of the Stockholm Convention to include non-POPs chemicals. Parties and others may argue that the application of the Convention's provisions designed for POPs is inappropriate for chemicals with non-POPs characteristics. Indeed, resistance to using the Montreal Protocol for hydrofluorocarbons (HFCs), which are potent greenhouse gases but not ozone depleting substances,

<sup>152</sup> UNEP/GC.25/16/Add.1 para. 8

<sup>153</sup> Both of these options raise issues of a political nature that are not addressed in the present analysis.

<sup>154</sup> An example of concurrent adoption of protocols is the Barcelona Convention. The Convention on Long-Range Transboundary Air Pollution (LRTAP) did not provide for protocols in the original agreement, but never the less produced eight protocols.

<sup>155</sup> See Stockholm Convention, Annex D.

prevented this proposal from going forward, despite the use of HFCs as alternatives to certain ozone depleting substances.

In contrast to the relatively narrow objectives of the Stockholm Convention and the Montreal Protocol, the objective of the UNECE Convention on Long-Range Transboundary Air Pollution (LRTAP) is broadly stated to protect human health and the environment from the adverse effects of air pollution. LRTAP's broad definition of air pollution allowed for a suite of more specific protocols on POPs, heavy metals, volatile organic compounds (VOCs), and other air pollutants or even thermal energy.<sup>156</sup>

Other relevant concerns of this approach include whether existing institutions such as the POPRC would need to be refashioned to address non-POPs chemicals, and the absence of a compliance mechanism for POPs under the Stockholm Convention. Amending the Convention could reopen all of its provisions to negotiation, possibly weakening the instrument. Moreover, by amending the Stockholm Convention, there is significant likelihood of two substantively different forms of the Convention, i.e., a "split regime" for POPs and non-POPs chemicals, which could lessen the effectiveness of each form.

Negotiating one or more protocols could address some of the issues that could emerge with an amendment to the Convention text itself. However, because the Stockholm Convention does not have any provisions on the creation of protocols, Parties must agree to negotiate and adopt a protocol on non-POP chemicals under the Stockholm Convention by consensus (unless previously agreed otherwise) through the normal decision-making processes of the COP.

SAICM has the potential to assist developing countries to build capacity for sound chemicals management, an important element for the successful implementation of global obligations on hazardous chemicals under legally-

binding instruments. This could become a more central element of SAICM through the creation of a subsidiary body specifically tasked with monitoring overall efforts. Activities could be developed by this subsidiary body to ensure that all countries develop the capacity for sound chemicals management at the national level.

SAICM is also useful to explore various measures to better understand and enable precaution and prevention on new, "emerging" issues. Many of the current emerging policy issues under SAICM were discussed under the ambit of IFCS and carried forward into SAICM at ICCM2. Some of these issues are of an urgent nature, such as lead in paint, while others are truly emerging, such as the novel properties and risks of manufactured nanomaterials.

While a process has been developed for the nomination of issues to be included as "emerging policy issues" under SAICM, many more unaddressed issues could be addressed under SAICM as emerging policy issues or otherwise. Indeed, the four emerging policy issues selected at ICCM2 were from a much larger list of 34. Currently, the SAICM Open-Ended Working Group is empowered to recommend new emerging policy issues for consideration by the ICCM. However, the nomination of new emerging policy issues is up to SAICM participants and has yielded few proposals for new issues. At the 2011 OEWG, only two emerging policy issues were nominated to be considered as an emerging policy issue at ICCM3, only one of which was subsequently adopted.

A subsidiary body under the ICCM could be established to provide scientific guidance and recommendations for the suite of future issues, emerging or otherwise, to be considered by the ICCM for further action. This could enable work on a broader suite of issues by incubating new issues for activities under SAICM, and facilitating categorization, coordination, and synergy between issues that are urgent, mature, and well-characterized, versus those that are truly more emerging in nature. Although additional subsidiary bodies may carry costs, when used appropriately they can help to increase the effectiveness and efficiency of international agreements. Maintaining

<sup>156</sup> LRTAP Article 1 defines "Air Pollution" as "the introduction by man, directly or indirectly, of substances or energy into the air resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment, and 'air pollutants' shall be construed accordingly."

