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Item 4 (d) of the provisional agenda*
Considerations for beyond 2020: Implementation arrangements

Financing the sound management of chemicals and waste beyond 2020

Note by the secretariat

1. At the first meeting of the intersessional process considering the Strategic Approach and the sound management of chemicals and waste beyond 2020, requests were made to develop papers related to:

   a. mapping the indicative basic cost of implementing the sound management of chemicals and waste beyond 2020;

   b. potential sources of financing resulting from Agenda 2030.

2. At the third meeting of the Bureau of the International Conference on Chemicals Management in May 2017, it was agreed that the secretariat would prepare one report for the second intersessional meeting that responds to both of the above noted requests.

3. The secretariat has the honour to provide, in the annex to the present note, the document as developed by the secretariat. It is presented without formal editing.

4. Participants may wish to take note of the information and consider it in the deliberations.

*SAICM/IP.2/1

Annex

Financing the sound management of chemicals and waste beyond 2020

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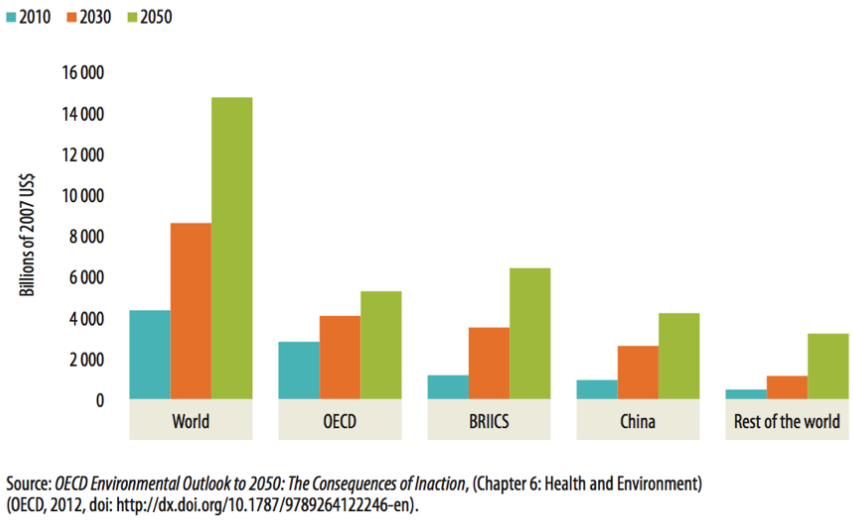
1 Introduction

1.1 Background

The sound management of chemicals and waste is inherently linked to sustainable development. Significant progress has been made in chemicals and waste management over the past decades and multi-stakeholder approaches effectively avoided costly problems. Despite many achievements, the subject remains frequently considered for a specialist technical issue or area of scientific expertise.

Related issues such as climate change and stratospheric ozone depletion have succeeded in gaining the international political momentum necessary to spur substantive policies and funding aimed at protecting human health and the environment from the associated risks. In order to achieve global sustainable development, the environmental pollution related to chemicals and waste must be treated with similar concern. Only by recognizing the inherent link of sound management of chemicals and waste to sustainable development, and its ubiquity in the economy, can chemicals and waste management be mainstreamed in national development and move away from case-by-case treatment to become better reflected in development assistance packages and in recipient countries' aid requests.

Chemical production and use is one of the major and most globalized sectors of the world economy. The important economic role of chemicals and their contribution to improved living standards needs to be balanced with the potential costs and impacts. These include the potential adverse impacts of chemicals on the environment and human health as well as the chemical industry's heavy use of water, natural resources, and energy. The diversity and potential severity of such benefits and impacts makes sound chemical management a key cross-cutting issue for sustainable development. A functional chemical management system can significantly contribute to achieving a safe circular economy while poor chemicals management could reverse successes in economic and social areas.



Source: *OECD Environmental Outlook to 2050: The Consequences of Inaction*, (Chapter 6: Health and Environment) (OECD, 2012, doi: http://dx.doi.org/10.1787/9789264122246-en).

Figure 1: Projected chemical production (sales) by region, Baseline scenario, 2010–2050

Increased prosperity contributes to increased and changed domestic consumption and increased welfare. The proportions of the world's total GDP and population are significantly changing as is the global production of chemicals as shown in Figure 1. There is also an increasing degree of global value chains with production processes divided into different locations in the world. With massive global trade, hazardous substances are not only spread by air or water between countries, they are also spread globally in products.

The Strategic Approach to International Chemicals Management (SAICM) is the international policy framework for international action on the sound management of chemicals. SAICM guides efforts to achieve the Johannesburg Plan of Implementation goal: by 2020, chemicals will be produced and used in ways that minimize significant adverse impacts on human health and the environment. The Strategic Approach covers all agricultural and industrial chemicals and connects sectors and stakeholders from agriculture, health, environment, water, transport, industry, trade, energy, mining and others to chemical safety. It is voluntary and non-binding, but since its adoption in 2006, SAICM has created a proactive, inclusive and overarching platform for engagement and commitment of governments, intergovernmental organizations, non-governmental organizations (NGOs) and industry. With the 2020 deadline approaching, stakeholders are now tasked with shaping the future of the sound management of chemicals and waste beyond 2020, including its role in supporting the 2030 Agenda for Sustainable Development.

1.2 Assumptions and limitations

Although global estimates are useful advocacy tools to highlight investment needs, there is currently very limited national, regional and global data available for the quantification of financing needs regarding the sound management of chemicals and waste. Many assessments that tackle related areas often specifically exclude the consideration of chemicals and waste given the complexity and vastness of the task in absence of reliable baseline data. The 2017 WHO Health Price Tag report for example confirms that global costing frameworks and impact models are not available for chemical poisoning.

The figures cited in this report are based on existing, known cost-estimates, and are intended to provide a rough overview on existing costs in relation to chemicals and waste management. There are numerous limitations to this work, many of which concern uncertainties and absence of projections.

2 Current financing

2.1 The integrated approach to financing the sound management of chemicals and waste

The third International Conference on Chemicals Management in 2015 welcomed the integrated approach to long term funding of the sound management of chemicals and waste through resolution III/1. The approach is a strategic and synergistic proposal adopted by the UNEP Governing Council to improve financing for the sound management of chemicals and waste in the long term and at all levels. It is composed of three complementary components: (1) mainstreaming of sound management of chemicals and waste into national budgets and development plans; (2) industry involvement including designating the responsibilities of industry and the wider business community; and (3) dedicated external financing such as support from the GEF and by the UNEA 1 established Special Programme. These elements are mutually reinforcing and are all important for the financing of the sound management of chemicals and waste at all levels (stated in Annex I of Resolution 1/5 of UNEA1).

The **mainstreaming** component is intended to integrate sound chemical management into national budgets and development plans for agriculture, health, environment, water, transport, industry, trade, energy, mining, and other sectors while also reflecting the actual

cost of mismanagement of chemicals and waste to the community. The goals are to recognize the importance of chemical and waste management in achieving the various development goals and to invest accordingly. Countries would articulate chemical and waste management priorities in country assistance plans and strategies and thus recognize the actual cost of mismanagement of chemicals and waste to the community which is often a prerequisite for directing national and international financing into sound chemical management. Mainstreaming seeks to scale up national, international and industry financing for the sound management of chemicals and waste. Since its establishment in 2006, the Quick Start Programme (QSP) Trust Fund has had 14 application rounds with 184 projects approved by the QSP Trust Fund Implementation Committee. Activities include the development of appropriate legislation and institutions and systems for chemical control. QSP-funded projects also delivered analysis, inter-agency coordination and public participation activities.

The implementation of the 2030 Agenda for Sustainable Development offers a promising entry point to advance further the mainstreaming of sound chemical and waste management into national sustainable development strategies.

Industry involvement constitutes the second component of the Integrated Approach. It channels financial resources to the chemicals and wastes agenda when, inter alia, industry internalizes the costs of complying with chemicals and wastes regulations; industry internalizes costs previously borne by the community and the environment; industry transfers technology; industry pays taxes to governments; and when industry innovates to "green" the chemical and waste lifecycle. Economic instruments can play a role in achieving the internalization of costs. However, Honkonen and Khan (2017) suggest that economic instruments should also be developed in cooperation with the chemical industry to become fully effective and supported by the industry. The benefits of any new instruments should be demonstrated to industry and other stakeholders (UNEP 2016).

