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GENDER MAINSTREAMING STRATEGY AND ACTION PLAN FOR THE DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCB) IN SOUTHERN AFRICA

DISPOSAL OF PCB OILS CONTAINED IN TRANSFORMERS AND DISPOSAL OF CAPACITORS CONTAINING PCBS IN SOUTHERN AFRICA (GEF PROJECT 5532)

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ACRONYMS

AUC-WGDD	African Union Commission – Women, Gender and Development Directorate
BRS	Basel, Rotterdam, and Stockholm
CBD	Convention on Biological Diversity
COP	Conference of the Parties
COVID-19	Coronavirus disease 2019
DL-PCBs	Dioxin-like polychlorinated biphenyls
EEA	European Environment Agency
EFSA	European Food Safety Authority
ESM	Environmentally sound management
EU	European Union
GAP	Gender Action Plan
GDP	Gross domestic product
GEF	Global Environment Facility
GEFIEO	Global Environment Facility Independent Evaluation Office
IARC	International Agency for Research on Cancer
ICTs	Information and communications technologies
ILO	International Labour Organization
IPEN	International Pollutants Elimination Network
ITU	International Telecommunication Union
KAP	Knowledge, attitude and practices
M&E	Monitoring and evaluation
MEA	Multilateral Environmental Agreement
NIPs	National Implementation Plans
ODI	(Formerly) Overseas Development Institute
OECD	Organisation for Economic Co-operation and Development
PBDEs	Polybrominated diphenyl ethers
PCBs	Polychlorinated biphenyls
PCDD/F	Polychlorinated dibenzofurans
PCTs	Polychlorinated terphenyls
POPs	Persistent organic pollutants
R&D	Research and development
SADC	Southern African Development Community
SAICM	Strategic Approach to International Chemicals Management
SDGs	Sustainable Development Goals
TSCA	Toxic Substances Control Act (United States)
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US EPA	United States Environmental Protection Agency
WECF	Women Engage for a Common Future
WEEE	Waste electrical and electronic equipment
WHO	World Health Organization

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EXECUTIVE SUMMARY

Polychlorinated biphenyls (PCBs) are persistent organic pollutants (POPs). Recognizing that women, men and children can be affected differently following exposure to PCBs and other POPs, this report emphasizes the importance of engaging women and men alike as part of the solutions that the Global Environment Facility (GEF) project "Disposal of PCB Oils Contained in Transformers and Disposal of Capacitors Containing PCBs in Southern Africa" is intended to implement.

This document consists of two parts, a gender mainstreaming which aims to enable women, men, youth, the elderly, other vulnerable social groups, and other population categories to achieve gender equality. The second part is a Gender Action Plan (GAP) developed for this project is to enable women, and those belonging to other population categories, to benefit from the project equally at project intervention sites in the 12 targeted countries: Botswana, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Tanzania, Zambia and Zimbabwe. A gender lens has been used to examine the underlying gender dynamics according to which people may be disproportionately affected by the interplay of sex, gender, and exposure to POPs, with a special focus on PCBs.

The GEF project is supporting the target countries in fulfilling their obligations as parties to the Stockholm Convention on Persistent Organic Pollutants. PCBs are among the original 12 POPs covered by the Convention. Owing to properties such as longevity and heat absorbance, PCBs have been used widely as electrical insulating fluids in capacitors and transformers, as well as hydraulic, heat transfer, and lubricating fluids. Under the Stockholm Convention the production and new uses of PCBs are banned. Parties to the Convention are required to eliminate the use of PCBs in equipment by 2025 and to ensure environmentally sound waste management of liquids containing PCBs and equipment contaminated with PCBs by 2028.

Following the introductory Section 1, Section 2 explores some gender considerations in the context of chemicals and waste management. It focuses, to the extent possible, on the specific gender narrative applicable to PCBs and Africa.

Section 3 looks at potential strategies for gender mainstreaming under the headings of enabling environment; stakeholder engagement; inventories and monitoring; alternatives to PCBs; knowledge management; the human health impact and cost burden of exposure to PCBs; mitigating the socio-economic impact of exposure to PCBs; and financing the phase-out of PCBs and adoption of safer alternatives.

Section 4 consists of a gender-responsive logframe and monitoring and evaluation (M&E) framework (Table 4.1) and a risk matrix for gender-related considerations during project implementation (Table 4.2).

Conclusions are presented in Section 5.

INTRODUCTION

Spotlight

In this report gender mainstreaming refers to the overall strategy of enabling women, men, youth, the elderly, other vulnerable social groups, and other population categories within the project's targeted areas to benefit equally from the project's interventions. This strategy aims to achieve gender equality, including by not exacerbating the underlying drivers of gender inequality.

