



# FINANCING THE SOUND MANAGEMENT OF CHEMICALS BEYOND 2020: OPTIONS FOR A COORDINATED TAX

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*Lead Authors*

*Nathaniel Eisen, Legal Fellow, CIEL*

*David Azoulay, Director, Environmental Health Program, CIEL*

*Joe DiGangi, PhD, Senior Science and Technical Advisor, IPEN*

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# EXECUTIVE SUMMARY

Developing and transition countries need additional infrastructures and capabilities for the sound management of chemicals and wastes that they currently lack and cannot presently afford to establish and maintain. The need for capacity is urgent, as chemical use is increasing and the industry is rapidly growing and shifting to emerging economies. Governments have agreed that the financial resources to address these issues are inadequate, and that a new, sufficient, sustainable form of financing is needed. To operationalize the private sector involvement pillar of the Integrated Approach to Financing, this paper proposes a coordinated tax on chemical feedstocks, also known as basic chemicals. This tax would be levied by national governments in all countries where this subset of chemicals is produced and the revenues would be directed to a new or existing international fund to support chemicals and waste management in developing and transition countries. A very small tax could yield significantly more annual funding than has ever been allocated for sound chemicals and wastes management—on the order of billions of US dollars per year. A coordinated tax on basic chemicals has these advantages:

- Raises sufficient, sustainable revenues
- Global approach eliminates the burden of establishing national cost recovery mechanisms
- Easy to administer due to the relatively small number of companies and countries
- Levying product taxes on a per-unit basis is common in all countries
- Operationalizes the industry involvement part of the Integrated Approach as well as the polluter pays principle.



## INTRODUCTION

Governments require substantial management capabilities and infrastructure in order to effectively develop, implement and enforce laws, policies and regulations governing the sound management of chemicals and wastes. However, most countries presently lack sufficient national management capacity and the financial resources needed to protect human health and the environment.

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**A VERY SMALL TAX COULD  
YIELD SIGNIFICANTLY MORE  
ANNUAL FUNDING THAN  
HAS EVER BEEN ALLOCATED  
FOR SOUND CHEMICALS AND  
WASTES MANAGEMENT**

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Substantial new and additional funds will be needed if there is to be a sincere global effort to achieve the sound management of chemicals and wastes. Funding from donor governments and from current revenue streams will not be sufficient to establish and sustain the programs and infrastructures that will be required to effectively

protect the public's health and the environment from chemical exposures and accidents in all countries. Securing sufficient funds on a sustainable basis will require the internalization of costs within relevant producer industries.<sup>1</sup>

The need for more reliable and sufficient funding drove the development of the Integrated Approach to Financing the Sound Management of Chemicals and Waste, with its three pillars of mainstreaming, industry involvement, and dedicated external financing. Industry involvement was defined to include “cost recovery instruments at the national level,”<sup>22</sup> and there have been important conversations about how to achieve that goal. However, national-level cost recovery is unlikely to meet the goals of sufficient or stable financing for reasons outlined below. International coordination to achieve industry internalization of costs is therefore needed. The most efficient way to reach this goal is through an agreed minimum tax and redistribution mechanism among key countries.

The COVID-19 pandemic has created a severe public health crisis and greater awareness of the links between environmental factors and determinants of health. As governments move forward with post-crisis planning, there is an urgent need for sound management of chemicals and waste that includes enacting mechanisms for producer responsibility. SAICM will never achieve its goals unless financial resources equivalent to the scale of the chemicals management challenge are mobilized, and the chemicals industry internalizes the harms associated with its products. The Beyond 2020 Negotiations are the best chance to enact the needed changes.

This paper recommends a tax on the production of chemical feedstocks in order to generate significant revenue with limited distortion and preserve administrative feasibility and fidelity to general principles of international law (all presented in more detail in Annex III of this document). The revenues raised by these coordinated taxes should flow to a new or existing fund and then be allocated to developing and transition country governments and relevant stakeholders to implement sound management of chemicals and wastes. Details on governance, housing, and operations of the fund will all need to be worked out in greater detail. This thought starter focuses on the motivation for and design of a coordinated tax to fund the sound management of chemicals and wastes.

# I. MANAGEMENT CHALLENGES

Chemical companies have not internalized the full social costs of their products. As noted by the United Nations Environment Programme (UNEP),

*“The vast majority of human health costs linked to chemicals production, consumption and disposal are not borne by chemicals producers, or shared down the value-chain. Uncompensated harms to human health and the environment are market failures that need correction.”<sup>3</sup>*

These externalized costs have created large management challenges for national governments and massive funding needs, especially in developing and transition countries.<sup>4</sup> As a result, a key finding of the independent evaluation of the Strategic Approach to International Chemicals Management (SAICM) was that, *“the gap between countries in different development categories...was widening rather narrowing.”<sup>5</sup>* A representative list of shortfalls in achieving the Johannesburg Plan of Implementation’s goal of international sound chemicals management by 2020 includes:



Chemical pollutants are ubiquitous in the environment and in humans.<sup>6</sup>

Adequate information on substances and wastes is lacking: *“Of the tens of thousands of chemicals on the market, only a fraction has been thoroughly evaluated to determine their effects on human health and the environment.”<sup>7</sup>*

Concerns exist about the lack of information sharing by business, particularly with respect to chemicals in products, hazardous chemicals in electronics and nanomaterials.<sup>8</sup>



Chemical exposures result in widespread, significant harms to workers; *“One worker dies every 15 seconds from toxic exposures at work.”<sup>9</sup>* Occupational diseases account for over 86% of total premature work-related deaths.<sup>10</sup>

Low levels of awareness about chemical safety within governments and among end-users pose serious potential harms to human health and the environment.<sup>11</sup>



The cost of harms due to pesticide poisoning in Sub-Saharan Africa outstrips *all* Overseas Development Assistance to the health sectors in those countries, excluding assistance for HIV/AIDS.<sup>12</sup>

A conservative estimate of the median annual health cost for diseases associated with endocrine disrupting chemicals only in the European Union is €157 billion.<sup>13</sup>

In 2018, WHO estimated the global disease burden attributable to preventable chemical mismanagement to be 1.6 million annual premature deaths and 45 million lost Disability-adjusted Life Years (DALYs).<sup>14</sup>



Estimated annual health costs due to per and polyfluoroalkyl substances (PFAS) are €2.8 - 4.6 billion in Nordic countries and €52 - 84 billion in the thirty European Economic Area countries.<sup>15</sup>

Estimated annual costs for pollution associated with the production and use of volatile organic compounds are US\$236 billion. This is an underestimate, as it excludes damage to most natural resources as well as water pollution and land use change and waste in non-OECD countries.<sup>16</sup>

Annual costs related to childhood lead exposure in low- and middle-income countries are estimated to be US\$977 billion. The

largest burden of lead exposure is now borne by low- and middle-income countries.<sup>17</sup> Meanwhile, most countries do not have legally binding regulations limiting lead in paint.<sup>18</sup>



The Globally Harmonized System for Chemicals Classification (GHS) is not operational in more than 120 countries.<sup>19</sup>

Most countries lack pollutant release and transfer registries.<sup>20</sup>

Large stockpiles of expired pesticides and banned persistent organic pollutants remain untreated and present threats of leaks.<sup>21</sup>



Governance remains a challenge: “*Many countries [do] not have laws governing chemicals management and for those that [do], enforcement mechanisms for implementation remained weak.*”<sup>22</sup>

Reporting compliance under the Basel Convention, Stockholm Convention, and SAICM was all below 50%, with Basel compliance possibly as low as 10%.<sup>23</sup>



## II. FUNDING

### PRESENT SITUATION

SAICM is the only global forum where the full range of known and newly discovered health and environmental concerns associated with the chemical life-cycle can be identified, assessed and addressed. Its broad scope covers many chemical exposures that lie outside the framework of current chemicals conventions. In many cases, the harms to human health and the environment caused by these other sources can be just as serious as harms caused by persistent organic pollutants, ozone depleting substances, or mercury. These sources of toxic chemical exposure frequently disproportionately affect people and environments in developing and transition countries. To accomplish the sound management of chemicals and wastes, developing and transition countries will need to establish additional infrastructures and capabilities that they currently lack and cannot presently afford to establish and maintain.

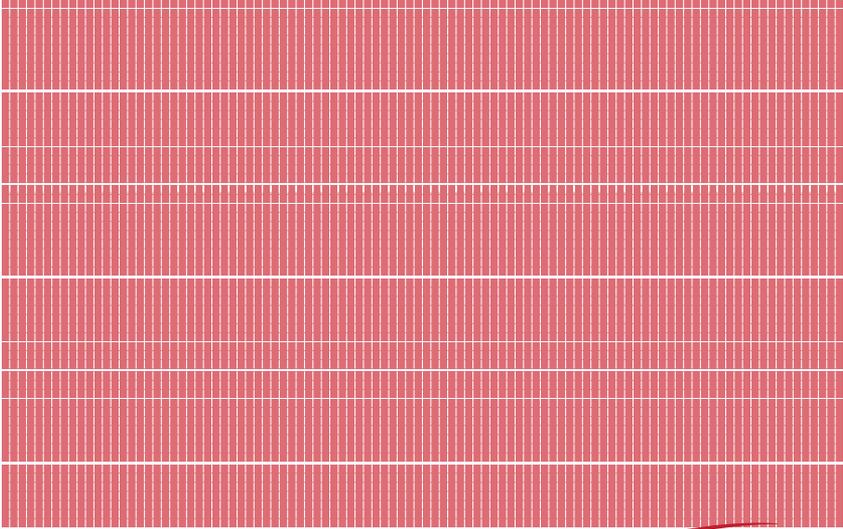
## ***Funding is inadequate***

Funds are needed for chemicals and waste regulatory capacity, infrastructure, information systems, and monitoring, as well as management of wastes, among others. However, funding has been inadequate:

- The estimate of net funding needs for the Stockholm Convention for the 2018 – 2022 time-period is approximately USD\$4.4 billion.<sup>24, 25</sup> However, the programming document of the 7th replenishment of the Global Environment Facility (GEF) tentatively allocates USD\$392 million for the Stockholm Convention – approximately 11-fold lower than the estimated needs.<sup>26</sup>
- A financial needs assessment has not been performed for the Rotterdam, Basel, and Minamata Conventions, or SAICM, indicating that the underfunding of the chemical agenda is likely to be much larger than previously estimated.
- While SAICM had time-limited enabling activities financing through the Quick Start Programme, the agreement did not establish a fund for implementation.
- Donor governments contributed a total of US\$41 million to the discontinued Quick Start Programme Trust Fund for a 10-year period from 2006 – 2015.<sup>27</sup> Four donors (EU, Sweden, Norway, and USA) contributed 73% of these funds. In contrast, climate financing from just the Green Climate Fund is US\$5.4 billion for a four-year period.<sup>28</sup>
- The annual shortfall in the SAICM Secretariat budget was 43% for six of the ten years between 2006 and 2015 and this affected its ability to deliver on a number of functions.<sup>29</sup>
- The GEF earmarked only US\$13 million in total for global SAICM implementation for a four-year period between 2014 – 2018.<sup>30</sup> This was 0.3% of the GEF-6 replenishment.
- At the 4th International Conference on Chemicals Management (ICCM4), more than 100 governments acknowledged with concern that, “the scale of resources available from all sources, including through the Quick Start Programme and the Global Environment Facility, are insufficient to achieve the goal of sound management of chemicals in developing countries.”<sup>31</sup>
- The Independent SAICM Evaluation notes that the success of the agreement depended on “secure and sustainable financing”, but that the implementation of the agreement, “has been hampered by both uncertainty and shortfalls in planned financing.”<sup>32</sup>