The Quick Start Programme evaluation report found that industry involvement is common, if not universal, in QSP project coordination and delivery as well as in provision of information – mainly on chemical use. The report considered a wide range of private sector entities including the chemical industry, chemical users, standard-setting organizations and others. Most of the funded projects had some representation of industry in the national committees, with greater or lesser contributions (Nurick and Touni 2015).

The currently available **dedicated external financing** includes two of the integrated chemical and waste focal areas under the Global Environment Facility (GEF) as well as the Special Programme to support the strengthening of institutions at the national level for implementation of the Basel, Rotterdam, Stockholm and Minamata Conventions and SAICM. The Minamata Convention further features the specific international program in

support of capacity-building and technical assistance under the convention. The Multilateral Fund for the Implementation of the Montreal Protocol provides funds to help developing countries comply with their obligations under the Protocol to phase out the use of ozone-depleting substances.

Funding available under the SAICM Quick Start Programme has mobilized resources for national priority initial enabling activities in keeping with the work areas set out in the strategic objectives of the overarching policy strategy, in particular:

- Development or updating of national chemical profiles and the identification of capacity needs for sound chemical management
- Development and strengthening of national chemical management institutions, plans, programmes and activities to implement the strategic approach, building upon work conducted to implement international chemical-related agreements and initiatives
- Undertaking analysis, inter-agency coordination, and public participation activities directed at enabling the implementation of the strategic approach by integrating – i.e., mainstreaming – the sound management of chemicals into national strategies, and thereby informing development assistance cooperation priorities

The QSP has a limited mandate in that it provides funding only for enabling activities.

Since 2006, the now closed Quick Start Programme Trust Fund has mobilized a total of over US $47.6 million: US $37.8 million in contributions to the Trust Fund and over US $9.8 million in cash and/or in-kind contributions. Eight European donors and the United States contributed over 90 per cent of all pledges. Additional funds were also provided by Sweden and the European Union to directly support the QSP administration. The total non-Trust Fund cash and/or in-kind contributions to the Programme reported over 2006 to 2017 total US $88.5 million from 19 different contributors, including UNEP, governments, non-government and intergovernmental organizations. Therefore, the total amount of funds mobilized by the Quick Start Programme as of late 2017 was US $136.1 million (Echeverria 2017).

The Global Environment Facility has had a specific chemical and waste focal area in its sixth replenishment cycle running from 2014 to 2018. The focal area replaced the previous focal areas for persistent organic pollutants (POPs) and ozone by expanding their scope to include mercury and SAICM. The long-term goal of the GEF-6 chemical and waste strategy is to prevent the exposure of humans and the environment to harmful chemicals and waste of global importance, including POPs, mercury and ozone- depleting substances through a significant reduction in the production, use, consumption, and emissions or releases of those chemicals and waste (GEF 2014). In the 25 years from its inception through to 2016,

GEF has approved US $1.1 billion in grant funding to 482 chemical and waste projects, with an additional US $3.1 billion via co-financing (GEF 2017a).

In the GEF-6 replenishment cycle, the chemicals and waste focal area funding was increased to a total of US $554 million, which represented 12.5% of the total GEF-6 replenishment. In the Chemicals and Waste focal area, USD 13 million was allocated to SAICM, representing 2% of the Chemicals and Waste focal area budget and 0.3% of the total GEG-6 replenishment (SAICM 2015). An interesting development under GEF-7 is the creation of the proposed impact programs, with two (out of three) programs having clear linkages to the management of chemicals and waste. The Food Systems, Land Use, and Restoration Impact Programme will contribute to the removal or disposal of hazardous chemicals (especially pesticides) and waste associated with food value chains. The Sustainable Cities Impact Programme will have the removal or disposal of hazardous chemicals and improved urban waste management as an outcome (GEF 2017b).

The United Nations Environment Assembly in 2014 agreed to the Special Programme on Institutional Strengthening to support country-driven institutional strengthening at the national level for the implementation of the Basel, Rotterdam, Stockholm, and Minamata Conventions and SAICM. The goal of the Special Programme is to "increase sustainable public institutional capacity for the sound management of chemicals and waste throughout their life cycle". The financing initiative simultaneously supports strengthening the whole chemicals and waste cluster in the context of the integrated approach to address the long term funding of sound management of chemicals and waste. The programme is applicable only to activities that fall outside the GEF mandate. The Special Programme only funds government initiatives. The Trust Fund for the Special Programme has been open to receive voluntary funds since September 2015 with contributions currently at US $17 million. By the end of 2017, it had approved 17 projects amounting to US $5.1 million (Sharma 2017).

3 Financing the implementation of the sound management of chemicals and waste beyond 2020

Quantifying cost of the sound management of chemicals and waste is complex and imprecise since estimates are dependent on a host of assumptions about macroeconomic and policy environments. In addition, costing traditionally only takes into account the direct costs of an action without reflecting the benefits of that action or the costs incurred by inaction, and hence results in inflated cost estimates. Consequently, estimates of financing needs vary widely and also differ across countries and regions.

3.1 Cost of inaction

As economic development is moving forward, it is increasingly important with sound management of chemicals and waste to promote the fact that society overall benefits from chemicals rather than being negatively impacted. While the magnitude of the costs externalized by the chemical and waste industry is high, sound management of chemicals and waste can decrease or even eliminate these costs to business and society.

In the past, pollution control has yielded great economic and social benefits. For example, the removal of lead from gasoline is perhaps one of the greatest public health accomplishments, and arguably produced some of the largest reductions in pediatric morbidity, over the past 50 years. Despite a decline in blood lead concentration worldwide, lead exposure still represents a major contributor to children's intellectual disability in many low- and middle-income countries. This, in turn, translates into significant earning losses over a lifetime, which Attina and Trasande (2013) estimated $977 billions of international dollars in with economic losses equal to $134.7 billion in Africa (4.03% of GDP), $142.3 billion in Latin America and the Caribbean (2.04% of GDP), and $699.9 billion in Asia (1.88% of GDP).

Estimates by the World Bank suggest that pollution imposes substantial economic costs frequently in the range of 4 - 5 per cent of a country's gross domestic product – often exceeding the amounts countries receive in overseas development aid (World Bank Group 2017). As noted in UNEP's Global Chemicals Outlook, "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." For example, UNEP (2013) estimates USD$90 billion for health-related pesticide costs in Sub-Saharan Africa from

2005 – 2020. The entire 2009 Overseas Development Assistance to the health sector in all of Africa was US$4.8 billion – a fraction of the health-related costs due to pesticides alone. Furthermore, the estimated median annual health costs for diseases associated with endocrine disrupting chemicals in the European Union is €157 billion (Trasande, Zoeller, et al. 2015). The estimated annual costs for pollution associated with the production and use of volatile organic compounds is USD236 billion. These significant costs of environmental damage – the negative externalities of pollution and waste – are borne by society and the economy as a whole, rather than being internalized or included as part of the cost of production (UNEP 2013).

While high growth rates in many developing countries have helped reduce poverty, growth has also given rise to high levels of pollution with effects that significantly exceed other major public health care concerns. These effects of pollution fall disproportionally on the poor. Approximately 9 million people die annually from exposure to polluted soil, water and air each year, mostly young children (1.7 million) and the elderly (4.9 million). Ninety-four per cent (8.4 million) of these deaths occur in lower- to middle-income countries. By comparison, HIV/AIDS causes 1.5 million deaths per year, and malaria and tuberculosis less than 1 million each (World Bank Group 2017). The diseases caused by pollution include the traditional scourges of pneumonia and diarrhea, but increasingly they also include chronic, non-communicable diseases such as heart disease, stroke and cancer (Landrigan and Fuller 2014).

If global mercury emissions, for example, could be reduced by 50 per cent to 60 per cent before 2020, the resulting prevention of water and fish contamination, and exposures to pregnant women and children, could reap global economic benefits of between $2.2 billion and $2.7 billion in 2020 (Sundseth et al. 2010). Global pollution associated with the production and use of volatile organic compounds and mercury causes US $236 billion and US $22 billion of annual loss in economic value for ecosystem goods and service, respectively. While in Uganda, the benefits of strengthening the governance of chemicals management for the agriculture sector are estimated to be $1.98 billion over the period 2011 to 2025. Crop yield gains are estimated at 20 per cent in the cultivated areas concerned (Kateregga 2010). These figures still tend to underestimate economic impact caused by pollution because it excludes damage to most natural resources as well as water pollution and land use change (UNEP 2013).