SAICM's participatory nature, government participants, IGOs, and civil society could propose emerging policy issues for exploration by the subsidiary body for emerging policy issues, and, alternatively, for consideration by any future OEWG.

In addition, the ICCM does not have a review process in place to report on the efficacy of SAICM as a whole on the development of achieving its stated objective, the sound management of chemicals throughout their life-cycle by 2020. At ICCM3, it was recommended that the SAICM secretariat develop a roadmap for its pursuit of the 2020 Goal.<sup>157</sup> A subsidiary body could be established to report to the ICCM on the effectiveness of all measures taken under SAICM towards achieving this objective.

Enhancements to SAICM can prove useful to achieving the 2020 Goal, but SAICM remains non-binding in nature. The Stockholm Convention, on the other hand, does not seem well-suited at the moment to address a spectrum of hazardous chemical beyond POPs. Given this reality, developing a comprehensive new agreement merits consideration in addition to the above recommendations to SAICM.

## B. Developing New Agreements and Institutions

The second proposed way forward borrows from the first, taking advantage of institutions and processes that are already working. But it differs in one fundamental way: by proposing a new legally binding agreement to serve as a framework convention on chemicals. This option need not discard existing laws, processes, and institutions for global chemicals management, but rather embrace common elements and commitments of the Basel, Rotterdam, and Stockholm Conventions, as well as SAICM, and create other necessary elements to protect human health and the environment from all chemicals that warrant international action.

Constructing a new regime raises practical questions regarding the commitment of countries at all stages of development, and the capacity of intergovernmental

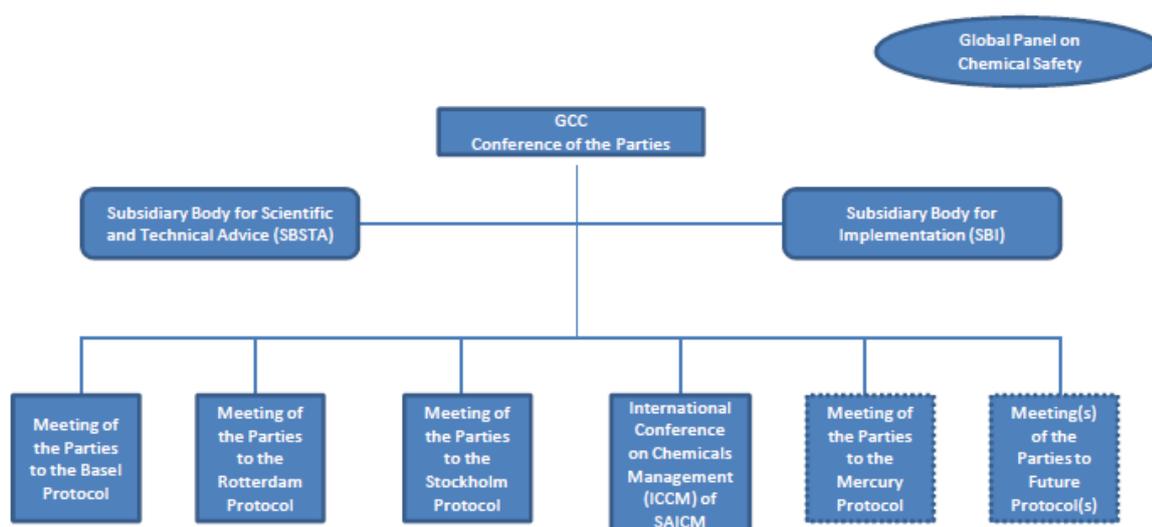
organizations, to create a legally binding instrument for a broad range of chemicals. The demand for softer obligations in exchange for breadth is well-illustrated by negotiations towards the creation of SAICM. Moreover, legal questions arise regarding the effective integration of one or more agreements into an overarching structure, where countries may take reservations to commitments that are no longer desired. Although these questions are also relevant, the proposal explores the basic architecture of a legally binding agreement with the breadth of SAICM and the rigor of the Stockholm Convention.