# The Chemicals Management Balance Sheet

## Chemical Industry Sales (2017)\*

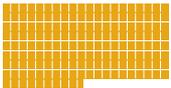


**\$5.7 trillion USD**

\* Projected to more than **double** by 2030

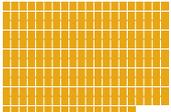
## Examples of Costs to the Public for Health and Environmental Costs

Estimated European Health Costs for Endocrine Disrupting Chemicals (Annual)



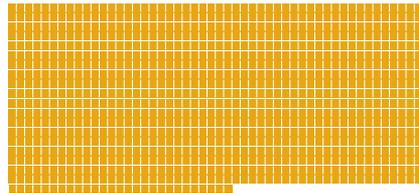
US\$169.7 billion  
(€157 billion)

Estimated Costs for Pollution Related to Volatile Organic Compounds (Annual)



US\$236 billion

Estimated Costs for Lead Exposure in Low- and Middle-Income Countries (Annual)



US\$977 billion

Key: ■ US\$1,000,000,000

- The 1st Session of the United Nations Environment Assembly (UNEA 1) agreed that for chemicals and waste management, “Sustainable, predictable, adequate and accessible long-term funding at all levels... is a key element, in particular in developing countries and countries with economies in transition.”<sup>33</sup>

### ***The chemical industry is large and rapidly expanding***

The chemical industry is the second largest manufacturing industry in the world and is currently rapidly expanding to emerging economies in Asia and the Middle East.<sup>34</sup> Chemical production capacity has nearly doubled between 2000 and 2017, accompanied by a significant increase in international trade.<sup>35</sup> Chemical industry sales (including pharmaceuticals) totaled US\$5.7 trillion in 2017 and this is projected to double by 2030.<sup>36</sup> China has 37% of global chemical sales (the world’s largest share) and this is set to increase to 50% by 2030.<sup>37</sup>

The chemical industry is the world’s largest industrial energy consumer and third largest emitter of carbon dioxide.<sup>38</sup> A key segment of the industry is conversion of natural gas and minerals to basic chemicals which are then used to

make a variety of other chemicals and polymers. Basic chemicals include olefins (e.g. ethylene, propylene, butadiene), aromatics (e.g. xylene, benzene, toluene), methanol, sulfur, chlorine, caustic soda, titanium oxides, industrial gases and others.<sup>39</sup> Basic organic and inorganic chemicals occupy approximately 67% of global chemical production and use by volume.<sup>40</sup>

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**CHEMICAL INDUSTRY SALES  
[ARE] PROJECTED TO  
DOUBLE BY 2030.**

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### ***The integrated approach to financing includes the industry***

The current “Integrated Approach to Financing” adopted by UNEA 1 and the 3rd International Conference on Chemicals Management (ICCM3), was designed to bring more stable and predictable funding to chemicals management across the chemicals and waste cluster through three pillars. The Special Programme has contributed to the third pillar of dedicated external financing by raising over US\$25 million to date and distributing roughly US\$11.5 million.<sup>41</sup> However, because this funding applies to work under the Basel, Rotterdam, Stockholm, and Minamata Conventions and SAICM, it is difficult to determine how much should be counted as flowing to SAICM implementation. Further, funding is limited to applications from governments for institutional strengthening and only for activities that fall outside the GEF mandate.

The chemical industry is the world's largest industrial energy consumer and third largest emitter of carbon dioxide. Basic chemicals comprise 67% of global chemical production by volume.



One of the objectives of industry involvement under the Integrated Approach was to shift the costs of management onto industry<sup>42</sup>, as envisioned by the SAICM Overarching Policy Strategy.<sup>43</sup> Progress has been made, especially by UNEP, in providing guidance on national-level cost recovery actions.<sup>44</sup> Meanwhile, proposals have been put forward in 2019 in the context of the SAICM Beyond 2020 negotiations, notably by the Africa Group, Group of Latin American and Caribbean Countries, Azerbaijan, Cambodia, Indonesia, Iran, Oman, Thailand and Tuvalu. Their proposal would implement the polluter pays principle more completely, including through regulations establishing extended producer responsibility and the creation of a new fund to collect additional resources from taxes and levies on industry.<sup>45</sup>

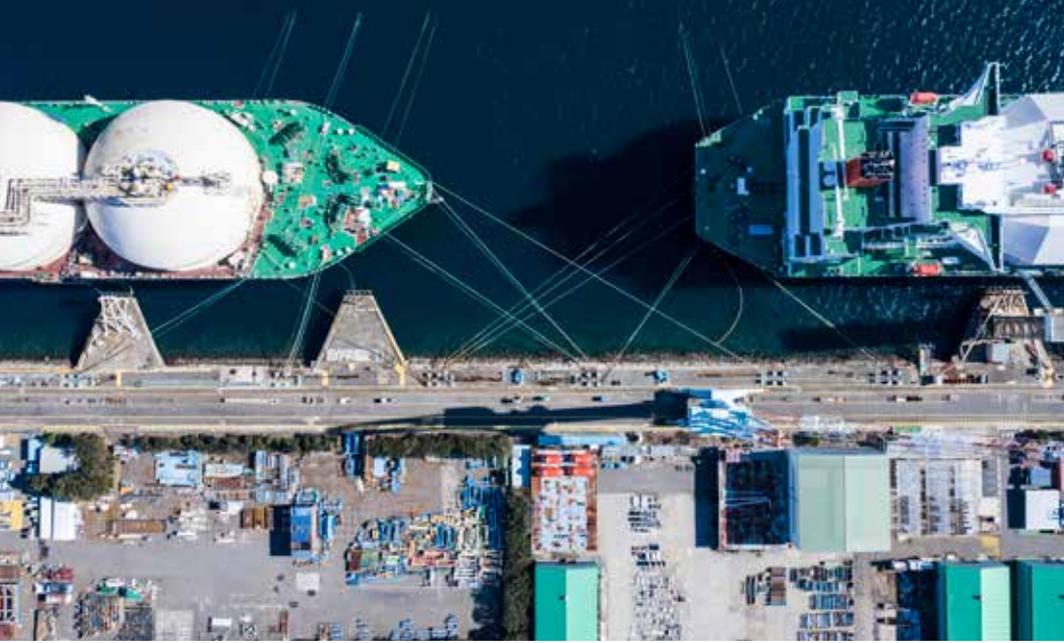
UNEP's two guidance documents and the Secretariat's note point to some successful examples of fee for service models where governments charge industry fees for registration or approval of chemicals or inspections of facilities. They also note the possibility of annual fees or taxes, which is welcome.<sup>46</sup> However, there are only a few examples of developing countries implementing either approach, and none that have come close to fully funding a country's chemicals management needs. We suggest this is not a result of lack of interest, but rather because of a fundamental mismatch between national level cost recovery and the funding required for chemicals and waste management. In fact, even in developed countries where this approach is being implemented to its fullest (see for example the funding of the European Chemical Agency by registration fees), the resources collected are not sufficient to fully fund chemicals management authorities and activities.<sup>47</sup>

## LIMITS OF NATIONAL APPROACHES

As touched upon in an earlier concept note by IPEN<sup>48</sup> and expanded on here, purely national (i.e. uncoordinated) approaches to a tax on the chemicals sector are impractical for the following reasons:

### ***Information and coordination barriers***

First, designing cost-recovery instruments requires a certain level of information about the chemicals sector and chemicals in products and wastes in one's country. This information does not exist in many countries and can be costly to generate. It also requires a certain level of coordination between ministries (e.g. finance and environment) beyond what presently exists in some countries.



### ***Sufficient funds***

In many developing countries, national cost recovery cannot be reasonably expected to generate sufficient revenues. In part, this is because many of the management costs in developing and transition countries do not result from chemicals produced or even sold in those countries — instead they result from chemicals included in unknown quantities in industrial and electrical products, consumer products or various waste streams (hazardous waste, plastics, e-waste, etc.).<sup>49</sup> This makes it difficult to recover sufficient funds for management of chemicals purely from taxes and fees on producers or importers of chemicals in those countries, as suggested by UNEP.<sup>50</sup> Finally, many countries may be concerned that unilateral taxation will incentivize companies to shift production or distribution hubs outside their territory, and thus negatively impact their economic development prospects.

### ***Jurisdiction***

Similarly, in some countries a sizable portion of management costs can result from cross-border emissions, in addition to the production or importation in those countries of chemicals or chemical-containing products or waste.<sup>51</sup> The suitable tax base for these cross-border emissions is often beyond the reach of national jurisdiction. In other words, these countries do not have a basis under international law to tax the entities responsible for many of the risks they face.

### ***Polluter pays principle***

This relates to the final point, which is that true implementation of the polluter pays principle requires going beyond national level approaches. The polluter pays principle, as outlined with some small differences by the OECD and the Rio Declaration, states that the polluter should bear the costs associated with pollution and its prevention and control.<sup>52</sup>

To operationalize the polluter pays principle, the producers of chemicals should be regarded as the polluter.<sup>53</sup> This is because while governments have obligations to adequately protect their public's health and national environment from harm resulting from chemical exposures and accidents, the costs they incur in fulfilling this obligation arise as a result of economic decisions by the industry to produce, use and import chemicals. Governments have a right and an obligation to recover these externalized costs through application of the polluter pays principle. The Independent SAICM Evaluation reveals that governments clearly understand that operationalizing the polluter pays principle means to “*shift the external costs of production, use and disposal of chemicals away from the public sector to the private sector.*”<sup>54</sup>

Due to the global nature of supply chains and trade and the unique features of chemicals, chemical producers are often not subject to taxation or regulation in the countries where pollution control is needed. To encourage producers to internalize costs while preserving the efficiency of international trade, coordinating taxes on producers in their countries of establishment and redistributing the funds is the most practical and efficient approach.

The approach also follows another important principle in international environmental law of common but differentiated responsibilities. All relevant countries are asked to place a common tax on producers of basic chemicals sited in their countries, and direct the revenues to an international fund. However, nearly all developing countries will receive more in disbursements from that fund than they put in, which recognizes the greater challenges they face in financing chemicals and waste management.

One final point in this regard: The large legacy costs of decades of irresponsible production mean that true implementation of the polluter pays principle with regards to this sector would require either retrospective taxation or a larger tax than if only present pollution were to be considered.<sup>55</sup> This is a further inadequacy of fee-for-service models that traditionally focus only on the present and are thus incapable of raising the resources needed to both address legacy issues and prevent future impacts.

## WHAT ARE BASIC CHEMICALS?

Any such list should at the minimum include:

- acetone
- ammonia
- benzene
- methyl benzenes
- bromine
- butadiene
- cyclohexane
- calcium carbonate
- chlorine
- ethanol
- ethylene
- ethylene glycol
- fluorine
- hydrogen
- hydrogen chloride
- urea
- hydrogen fluoride
- oxygen
- hydrogen peroxide
- iodine
- nitric acid
- methanol
- methyl tert-butyl ether
- nitrogen
- phenol
- phosphoric acid
- phosphorous
- propylene
- sodium carbonate
- sodium hydroxide
- sulfur
- sulfuric acid
- titanium dioxide
- toluene
- formaldehyde
- various xylenes
- rare gases

## INTERNATIONAL TAXES

The above inadequacies suggest that a tax or fee imposed by an international body or a coordinated set of national taxes or fees with pooling of revenue is necessary to achieve industry internalization of costs. International or coordinated taxation is an established concept. There are several examples of coordinated taxes and revenue pooling measures in place, including specifically for environmental purposes (See Annex I). There is even one example where countries have delegated to an international body the power to levy fees on a narrow category of corporate entities.<sup>56</sup> However, a coordinated approach (as opposed to taxation by an international body) has the virtue of using existing domestic regulatory infrastructure to collect the taxes and of preserving flexibility for countries wary of delegating authority to tax to an international body.