Overall, the costs of action are not well defined and will vary widely but can safely be estimated to be much smaller than the high costs of inaction. Projects like the GEF-funded 'Integrated Health and Environment Observatories and Legal and Institutional Strengthening for the Sound Management of Chemicals in Africa (African ChemObs)' are helping to provide the scientific evidence to evaluate the economic cost and benefits of

actions, assisting decision-makers to understand and act on the outcomes of a sound management of chemicals.

3.2 Financing the 2030 Agenda for Sustainable Development

The 2030 Agenda for Sustainable Development reaffirms all the principles of the Rio Declaration on Environment and Development and it envisages, "a world free of poverty, hunger, disease and want." The Sustainable Development Goals aim to meet the dual challenge of overcoming poverty and protecting the planet. They highlight a comprehensive vision of sustainable development that embraces economic, social and environmental dimensions.

The scope of the financial means of implementation for the SDGs includes official development assistance (ODA) and debt relief, both of which will continue to be important inputs for the delivery of the post-2015 international development agenda. Developing countries need to mobilize more resources through measures that could include taxation, cutting subsidies and preventing illicit capital flows. And countries – individually or collectively – have to tap into the new and innovative sources of finance, in particular with regard to mobilizing private capital through, for example, development financing opportunities that pool public and private resources and expertise also called 'blended finance'.

The UN Sustainable Development Solutions Network values the total additional investment needed to achieve the SDGs in all countries at US $2.4 trillion a year, around 11 per cent of annual global savings, with the major part – around US $1.6 trillion – needed for infrastructure. But while trillions of dollars will be required in incremental investments to achieve all SDGs, public financing needs for health, education and other services are on the order of tens of billions of dollars. It is important not to confuse these investment needs since each sector will require a different resource mobilization strategy (Schmidt-Traub 2015).

At the same time, there should be sufficient supply of capital available to finance the SDGs. Financial assets currently exceed US $290 trillion and are growing at 5 per cent a year. Even a small shift in the way resources are allocated would have an enormous impact. Nearly US $100 trillion is invested in pension funds, insurance companies and investment funds, including sovereign wealth funds. As of November 2016, over US $11 trillion was invested in capital that could be invested more productively elsewhere. The main constraint is that too many investors want immediate results. Over half of CEOs report feeling under pressure to deliver financial results within a year or less, leading many to prioritize immediate shareholder rewards over investments for the future (BSDC 2017).

Lengthening the investment horizon and attracting investors to sustainable investments in line with the SDGs requires unprecedented collaboration between the public and private sector. The Business and Sustainable Development Commission proposes three areas of action for business leaders to pursue in response to the Global Goals opportunities:

- Standardizing and simplifying sustainability reporting;
- Unlocking public and private investment in infrastructure;
- Aligning financial regulation and investment principles with sustainable development.

3.3 Chemicals and waste within the 2030 Agenda for Sustainable Development

Many of the SDGs have close links to sound chemical and waste management. Some of the most closely related goals include the following specific targets:

> 2.4. By 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality
>
> 3.9. By 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination
>
> 6.3. By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
>
> 12.4. By 2020, achieve the environmentally sound management of chemicals and all waste throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
>
> 12.5. By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse

It is important to highlight that the SDGs are inter-related, not independent, and SDG target 12.4 is embedded within SDG 12: Ensure sustainable consumption and production patterns. In summary, SDG 12 is about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. Sustainable consumption and production requires a systemic approach and cooperation among actors operating in the supply chain, from producer to final consumer. Overall policy principles and sectoral approaches could help the chemicals and waste community to engage with a broader group of stakeholders and promote wider cooperation and investment.

The following section presents selected financing needs along the SDG/ sustainable chemicals and waste management nexus and provides an illustration of the issue rather than comprehensive analysis.

3.3.1 Sustainable food production (2.4)

With food expenses accounting for 50-70 per cent of spending by people living under the $1.25-a-day poverty line, eradicating hunger is closely related to ending extreme poverty. Chemical and waste management plays a crucial role in improving agricultural production. Preliminary estimates for annual investment needs for food security and agriculture run to US $125 billion per year from 2015 to 2030, of which US $61 and US $64 billion are needed in LICs and LMICs, respectively (Schmidt-Traub 2015). FAO et al. (2015) estimate that 60 per cent of investments in rural productivity need to be publicly financed. In comparison, the United Nations Conference on Trade and Development (UNCTAD) projects that 75 per cent of agricultural investments can be privately financed (UNCTAD 2014). This much higher estimate of the share of private investment results from the fact that the bulk of UNCTAD investment needs include investments to increase the productivity of commercial agriculture, which should indeed be overwhelmingly privately financed. If investments in rural infrastructure (roads and electrification, estimated to require public funding up to 80-90 per cent of total needs by FAO et al.) are removed from the analysis, the public share of investments falls to about 49 per cent (Schmidt-Traub 2015).

The more recent report by the Human Rights Councils Special Rapporteur (2017) on the right to food counters UNCTAD's endorsement of commercial agriculture as path to achieving greater sustainability and suggests that industrial agrochemical dependent farming promotes pesticide reliant industrial food systems. The Special Rapporteur concludes that the most effective, long-term method to reduce exposure to toxic chemicals is to to promote agroecological farming which can help secure livelihoods for smallholder farmers. If properly managed, biodiversity and efficient use of resources can enable smallholder farms to be more productive per hectare than large industrial farms (UN Human Rights Council 2017).

Climate change will have a significant impact on the investment needs for food security and

sustainable agriculture by influencing where crops can be grown and livestock reared. In the Economics of Adaptation to Climate Change Synthesis Report, the World Bank (2010) estimates investment needs for adaptation in the agricultural sector between US $ 2.5-3 billion. In addition, agriculture accounts for 10-12 per cent of global greenhouse gas emissions (IPCC 2014), notably through methane emissions from livestock and rice paddies, as well as nitrous oxide from the use of fertilizer. Changes in consumption patterns will have to play a significant role in mitigation in agriculture, but interventions are also possible at the production stage. These include new low-emitting production systems, particularly through avoided deforestation and improved livestock, and paddy rice and nitrogen fertilizer management.

A lack of good chemical management may also deepen poverty as harmful chemicals damage the natural resources upon which people depend for their economic livelihoods. In Mali for example, pesticide resistance and destruction of natural enemies, resulting from ineffective pest management, were estimated to cost over US $8.5 million annually in cotton alone, and the African Stockpiles Programme calculates that to clean up the 50,000 tonnes of obsolete pesticides in Africa will cost around US $150-175 million. The United States spends US $1 billion per year on efforts to clean up hazardous waste Superfund sites. The U.S. EPA estimates that cleanup costs for additional sites require about US $250 billion (UNEP 2013).

3.3.2 Reduced number of deaths and illnesses (3.9)

Transforming health systems towards achievement of the health Sustainable Development Goals requires an additional US $274 billion spending on health per year by 2030 according to recent WHO estimates. In their ambitious scenario the number rises to US $371 billion – the equivalent of an additional US $41 (range $15–102) or US $58 (range $22–167) per person, respectively, by the final years of scale-up (Stenberg et al. 2017). Although these figures exclude direct effects from chemical poisoning in their projection due to the absence of costing frameworks and impact models, sound chemical and waste management has far reaching impacts on health care related cost.

In a SAICM context, a conservative future risk scenario analysis suggests that accumulated health costs in sub-Saharan Africa will increase to approximately US $97 billion by 2020 (UNEP 2013). This is assuming the current inadequate capacities for the sound management of pesticides at the national and local levels remain constant. These costs apply only to direct injury and not to environmental costs, for which data were not available (UNEP 2013). They also do not include costs linked to fatal injuries. For 2009, the conservatively projected costs of inaction related to inappropriate pesticide use alone is greater than the total ODA to general healthcare in Africa as the total Official Development

Assistance to Health in Africa in 2009 was US $4.8 billion (not including targeted aid for HIV/AIDS).