Below we present one option for a comprehensive global chemicals regime: a framework convention to ensure chemical safety around the world. This, however, is not the only option. Countries may alternately choose to create a regime where the agreements comprising the chemicals and waste cluster are bundled as "related agreements," as done with certain, pre-existing multilateral trade agreements in establishing the World Trade Organization. A second option is the creation of a new agreement, incorporating desired elements of the chemicals and waste cluster into one holistic agreement to ensure global chemical safety and minimize the challenge of ensuring coherence across interrelated agreements.

While advantages exist for any of these three options, the framework convention captures several aspects that are to be desired. First, several functions and activities under the existing chemicals and waste cluster are critical. These functions and activities could continue within the framework. Second, because the most substantial commitments would be left to specific protocols, the overarching agreement establishing the framework could contain a broad, ambitious objective that is necessary, rather than summarizing negotiations on narrow issues.<sup>158</sup> With a broad objective, coordination and coherence between agreements could be better enhanced as the framework develops, and potential co-benefits maximized, enabled by an overarching governing body. Third, the structure would

<sup>157</sup> Earth Negotiations Bulletin, Summary of the Third Session of the International Conference on Chemicals Management: 17-21 September 2012 (24 Sept. 2012).

<sup>158</sup> See e.g. the objective of the UNECE Convention on Long-Range Transboundary Air Pollution (LRTAP), as discussed above.



Possible architecture of a global chemicals convention.

provide sufficient flexibility to address future issues and consolidate related functions, both of which carry potential cost-savings. Fourth, global agreement on the internalization of costs by industry would help to address national concerns regarding decreased competitiveness by unilateral or regional measures. Fifth, the potential for legally binding obligations for the spectrum of issues relating to the production and use of hazardous chemicals increases the likelihood of predictable and adequate financial resources for sound chemicals management in the Global South. To illustrate the function of the framework convention, the general architecture and then more specific elements are introduced.

### 1. General Architecture of a Future Global Chemicals Convention (GCC)

A Conference of the Parties (COP) would serve as the governing body to the framework agreement to the GCC. The Basel, Rotterdam, and Stockholm (BRS) Conventions could function as protocol agreements under the GCC, maintaining current efforts to foster “synergies” between

these agreements. The COP of the GCC would decide whether one or more new protocols are necessary to protect from unaddressed hazards, i.e. the aforementioned “orphan issues.” The ICCM could be a subsidiary body of the GCC, and additional institutions could be created related to scientific advice and implementation, retaining certain established institutions, such as the POPRC and the CRC. The details of these features are described below.

### 2. Elements of a Global Chemicals Regime

As described in Section III, core elements of a framework convention should include: an objective; obligations of varying specificity; principles and approaches; institutions; implementation mechanisms; and decision making procedures. Existing agreements, such as the BRS Conventions and SAICM can become Protocols under the GCC. Specific obligations and implementation details for chemicals beyond those with legally binding obligations through the BRS Conventions could be articulated in a set of protocols.

### *a. Objective*

The objective of the GCC could be: The management of chemicals throughout their life-cycle in such a manner as to ensure that the production, use, release and disposal of chemicals do not result in adverse effects on human health or the environment.<sup>159</sup> Unlike the objectives of the BRS Conventions, and with fewer limitations than the SAICM objective, this objective would be of sufficient breadth to address all future adverse effects of chemicals throughout their life-cycle. With the Protocols specifying details of the Parties' obligations, a broader objective could be more acceptable to Parties to guide the evolution of the Framework.

Under such an objective, the life-cycle approach should include extraction or production of feedstocks for further processing, chemicals in articles, as well as recycling and recovery operations. In addition, such an approach should recognize sound chemicals management may not be possible for certain chemicals throughout the time-period for which they pose a risk. Under such an objective, "chemicals" should be defined broadly to include all molecular substances, including nanomaterials and other chemicals with unique features that may be invented or produced in the future.