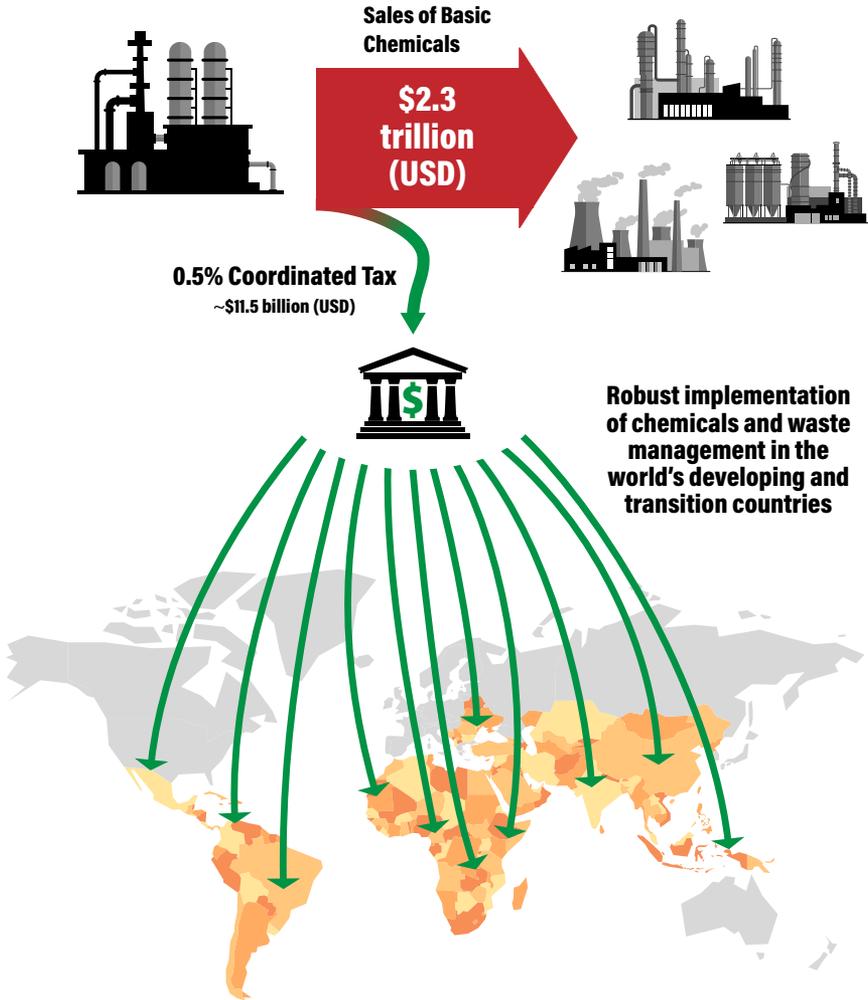
# III. DESIGN OF A COORDINATED TAX

We propose implementing a global approach to industry cost internalization, to raise new and additional sustainable funds for sound chemicals and wastes management. Under this approach, countries will agree to implement a new minimum tax or fee on chemical feedstocks, also known as platform or basic chemicals. This tax or fee will be levied in all those countries where these chemicals are produced. The revenues will be directed by these countries to a new or existing international fund to support chemicals and wastes management in developing and transition countries.

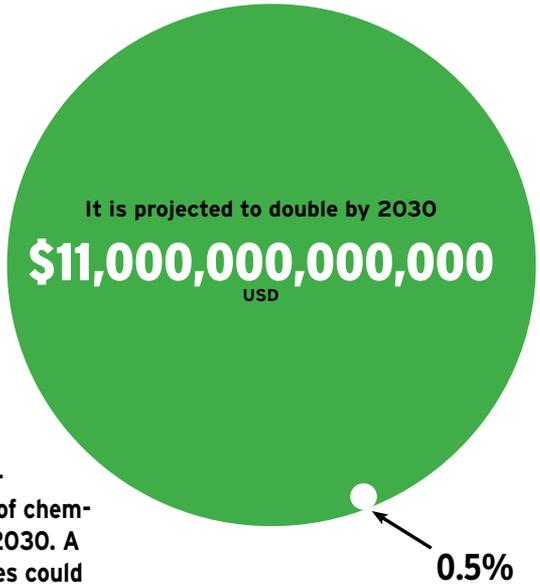
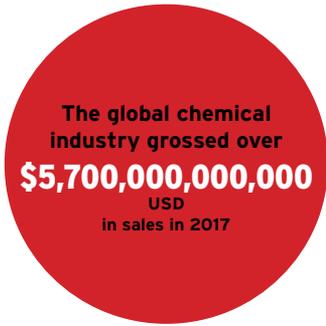
To develop this proposal, we first undertook a careful evaluation of the plausible forms a tax might take—e.g. on income, assets, sales or production<sup>57</sup> (see Annex III for the details of this analysis). The evaluation revealed that a production tax on basic chemicals has the potential to raise significant revenue at a very low tax rate. It is also less likely to produce distortions in the economy or opportunities for avoidance than some of the other taxes examined. In addition, it is more likely to deter harmful behaviors such as over-use of chemicals. Its feasibility has already been demonstrated at a national level: the United States imposed a sales tax on chemical feedstocks to partially fund its Superfund program from 1980 through 1995.<sup>58</sup> The tax applied initially to 42 chemical feedstocks whenever manufactured in or imported to the United States, at rates ranging from \$0.22 to \$4.87 per ton.<sup>59</sup> The law was amended in 1986 to also apply a tax to imports of 50 substances derived from or manufactured with the taxed feedstocks.<sup>60</sup> In the last four years before those taxes expired, they raised an average of US\$331 million per year.<sup>61</sup> In what follows, we detail first the benefits and then the proposed scope of the tax, how it could be administered, and how it embodies key principles of international law, such as common but differentiated responsibilities and the polluter pays principle.

## BENEFITS

A tax on the sales of basic chemicals has the potential to raise significant revenue at a very low tax rate. Global sales of chemicals totaled roughly US\$3.3 - 4 trillion in 2018 (excluding pharmaceuticals).<sup>62</sup> Of those sales, roughly \$2.3 trillion were of basic chemicals, according to the American Chemistry Council (ACC), which defines basic chemicals to include organic and inorganic compounds, certain acids, rare gases, and certain



dyes and inks.<sup>63</sup> If fully implemented, therefore, a 0.5% tax on production value of basic chemicals as defined by the ACC could raise \$11.5 billion annually — roughly eighty-five times the total annual assistance currently flowing to the chemicals cluster from the GEF (US\$131 million) and Special Programme (US\$4,703,849) combined.<sup>64</sup> This is the scale of financing required for full and robust implementation of chemicals and waste management in the world's developing and transition countries. It is also



The chemical industry is the second largest manufacturing industry in the world and is currently rapidly expanding. Sales of chemicals are forecast to double by 2030. A 0.5% tax on basic chemical sales could generate \$11 billion in public funds for sound chemicals management.

considerably greater than what donor governments might be expected to supply in grant aid on a continuing and sustainable basis.

Even with the agreement of just a small subset of countries, the tax would still raise significant funds. According to UNIDO, in 2009 77% of basic chemicals production *by value* was concentrated in just 10 countries: The United States, China, Japan, Germany, France, Brazil, South Korea, India, Russia, and the United Kingdom (in that order).<sup>65</sup> While production may have shifted since then, assuming for now a roughly equivalent distribution of production today, a 0.5% production tax on basic chemicals in just those ten countries would raise approximately \$8.8 billion annually. As opposed to income taxes, which may be evaded through shifting profits among related corporate entities, production taxes, especially at a low rate, should not provide much incentive or opportunity for avoidance. Finally, to the extent that these taxes directly raise the cost of basic chemicals to their buyers (typically producers of intermediate or specialty chemicals), they can have the beneficial effect of deterring over-use of basic chemicals.

## SCOPE

Taxing only chemical feedstocks maximizes the advantages of a tax that is easy to administer and is neither over- nor under-inclusive. It is easy to administer because of the relatively small number of firms engaged in the production of these basic chemicals in any country. Further, by targeting only early stages in the chain of production, this tax is designed to limit “cascading,” or when producers of later stage products pay tax on tax that has already been paid.<sup>66</sup>

By levying the tax at the first stage of production, however, the costs of the tax will be distributed throughout the value chain of production, with producers and consumers of intermediate chemicals and retail products bearing some of the costs through classic market mechanisms. Given that many of the chemicals that produce the greatest negative externalities are intermediate products such as flame-retardants, pesticides or industrial solvents, this is a welcome feature.

Opponents of a tax may argue that a tax on all basic chemicals is over-inclusive, given that some of these chemicals may be less hazardous than others. However, all chemicals and wastes require sound management. In addition, as seen in the case of persistent organic pollutants, to take just one example, many chemical hazards only become apparent over time and those hazards depend on many environmental and institutional features.<sup>67</sup> Given these considerations, and the significant legacy costs associated with untested chemicals, broad coverage of basic chemicals is appropriate.

Defining the exact products to be taxed will require further study and consultation among all SAICM stakeholders. It may be easiest to use tariff headers: The International Standard Industrial Classification of Economic Activities (ISIC) has one tariff header at the three digit level for “Basic Chemicals,” and while the Harmonized System (HS) does not have a “Basics Chemicals” header, it is possible to recreate the list of basic chemicals using HS four digit codes and correspondence tables. Any such list should at the minimum include: acetone, ammonia, benzene and methyl benzenes, bromine, butadiene, cyclohexane, calcium carbonate, chlorine,

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**THE UNITED STATES IMPOSED A SALES TAX ON CHEMICAL FEEDSTOCKS TO PARTIALLY FUND ITS SUPERFUND PROGRAM FROM 1980 THROUGH 1995....**

**IN THE LAST FOUR YEARS BEFORE THOSE TAXES EXPIRED, THEY RAISED AN AVERAGE OF US\$331 MILLION PER YEAR.**

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ethanol, ethylene, ethylene glycol, fluorine, formaldehyde, hydrogen, hydrogen chloride, hydrogen fluoride, hydrogen peroxide, iodine, nitric acid, oxygen, methanol, methyl tert-butyl ether, nitrogen, phenol, phosphoric acid, phosphorous, propylene, sodium carbonate, sodium hydroxide, sulfur, sulfuric acid, titanium dioxide, toluene, urea, and various xylenes and rare gases.

Given that the main goal of the proposed tax is to enable the chemicals industry to internalize the downstream often cross-border costs associated with the use of its products, a couple of conclusions about scope also follow. First, the proposal currently is to tax the volume of basic chemicals produced for sale — it is not designed to tax any emissions or effluents from manufacturing facilities. Second, the tax should be levied on these basic chemicals regardless of whether they are produced from hydrocarbons or bio-based sources. While there are certainly upstream harms associated with hydrocarbon-based production, those should be dealt with through taxes or regulations on the hydrocarbons themselves. This tax is focused on internalizing the costs of basic chemicals and the products manufactured from them.

## TAXABLE EVENT AND FORMULA

One way to levy a tax on particular goods is upon the sale of those goods, which has the benefit that the transaction is recorded by multiple parties.<sup>68</sup> Alternatively, the tax could be levied based upon the actual act of producing the basic chemicals — and collected when the chemicals leave the manufacturing facility. This method of levying specific product taxes on the manufacturer is common in countries at all levels of development,<sup>69</sup> and is recommended here for its administrative simplicity.