In the United States alone, the annual cost of diseases in children caused by environmental pollution is estimated to be US $76.6 billion (Trasande and Liu, 2011) and the cost of occupational diseases and injuries is US $250 billion (Leigh 2011). In the European Union, the median annual health cost for diseases associated with endocrine-disrupting chemicals amounts to €157 billion. The impacts include IQ loss and associated intellectual disability, autism, attention-deficit hyperactivity disorder, childhood obesity, adult obesity, adult diabetes, cryptorchidism, male infertility, and mortality associated with reduced testosterone (UNEP 2012). Europe's nitrogen pollution costs between €70 and €320 billion per year of which 75 per cent is related to air pollution effects and 60 per cent to human health. The total damage equates to €150-750 per person, or 1-4 per cent of the average European income (Sutton and Grinsven 2011).

3.3.3 Improved water quality (6.3)

Overall investment needs for ensuring access to safe water and improved sanitation are distinct from the broader investment needs in water management and sanitation infrastructure. Incremental investment needs for water and sanitation are estimated at US $28 billion ($7 billion in LICs and $21 billion in LMICs) per year. The incremental investment needs for climate change adaptation and mitigation add US $14-17 billion, which raise the total to US $42-45 billion ($11 billion in LICs and $31-34 billion in LMICs) per year (Schmidt-Traub 2015).

Access to safe drinking water depends in part on adequate management of the quantity and quality of freshwater resources. The quality in turn is affected by infrastructure for wastewater management, pollution control, and effective integrated water resources management including the sound management of chemicals and waste. According to Schmidt-Traub (2015) the impact of such investments on the investment needs in the water and sanitation sector has not been addressed quantitatively.

3.3.4 Environmentally sound management of chemicals and all waste (12.4)

Target 12.4 specifically addresses the sound management of chemicals and waste by stressing the role and responsibility of international frameworks to achieve SDG 12. As the overarching international framework for chemical safety, SAICM plays a crucial in bringing together the various multilateral environmental agreements on specific (groups of) chemicals or waste.

Relevant international frameworks for this target include:

- SAICM
- Rotterdam Convention (The Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade)
- The Stockholm Convention (Protecting Human Health and the Environment from Persistent Organic Pollutants)
- The Basel Convention (Controlling Transboundary Movements of Hazardous Wastes and their Disposal)
- Minamata Convention (Global Treaty to Protect Human Health and the Environment from the Adverse Effects of Mercury)
- Montreal Protocol on Substances that Deplete the Ozone Layer / The Vienna Convention for the Protection of the Ozone Layer
- Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)

Detailed financial projections for implementing Target 12.4 under each framework are not available, however, a financing needs assessment performed under the Stockholm Convention provides some indications for implementation of the treaty. The estimate of needs provided at the 8th Conference of the Parties for the 2018 – 2022 GEF-7 time-period is approximately US$4.4 billion. Note that this estimate does not include costs associated with the new POPs added to the treaty. In addition, PCB destruction costs may be higher since only 20 per cent of the PCB inventory is known. The Stockholm Convention needs estimate for the GEF-7 period of US$4.4 billion contrasts with the draft GEF-7 programming document allocation for the Chemicals and Waste focal area of US$850 million.

3.3.5 Reduce waste generation (12.5)

According to the Global Waste Outlook (UNEP 2015), waste management depends on the consistent implementation and enforcement of strong public health and environmental legislation. By definition, uncontrolled waste is not managed and thus not measured, making it difficult to estimate either the size of the problem or the scale of the associated costs. The evidence suggests, however, that in a middle- or low-income city, the costs to society and the economy are perhaps 5-10 times what sound solid waste management would cost per capita. The costs of managing waste now in an environmentally sound manner are dramatically lower than the costs associated with poor waste management.

3.4 Indicative basic costs of financing the implementation of the sound management of chemicals and waste beyond 2020

The following table provides a general overview of estimated basic costs beyond 2020 in line with the key action areas set out in the secretariat proposal on objectives (SAICM/IP.2/8).

Key areas to address chemicals and waste	**Primary Responsibility**	**Estimated costs**	**Considerations / Reflections**
I. Legal and institutional frameworks, implementation and enforcement	National	Medium	Levels the playing field globally, building equity in line with the SDGs
II. International frameworks, stakeholder participation, and sectoral engagement	Global/National	Medium	Investment in meaningful coordination and cooperation supports effectiveness in implementation of key areas I and III. International arrangements, both legally binding instruments and other initiatives, and national arrangements are interlinked and mutually supportive. Binding conventions needs to be implemented nationally and voluntary global initiatives (GHS etc.) can provide useful guidance to countries forming a national chemicals control.
III. Information, risk assessment/ reduction and monitoring	Industry National	High	Provides the basis for decision-making and guides priorities in protecting human health and the environment. SDG 17 is an incentive to 'strengthen the means of implementation and revitalize the global partnership for sustainable development'. Opportunities for blended finance approaches.
IV. Political leadership, outreach, and promotion	Global/National NGOs	Low	Requires investment in communication and messaging. A new narrative that speaks to the integrated nature of the SDGs and those who are not

			engaged in technical chemicals and waste issues should be developed, closely linked to the 2030 Agenda for Sustainable Development. Fundamental for supporting I, II and III.

Stakeholders will be in a better position to assess indicative basic costs once draft objectives are established and there is an understanding of the programme of work for the beyond 2020 framework.

Actions beyond 2020 need to take into account not moving environmental problems or costs to other parts of the globe. Global Chemicals Outlook 1 (2013) recommends that the industry should generate an appropriate baseline set of data for health and environmental effects for chemicals in commerce. With increased and changed domestic production and consumption patterns and the strong growth in the chemical industry mainly in China there is a need to take into account the issue of burden sharing of this key area for chemicals safety.

4 Potential sources of financing resulting from Agenda 2030

The financing needs for the sound management of chemicals and waste remain significant. Agenda 2030 opens up new possibilities to finance sustainable development in the context of chemicals and waste. Unfortunately, the resources needed to achieve the SDGs will surpass current development financial flows. With greater emphasis on nationally led development strategies, countries and donors alike are reflecting on how the role of international public finance should evolve. International financing agreements reveal a consensus that countries are the primary drivers of their own development, with international public finance playing an important supportive role (AP-DEF 2016). WHO suggests, for example, that financing projections indicate that around 85 per cent of the additional costs for achieving SDG health targets could be borne by increasing domestic resources for health in particular by middle-income countries (Stenberg, et al. 2017).

Private sector funding decisions, both domestic and international, are inherently dispersed among multiple actors, and despite efforts at coordination, the delivery of international public funds is highly fragmented. Coherent financing strategies based on the principle of country ownership are thus essential to facilitating the coordination of diverse sources of

financing. The Intergovernmental Committee of Experts on Sustainable Development Financing (2014) proposes a number of options for an integrated sustainable development financing strategy relevant to sound management of chemicals and waste adapted to the integrated approach.

4.1 Mainstreaming sound management of chemicals and waste into national development plans

A defining feature of the last decade of public policy has been the strengthening of domestic resource mobilization. Domestic public finance in developing countries more than doubled between 2002 and 2011, increasing from $838 billion to $1.86 trillion. In absolute terms, this growth for the most part reflects developments in middle-income countries. Domestic public finance also doubled in low-income countries, although it remains insufficient to meet sustainable development needs. Tax revenues account for about 10-14 per cent of gross domestic product (GDP) in low-income countries, which is about one third less than in middle-income countries, and significantly less than in high-income countries, which achieve tax-to-GDP ratios of 20-30 per cent (UN 2014). Although every country is different and there is no one-size-fits-all formula, there is increasing evidence that countries with tax revenues below 15 per cent of GDP have difficultly funding basic state functions. Yet taxes in half of least developed countries (LDCs) remain below that threshold, especially in countries that are experiencing or have recently experienced conflict (UN 2017a).

There has also been considerable change in the landscape of sovereign debt of developing countries since the Millennium Declaration. External debt amounted to 22.6 per cent of GDP in developing countries in 2013, as compared to 33.5 per cent a decade earlier. The debt difficulties of heavily indebted poor countries (HIPCs) have largely been addressed under the terms of the HIPC Initiative and the Multilateral Debt Relief Initiative. Nonetheless, the aggregate picture masks growing debt problems in some countries. Debt sustainability is particularly problematic in some small States. In 2013, the average ratio of public debt to GDP of small developing countries amounted to 107.7 per cent, compared to 26.4 per cent for developing countries as a whole (UN 2014).