### *b. Principles and approaches*

The principles and approaches described in Section III could be reaffirmed by the Framework Convention, namely: prevention; inter-generational equity; cooperation among States; the polluter pays principle; precaution; substitution; special needs of the most vulnerable; a life-cycle approach; and transparency, accountability, and public participation. To help ensure application of these principles at the national level, clear obligations and provisions to assist countries with implementation will be essential. Given the relatively poor record of predicting exposure, precautionary steps away from

the current, strong focus on the risks of individual chemicals toward an emphasis on the inherent hazards of individual chemicals and chemical mixtures is necessary. Much greater effort is necessary to prevent harmful exposure by vulnerable populations, such as women, children, workers in certain occupations, and others.

### *c. Obligations and decision-making*

Under the GCC, certain obligations would apply to all Parties of the overarching framework to meet the objective of the GCC and to apply the above principles and approaches.<sup>160</sup> Parties would make a general commitment to take measures to protect human health and the environment from the adverse effects of chemicals, including the global phase-out of chemicals that meet certain criteria. Parties would commit to cooperative efforts to strengthen national capacities to prevent adverse effects from chemicals through financial and technical assistance and the transfer of technology. To address the perennial challenge of finance, Parties must commit to take national measures to ensure that health and environmental costs are internalized, as stated in Principle 16 of the Rio Declaration (polluter pays principle), and meet new and existing financial commitments.

Currently, chemicals are generally considered individually for inclusion under the Stockholm and Rotterdam Conventions. This chemical-by-chemical addition process is not only dangerously slow, it risks the substitution of one dangerous chemical for another. To help ensure a level playing field for safer alternatives and to avoid cases of regrettable substitution, some countries and regions are beginning to require basic information on all chemicals in commerce. A core obligation under the GCC, of benefit to any protocol, would be to place the burden on chemical manufacturers of providing adequate health and safety information for any chemical in the market, and to ensure access to this information worldwide. This would be an

<sup>159</sup> This language derives from para. 23 of the Johannesburg Plan of Implementation: "The sound management of chemicals throughout their life cycle and of hazardous wastes for sustainable development as well as for the protection of human health and the environment, inter alia, aiming to achieve, by 2020, [in such a manner as to ensure] that [the use, production and disposal of] chemicals are used and produced in ways that lead to the minimization of significant [do not result in] adverse effects on human health and [or] the environment."

<sup>160</sup> Note, a State need not be a member of the framework to become a Party to a protocol, as illustrated by the 1967 Refugee Protocol, which is open to signature and ratification by any State, not only the parties to the 1951 Refugee Convention.

important step towards the internalization of costs.

As demonstrated by current experience with many existing MEAs, the GCC must have a sustainable financial mechanism. The final outcome of the “integrated approach” may help in this regard, but implementation will likely depend on many factors, including the commitment of governments. Although a broader agreement will carry additional costs, implementation of the polluter pays principle, particularly in ensuring that chemical manufacturers bear the burden of proving the safety of chemicals in commerce and the onus of reducing exposure to hazardous chemicals, would lower the financial burden on public authorities.

#### *d. Protocols*

The BRS Conventions could be integrated as Protocols to the GCC, altered to change the decision making body of each Agreement to a Meeting of the Parties (MOP) and continuing efforts to consolidating elements as needed to further maximize synergies. Thus, these protocols under the GCC could address specific issues related to waste, and POPs. To expedite the nomination of chemicals for listing under the former Stockholm and Rotterdam Conventions, Parties could also amend the Protocols to allow non-Parties and non-State actors to nominate chemicals for listing under the Protocols.

In addition, the core agreements of SAICM could also be integrated as the SAICM Protocol to the GCC. The ICCM would remain the decision making body of SAICM. The ICCM should continue to explore pressing issues through the use of non-binding but global approaches, and activities for chemicals management capacity-building and implementation at the national level. Recommendations above for enhancing SAICM, such as the creation of subsidiary bodies for recommending emerging issues and evaluating the effectiveness of SAICM would function through the institutions created by the GCC, discussed below.