It is suggested that the tax be levied on a per-unit basis, with automatic adjustments for inflation. Without significant difference in pricing among basic chemicals manufacturers, there is little reason to recommend an *ad valorem* (per value) approach, while a per-unit approach simplifies transfer pricing.<sup>70</sup>

## DISTRIBUTION OF FUNDS

Revenues should either flow into an existing international fund or a new fund. The executive board of any new fund should contain representatives from all UN regions and from developed and developing and transition countries. The fund will need well designed access modalities for all relevant stakeholders, strong transparency requirements, and human rights safeguards.



## IV. CONCLUSION

A coordinated tax on basic chemicals operationalizes both the Integrated Approach and the polluter pays principle. It recognizes that the global nature of chemical hazards and the widespread need for regulatory infrastructure necessitates collaboration to achieve industry cost internalization. Developing this regulatory infrastructure, which will enable innovation and the development of safer forms of chemistry, is in the interest of all stakeholders. Moreover, a coordinated approach ensures a level playing field for industry and the large base enables an extremely low tax rate. The tax as proposed would yield sufficient and sustainable revenues and will be relatively easy to implement, considering the limited number of companies and countries involved.

The Beyond 2020 negotiations are the best chance in the foreseeable future to improve upon what is working in SAICM, through honest evaluation of the existing approaches and adjustments reflecting the experience of the past 15 years. Sustainable, sufficient funding is critical for achieving the sound management of chemicals and waste, and can best be achieved through a coordinated international approach to taxes on chemical producers.

# ENDNOTES

- 1 When chemicals are produced or used in a country, it is an obligation of the government to ensure that the public's health and the environment are not harmed. The costs governments incur in fulfilling this obligation are economic externalities that arise as a result of economic decisions by industry to manufacture and to use chemicals. These external costs should not be borne by the general taxpayer or national treasury, but by the chemical industry.
- 2 Governing Council of the United Nations Environment Programme (2012), *Consultative Process on Financing Options for Chemicals and Wastes: Implementation of Governing Council Decisions SS.XI/8, 26/7 and SS.XII/4 Report of the Executive Director*, UNEP/GC.27/7.
- 3 United Nations Environment Programme (2013), *Global Chemicals Outlook* 118 (Hereinafter "GCO I").
- 4 United Nations Environment Programme (2019), *Global Chemicals Outlook* 333 (Hereinafter "GCO II").
- 5 United Nations Environment Programme (2019), *Independent Evaluation of the Strategic Approach from 2006 – 2015*, SAICM/IP.3/INF/3.
- 6 GCO II, Synthesis Report viii (2019).
- 7 GCO I 48 (2013).
- 8 GCO II Synthesis Report Table 3 (2019).
- 9 Tuncak B (2018) *Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes*, Human Rights Council, A/HRC/39/48.
- 10 Hamalainen P, Takala J, Kiat TB (2017) *Global Estimates of Occupational Accidents and Work-related Illnesses 2017*, Workplace Safety and Health Institute and Ministry of Social Affairs and Health, Finland.
- 11 GCO II Synthesis Report Table 3 (2019).
- 12 *Financing the Sound Management of Chemicals and Waste Beyond 2020*, Note by the Secretariat 15-16, SAICM/IP.2/9 (Jan. 12, 2018).
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- 15 Goldenman G, Fernandes M, Holland M, Tugran T, Nordin A, Schoumacher C, McNeill A (2019) The cost of inaction: A socioeconomic analysis of environmental and health impacts linked to exposure to PFAS, Nordic Council of Ministers, TemaNord 2019:516
- 16 United Nations Environment Programme (2013), *Costs of inaction on the sound management of chemicals* 11.
- 17 Attina TM, Trasande L (2013) *Economic costs of childhood lead exposure in low- and middle-income countries*, Environ Health Perspect 121: 1097-1102.
- 18 GCO II Synthesis Report 40 (2019).
- 19 GCO II Synthesis Report 40 (2019).
- 20 GCO II Synthesis Report Table 3 (2019).
- 21 GCO II Synthesis Report 40 (2019).
- 22 United Nations Environment Programme (2019), *Independent Evaluation of the Strategic Approach from 2006 – 2015*, SAICM/IP.3/INF/3 at 78.
- 23 GCO II 231 (2019).
- 24 United Nations Environment Programme (2017) *Report on the assessment of funding needs of Parties that are developing countries or countries with economies in transition to implement the Stockholm Convention for the period 2018–2022*, UNEP/POPS/COP.8/INF32.
- 25 Note that this figure underestimates actual needs as it does not include costs associated with the 14 New POPs added to the Convention's initial list of 12 substances (as of COP7 in 2015). In addition, the study notes that in some cases, only 20 per cent of the PCB inventory or less is reported as known, indicating that PCB destruction costs could be much higher. Finally, the study assumes that data for a given country or countries are representative of all countries in the respective region regardless of size or national circumstances.
- 26 United Nations Environment Programme (2019), *Evaluation of the Implementation of the Integrated Approach to Financing the Sound Management of Chemicals and Waste* 6-7, UNEP/EA.4/INF.16.
- 27 United Nations Environment Programme (2019), *Independent Evaluation of the Strategic Approach from 2006 – 2015*, SAICM/IP.3/INF/3.
- 28 Green Climate Fund, <https://www.greenclimate.fund/> (last accessed Mar. 4, 2020).

- 29 United Nations Environment Programme (2019), *Independent Evaluation of the Strategic Approach from 2006 – 2015*, SAICM/IP.3/INF/3.
- 30 *Financing the Sound Management of Chemicals and Waste Beyond 2020*, Note by the Secretariat 8-9, SA-ICM/IP.2/9 (Jan. 12, 2018).
- 31 United Nations Environment Programme, *Report of the International Conference on Chemicals Management on the work of its fourth session: IV/1: Implementation towards the achievement of the 2020 goal*, SAICM/ICCM.4/15.
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- 43 Strategic Approach to International Chemicals Management: Overarching Policy Strategy ¶ 19.a(iii-iv)) (2006).
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- 45 “Submission by the African Group, the Latin American and Caribbean Group, Azerbaijan, Cambodia, Indonesia, the Islamic Republic of Iran, Oman, Thailand and Tuvalu on Financial Considerations,” SAICM/OEWG.3/CRP.2 (Apr. 3, 2019).
- 46 Guidance on National Authorities for Chemicals Control 30-33 (2019).
- 47 European Commission (2018), *Commission General Report on the Operation of REACH and Review of Certain Elements: Conclusions and Actions 10*.
- 48 International Pollutants Elimination Network (2017), *Beyond 2020: Financing Chemical Safety 5-6*.
- 49 GCO II 134 (2019).
- 50 LIRA Guidance 65-66 (2015).
- 51 GCO II 122, 130-133 (2019).
- 52 OECD (1975), *The Polluter Pays Principle: Rio Declaration on Environment and Development Principle 16*, A/CONF.151/26 (Vol. I) (1992).
- 53 IPEN (2017), *Beyond 2020: Financing Chemical Safety 6*.
- 54 United Nations Environment Programme (2019), *Independent Evaluation of the Strategic Approach from 2006 – 2015*, SAICM/IP.3/INF/3.
- 55 As a parallel, the IMF endorsed backward-looking taxation of previous years’ assets as part of forcing the financial industry to bear the societal costs of the global financial crisis that sector engineered. See International Monetary Fund (2010), *A Fair and Substantial Contribution by the Financial Sector 8*.
- 56 Namely the International Oil Pollution Compensation Funds. For a description, see Annex I or visit <https://iopcfunds.org/about-us/>.
- 57 See Thuronyi, V, Brooks, K, and Kolozs, Borbala (2d ed. 2016), *Comparative Tax Law* 49-50. One other broad category, customs taxes (tariffs), are not considered given the stringent international law around their use embodied in the WTO.
- 58 Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Pub. L. 96-510 (Dec. 8, 1980).
- 59 Id. at § 4661.
- 60 Superfund Amendment and Reauthorization Act of 1986, Pub. L. 99-499 (1986), §§ 4671-4672.
- 61 Reisch, M (2003), *Superfund: A Summary of the Law* at CRS-3, Congressional Research Service. Note, this figure includes revenues from the taxes on imported chemical derivatives imposed as part of the Superfund Reauthorization Amendments of 1986, but excludes the tax on petroleum or the corporate environmental income tax.
- 62 Cefic (2020), *Facts & Figures of the European Chemical Industry 6*; American Chemistry Council (2019), *Guide to the Business of Chemistry 38*.

- 63 American Chemistry Council (2019), *Guide to the Business of Chemistry*, Fig. 5.3.
- 64 United Nations Environment Programme (2019), *Evaluation of the Implementation of the Integrated Approach to Financing the Sound Management of Chemicals and Waste* at Table 2, UNEP/EA.4/INF.16 (using annualized GEF-7 figure + Special Programme Support in 2019).
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- 66 While systems like the Value Added Tax have ways of dealing with the problem of cascading, it is much simpler not to have to do so.
- 67 Coloborn, T, Dumanoski, D and Peterson Myers, J (1996), *Our Stolen Future*.
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- 69 Terra, B, *Excise Taxes* at 5 (1998); Thuronyi, V et al., "Excise Taxes" in *Comparative Tax Law*, 296 (2016).
- 70 Terra, B, *Excise Taxes* at 4–5 (1998).

# ANNEX I: PRIOR INTERNATIONAL TAXES

There have been numerous prior proposals for global or coordinated international taxes or charges. In several instances, these charges were meant to either reduce use of an environmentally harmful product or service or raise money to fund global public goods, including environmental management (or both). In a few rare cases, these proposals have been implemented. This annex describes three such taxes that have been implemented or whose details have at least partially been agreed to in an international agreement<sup>1</sup>: The tax on recipients of marine oil shipments; the tax imposed on air travel by ten countries; and the decision within the UN Convention on the Law of the Sea (UNCLOS) to collect royalties from deep seabed mining. The annex then goes on to describe a representative sample of other taxes that were proposed but have not been enacted, including one in the chemicals cluster itself. The enacted proposals demonstrate the possibility of collaborating on fiscal measures, and hopefully lessons can be drawn from some of the situations in which well-thought-out proposals for coordinated taxes have not been enacted.

## ENACTED PROPOSAL 1: OIL POLLUTION COMPENSATION FUNDS

The most successful example of a coordinated tax, at least for explicitly environmental purposes, comes from the international civil liability regime for ship-based oil pollution.

The 1969 International Convention on Civil Liability for Oil Pollution Damage established uniform rules on liability of owners of ships that experienced an oil spill. The Convention covered certain types of oil pollution damage to areas within national jurisdiction, and was replaced by the 1992 Civil Liability Convention, in force today. These rules include caps on liability for those shipowners. The parties therefore separately negotiated a convention establishing a fund that would compensate victims for damages above those liability limits.<sup>2</sup> 116 parties have now joined the 1992 Fund. Crucially, this fund is capitalized via taxes on maritime receipts of crude and heavy-fuel oil by any persons who receive above a threshold quantity of such oils and reside in a state party.<sup>3</sup>

State parties have delegated what at first appears a surprising amount of power to levy these taxes to the International Oil Pollution Compensation

Funds' management. States report the names of resident eligible entities, whether public or private, and the quantity of oil received by each to the Funds. The Funds then decide on the rate they will charge and assess levies on those entities directly, based on receipts in the previous year.<sup>4</sup>

The Funds first determine how much revenue is needed and only then establish the tax rate. Specifically, each year the Funds first calculate how much revenue they need for the general fund “to meet the anticipated payments of compensation and administrative expenses during the coming year,”<sup>5</sup> and establish the appropriate tax rate to raise that revenue. The Funds also establish “Major Incident Funds” for incidents whose costs exceed the limit established for payments from the general fund, and levy a special contribution on the same entities over multiple years as needed to finance compensation. Any excess revenue raised for the Major Incident Funds is returned to the contributors.<sup>6</sup> In 2018, the Funds raised £5.9 million for the general fund. The most ever levied in a year for the general fund was £10 million in 2008.<sup>7</sup>

This is the one known instance to date in which governments have delegated to an international entity the power to directly levy taxes on their nationals' activity within national borders. More research should be done to understand the conditions that led to the adoption of this system. It is hypothesized that the insurance-like nature of the scheme, as well as the public salience of large marine oil spills that drove the need for governments to respond in haste to the problem help explain the outcome.