Polychlorinated biphenyls (PCBs) are persistent organic pollutants (POPs). Recognizing that women and men, as well as children, can be affected differently following exposure to PCBs and other POPs,[1] this report emphasizes the importance of engaging women and men alike as part of the solutions that the Global Environment Facility (GEF) project "Disposal of PCB Oils Contained in Transformers and Disposal of Capacitors Containing PCBs in Southern Africa" is intended to implement.

The objective of the Gender Action Plan (GAP) developed for this project is to enable women and members of the other population categories mentioned above to benefit from the project equally at project intervention sites in the 12 targeted countries (see Figure 1). A gender lens has been used to examine the underlying gender dynamics according to which people may be disproportionately affected by the interplay of sex, gender, and exposure to POPs, with a special focus on PCBs. The development of the GAP is described below.

[1] See, for example, Women Engage for a Common Future [WECF] (2015); United Nations Environment Programme [UNEP] (2016); Schoon (2017) (includes online video based on a scoping study in Nigeria on the gender dimensions of implementation of the Basel, Rotterdam and Stockholm Conventions); WECF (2017a, b); Wahlang (2018); Sly *et al.* (2021); International Pollutants Elimination Network [IPEN] (n.d.).

Global Environment Facility (GEF) policy on gender equality

The Global Environment Facility policy on gender equality was adopted in 2017 (Global Environment Facility [GEF] 2017). It highlights an enhanced ambition to invest in gender equality and women's empowerment in order to deliver the results expected from GEF-funded projects and achieve global environmental benefits. This policy has paved the way for GEF projects to go beyond a gender-sensitive "do-no-harm" approach towards a gender-responsive "do-good" approach, which could ultimately create the enabling environment for gender-transformative change and achieve impacts on a larger scale by identifying both women and men as part of GEF-funded solutions.

An assessment by the GEF's Independent Evaluation Office (IEO) showed that, out of 57 GEF-funded projects in the focal area of chemicals and waste, 29 projects were rated as gender-sensitive, 27 as gender-aware, and only one as gender mainstreamed; no projects were rated gender blind or gender-transformative (Global Environment Facility Independent Evaluation Office [GEFIEO] 2018). Overall, multi-focal area projects tend to outperform single-focal ones in terms of gender responsiveness, confirming that better gender mainstreaming results can be achieved using integrated approaches within the gender-environment nexus.

In general terms, the above overview of the performance of GEF-funded projects under its Sixth Replenishment cycle shows that while gender aspects may be sufficiently mainstreamed into project design and interventions, the gender performance of chemicals and waste management projects tends to be "trapped in the middle". While there is an incentive up front to mainstream gender into project design, that incentive is not necessarily translated into sound gender equality results. This finding highlights the need to translate good project design into transformative gender outcomes, a need which can be explained in part by prevailing gender norms that can only be challenged one step at a time (GEFIEO 2018).

Against this background, gender mainstreaming strategies and action plans should be user-friendly. They should not overwhelm end users or discourage them from walking the talk of gender mainstreaming in the focal area of chemicals and waste, using a step-by-step approach.

Project context

The GEF project entitled "Disposal of PCB oils contained in transformers and disposal of capacitors containing PCBs in Southern Africa" aims to reduce environmental and human health risks from PCB releases in 12 countries: Botswana, Eswatini (formerly Swaziland), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Tanzania, Zambia and Zimbabwe (Figure 1). This is to be carried out through demonstrating a regional approach to the introduction of cost-effective and socially acceptable Environmentally Sound Management (ESM) of PCB oils, equipment, and wastes held by electrical utilities and others in participating countries.

The project is intended to support these countries in fulfilling their requirements as parties to the Stockholm Convention. PCBs are among the original 12 POPs covered by the Convention. Owing to properties such as longevity and heat absorbance, PCBs have been used widely as electrical insulating fluids in capacitors and transformers, as well as hydraulic, heat transfer, and lubricating fluids. Under the Stockholm Convention the production and new uses of PCBs are banned.[2] Parties to the Convention are