New protocols could be created by the COP to provide legally binding obligations for “orphan issues” (see Section

III(A)(2)(a)) throughout their life-cycle, such as non-POPs carcinogens, heavy metals, and other possible chemicals of global concern that fall outside the scope of the Stockholm Convention. Criteria could be developed under these protocols for the global phase-out substances of sufficient concern, utilizing provisions of the Basel and Rotterdam Protocols to address waste and trade, respectively. To avoid repeating the slow process for listing chemicals under the existing Conventions, the new Protocol(s) could borrow an idea from the Rotterdam Convention and create an automatic trigger, where a ban or severe restriction in one or more jurisdiction (national or regional) could initiate consideration of a chemical for global action under the newly created protocol. Also, similar to the Montreal Protocol, incentives for parties to ratify the Protocol(s) could be developed through the use of restrictions on trade with non-Parties.

It would be very important to ensure that Protocols are structured to minimize substantive and governance overlaps, gaps, and other potential challenges under the GCC. To create as inclusive a structure as possible, the COP could decide to create one protocol of sufficient breadth to address known and foreseeable issues that are not already covered by effective, existing global conventions such as the Stockholm Convention, the Montreal Protocol, and others. This approach could help to address the logistical challenge for developing country Parties with limited resources and prevent a proliferation of negotiation and governance challenges that emerge from a series of specialized agreements.

Liability is another element of the polluter pays principle. Although the political challenge of such provisions is illustrated by the liability protocol of the Basel Convention, which is yet to enter into force, a liability protocol is critical for both good governance and accountability under the GCC. The Parties could establish a liability protocol for illegal traffic of chemicals and wastes, as well as liability and mandatory insurance for worst-case scenarios.

*e. Institutions*

The GCC would benefit from crucial subsidiary bodies. Given its role with the BRS Conventions and SAICM, UNEP could host the secretariat, although a joint arrangement with WHO might be considered as well, given WHO's expertise in the implications of hazardous chemicals for human health.

A Subsidiary Body for Implementation (SBI) would ensure the effectiveness of efforts under the GCC. The SBI could oversee monitoring and review of the BRS Protocols, SAICM and other future protocol(s). In addition, it could resolve disputes and oversee the compliance mechanism. The compliance mechanism of the GCC, could be modeled on the Aarhus Convention where any Party, including the Party out of compliance, and non-Parties (including civil society) may submit evidence of non-compliance. Consistent with a good governance approach, this participatory compliance mechanism would serve the interests of all stakeholders, ensuring that the necessary assistance is provided to achieve and maintain the compliance of Parties and the efficient use of resources by sharing best practices and other information.

For the listing of new substances under protocols, a subsidiary body for scientific and technical advice (SBSTA) could provide assessments necessary for the listing of chemicals under the various Protocols. Integrating the POPRC and the CRC under the SBSTA would maintain the mode of operation of the existing Conventions while maximizing the potential for synergies across technical bodies for each protocol. This body could also recommend issues for the ICCM to explore certain voluntary approaches, such as where criteria for listing chemicals are not clearly met, although the timeliness of precautionary and preventative approaches must be ensured.

*f. External bodies*

The GCC could benefit from an independent scientific body to provide a credible assessment of the global state of the health and environmental impacts of chemicals. An external body, the reports of the Global Panel on Chemicals

(GPC) could inform the various bodies of the GCC. Unlike the SBSTA, the GPC would not assess whether chemicals meet relevant criteria for listing under a particular convention. The GPC could provide authoritative information on scientific advancements in evaluating chemical hazards, exposures, uses, and alternatives. Publicly available information generated through the EU's REACH and other national or regional measures, epidemiological trends, as well as peer-reviewed, independent, and science-based research could form the basis of the GPC's assessments. The GPC's function as an advisory body would also enable better use of "soft" data, in addition to "hard" data. In addition, GPC might manage a global database on chemical safety, to better enable substitution.

The GPC would comprise independent scientists with appropriate safeguards to ensure the credibility of its findings, divorced from political interference. It would be necessary to look at the experience of other scientific bodies in international environmental law to see what lessons could be learned to avoid extending the delay between the emergence of new scientific knowledge and its integration at the policy level.

## Section V. Recommended Actions for Stakeholders

Given the significant challenges outlined in ensuring global chemical safety, and the various paths available toward achieving the sound management of chemicals, the following recommendations are offered to actors at the global level.