## ENACTED PROPOSAL 2: PASSENGER AIR TRAVEL TAX

In the next example, the taxed activity bears less of an obvious relation to the use of the funds. France and eight other countries<sup>8</sup> impose a per-passenger fee on air transit leaving from their jurisdictions and send the revenues to UNITAID, which funds purchases of medication to treat AIDS and other infectious diseases in developing countries.<sup>9</sup> Collectively, the countries raise roughly €210 million annually via these taxes.<sup>10</sup>

There is no minimum fee—participating countries impose different rate schedules, and those schedules also differentiate between e.g., domestic

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4 IOPC Funds, “Oil Reporting and Contributions” (last accessed Jan. 2020), <https://www.iopcfunds.org/about-us/what-we-do/oil-reporting-contributions/>.

5 IOPC Funds, Contributions to the IOPC Funds 3 (Jan. 2019).

6 *Id.* at 2.

7 *Id.* at 4.

8 Cameroon, Chile, the Republic of Congo, Madagascar, Mali, Mauritius, Niger and South Korea.

9 Leading Group on Innovative Financing for Development (2010), *Globalizing Solidarity: The Case for Financial Levies* 12.

10 Cecile Barbriere, *French Auditors Launch Assault on ‘Solidarity Tax’ for World Aid*, Euractiv (Oct. 18, 2016), <https://www.euractiv.com/section/development-policy/news/french-auditors-launch-assault-on-solidarity-tax/>

vs. international flights and business/first class vs. economy tickets.<sup>11</sup> To avoid distortion and attempts at avoidance, however, the fees have generally been kept low enough that trying to avoid them (e.g. by flying from a neighboring country) would be more costly than the fee.<sup>12</sup> Nevertheless, the French fees (which are the highest) are the subject of repeated criticism from the national airline, which, despite the low rates, claims they distort travel choices.<sup>13</sup>

A tax on international air travel was proposed as early as 1995 by the Commission on Global Governance<sup>14</sup> and was incorporated into discussions among members of the Leading Group on Innovative Financing for Development at its founding conference in 2006.<sup>15</sup> (This group of states and international organizations, dedicated to finding alternative sources of funding development projects to Official Development Assistance, continues to meet).<sup>16</sup> Without any formal agreement, the above countries have implemented this more limited version of the air travel tax. The Leading Group also produced a well-thought-out proposal for a global currency transactions tax that has not been implemented, discussed below.

### (PARTIALLY) ENACTED PROPOSAL 3: DEEP SEABED MINING ROYALTIES

Finally, although no revenues have yet been raised via this mechanism, the United Nations Convention on the Law of the Sea (UNCLOS) provides that if deep seabed mining in the Area is allowed, royalties or a portion of profits will be paid into a fund to be used for the common benefit of humankind.<sup>17</sup> What exactly that means has yet to be determined, although it has been convincingly argued that the spirit of the original treaty was for redistribution of the financial benefits of deep seabed mining.<sup>18</sup> One specific use of royalties that both UNCLOS and the 1994 Agreement on Implementing Part XI of UNCLOS envisioned is both compensatory and redistributive—funds would be used to assist developing countries whose

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11 Leading Group, *Globalizing Solidarity: The Case for Financial Levies* 12 (2010).

12 *Id.*

13 Barbiere, *French Auditors Launch Assault on 'Solidarity Tax.'*

14 Pitrone, F (2014), *Environmental Taxation: A Legal Perspective* 172.

15 Leading Group, *Globalizing Solidarity: The Case for Financial Levies* 12 (2010).

16 Leading Group on Innovative Financing for Development, "Innovative Finance for sustainable development: Scale and impact - New York, FFD Side Event, 16 April 2019," <http://www.leadinggroup.org/rubrique359.html>

17 UNCLOS articles 140 and 160.2(f) empower the Assembly of the International Seabed Authority to develop rules and regulations regarding the benefit sharing.

18 Feichtner, I (2019), *Sharing the Riches of the Sea: The Redistributive and Fiscal Dimension of Deep Seabed Exploitation*, 30 *European Journal of International Law* 601, 618.

land-based mining sectors were hurt by competition from deep seabed mining.<sup>19</sup>

The International Seabed Authority (ISA) is in the process of writing the code of regulations to govern deep sea-bed mining, including establishing royalties and fees. The ISA released a draft of the latest regulations in March, 2019. The current draft code would establish different royalties for each metal targeted for exploitation in the area, using average grades of ore and average prices to set these rates.<sup>20</sup> The rates would differ between the first and subsequent periods after exploitation begins.<sup>21</sup>

The draft code also establishes annual fees on contractors licensed to operate in the area.<sup>22</sup> A portion of those fees are directed to an Environmental Compensation Fund, meant to fund activities to prevent and, in cases where the responsible party cannot be made to pay, mitigate and repair damage to natural resources in the Area.<sup>23</sup>

## PROPOSED TAXES

The universe of global or coordinated taxes that have been proposed is far larger than even those that have been only partly implemented; this section reviews just a handful of proposals, starting with one in the chemical cluster itself.

### i. Hazardous and Noxious Substances Convention

The International Maritime Organization has spearheaded the creation of the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 2010 (The HNS Convention), which mirrors the regime for damage from marine oil spills (see above). The HNS Convention was adopted in 2010 but has not achieved sufficient ratifications to enter into force.<sup>24</sup> As with the oil liability regime, the convention would a) establish common principles for liability of shipowners with respect to damages caused by maritime spills of hazardous and noxious substances; b) establish an upper cap on that liability; and c) create a compensation fund for damages

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19 United Nations Convention on the Law of the Sea art. 150.10, Dec. 10, 1982, 1833 U.N.T.S. 397; Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea, Section 7.1.

20 International Seabed Authority, Draft Regulations on Exploitation of Mineral Resources in the Area, ISBA/25/C/WP.1, Regulation 64 & Appendix IV (Mar. 25, 2019).

21 *Id.*

22 *Id.*, Regulations 84-85.

23 *Id.*, Regulations 54-56.

24 IOPC Funds, "Status of the HNS Convention and 2010 Protocol," <https://www.hnsconvention.org/status/>.

above the liability cap, to be funded by mandatory contributions from all recipients of hazardous and noxious substances in state parties.<sup>25</sup>

## ii. Plan of Action to Combat Desertification

One early issue for which a coordinated tax was considered was desertification. The UN General Assembly commissioned a report on possible means of achieving additional and automatic funding for the Plan of Action to Combat Desertification, the predecessor to the UNCCD.<sup>26</sup> The report, delivered in 1980, first analyzed all the proposals to date for global taxes and other “automatic” sources of funding made within the U.N. system, including a general tax on trade, or specific taxes on the trade of petroleum and other hydrocarbons. The report’s authors thought a general tax on trade and fees on the operators of satellites in the Earth’s orbit to be the most promising sources of funding for combating desertification.<sup>27</sup> However, neither tax was implemented and the Plan of Action, as well as the UNCCD which replaced it, continued to be chronically underfunded.<sup>28</sup>

## iii. Carbon tax

Various proposals have been put forward over the years to establish a global tax on carbon (usually in the form of a tax floor that countries would be free to establish their rates above). Some authors of these proposals, such as the High Level Panel on Financing for Development were focused more on raising revenue to fund a number of global public goods (which included activities to combat climate change, like reforestation).<sup>29</sup> Others, including the IMF, were more focused on the Pigouvian effects of the tax and its importance to achieving the necessary reductions in GHG emissions. The IMF proposed a floor of \$75/ton of CO<sub>2</sub> by 2030, up from the current average price of \$2/ton imposed by various market based measures countries have passed to date.<sup>30</sup> The IMF highlighted the need for such coordination to address competitiveness concerns and the present ambition gap.<sup>31</sup> While acknowledging that a tax at this level would impose substantial new costs on households, the IMF proposed reducing

25 International Maritime Organization, International Tanker Owners Pollution Federation, & International Oil Pollution Compensation Funds, *The HNS Convention: Why it is Needed*, available at <http://www.imo.org/en/MediaCentre/HotTopics/Pages/HNS-2010.aspx>

26 G.A. Res. 34/84 (Dec. 18, 1979)

27 Study on financing the United Nations Plan of Action to Combat Desertification, A/35/396 (Sept. 17, 1980)

28 Hunter, D, Salzman, J, & Zaelke, D (2<sup>nd</sup> ed. 2002), *International Environmental Law & Policy* 1114, 1121

29 Recommendations of the High-level Panel on Financing for Development, A/55/1000 at 27 (June 26, 2001)

30 International Monetary Fund (2019), *Fiscal Monitor: How to Mitigate Climate Change* 7.

31 *Id.* at 11.

more distortive taxes, such as income tax, or at least rebating the carbon tax to the poorest households to compensate for these new costs.<sup>32</sup>

There have been numerous other proposals for taxes or fees on environmentally destructive activities. The Commission on Global Governance proposed several, including taxes on airline tickets, and user fees for the “global commons,” paid by those transporting cargo or fishing on the high seas. However, the United States, led by Senator Bob Dole, threatened to withhold assessed contributions to the United Nations if these and other proposals by the Commission *went any further*.<sup>33</sup>

#### iv. Financial or Currency Transactions Tax

A global tax on currency transactions was initially proposed by James Tobin in 1972 as a means of reducing destabilizing speculation. However, other thinkers have adopted the proposal for raising revenue for global public goods. For example, the aforementioned Leading Group on Innovative Financing for Development argued that a Tobin Tax would be the best way of raising funds for a variety of global public goods. The Leading Group was confident such a tax could be imposed with minimum required administrative effort of governments, thanks to the existence of a central institution for currency trades and their electronic nature.<sup>34</sup>

Proposals for a broader tax on financial transactions (e.g. including stocks, bonds, derivatives, and other instruments) also multiplied in the wake of the financial crisis—again, both as a means of forcing those who engineered the crisis to cover some of its social costs, and to deter future risky behavior.<sup>35</sup> While many countries impose some form of domestic tax on financial transactions, achieving even regional coordination has proved difficult—the European Commission has repeatedly tried and failed to achieve buy-in for a regional financial transactions tax.<sup>36</sup> Instead, a subset of countries led by Germany and France are currently seeking to reach agreement on a financial transactions tax through the procedure of “enhanced cooperation” which does not require unanimity.<sup>37</sup>

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32 *Id. at 16.*

33 Pitrone, F (2014), *Environmental Taxation: A Legal Perspective* 172.

34 Leading Group on Innovative Financing for Development (2010), *Globalizing Solidarity: The Case for Financial Levies* 21-25.