Fiscal reforms have a large potential role in promoting environmental sustainability with regard to financing strategies for sustainable management of chemicals and waste. Governments may also consider other policies to change investment patterns, such as direct emission restrictions on investments, subsidizing research and development of clean technologies, tax incentives, energy efficiency or renewable energy targets, pollution rights, and payments for ecosystem services. Excise taxes – taxes applied to domestic

consumption of specific, often damaging, products such as tobacco and alcohol – are another good example. As noted in the Addis Agenda, countries can take price and tax measures on tobacco to raise revenue, improve health and decrease health care costs (UN 2017a)

Environmental accounting, which incorporates environmentally relevant financial flows and accounts for the use of natural resources, is another mechanism that can help policymakers internalize externalities. GDP is a crucial measure that governments use to assess the economic performance of countries, but the failure to incorporate natural capital can lead governments to ignore an inefficient allocation of investment. The System of Environmental-Economic Accounting could facilitate greater public investment in sustainable development.

The Inter-Organization Programme for the Sound Management of Chemicals (IOMC) toolbox for decision-making in chemical management provides guidance to countries on finding the most cost-effective solutions (OECD 2014). Nevertheless, financial estimates for the sound management of chemicals remain scarce. In Colombia, the Council of the National Economic and Social Policy (2016) estimates the required financial investment for implementing a national risk management policy associated with the use of chemical substances at US $5.1 million between 2017-2020 (Council of the National Economic and Social Policy 2016). In Mauritius, the budget for the National Plan of Action on SAICM is estimated at US $1 million per year "related to actions focused on strengthening institutional capacities and establishment of systems for sound management of chemicals in different sectors" (Ministry of Health and Quality of Life 2014). Financial estimates of this kind could be facilitated and thus become more readily available and comparable in the future by defining an agreed basic set of what constitutes sustainable management of chemicals and waste, considering, for instance, infrastructural, institutional, legal and enforcement needs.

4.2 Industry involvement

According to the Global Chemicals Outlook, sales in the global chemical industry have increased steadily over the past several decades, from US $171 billion in 1970 to US $4.12 trillion in 2010 (UNEP 2013). These figures indicate that the industry has significant financial and technical resources to invest in sustainable chemical and waste management projects. With pharmaceuticals and nanotechnology on the list of emerging policy issues, new industry players are becoming involved in creating new opportunities for collaborative efforts.

A potential challenge is the adoption of pricing of environmental externalities. However, the transnational nature of the chemicals industry and its markets could make isolated national approaches to cost-recovery difficult, even for large, highly industrialized countries. Most developing and transition countries would find the burden of establishing a unique national approach overwhelming. A purely national approach could also lead to economic retaliation and/or distortions in international trade and investment (IPEN 2017).

A framework that offers an entry point or model for cooperation with the chemical industry is the United Nations Global Compact, a voluntary initiative based on CEO commitments to implement universal sustainability principles and to undertake partnerships in support of UN goals. The framework's funding models rely on both government and corporate funding, with separate funds to ensure that initiatives remain autonomous.

Another area of increased attention and opportunity is green and sustainable chemistry. Though neither concept replaces the need for sound chemicals management and dealing with legacy issues, both green and sustainable chemistry could provide important proactive advances in safer, non-toxic chemistries with important links to occupational health safety and pollution prevention among others. Green chemistry is defined as, "the utilization of a set of principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture and application of chemical products" (Anastas and Warner 1998) while OECD has defined sustainable chemistry as "a scientific concept that seeks to improve the efficiency with which natural resources are used to meet human needs for chemical products and services. Sustainable chemistry encompasses the design, manufacture and use of efficient, effective, safe and more environmentally benign chemical products and processes" (OECD 2017). If further defined to mandate hazard reduction, envisaged benefits of sustainable chemistry are many, from the avoidance of toxic and hazardous materials, the use of renewable resources and the minimizing of negative environmental impacts of chemical processing and manufacturing to the provision of technologies that are economically competitive and advantageous to industry.

The GEF and UNIDO have recently launched a global green chemistry initiative in collaboration with Yale University, the German Environmental Foundation, Braskem, the largest thermoplastic resins producer in the Americas, and several National Cleaner Production Centers. The project is the first GEF-funded global public-private partnership to bridge the gap between science-based innovation and real-world application of green chemistry in developing countries and economies in transition. It seeks to reduce pollution at its source by minimizing or eliminating the hazards of chemical feedstock, reagents, solvents and products; or encouraging the invention and innovation of new and non-hazardous solvents, surfactants, materials, processes and products (UNIDO 2017).

More opportunities arise from involving specific industrial sectors to level the playing field

within their sector by engaging in corporate social responsibility in line with the 2030 Agenda for Sustainable Development. Lead in paint, for example, is an emerging policy issue with extensive efforts being undertaken since 2009 that have been primarily financed by bilateral assistance and the GEF. At the same time, the top 10 companies that manufacture paints and coating, alone, represent approximately 59 billion USD in annual sales (Coatings World 2017). The economic cost of eliminating the use of lead in many paints is known to be low and benefit of action high, with a number of manufacturers already successfully reformulating products that avoid the intentional addition of lead. In the future, paint manufacturers and related pigment suppliers could collaborate and contribute financially to scale-up current programming which would also encourage remaining large scale producers to join the global effort. An industry-led initiative would also support governments in their efforts to set legislative restrictions for lead in paint and strengthen overall compliance with existing legislation.

4.3 External financing

In the integrated approach, external financing supports mainstreaming and industry involvement by assisting recipient countries in implementing their legal obligations and other commitments to the sound management of chemicals and waste. This is set out in section 2 of this document.

Between 2000 and 2014, net ODA has increased by 83 per cent in real terms (UN ECOSOC 2016). In 2016, ODA rose by 7.1 per cent, and the main recipients of assistance were the public administration, environment and energy sectors, which together were provided with a total of US $8.2 billion. ODA to least developed countries, however, fell by 3.9 per cent in real terms from 2015, and aid to Africa fell 0.5 per cent (UN 2017a). Total ODA for bilateral capacity-building and national planning stood at US $21 billion in 2015. That amount represented 19 per cent of total aid allocable by sector[1], a proportion that has been stable since 2010. ODA will remain an important source of external public financing but it accounts for only a small proportion of the total mix of resources available to developing countries for investing in sustainable development. In 2014, ODA to developing countries ($160 billion) was vastly exceeded by domestic public resources ($5.3 trillion),19 which are by far the largest available resource in aggregate terms (UN ECOSOC 2016).

In the future, ODA could be targeted increasingly to bring together other funding sources:

[1] The DAC uses a sector classification specifically developed to track aid flows and to permit measuring the share of each sector (e.g. health, energy, agriculture) or other purpose category "non-sector allocable aid" (e.g. general budget support, humanitarian aid) in total aid (OECD 2017).

(i) for Low-Income Countries (LICs), on the basis of poverty, vulnerability, and limited fiscal capacity; and (ii) for Middle-Income Countries (MICs), by playing an increasing role to leverage and catalyze public and private sources of financing. ODA can thereby help to catalyze and leverage financing for progress on the SDGs.

At the same time, the development gains made in the past, in particular in health and education, are being threatened by the absence of sound management of chemicals and waste in those developing countries with expanding chemical and waste concerns. A shift in ODA investment towards sound management of chemicals and waste can safeguard and further expand the gains. International public funds that are less concessional than ODA, such as some loans from the International Monetary Fund (IMF), the World Bank and the other international and regional financial institutions, are key sources of medium- and long-term finance for the countries that draw upon them.

South-South cooperation continues to grow rapidly. South-South and Triangular Cooperation have emerged as important vehicles to accelerate human development and will assume greater importance in the future. These approaches have increasingly demonstrated their contribution to development results through a variety of flexible cooperation modalities, including knowledge exchanges, technology transfers, financing, peer support and neighborhood initiatives, as well as through countries forming common development agendas and seeking collective solutions. Often underreported and sometimes hard to quantify, the estimated value of South-South Cooperation exceeded US $20 billion in 2013 (UN 2016).