### 1. Recommendations for National Governments

National governments should acknowledge that the current state of chemicals management has not enabled adequate and timely action on overarching issues of concern, emerging risks, or even well-understood dangers of individual chemicals, imparting substantial health and environmental costs on industrialized and developing countries alike. Countries around the world stand to benefit from a more effective global framework for chemicals management. Recognizing the challenges and the many years of work ahead, States should actively join discussions in pursuit of a more robust, rigorous global regime for chemical safety, beyond 2020.

Meanwhile, industrialized countries should increase funding to intergovernmental and civil society organizations, particularly from the Global South, to actively participate in the development of a more rigorous global regime. All countries should implement the polluter pays principle at the national level and integrate chemicals management into national development agendas. Industrialized countries should assist developing countries to elevate the importance of – and synergies between – chemical safety and other priorities for development assistance.

Discussions on a future chemicals regime should not, however, divert attention or resources away from SAICM. The SAICM process is already producing important results, and has the potential to address some of the key impediments in ensuring global chemical safety at a global level, in particular by elevating the domestic capacity of developing countries for chemicals management. SAICM should be a part of a future, more comprehensive chemicals regime with legally-binding obligations. Countries should renew the mandate of SAICM beyond 2020, recognizing its continuing

role in fostering the sound management of chemicals.

### 2. Recommendations for Intergovernmental Organizations

Intergovernmental organizations should affirm their commitment to eliminating chemical hazards, and actively participate in the development, implementation, and management of the international regime for chemical safety. In particular, WHO, the International Labour Organization (ILO), and the Office of the UN High Commissioner for Human Rights (OHCHR) should increase their engagement with current and future processes and negotiations. Synergies across the chemicals and waste cluster should not impose additional layers of administration or undercut good governance principles.

### 3. Recommendations for Businesses

Businesses of all kinds stand to benefit from a more effective global framework on chemicals. The chemical industry should recognize the growing public awareness of the potential adverse effects to human health and the environment from toxic chemicals and the erosion of goodwill among consumers. Chemicals manufacturers should provide necessary health, safety, and product information to downstream users, authorities, and the public. Companies that are downstream users of chemicals should continue to develop and sell products free of hazardous chemicals.

National and international approaches that allow health and environmental costs to factor into business decisions will speed the adoption of safer alternatives. There is great potential for innovators to decrease burdens on human health and the environment from hazardous chemicals. A more robust regime could foster an enabling environment for innovative solutions to replace outdated business models. If the chemical industry contributes financial and technical resources on a par with these social costs and engages constructively in the development of a future chemicals regime, they can expect increased goodwill, consumer confidence, as well as opportunities for innovation.

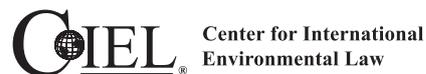
#### 4. Recommendations for Civil Society

Years of tireless advocacy by public interest NGOs yielded many noteworthy achievements, but systemic challenges remain and continue to grow, with staggering costs to society and hazardous chemicals becoming further entrenched. The participatory nature of SAICM should be the standard for the future engagement of civil society in global chemicals management, continuing to provide new impulses to accelerate the momentum of global efforts toward eliminating dangerous chemicals.

Civil society serves a vital role in establishing linkages between communities and governments from the local to the global level. In addition, civil society should engage horizontally across issues of focus. In particular, increased engagement between civil society organizations with a focus on development, environment, health, and human rights could increase awareness of chemical hazards and help to mainstream chemical management in official development assistance. Coordination and transparency are crucial in effective engagement with governments and other civil society organizations. As technology continues to evolve, often raising new or additional environmental challenges, new technologies are also creating opportunities for civil society to enhance communication, build awareness, and foster the engagement of the public in the continued pursuit of a world free of toxic chemicals.



Over the past forty years, a set of global agreements has emerged to address specific issues in chemicals management. This study examines four principal global agreements for international chemicals management (the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal; the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade; the Stockholm Convention on Persistent Organic Pollutants; and the Strategic Approach to International Chemicals Management (SAICM)), and proposes the creation of a comprehensive global chemicals regime to better protect human health and the environment beyond 2020.”



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