35 Bird, R (2016), *Global Taxes and International Taxation: Mirage & Reality: Part I J. Int. Tax 'n. 54.*

36 *Id. at 54-55.*

37 Outcome of the Council Meeting, 3699th Council meeting Economic and Financial Affairs, 10336/19 (June 14, 2019).

# ANNEX II: SELECTED NATIONAL COST RECOVERY MEASURES DIRECTED AT THE CHEMICALS SECTOR

To determine both the extent to which national cost recovery is underway and whether the proposed tax would be duplicative of any national taxes, a search for currently-in-force national level cost recovery instruments on the chemical sector was conducted. This search relied on both the OECD Policy Instruments for the Environment (PINE) database and several other documents to identify cost recovery instruments, including the draft SAICM Secretariat's note on this issue, and a review by Slunge and Alpi-zar.<sup>71</sup> We believe we have identified most if not all currently-in-effect cost recovery instruments directly imposed on the chemicals sector (charges on ozone depleting substances are excluded). These data are useful in confirming that an excise tax on basic chemicals will not be very, if at all, duplicative, and that no country currently funds all of its chemicals management costs through cost recovery instruments. Where discoverable, we have indicated both the amounts of the charge and what the funds from each instrument are directed to. Only national level instruments are presented, with the exception of EU REACH.

<b>Country</b>	<b>Type</b>	<b>Instrument Name/ Establishing Legislation</b>	<b>Details of scope (i.e. what or whom is taxed or for what service is a fee charged)</b>	<b>What it funds</b>
Belgium	Tax	Royal Decree fixing the fees and contributions due to the Budgetary Fund for Raw Materials (1998)	Special tax of €2.5/kg on the sales of five substances (diuron, atrazine, simazine, isoproturon, and lindane)	Paid into the Budgetary Fund for Raw Materials.  Funds the evaluation work related to data submitted by a party declaring the introduction of a listed substance on the market.
Belgium	Fee	Royal Decree fixing the fees and contributions due to the Budgetary Fund for Raw Materials and Products (2011)	Fee for approval of a pesticide for agricultural use, a plant protection product or an adjuvant at the Federal Public Service Public Health, Safety of the Food Chain and Environment (Between €1,500 and €20,000 depending on whether the product contains an active substance which is not yet approved or not yet deemed to be approved under Regulation (EC) No 1107/2009)  Also an annual fee paid by manufacturers and importers of pesticides (amount established using a formula based on quantity of pesticide placed on the Belgian market in the preceding year and the classification of the pesticide).	Annual fee to the Budgetary Fund for Raw Materials and Products for approval of chemicals.  Contributions to the Budgetary Fund for Raw Materials and Products fund the proper functioning of the Plant Protection Products and Fertilizers Service.  Studies to support applications for authorization of products.
Bulgaria	Fee	Plant Protection Law (2014)	Fees for issuance of plant passport or phytosanitary certificate; registration of pesticides, synergists, antidotes, and other active ingredients in plant protection products.	Costs of issuing permits and certificates, laboratory tests and other services provided by the relevant agency.
Canada	Fee	Pest Control Product Fees and Charges Regulation	Application fee to register new pesticide or amend registration for new use; annual charge per pesticide registered.	Earmarked for Pest Management Regulatory Authority—revenue makes up roughly 26% of its annual budget.

<b>Country</b>	<b>Type</b>	<b>Instrument Name/ Establishing Legislation</b>	<b>Details of scope (i.e. what or whom is taxed or for what service is a fee charged)</b>	<b>What it funds</b>
China	Tax	Environmental Protection Tax Law (amended 2018)	Taxes emissions of pollutants to air, water and soils. Included under water pollutants are a number of organic chemicals, which are taxed according to a calculated "pollution equivalent value."	National budget.
Costa Rica	Fees	Online Registration of Products of Sanitary Interest (Registro de Productos de Interés Sanitario en línea)	Fees for registering new pesticides, fertilizers, and other chemicals (€192), as well as for other services, including testing and inspections.	Cost of designing and maintaining the registration system's online platform as well as other administrative costs.
Denmark	Tax	Duty on certain chlorinated solvents	Tax on manufacturers and importers of certain hazardous chemicals: Dichloromethane, Tetrachloroethylene, Trichloroethylene (€0.27 per kg net weight of the above mentioned substances)	Not indicated.
Denmark	Tax	Duty on pesticides	Pesticides (varies according to toxicity, but with a base rate of €6.67 per kg of active substances).	Offsets reductions in land value tax Research
Denmark	Tax	Nitrogen Tax Act	Sales tax on manufacturers and importers of certain fertilizers at the rate of €0.67/kg of nitrogen content of fertilizer. Only levied on sales to farmers who are not registered in the "Fertilizer Accounting System." Levied on sales of ammonia, potassium nitrate, calcium nitrate, ammonium chloride, and fertilizers of heading 3102 and 3105 of the EU combined nomenclature.	Tax is part of the Aquatic Environment Plan II, but not specified whether it funds activities under this plan.

<b>Country</b>	<b>Type</b>	<b>Instrument Name/ Establishing Legislation</b>	<b>Details of scope (i.e. what or whom is taxed or for what service is a fee charged)</b>	<b>What it funds</b>
European Union	Fee	REACH Regulation	Registration of chemicals; Authorization of new substances of very high concern; other fees.	70% of the budget of the European Chemicals Health Agency.
Finland	Fee	Plant Protection Products Act	Non-point sources of water pollution - Pesticides registration fee: €105	Administrative tasks related to environmental policy, including costs of assessment.
Finland	Fee	Regulation of the Ministry of Social Affairs and Health on the Provision of Information on Chemicals	Notification fee for chemicals placed on Finnish market, as well as for many other services performed by the Agency for Safety and Chemicals.	Fees for many services, including processing applications, inspections, granting of certificates and more.
France	Tax	Charge for Diffuse Pollution	Levied on sales or transfers of certain types of pesticides. (between €0.9 and €9 per kg, depending on the pesticide category)	Implementing pesticide reduction policy and managing hazards associated with pesticide use.
Italy	Tax	Tax on pesticides	Sales tax on certain pesticides-2% of final sale value.	Research into organic farming techniques and quality control measures.
Mexico	Tax	Tax on pesticides	Pesticide production and importation. Set according to toxicity: range from 6% to 9% of value.	National budget.
Norway	Fee	Regulations on pesticides; Regulations on fees in food management	Pesticide production and importation	Fee for services from the Norwegian Food Safety Authority, including processing applications and inspections.

<b>Country</b>	<b>Type</b>	<b>Instrument Name/ Establishing Legislation</b>	<b>Details of scope (i.e. what or whom is taxed or for what service is a fee charged)</b>	<b>What it funds</b>
Norway	Tax/fee	Tax on trichloroethene (TRI)	Hazardous chemicals: Imports or domestic production of trichloroethane (€8.07 per kg.)	Implementing preventive and mitigating measures for environmental damage in accordance with the rules of the Pollution Control Act.  Payment of reimbursement and expenditure on information and administration of the scheme.
Sweden	Fee	Fee for chemical products	Authorization fee for pesticides and hazardous chemicals.  Annual fee based on amount of chemicals produced or imported and number of chemicals registered with Kemi.	Financing the activities of Swedish Chemicals Inspectorate.
Sweden	Tax	Tax on chemicals in certain electronic products	Electronic equipment containing certain chemical components (Tax varies depending on the chemicals concerned.)	National budget.
Sweden	Tax	Tax on pesticides	Non-point sources of water pollution: Pesticides (€3.59 per kg active constituent.)	Research and advice on reducing the use of commercial fertilizers and pesticides and environmental improvement measures in agriculture.  Activities of the Swedish Chemicals Inspectorate.

Country	Type	Instrument Name/ Establishing Legislation	Details of scope (i.e. what or whom is taxed or for what service is a fee charged)	What it funds
United Kingdom	Fee	Plant Protection Products (Fees and Charges) Regulations 2011 No. 2132 (as amended 2016)	Authorization fee for pesticides, active substances, safeners, and synergists. Fee for recognition of a test facility or organization. Annual fee calculated on the basis of an authorization holder's percentage of total annual turnover in the UK.	Application fees represent the nominal costs of processing the application; Annual fees meant to cover all other costs of complying with certain EU regulations and directives on plant protection products.
Vietnam	Tax	Environmental Protection Tax Law of 2010.	Sales tax applied to pesticides, herbicides and other restricted use chemicals (among other products) Pesticides \$.04/kg & herbicides \$.02/kg in 2018.	National budget.
Zambia	Fee	Environmental Management (Licensing) Regulations	Licenses for manufacturing of chemicals, registration, importation and exportation, distribution, transportation, pest control and fumigation	Monitoring & Enforcement Activities of Environmental Management Authority.

# ANNEX III: COMPARISON OF COORDINATED TAX OPTIONS

## I. INTRODUCTION

There are numerous forms a coordinated tax on the chemicals industry could take. Four illustrative types of tax were chosen for consideration based on review of both the literature on taxation and prior proposed and enacted global taxes. In each case, the proposal attempts to put the costs of managing risks associated with chemicals on the producers and users of chemicals.

The first approach would raise corporate *income* taxes on the chemicals industry, just as some countries already impose higher tax rates on petroleum producers or the financial sector. The second approach would institute what in many countries would be a new tax on the *assets*—cash, land, physical capital, inventory, and/or intellectual property—of companies producing and selling chemicals and waste. The third approach would tax *transactions* in chemical industry securities. The fourth and final approach would impose an *excise tax* on one or more classes of chemicals.

## II. CRITERIA

To choose among these options, this analysis relied on the following five criteria. The order they are presented below is not a reflection of perceived importance.<sup>1</sup>

### A. *Sufficient revenue*

This criterion was meant to capture whether a particular tax is associated with a base large enough to provide the necessary revenues. Assessment under this criterion was necessarily imprecise for two reasons: 1) The amount of necessary revenues is at present unknown, since global data on the present and future costs of chemicals management are lacking<sup>2</sup>; and 2) whether a base is large enough depends mathematically on how large the tax placed on it will be—however there also may be limits to how large any tax can be before it is self-defeating (shifting behavior or assets away

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2 SAICM Secretariat (2018), “Financing the Sound Management of Chemicals and Waste Beyond 2020” at 21.

from the taxed activity or class of assets such that less overall revenue is collected). Despite this, the options were able to be compared against each other and against a rough benchmark of estimated necessary financing.

### ***B. Limiting distortions and avoidance***

This criterion is meant to cover at least three distinct concerns, one focused on the economic impacts of the tax and two on its environmental impacts. While different stakeholders might be more or less concerned about any of the three, all should be taken into consideration. The first is how much a tax shifts economic behavior away from the most productive use of resources. The second is whether a tax will fail to reduce environmentally harmful behaviors because of the problem of leakage. The third is whether a tax will incentivize new environmentally problematic behaviors.

The second concern arises when environmentally problematic production or consumption occurs beyond the taxing jurisdiction as well as within it, and the tax is meant in part to be Pigouvian—in other words to deter such harmful behavior. In such scenarios, there are concerns over “leakage”—i.e. when a tax is not applied in every jurisdiction, as very few are, the concern is that the tax could shift consumption from tax-bearing to non-tax bearing producers, thus limiting its deterrent effects.<sup>3</sup> And even where a tax is universal, the third concern arises if the products which are substitutes for the taxed product—which will likely see increased demand as a result of the tax increase—themselves have harmful side-effects.<sup>4</sup>

### ***C. Technical and Legal Feasibility***

Technical feasibility refers to how easy it would be to design and implement an effective version of the proposed tax. Availability of necessary data or the ease of obtaining it, ability to construct necessary equivalencies between harm and tax, and the level of new resources required for implementation and enforcement all make up this criterion.