Other contributors to sustainable management of chemicals and waste include the World Bank Group, which committed US $43 billion directly to its multisectoral and cross-cutting pollution management strategies and implemented through 534 projects between 2004 and 2017. It supports client country governments in their efforts to create or improve the enabling environment for pollution management through capacity-building for institutions handling the country's pollution management agenda, and through regulations and standard-setting for strategy development and design of national pollution agendas, stakeholder dialogue and diagnostics. Policy operations have concentrated on creating regulatory frameworks and strategies, whereas investment operations most frequently provide institutional capacity-building (World Bank Group 2017). So far, direct engagement of the World Bank with SAICM implementation has been limited, but opportunities for enhanced collaboration are apparent.

The Sustainable Development Goals Fund is another international multi-donor and multi-agency development mechanism that the United Nations created in 2014 to support sustainable development activities through integrated and multidimensional joint programmes. Its main objective is to bring together UN agencies, national governments,

academia, civil society and business to address the challenges of poverty, promote the 2030 Agenda for Sustainable Development and achieve the SDGs. The SDG Fund was conceived as a multi-partner facility and is open to other public and private donors interested in advancing sustainable development through UN agency coordination. Convening public-private partnerships to reach SDGs is one of the SDG Fund main objectives. As an inter-agency mechanism, the SDG Fund works across the UN system, currently with 14 agencies, implementing joint programmes around the globe. The government of Spain made the initial contribution to establish the fund, and more than 20 donors have donated since (SDG Fund 2017).

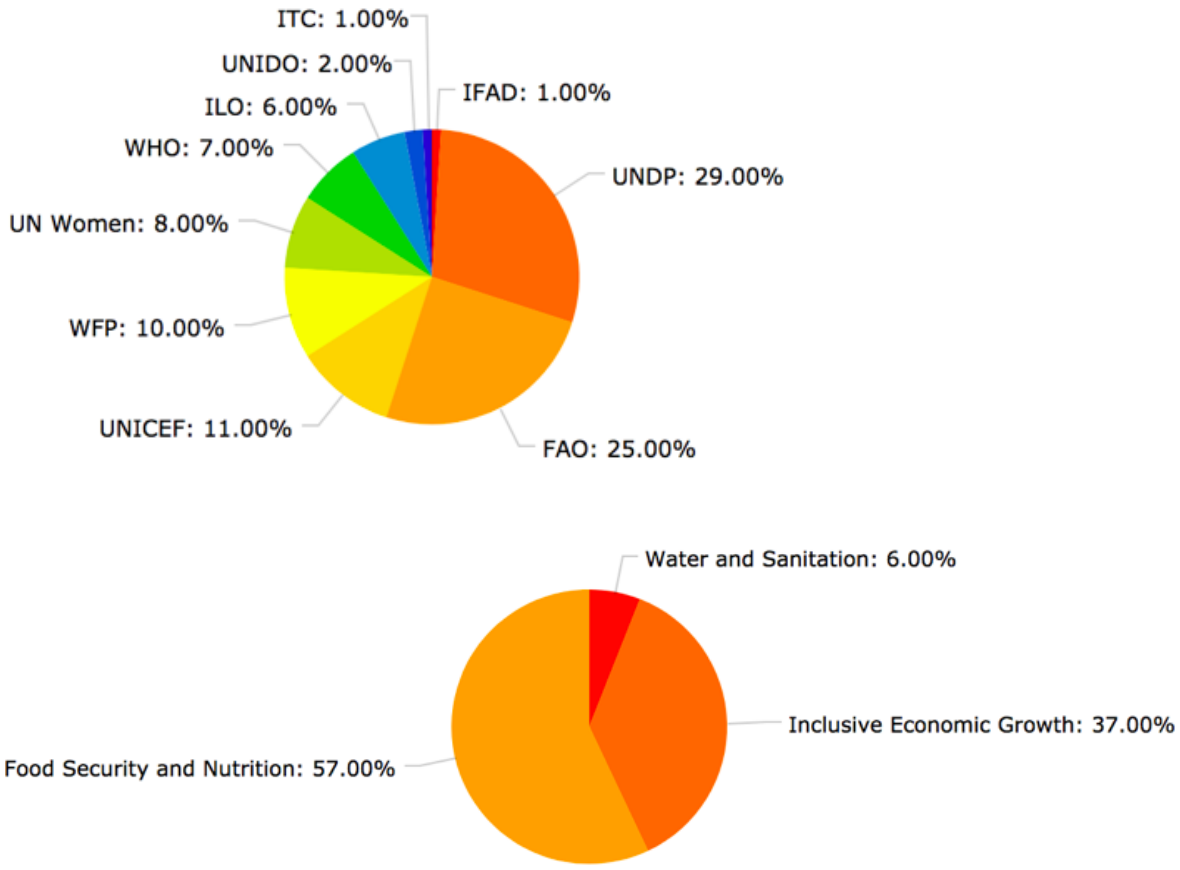


Figure 4: SDG Fund agencies and thematic areas (SDG Fund 2017)

5 New opportunities

This section explores new opportunities for financing the chemical and waste agenda beyond 2020. Many of these concepts are widely applicable and closely linked to financing the SDGs. They will need to be explored and mapped out more precisely with regard to chemicals and waste.

5.1 Funds and philanthropy

There has been a significant increase in international funds and delivery channels related to sustainable development. These include global sector funds premised on multi-stakeholder partnerships that bring together governments, the private sector, civil society, and such traditional and emerging donors as the Global Fund to Fight AIDS, Tuberculosis and Malaria, the Global Alliance for Vaccines and Immunization, and the Global Partnership for Education. In past years, several international public funds arose from governments designing and reforming institutions such as the Global Environment Facility, the Adaptation Fund, the Climate Investment Funds, and the Green Climate Fund as well as financial instruments such as performance-based payments for reducing emissions from deforestation, degradation and forest conservation.

The G7-initiated Vision Zero Fund aims to prevent work-related deaths, injuries and diseases in global supply chains, areas highly relevant for sound management of chemicals and waste. The International Labour Organization has estimated that more than 4 per cent of the world's annual GDP is lost as a consequence of work-related injuries and diseases. By 2015, the G7 states had pledged a total of €7 million for the Fund, which started the financing of measures on 1 January 2016 (German Federal Government 2015).

Moreover, philanthropic finance from private individuals, foundations and other organizations to developing countries is reshaping the development landscape like never before. According to the 2017 OECD Data survey, philanthropic giving for development amounted to US $23.4 billion in 2013-15 or US $7.8 billion per year on average. This includes philanthropic giving for development purposes, extended either directly to citizens of developing countries or through intermediaries such as NGOs, multilateral institutions, research institutes and private enterprises. The figures are drawn from data on over 130 private philanthropic foundations, mostly based in the United States, Canada, the United Kingdom, the Netherlands, Switzerland and other European countries, but also India, Brazil, Mexico, Panama, the People's Republic of China (incl. Hong Kong), the United Arab

Emirates and some African countries (OECD 2017a).

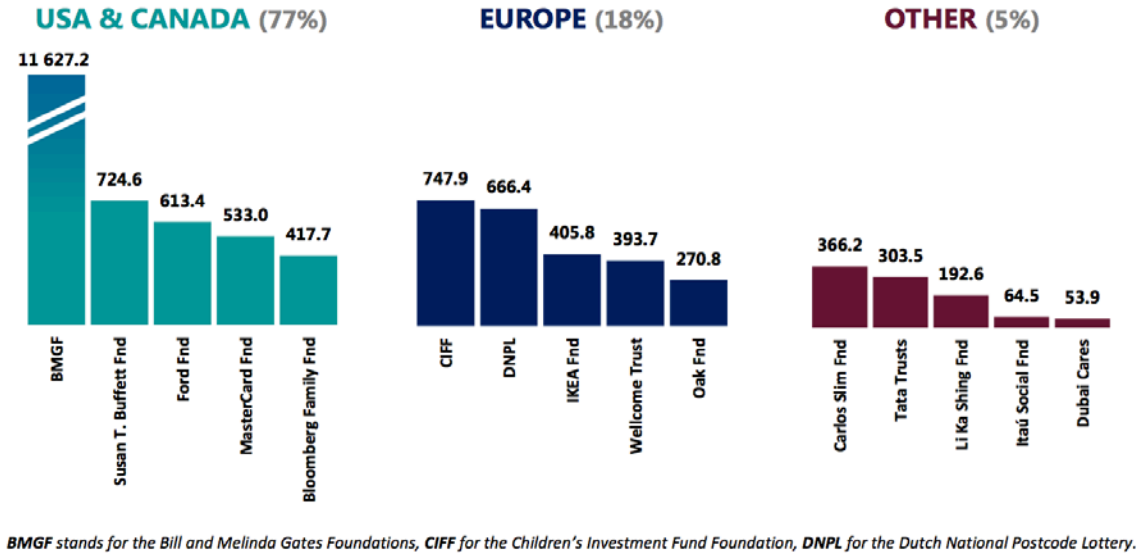


Figure 5: Largest foundations working for development per region, USD million, 2013-15 (OECD 2017b)

5.2 Private finance

The potential of the private sector in financing sustainable development includes a wide range of diverse actors, from households to multinational corporations and from direct investors to financial intermediaries, such as banks and pension funds. However, there is a lack of domestic long-term investment necessary for sustainable development, even while there is a growing understanding among the private sector that commercial interest and public policy goals can be realized at the same time. In addition, gross domestic savings rates in many least developed countries remain significantly below the amount necessary to drive sustained domestic investment.