[2] In the United States, where PCBs had been commercially manufactured since 1929, their production was banned in 1979 by the Toxic Substances Control Act (TSCA). The regulations implementing TSCA for PCBs allow some inadvertent generation of PCBs at defined concentrations, under certain conditions, and with requirements to report to the United States Environmental Protection Agency (US EPA) and maintain certain records. Under the 1987 Organisation for Economic Co-operation and Development (OECD) Decision-Recommendation on Further Measures for the Protection of the Environment by Control of Polychlorinated Biphenyls, all adherent countries, which included European Union (EU) Member States, were to ensure the cessation (except in a few cases) of the manufacture, import, export and sale of PCBs, products, articles or equipment containing PCBs, and equipment which specifically requires the use of PCBs. For existing uses of PCBs these countries were to ensure that appropriate controls were applied to such uses, as well as to any associated storage and transport, to prevent releases of PCBs into the environment or fires involving PCBs. The OECD Decision-Recommendation also addresses existing products, articles or equipment contaminated by PCBs, along with the disposal of PCBs and other wastes containing PCBs (Organisation for Economic Co-operation and Development [OECD] 2022).

required to eliminate the use of PCBs in equipment by 2025 and to ensure environmentally sound waste management of liquids containing PCBs and equipment contaminated with PCBs by 2028 (Stockholm Convention 2019a).

PCBs have been used in hundreds of other applications since they began to be manufactured commercially (e.g. as plasticizers and fire retardants) (Erickson and Kaley 2011; Stockholm Convention 2019a; United States Environmental Protection Agency [US EPA] 2023). Although their production is no longer allowed in most countries, PCBs are found virtually everywhere on the planet (United Nations Environment Programme [UNEP] 2017; UNEP n.d.a; UNEP and United Nations Institute for Training and Research n.d.). Almost two decades after the Stockholm Convention entered into force, over 10 million metric tons of materials that contain PCBs are estimated to remain, mostly in countries lacking the capacity or regulatory structures to achieve environmentally sound management (ESM) of the final disposal of these materials by 2028 as prescribed by the Stockholm Convention (Melymuk *et al.* 2022).

Once PCBs are released into the environment, these toxic organic chemicals can remain intact for long periods and be widely distributed through air, water and migratory species. A key characteristic of PCBs and other POPs is their capacity to bioaccumulate in the fatty tissues of living organisms and biomagnify higher up the food chain, where they can be harmful to top predators (Windsor *et al.* 2019; Megson *et al.* 2022). Prolonged exposure of humans and other species to PCBs can have a wide range of acute and chronic toxic effects.[3]

Human exposure to PCBs can occur through multiple routes and sources, including dietary intake, inhalation, dermal contact, and ingestion of dust and soils (Weitekamp *et al.* 2021; Agency for Toxic Substances and Disease Registry 2023a). Dietary exposure to PCBs is often considered the primary exposure route for the general population, mainly through ingestion of high-fat foods including dairy products, eggs, animal fats and some fish and wildlife. However, the potential adverse effects of indoor exposure also need be taken into account, including prolonged exposure even to comparatively low PCB concentrations in workplaces and other indoor environments (Kofoed *et al.* 2021; Kraft *et al.* 2021; Montano *et al.* 2022; Otham *et al.* 2022; Wang *et al.* 2022; Hammel *et al.* 2023).

It is crucial to bring gender to the forefront in any strategy or action plan for the sound management of chemicals and waste (Strategic Approach to International Chemicals Management [SAICM] 2018). The first specific decision on gender mainstreaming with respect to the Basel, Rotterdam, and Stockholm (BRS) was adopted in 2017 at the triple of Conference of the Parties (COP) of the Conventions (Basel, Rotterdam, and Stockholm Conventions [BRS Conventions] n.d.). A dedicated Gender Action Plan is being implemented by the Secretariat of the BRS Conventions to ensure that women and men are equally involved and empowered to enable effective and gender-responsive management of chemicals and waste (BRS Conventions 2023).[4]

[3] See, for example, World Health Organization [WHO] (1993, 2003); International Agency for Research on Cancer [IARC] (2015); Casey (2021); Kofoed *et al.* (2021); Iqbal *et al.* (2022); Montano *et al.* (2022); Agency for Toxic Substances and Disease Registry (2023b). The International Agency for Research on Cancer has classified PCBs as Group 1 "carcinogenic to humans" (IARC 2015).

[4] The latest, simplified version of the BRS Gender Action Plan is the 2023 version (Basel, Rotterdam and Stockholm Conventions 2023)

Figure 1.1: Countries targeted by the project "Disposal of PCB Oils Contained in Transformers and Disposal of Capacitors Containing PCBs in Southern Africa"

The Stockholm Convention on Persistent Organic Pollutants (POPs)

The Stockholm Convention is a legally binding global treaty whose purpose is to protect human health and the environment from the harmful effects of chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife. Adopted by the Conference of Plenipotentiaries on 22 May 2001 in Stockholm, Sweden, it entered into force on 17 May 2004. The Conference of the Parties (COP), the Convention's governing body, reviews and assesses its implementation (Stockholm Convention 2019a).