Legal feasibility captures whether, should a measure be challenged before a national or international juridical body, it would be likely to be upheld. This analysis sticks primarily to two areas of international law: international tax treaties, which allocate rights to tax income between jurisdictions; and international trade law, which, among other things, governs taxes on imports and subsidies of exports.

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<sup>3</sup> Pitrone, F (2014), *Environmental Taxation: A Legal Perspective* 70.

<sup>4</sup> Metcalf, G (2019), “On the Economics of a Carbon Tax for the United States” 28.

One critical feature of international trade law in this context is that of border tax adjustments, or “BTAs.” Essentially, the General Agreement on Tariffs and Trade (GATT) forbids countries from imposing charges above and beyond a country’s tariff bindings on imports—except where those charges represent a BTA to equalize the tax treatment of those imports with domestically produced goods.<sup>5</sup> BTAs are also permissible in the form of tax rebates or exemptions for domestically produced goods upon export.<sup>6</sup>

In both cases, only so-called “indirect” and not “direct” taxes may be adjusted. The basis for this rule comes primarily from a 1970 report of experts commissioned by the GATT Secretariat called the Working Party on Border Tax Adjustments as well as from the Agreement on Subsidies and Countervailing Measures (SCM Agreement). Although there are some differences between the Working Party Report and the SCM agreement, basically, “direct” taxes are those levied directly on producers, including payroll and income taxes. “Indirect” taxes are those placed on consumption or transactions, including excise taxes.<sup>7</sup> The reason only indirect taxes were deemed eligible for adjustment is often described as being that the parties and experts believed these taxes were easier for producers to pass on to consumers in the form of higher prices—or at least the process of their doing so was more transparent—than direct taxes.<sup>8</sup> Equalizing competition between domestic products and imports, or between exported goods and the goods in destination countries, therefore can be achieved through adjusting indirect taxes in a way it cannot (in theory) be achieved by adjusting direct taxes.

#### **D. Political Feasibility**

The above criteria all feed into political feasibility, or how likely a measure would be to obtain support among the necessary stakeholders. However, industry, consumer, and voter preferences and geopolitical dynamics are also key ingredients in determining political feasibility. Again, there is

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5 Pirlot, A (2017), “Environmental Border Tax Adjustments and International Trade Law” 167. Pirlot and other authors differ on how to interpret these articles and panel and Appellate Body reports, for instance over the issue of when in the process of importation and sale a BTA on imports may be legally applied and which articles are involved in determining the answer (*Compare id.* with Trachtman, J (2016), “WTO Law Constraints on Border Tax Adjustment and Tax Credit Mechanisms to Reduce the Competitive Effects of Carbon Taxes.” (Resources For the Future). But the details of that disagreement would only become relevant far down the line, if at all.

6 GATT Articles VI and XVI and the Agreement on Subsidies and Countervailing Measures Articles 1, 3, and Annex, allow for the non-charging or rebate of certain taxes on exports.

7 Agreement on Subsidies and Countervailing Measures Annex I.

8 See, e.g. Pauwelyn, J, “Carbon Leakage Measures and Border Tax Adjustments Under WTO Law” 476-77, in *Research Handbook on Environment, Health and the WTO* (Geert Van Calster & Denise Prevost eds., 2013)

much uncertainty in determining the political feasibility of these proposals and we present only a rough estimate.

### ***E. Fidelity to the polluter pays principle***

While obtaining sufficient revenue to fund chemicals management, especially in developing countries, is what motivates this proposal, the Polluter Pays Principle should continue to provide some normative guidance as to *how* that goal is reached. Accepting that there are differences in interpretation of what the Polluter Pays Principle dictates, options are evaluated based on the extent to which they cause polluters to internalize the costs of managing chemicals safely.<sup>9</sup>

## **III. ANALYSIS OF OPTIONS**

### ***A. Income tax***

***How it works:*** A tax on corporate income is a feature of nearly every national tax system.<sup>10</sup> Given that many businesses operate outside of their countries of residence, the right to tax streams of income is allocated via tax treaties and domestic law to avoid double taxation by balancing rights to tax income at the source and to tax it in the business's country of residence.<sup>11</sup> Many of these treaties are based on an OECD model convention, and a significant process is under way at the OECD to propose reforms to the international income tax system, given that many firms hide profits through shell companies and tax shelters, which the OECD terms "base erosion and profit shifting."<sup>12</sup>

As applied to the chemicals cluster, this option would raise income tax rates on corporations engaged in the manufacture and/or sale of chemicals. Some countries already impose higher corporate income tax rates on petroleum producers or the financial sector.<sup>13</sup> The marginal additional revenues from the higher rates would then go into the fund for management costs associated with this sector.

***Evaluation:*** An income tax scores low on all of the five criteria, except perhaps technical and legal feasibility.

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9 IPEN (International Pollutants Elimination Network), 2017. *Beyond 2020: Financing Chemical Safety*.

10 Thuronyi, V *et al.* (2d ed. 2016), *Comparative Tax Law* 250

11 Margalioth, Y (2011), "Double Taxation" in *Max Planck Encyclopedias of International Law*.

12 See OECD, "BEPS Actions," (accessed Dec. 4, 2019), <https://www.oecd.org/tax/beps/beps-actions/>; OECD (2015), Addressing the Tax Challenges of the Digital Economy, Action 1.

13 Deloitte, "Corporate Tax Rates 2019," (accessed Dec. 4, 2019), <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-corporate-tax-rates.pdf>

## i. Revenue

First, a tax on income is not as likely to produce sufficient funds as some other options. Business expenses and capital depreciation are almost always deducted from revenue to form the taxable base<sup>14</sup>, and though there are other forms of revenue than from sales, this means a generally smaller base than a consumption tax for the same sector.<sup>15</sup> Further, given the significant use of strategies to shift profits and otherwise avoid paying taxes by multinational corporations generally, the taxable base is likely even smaller. The extent to which chemicals companies make use of those strategies would need to be investigated, although news reports have identified some examples.<sup>16</sup>

## ii. Distortions

Second, if the base is smaller, a higher marginal rate would be needed to raise the same amount of revenue, which would likely create greater economy-wide distortion than other options. Additionally, if, as discussed below, the tax leads to mergers or restructuring where they otherwise would not have occurred, that too would be distortionary.

As regards the other two concerns, leakage is not as large of a concern for the simple reason that an income tax does not really aim to shift environmentally harmful behavior, since companies generally may not avoid paying it by reducing their harmful activity.<sup>17</sup> However, the third distortion concern about substitution may be present to a limited degree: income taxes may in part be passed on in the form of higher costs for chemicals and products made from them, and it would be important to track whether this leads to increased use of substitutes or other factors of production and what the environmental effects of those changes are.

## iii. Technical & Legal Feasibility

On the third criterion, while this approach appears administratively and legally feasible, there are some concerns. This approach would require tax authorities to define the scope of *businesses* covered (as opposed to scope of products). Businesses will therefore have an opportunity to restructure in order to avoid being subject to the tax. For example, if only businesses which derive a certain percentage of profits from chemical production are subjected to the higher rates of income tax, this could lead to mergers or

14 Thuronyi, V et al. (2d ed. 2016), *Comparative Tax Law* at 246-47.

15 See, e.g., *Tax Foundation (2017), Options for Reforming America's Tax Code* 91-92.

16 European Greens (2016), *Toxic Tax Avoidance*.

17 Though one could imagine adding special exemptions or deductions for greener business practices—however, in that scenario the exempt companies would not face competition concerns.

expansion into other industries. Alternatively, the tax could be structured as a tax on profits solely from the production of chemicals, regardless of the other activities of a business, but that would likely pose certain book-keeping challenges given the need to separate out business expenses just for the chemicals portion of a company. Further, the system of international income taxation is under scrutiny at the moment, and the OECD's project on Base Erosion and Profit Shifting could lead to substantial alterations to the present allocation of taxing rights, making forecasting the administrability of this tax more difficult.

Importantly, if some countries with present or future rights to tax corporate income do not agree to the harmonized tax, those countries who do will be unable to impose border tax adjustments (on either exports or imports) since corporate income taxes are not adjustable.<sup>18</sup> This could harm the competitiveness of their firms.

#### **iv. Political Feasibility**

The above points on their own make a new income tax less politically feasible—especially the competitiveness concerns stemming from the non-border adjustability of income taxes. Further, the lack of a deterrent element of the tax may undermine support.

#### **v. Polluter Pays Principle**

That leads to the final point—though this tax in one way shows fidelity to the polluter pays principle (in that it literally asks the polluters to pay), it does not *directly* lead to internalization of social costs of harmful transactions in the sense of causing industry to consider those costs when making decisions.

### ***B. Tax on Assets***

***How it works:*** In contrast to a tax on income, which is essentially levied on profits realized in a given period of time, a tax on assets is levied on the pure value of assets held by an entity. Examples include taxes on real property, on wealth (usually levied at the point of inheritance), on physical capital (machinery), or on other assets on corporate balance sheets.<sup>19</sup> Taxes on assets can be levied on the same base repeatedly over multiple time periods.<sup>20</sup>

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18 Rep. by the Working Party on Border Tax Adjustments, ¶ 14, WTO Doc. L/3464 (Nov. 20, 1970); Agreement on Subsidies and Countervailing Measures Annex I, Apr. 15, 1994, 1869 U.N.T.S. 14 [hereinafter SCM Agreement].

As applied to the chemicals cluster, this option could be a tax on the value of real property, physical capital, or certain other categories on the balance sheets of corporations engaged in the manufacture and/or sale of chemicals.

**Evaluation:** A tax on assets was notably proposed for financial institutions and given serious consideration by governmental and intergovernmental actors, including the IMF, in the wake of the 2008 Financial Crisis.<sup>21</sup> However for the chemicals industry it appears less suitable.<sup>22</sup> While the base may be larger and more predictable than an income tax, and, in isolation, it may be easier to administer than an income tax<sup>23</sup>, fewer countries have an existing tax in place on business assets than on income.<sup>24</sup>

Therefore, more administrative infrastructure would need to be built specifically for this purpose. As another form of a “direct” tax, it is also not border-adjustable under WTO law. On the whole, then, this approach has little to recommend it above an income tax.

### C. Transaction Tax

**How it Works:** Taxes on transactions, also sometimes referred to as stamp duties or turnover taxes, are triggered by the act of transacting—exchanging goods and services for consideration. Typically, they are levied “ad-valorem”—that is, as a small percentage of the value of the transaction—although they could also be structured as a flat fee per transaction. Some past and proposed examples include taxes on the transfer of real property, on the issuance or sale of securities, on currency swaps, or on bank transactions more broadly defined.<sup>25</sup>

As applied to the chemicals cluster, the most relevant form of a transaction tax would be on chemical industry securities: shares of stock and company bonds and debentures.

**Evaluation:** While it could likely raise sufficient revenue, concerns over distortion and political feasibility are significant.

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21 International Monetary Fund (2010), A Fair and Substantial Contribution by the Financial Sector 8.

22 A tax on balance sheets seems to have been well suited to financial institutions since different classes of assets held by these institutions were inherently riskier, and the tax was meant in part to deter risky, destabilizing behavior. See *id.*

23 Krelove & Strotzky, “Asset and Wealth Taxes.”

24 *Id.*

25 Thuronyi *et al.*, *Comparative Tax Law* 299.

## **i. Revenue**

While data on the volume of trades in chemicals industry securities have been difficult to locate, it is suspected, given the profitability of this sector, and evaluations of the revenue-raising potential of a global financial transactions tax<sup>26</sup> that, at least from a static perspective, this tax would have the potential to raise significant revenues. Dynamically, the tax would likely lead to more companies obtaining private financing or otherwise decrease the number of taxable transactions, which would diminish revenues compared to the static scenario.