There continues to be a lack of the domestic long-term investment necessary for sustainable development, even while there is a growing understanding among the private sector that commercial interests and public policy goals can be realized at the same time. There is thus a role for governments to develop policies to help incentivize greater long-term investment in sustainable development. An enabling environment is essential for reducing risks and encouraging private investment. A growing group of private investors,

both millennials and older individuals, is now benefitting from inter-generational wealth transfers, and these investors appear to be willing to pay more attention to the total returns on their investments. This is expanding the potential for finance beyond infrastructure to new fields, such as sustainable agriculture, social housing, girls' education and off-grid clean energy.

Policymakers can foster sustainability considerations among institutions by encouraging joint reporting on environmental, social and governance impacts and economic returns – which can be referred to as Economic Environment Social and Governance (EESG) reporting. In addition, appropriate regulations, such as portfolio requirements and other measures in line with domestic conditions, can be used to strengthen these considerations.

An important consideration in sustainable development is the emissions impact of financing activities. Policymakers could play a catalytic role in this area by encouraging index providers to accelerate work on the design of benchmarks and encouraging transparency regarding pollutant emissions impact, particularly in public investment funds (e.g., public pension funds).

The presence of institutional investors in developing countries has been growing, and could potentially increase the resources available for long-term investment in sustainable development. Emerging market pension funds are estimated to manage US $2.5 trillion in assets, and are expected to increase significantly. A sizeable portion of these portfolios is invested in domestic sovereign debt. In some developing countries national pension funds have also been investing directly in national or regional infrastructure, including in South Africa, Ghana, Chile, Mexico and Peru (UN 2014). These investments could potentially increase resources available for long-term investment in sustainable development.

International institutional investors, including sovereign wealth funds, hold an estimated $80 trillion to 90 trillion in assets. However, their investment in sustainable development — in both developed and developing countries — has been low. One impediment is that many investors do not have the capacity to do the necessary due diligence to invest directly in infra- structure and other long-term assets. Instead, when they do make these investments, they do so through financial intermediaries, whose liabilities and incentive structures tend to be shorter-term. It is often not cost-effective for diversified long-term investors to build this due diligence expertise in-house. Public actors, such as multilateral and bilateral development finance institutions, could help to set up investment platforms on pooled financing (see below).

Global trade also continues to grow and trade flows have assumed increased importance for resource mobilization in many developing countries. For least developed countries, the average trade-to-GDP ratio has risen from 38 per cent in 1990 to 70 per cent in 2011

(UNCTAD 2014). The rise of global value chains in trade has tightened the link between trade and investment flows. Financial Direct Investment (FDI) remains the largest and most constant external source of finance for developing economies – compared with portfolio investments, remittances and of financial development assistance. However, policymakers need to monitor the quality of FDI to maximize its impact on sustainable development.

The predictability of investment policies for investors has reduced, a result of the increased complexity of sustainable development considerations, the greater divergence of policy making as it reflects the variety of approaches with which societies and governments respond to the effects of globalization, and an increasing number of government interventions. At the same time the world is seeing rapid growth of capital market-related policies and instruments designed to promote investment in sustainable businesses and to support the achievement of the SDGs.

Another significant development is the growth of green finance. Green bonds, first issued in 2007, finance industries across an array of sectors, from clean and efficient energy to low-carbon transport and water. Green bond listings have grown considerably, starting out with investments from the European Investment Bank and the World Bank. When the first corporate green bonds were issued in November 2013, it pushed the market size for 2013 to $11bn. The market trebled in size in 2014 with $36.6bn issued, and this growth has continued to a current $200bn outstanding green bonds in 2017 (Climate Bonds 2017).

This demonstrates both that exchanges are already involved in the transition to a green economy and that there is room for further growth. ESG indices remain the most popular sustainability instrument among exchanges, with 38 of 82 exchanges providing them. Indices with environmental, social and governance themes are used to promote sustainable investments, while encouraging greater voluntary transparency among issuers. There are more than 100 ESG-themed indices around the world, created by exchanges as well as by specialist companies such as FTSE Russell, Standard & Poor's, Stoxx, Thomson Reuters and MSCI (UNCTAD 2017).

A key question is whether largely voluntary initiatives can change the way financial institutions make investment decisions. The Intergovernmental Committee of Experts on Sustainable Development Financing suggests that policymakers could consider creating regulatory frameworks that make some of these practices mandatory. To be most effective, these policies should be based on extensive engagement between the private sector, civil society, financial regulators, and policymakers (UN 2014).

5.3 Blended finance

Policymakers have recently shown considerable interest in a class of "blended finance" development financing opportunities that pool public and private resources and expertise. Historically, there has been a sharp distinction between private sector growth funded by commercial banks and private investors, and public sector projects funded by governments, multilateral development banks (MDBs) and overseas development assistance.

The Business and Sustainable Development Commission suggests making greater use of the ability of development finance institutions (DFIs) to mobilize private finance, including through blended finance. This emerging practice involves the strategic use of public capital to leverage multiple sources of private capital. Specifically, blended finance entails public funders using market-driven risk mitigation tools to mobilize additional private capital, as outlined in the work of the Redesigning Development Finance Initiative, led by the World Economic Forum and OECD. The power of DFIs to raise blended finance makes them a critical bridge between private investment and public projects.

The World Bank, for instance, can raise US $28 from international markets for every dollar put into the bank as paid capital, as can the International Finance Corporation (IFC), which has financed over US $200 billion of private sector projects in a variety of sectors on the basis of only US $2.6 billion of paid-in capital. If executed well, this approach could be a very important important mechanism for delivering on the SDGs. An efficient blended finance strategy, one that raises US $20 of private capital for each public dollar, could raise the additional US $2.4 trillion a year needed for sustainable infrastructure development at a yearly cost of only US $125 billion of public capital. In addition, achieving the SDGs could open up an estimated US $12 trillion in market opportunities in four economic systems – food and agriculture, cities, energy and materials, and health and well-being – that represent around 60 per cent of the real economy and are critical to delivering on the United Nations Sustainable Development Goals (BSDC 2017).

Despite the private sector-centric narrative around financing development most infrastructure is actually (and will likely continue to be) financed by domestic resources, both public and private. The UN (2017b) notes that as the use of modalities such as blended finance grows, case-by-case assessments of projects are critical, and should assure that risks and returns are shared fairly. Careful consideration should be given to the overarching principles of development effectiveness, in particular strong country ownership, aligning programmes and projects with country priorities, and transparency. Similarly, other sources caution that there is insufficient evidence as to whether "blending" actually mobilizes additional private flows to supports national sustainable development priorities or increases sustainable development impact (UN ECOSOC 2016).

5.4 Global partnerships

SDG 17 provides a normative framework and targets to guide policy direction with indicators to assess the mobilization of resources quantitatively. These are essential elements in strengthening the means of implementation for all SDG targets and in revitalizing the global partnership for sustainable development.

The seven action areas of the Addis Agenda address the different sources of finance to achieve this: domestic public resources; domestic and international private business and finance; international development cooperation (including official development assistance, South-South cooperation and development bank lending); international trade; debt sustainability; systemic issues; and science, technology, innovation and capacity-building.