Parties to the Convention are required to eliminate or reduce their releases of POPs into the environment. They are also required to develop National Implementation Plans (NIPs) explaining how they will implement their obligations under the Convention and make efforts to put these plans into operation (Stockholm Convention 2019b).[5]

[5] Debela *et al*. (2022) reviewed the NIPs of 34 African countries "to assess the size of PCBs stockpiles, their storage conditions, and the management of PCBs contaminated sites". The countries whose NIPs were reviewed included all the GEF project's target countries. The authors found that "the inventories on PCBs in use and stockpiles [were] fraught with limitations and inconsistency. The inventory on the number of PCBs containing equipment and dielectric fluid was based on assumption in most countries, [a] simple rapid PBCs test which is often inaccurate in some countries, and laboratories analysis in a few countries". In most of the countries transformers, capacitors and oil that contained PCBs were reported to be disposed of in open fields without protective equipment. "Thus, strict implementation of the Stockholm Convention and the NIPs to reduce the PCBs stockpiles size, and appropriate management of PCBs are required in Africa." In 2018, the International Pollutants Elimination Network (IPEN) published a POPs Country Situation Report on Tanzania. The objective of this report was to provide information on the NIP implementation gap, with a focus on the level of awareness of local actors and their participation in implementing the NIP. The information obtained (including on PCBs in transformers and capacitors) was to be used to recommend improvements, including an action plan for better engagement of stakeholders in NIP implementation (IPEN 2018).

Any party can propose that new chemicals be listed under the Convention. These proposals may be brought forward by the POPs Review Committee. Following decisions made by the COP, new chemicals will potentially be listed under Annex A (chemicals to be eliminated), Annex B (chemicals to be restricted) or Annex C (chemicals whose unintentional production and releases are to be minimized). Starting with the initial list of 12 POPs, including PCBs, recognized as having adverse effects on humans and the environment, 19 additional chemicals have been listed as of 2022 (Stockholm Convention 2019c).

POPs are found virtually everywhere, but not everyone is affected by exposure to them in the same way. There is a critical need to identify the differentiated impacts of these harmful chemicals based on the roles assigned to women, men, children and others in their daily lives.

Whether human exposure to POPs is occupational, household (indoor) or ambient (outdoor), the bottom line is that there is a need to increase awareness about how acute and chronic exposures to POPs occur and the health impact of these exposures including cancer and damage to reproductive and neurological functions.[6]

How the Gender Action Plan (GAP) would align with key Multilateral Environmental Agreement (MEA) frameworks

Table 1 indicates how the Gender Action Plan (GAP) developed for the project "Disposal of PCB Oils Contained in Transformers and Disposal of Capacitors Containing PCBs in Southern Africa" would align with key Multilateral Environmental Agreement (MEA) frameworks for gender action.

Table 1.1: Alignment with key Multilateral Environmental Agreement frameworks for gender action

Workstreams	Frameworks for gender action	Contribution
Chemicals management	Basel, Rotterdam and Stockholm (BRS) Conventions + Minamata Convention + Strategic Approach to International Chemicals Management (SAICM)	Through implementation of this GAP the project will be in line with the BRS Gender Action Plan (BRS Conventions 2023), the beyond 2020 SAICM process, and the gender strategy of the Minamata Convention. It will generate sex- and gender-disaggregated data, and contribute to outreach interventions benefiting vulnerable populations, by raising awareness about the interplay between sex, gender, and the health/environmental impacts associated with exposure to PCBs. It will also document gender-sensitive success stories and generate gender-sensitive knowledge from project interventions to address the disproportionate burden affecting women and children exposed to PCB oils, equipment and wastes.
Biodiversity	Convention on Biological Diversity (CBD) Post-2020 Biodiversity Framework	Through implementation of this GAP the project will be in line with the 2050 vision of a world "living in harmony with nature". The GAP builds on the lessons learned in the implementation of the CBD's 2015-2020 Gender Plan of Action and will contribute to the proposed action areas for the CBD's post-2020 Gender Plan of Action. It will contribute to the enabling conditions for the CBD's post-2020 framework through socio-economic empowerment of women and girls. The project will also contribute to building capacities for gender mainstreaming, generate sex- and gender-disaggregated data, and disseminate gender-sensitive knowledge to better understand the interplay between sex, gender and chemicals from a biodiversity and ecosystem perspective.
Climate change	United Nations Framework Convention on Climate Change (UNFCCC)	Through implementation of this GAP the project will be in line with the Enhanced Lima Work Programme on Gender and its five-year Gender Action Plan. The project will contribute to priority areas related to building the capacities of national and state governments and key stakeholders to promote gender-smart innovations for mitigation and adaptation through the phase-out of harmful chemicals and the use of more climate-friendly alternatives and disseminate gender-inclusive knowledge.
Land degradation	United Nations Convention to Combat Desertification (UNCCD)	Through implementation of this GAP the project will be in line with the Gender Action Plan for a gender-transformative implementation of the UNCCD 2018-2030 Strategic Framework. The GAP builds on the findings from the UNCCD Gender Caucus's 2019 summary report. The project will contribute to the generation and sharing of gender-informative knowledge to fill the gender knowledge gap.
Green recovery and sustainable development	Sustainable Development Goals (SDGs)	This project is expected to contribute to meeting several SDGs, including SDG 5 on gender equality. More specifically, it will contribute to the following targets: - SDG target 1.5, by building the resilience of women in vulnerable situations and reducing their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters; - SDG target 8.8, by making women and men more aware and better equipped to soundly manage chemicals and use chemical-free alternatives.