## **ii. Distortions**

The clear first-order effect of such a tax would be to raise the cost of capital for publicly traded chemicals companies.<sup>27</sup> This might discourage otherwise economically productive investments by those companies. Further, this tax would provide an initial unearned advantage to privately held companies based only on how they raise capital.

One situation in which a transaction tax may still be desirable is when the very transaction (rather than use of the product) is thought to have negative externalities. For example, the various taxes proposed either on a broad set of financial transactions or on currency trading (the latter often known as a Tobin tax) are meant in part to counter the destabilizing effects of high-frequency trading.<sup>28</sup> While the same criticism of high frequency trading in general applies to high frequency trading just in the securities of chemical companies, taxing only transactions in those securities will not deter speculation on net, as traders will just shift to other securities.

## **iii. Technical and Legal Feasibility**

We have unable to find any examples of taxes only on the sales of securities in specific industries.<sup>29</sup> In theory this tax should have relatively high technical feasibility<sup>30</sup>, although as with income taxes, it would require defining which companies are subject to having their securities taxed—definitions which may be challenged as arbitrary. Moreover, given the lack

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26 See Leading Group on Innovative Financing for Development (2010), *Globalizing Solidarity: The Case for Financial Levies* 17.

27 International Monetary Fund, *A Fair and Substantial Contribution*, 20.

28 Leading Group on Innovative Financing for Development, *Globalizing Solidarity* 17.

29 Except for securities issued by real estate holding companies, which are really a tax on the sale of real estate. See *Equitable Life Assur. Soc. of U.S. v. Murphy*, 153 Pa. Cmwlt. 338, 621 A.2d 1078 (1993).

30 International Monetary Fund, *A Fair and Substantial Contribution*, 19 (“The [Financial Transactions Tax] should not be dismissed on grounds of administrative practicality. Most G-20 countries already tax some financial transactions.”).

of examples currently in place, the domestic legal feasibility of such taxes is subject to greater doubt.

#### iv. Political Feasibility

There are concerns about this form of tax's political feasibility. For one thing, it punishes current holders of securities in the chemicals industry by lowering the likely price they would receive if they sold their securities. Further, the EU has struggled for many years to achieve internal consensus on a general financial transactions tax; the same would likely be true for an industry specific FTT.<sup>31</sup>

#### v. Polluter Pays Principle

Finally, the costs of this tax will be borne by buyers and sellers of equity and debt issued by chemicals companies as well as by the companies themselves. The former are not clearly "polluters" within the meaning of the polluter pays principle, while the latter will once again not be incentivized to internalize the social costs of their transactions into decision making in any direct way.

### D. Excise tax

**How it works:** Excise taxes target production or consumption of a specific product, often one thought to have harmful features.<sup>32</sup> Depending largely on the nature of the product, they may be imposed at the retail level, on business to business sales, or on manufacturers.<sup>33</sup> As applied to the chemicals cluster, countries could impose a new excise tax on certain chemicals. They would need to decide at what points in the value chain to place the excise tax, and whether to attempt to offer rebates to prevent cascading if levied on products falling at multiple points. The main proposal considered here is to tax only basic chemicals, which represent the single, earliest stage in the value chain after extraction and initial refining of raw materials. In this proposal, the tax would be imposed directly on manufacturers of basic chemicals according to volume of production.

Because goods and services are traded across borders, no matter how an excise tax is imposed, the jurisdiction must decide whether to apply the tax on an "origin" or "destination" basis. A tax on an origin basis taxes a transaction in the country where the goods and services are produced. A tax on a "destination" basis taxes a transaction in the country where

31 Bird, R (2016), *Global Taxes and International Taxation: Mirage & Reality: Part I* J. Int. Tax'n 54-55.

32 Tobacco, alcohol, and petroleum are common examples. See Terra, B.J.M., "Excise Taxes" in *Tax Law Design and Drafting* (Victor Thuronyi, ed. 1998)

33 *Id.*

## **BOX 1: ORIGIN-BASED AND DESTINATION-BASED EXCISE TAXES**

The proposal is currently to levy the tax on what is known as an “origin basis”: Chemicals would be taxed in the country where they are produced. In contrast, many if not most extant excise taxes are levied on the basis of destination: products are taxed by the country in which they are consumed. It would be feasible to design this tax on a destination-basis as well.

To accomplish destination-based taxation, countries typically rebate taxes paid by exporting firms, and add a charge equivalent to the domestic consumption tax to imports, through what are known as “Border Tax Adjustments” (“BTAs”). BTAs are voluntary and not mandatory under international law, and WTO law governs their permissible scope and design.

Destination-based pricing seems to have become the norm principally because countries apply consumption taxes unilaterally, and seek to keep their firms competitive both against imports and in the countries to which they export. However, with agreement among the major basic chemicals producing countries to impose a minimum excise tax, any competitiveness concerns will be addressed.

To raise the same quantity of revenue by applying this tax on the destination basis would likely require more countries to agree to implement new taxes, as basic chemicals seem to be consumed in more countries than they are produced in. For example, and while imports and exports are only rough proxies for consumption and production, in 2018, 110 countries imported more than \$1 million worth of 8 basic chemicals, while only 70 countries exported more than that value, according to the UN Comtrade database. Destination-based taxation would likely also entail various imprecise adjustments by countries based on how they evaluate the tax regimes of their trade partners, which often provokes conflict. Finally, destination-based pricing can incentivize smuggling. However, it would be feasible and generally score well on our criteria to apply the proposed taxes on a destination, as well as on an origin basis.

the goods or services are consumed. To achieve destination-based taxes, countries typically add the tax to imports and rebate it to exports.<sup>34</sup> The proposal currently, however, is to tax goods on an origin basis. While this represents a departure from how most excise taxes on goods are structured, it is thought to be the simplest form of tax to design, and reduce the

<sup>34</sup> Margalioth, Y (2011), “Taxation, International” in *Max Planck Encyclopedia of Public International Law*.

number of countries that will need to be brought on board to achieve the goals of the tax. For more on this decision, see Box 1.

Another design choice with an excise tax is whether to levy it on a specific (per-unit) or an ad-valorem (percent of value) basis. The proposal here is to tax production of basic chemicals on a specific basis—in other words, the tax would be charged to manufacturers of basic chemicals based on the volume, rather than value, of production.

**Evaluation:** An excise tax on chemicals scores well across multiple criteria.

### i. Revenue

Whether the tax is placed on basic, intermediate, or retail chemical products<sup>35</sup>—or all of the above—the base is large and revenues should be predictable. Global sales of chemicals totaled somewhere between roughly \$3.3 and 4 trillion in 2018.<sup>36</sup> Of those sales, roughly \$2.3 trillion were of basic chemicals, \$1.3 trillion “specialty” or intermediate chemicals, and \$400 billion

consumer products.<sup>37</sup> Any of these quantities of sales probably form a sufficiently large base. Taxing only basic chemicals, as proposed, a tax of one half of a percent on the value of all basic chemicals production would raise on the order of \$11.5 billion (the same outcome could be achieved with a low specific tax per volume of production).

### ii. Distortions

Using an origin-based tax, as proposed, the concerns about economic distortions and environmental leakage are present, at least when considering one country in isolation. In other words, if just one country imposed such a tax, the tax could (depending on the magnitude and the extent to which it is passed onto subsequent consumers) favor imported over domestically produced goods. It could also put that country’s exports at a disadvantage. If the country imposing the tax is also one with relatively stronger environmental regulations on manufacturing, shifting market share to firms based in other countries could also be environmentally harmful. There are

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35 These are not terms of art. The differentiated sales figures that follow come from the American Chemistry Council 2019 Business of Chemistry Report, which defines basic chemicals as those “produced in large volumes to chemical composition specifications that are homogeneous in nature; that is, there is no product differentiation. Basic chemicals are typically incorporated into a manufactured product or used in processing.”

36 Cefic (2020), Facts & Figures of the European Chemical Industry 6; American Chemistry Council (2019), *Guide to the Business of Chemistry* 38.

37 American Chemistry Council, Guide to the Business of Chemistry at Fig. 5.3.

two responses to this concern. First, if they had to, the very low rates could likely be absorbed by the taxing jurisdiction's firms (rather than raising prices and incentivizing the shift to foreign products) without serious competitiveness impacts and without encouraging those firms to shift production abroad. There are many variables that make up a decision of where to site a manufacturing facility, and a low excise tax will be just one factor.<sup>38</sup>

Second, and more importantly, the tax will *not* be imposed by any country in isolation. The goal is to get all countries with a basic chemicals sector, now and in the future, to agree to such a tax. If that is achieved, the concerns about leakage and distortion disappear. However, because of how much production is currently concentrated in a small number of countries, achieving agreement even among just those countries would also minimize this concern.

If agreement among enough countries to institute an excise tax on basic chemicals were reached, it is expected that a small portion of the cost of the tax *would* likely be passed onto consumers of basic chemicals, which are largely the manufacturers of intermediate and retail chemicals. This could encourage some firms simply to reduce the use of basic chemicals, while others would likely try to develop substitutes, whose environmental profile would need to be addressed to understand the complete environmental impacts of this tax.

### iii. Technical & Legal Feasibility

The administrative capacity for new excise taxes exists throughout most of the world—the same agencies who administer other excise taxes or even customs duties likely could, with limited training, administer the proposed tax. This is true even in strongly federalist countries like the United States without a general federal consumption tax.<sup>39</sup> Similarly, the EU presently assesses fees against chemical companies on registration of chemicals and for several other services.<sup>40</sup> These fees make up 70% of the European Chemicals Agency budget at present, though this is expected to

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38 Deloitte (2018), Paradigm shift: Using Value Chain Alignment to Reshape Your Operating Model and Tax Strategies to the Modern Business Landscape.

39 The United States has several federal excise taxes presently—and historically even had an excise tax on chemical feedstocks and petroleum that funded the Superfund trust fund, *see generally* U.S. Congressional Joint Committee on Taxation (2015), Present Law and Background Information on Federal Excise Taxes.

40 Commission Regulation (EC) No 340/2008 on the fees and charges payable to the European Chemicals Agency pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (April 16, 2008).

decline.<sup>41</sup> While an excise tax would be separate from these fees, it could likely rely on some of the existing administrative infrastructure.

#### **iv. Political Feasibility**

Importantly for political feasibility, there are already national and international models of an excise tax on industry to pay for ultimate harms associated with that industry's activities/products. In addition to the (expired) Superfund tax and the tax on Ozone Depleting Substances in the United States, and the EU's REACH funding regulation, there is the example of the International Oil Pollution Compensation Funds. Those funds (the original fund established by the 1992 convention and supplemental fund established by the 2005 protocol) are funded by taxes on maritime receipts of crude and heavy-fuel oil by any persons who receive above a threshold amount and reside in a state party.<sup>42</sup>

#### **v. Polluter Pays Principle**

As discussed, an excise tax directly encourages internalization of the social costs associated with using the taxed product. Whatever the scope of taxed products—basic, intermediate, or retail chemical products or all of the above—such a tax would satisfy the polluter pays principle since any of those categories of products pose some of the management challenges for which funding is needed, whether from their manufacture or disposal.<sup>43</sup> The question is which placement most *fully* causes internalization of harms from this sector. While the “all of the above” approach probably does so best, a tax on just basic chemicals is a close second. Basic chemicals are necessary inputs to all of the major intermediate and retail chemicals, with no real substitutes available. Basic chemicals therefore form an appropriate taxable product from a PPP standpoint not only for their own harms but as a proxy for the harms associated with products they are used to make.

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42 International Oil Pollution Funds (2019), Explanatory Note 4.



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