The Addis Agenda provides a new global framework for financing sustainable development by aligning all financing flows and policies with economic, social and environmental priorities. It includes a comprehensive set of policy actions, with over 100 concrete measures that draw upon all sources of finance, technology, innovation, trade, debt and data in order to support achievement of the Sustainable Development Goals. The Addis Agenda addresses all sources of finance: public and private, domestic and international.

In line with the Addis Agenda recognition that technology and innovation are at the heart of economic, social and environmental development, the United Nations held the first Multi-stakeholder Forum on Science, Technology and Innovation for the Sustainable Development Goals as one element of the Technology Facilitation Mechanism, and established the Technology Bank for LDCs. The new body is dedicated to the least developed countries and was operationalized in September 2017. Developing countries could open potential new financing opportunities for the sound management of chemicals and waste by creating linkages with the implementation of the Addis Agenda.

Progress and gaps in the implementation of SDG 17 are largely difficult to assess at this point. Unlike other SDGs that can draw on baseline data from the Millennium Development Goals, SDG 17 has, for the most part, completely new means of implementation. Baseline data and accounting methodologies for SDG 17 are still in their infancy; consequently, assessing current progress on SDG 17 is more a reflection of initiatives and actions undertaken rather than a comprehensive or quantitative mapping of implementation (IISD 2017).

6 Summary overview

The implementation of the integrated approach to financing for the sound management of chemicals and waste is essential for financing in the long term. Many countries are already in a position to estimate the investment cost needed to provide basic infrastructure and institutional arrangements. These estimates may need updating to reflect the programme of work for the beyond 2020 framework.

Overall, the current level of funding for the sound management of chemicals and waste is widely considered inadequate. The approach to funding has been hampered by fragmentation, disconnections and insufficient coordination. The focus has been primarily on external and direct funding while leaving other potential sources, including greater use of economic instruments, largely untapped. Similarly, sound management of chemicals and waste requires a robust methodology to estimate related cost beyond direct costs, taking into account the costs of inaction and benefits.

Furthermore, the 2030 Agenda for Sustainable Development opens up new channels to rethink financing for sustainable development with relevance to chemicals and waste. In moving beyond 2020, there are many lessons to be learned to achieve the sound management of chemicals and waste:

Improve the numbers behind the price tag.

⇒ **Improve and consolidate the quantitative economic data related to financing the chemicals and waste agenda beyond 2020.**

The current study has revealed large gaps in hard financial information at all levels from local to global. Maintaining good analytical data and connecting and scaling-up existing data is a requirement to building the baseline of cost estimates required to build a convincing case for policy makers. One good starting point is to conduct a National Chemicals Profile. The SAICM Quick Start Programme Trust Fund, for example, has supported 22 countries in developing and updating their National Chemicals Profiles which could potentially provide a good starting point for these estimates.

Data and information is critical to support the strengthening of government systems and statistical systems that can measure and incentivize progress with regard to financing and implementing sound management of chemicals and waste. Improvement of data is also in line with the 2030 Agenda for Sustainable Development, in particular SDG 17, which considers data, monitoring and accountability essential to the "coherent policies, an

enabling environment for sustainable development…and a reinvigorated Global Partnership for Sustainable Development" necessary to meet the goal.

The chemicals and waste agenda should become more widely understood outside a small circle of experts.

⇒ **Increase awareness and expertise among partners, donor countries and the general public regarding the relevance of sound management of chemicals and waste for achieving the SDGs.**

As observed by Honkonen and Khan (2017), financing sound management of chemicals and waste through an integrated framework requires awareness in chemicals and waste on the part of those who make decisions on the allocation of development assistance resources. Specifically, a new narrative that speaks to the integrated nature of the SDGs should be developed to target and foster linkages to those who are not engaged in technical chemical and waste issues. The narrative can also be extended into high profile themes, such as gender, health, labour, water, pollution human rights and food security. Such a narrative is needed to gain political attention and ultimately financial support.

Sound management of chemicals and waste has a narrow participatory base with a government bias.

⇒ **Rethink how to mainstream sound management of chemicals and waste to include chemical users along the value chain and to promote new opportunities for financing.**

Like many international processes and initiatives, the participatory base of the current chemicals and waste platforms is relatively narrow with a government bias. While the global coverage may look impressive, mobilization within the countries is often poor. Mainstreaming can also broaden the financial base of the processes. Multi-sectoral and multi-stakeholder processes like SAICM can help address the issue and increase the collaboration, cooperation and understanding between key players.

Existing regulations are not sufficient to reach the objectives for internalizing external costs.

⇒ **Strengthen and enforce legal frameworks regarding chemicals and waste to create a level playing field for industry.**

The external costs created by inadequate management of chemicals and waste are

currently carried by society as a whole and by the environment. It is evident, and has also been highlighted by the Business and Sustainable Development Commission (2017), that environmental and social costs need to be factored in policy development. Policies on pricing externalities need to be advanced, and, this will not be readily achieved unless the policies and regulatory frameworks are applied consistently at a global level to create a level playing field for industry to comply.

While new financing from public sources may be limited, there are renewed opportunities for synergies and mainstreaming.

⇒ **Seize new opportunities provided by the SDGs and redesigned funding instruments such as GEF-7.**

The 2030 Agenda for Sustainable Development and GEF-7 provide opportunities for approaching chemicals and waste from new perspectives: for example, enhancing linkages to health, water and sustainable production and consumption for reaching the SDGs, or addressing core issues through impact programmes, like those proposed under GEF-7, can be conducive to addressing issues like pesticide use and municipal waste management. Enhancing linkages across SDGs opens up further potential opportunities. For example, pursuing projects under the Green Climate Fund (GCF) with benefits for both climate change and the sound management of chemicals and waste.

Opportunities for increasing current industry and finance engagement in the chemical and waste management agenda.

⇒ **Explore new financial mechanisms like the Technology Bank or industry partnerships as developed by the UNEP Finance initiative and other similar initiatives. Map the relevance of chemicals and waste in this context.**

As outlined in the analysis of the SDG financing requirements, the engagement of industry and the finance sector has potential to bridge the gaps in some areas. At the same time, there are inherent challenges of the public sector and UN organizations to engage with the private sector because of power dynamics, different priorities and diverging interests. It is thus important to explore new mechanisms, building on some of the successful existing partnerships. In the chemical and waste area – unlike climate change – this is very much underdeveloped. Engagement of actors along the value chain, in addition to the chemical industry, should be sought. Partnerships with the financial, insurance and investment sector should be pursued. Already, impact investments are often mapped within a SDG context; and a sharper focus regarding chemicals and waste management – potentially including green chemistry – could be applied.

Existing instruments for private sector engagement, such as the World Bank's IFC and Multilateral Investment Guarantee Agency could be replicated with a focus on chemicals and waste. As a first step, a simple mapping exercise comprising the various types of industry but also the financial sector may provide a solid base for future engagement.

Solutions to many of today's problems related to chemicals and waste management can be found in a circular economy and in sustainable chemistry concepts and approaches.

⇒ **Rethink todays resource flows of today and harvest innovation in concepts and technology.**

While for many the concept of a circular economy may still sound like vague, progress and innovation are in many areas today much faster than anticipated. The scientific community is making groundbreaking contributions. Some bodies exist that can support or provide a model for broader engagement of the scientific community, including for example: the International Resource Panel in playing a role in distilling the latest scientific, technical and socioeconomic findings around global resource use, the International Sustainable Chemistry Collaborative Centre in promoting sustainable chemistry solutions worldwide, as well as private and academic initiatives such as the Green Chemistry and Commerce Council.

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8 Acronyms and abbreviations

DFI	Development finance institution
DJSI	Dow Jones Sustainability Index
ESG	Environmental, social and governance
FDI	Foreign Direct Investment
GDP	Gross domestic product
GEF	Global Environment Facility
HIPC	Heavily indebted poor country
IFC	International Finance Corporation
IMF	International Monetary Fund
IOMC	Inter-Organization Programme for the Sound Management of Chemicals
LDC	Least developed countries
LICs	Low-Income Country
MDB	Multilateral development bank
MIC	Middle-Income Country
NGO	Non-governmental organization
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
POP	Persistent Organic Pollutant
QSP	SAICM Quick Start Programme
SAICM	Strategic Approach to International Chemicals Management
SDG	Sustainable Development Goal
SMCW	Sound management of chemicals and waste
SSE	United Nations Sustainable Stock Exchanges initiative
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
WHO	World Health Organization

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