[6] See, for example, Gascon *et al.* (2013); Vested *et al.* (2014); Alharbi *et al.* (2018); Bruce-Vanderpuije *et al.* (2019); Guo *et al.* (2019); Institut national de la santé et de la recherche médicale (INSERM) (2019); Kofoed *et al.* (2021); Guillotin and Delcourt (2022); Montano *et al.* (2022); UNEP (2023a).

Advancing gender equality and women's empowerment in the aftermath of the COVID-19 crisis in Africa

The COVID-19 pandemic served as a profound reminder to humanity about the significance of health and the delicate equilibrium between humans and the environment. From this experience, it is crucial to acknowledge the importance of effectively managing toxic chemicals, such as PCBs, which can adversely affect human health including the immune system. Additionally, the pandemic's impact highlighted the significance of considering gender dimensions in addressing toxic chemicals, offering valuable lessons for guiding future efforts to ensure equal protection from their detrimental effects for all genders. As the project strives to deliver sound results towards elimination of PCBs, it is crucial to understand the gender challenges in the aftermath of the COVID-19 pandemic.

From the early days of the COVID-19 crisis women and girls throughout the world were disproportionately affected by the pandemic (United Nations [UN] 2020). This was especially true for those who were most vulnerable or living in crises and conflict affected countries (Africa Union n.d.). The gendered impact of COVID-19 can be linked to the triple burden imposed on women to perform their productive, reproductive and community roles in exceptional times while also facing greater risks of gender-based violence, which UN Women has called the "shadow pandemic" (UN Women n.d.).

While available data indicate an increase in unpaid work for both women and men in 38 countries as a result of the pandemic, women continued to perform the lion's share of that unpaid work; women and girls also took on a "greater intensity of care-related tasks" than men and boys (UN Women 2020). In view of the temporary closing of schools and day care facilities, along with responsibilities for ill and elderly family members, women were more likely to face additional burdens in terms of unpaid care. More women than men left the workforce during the pandemic, perhaps as a result of these increased workloads (UN Women 2020). According to a study by McKinsey & Company (2021), one in four women globally compared with one in five men was considering leaving the workforce or downshifting careers; the disparity with male counterparts was even greater, reaching 10 percentage points, in the case of women who were parents of children under ten.

More specifically, in Africa school closures and stay-at-home curfews increased the domestic workload, including the burden of unpaid care usually assigned to women based on prevailing social and cultural norms, particularly in vulnerable social groups such as women-headed households, those who were internally displaced, and those living in refugee and displacement camps. Women throughout sub-Saharan Africa suffered disproportionate economic harm because of COVID-19 lockdowns and restrictions on their movements, with the likelihood of such harm "cascading onto their children" (Aoyagi 2021).

Lockdowns and curfews may force women to be confined in cramped living conditions, sometimes with family members who abuse them in a context of great financial, social and health strain that provides conditions for domestic violence to spike (Haider *et al.* 2020; UN News 2020; Usta, Murr and El-Jarah 2021; UN Women n.d.). Throughout the world during the COVID-19 crisis a significant increase in calls for help to domestic violence helplines and demands for emergency shelter was reported (UN Women n.d.; World Health Organization [WHO 2020).

In six Sahelian countries domestic violence increased by 12 per cent during the pandemic (by 30 per cent in Chad, 14 per cent in Senegal, 10 per cent in Mali and less than 10 per cent in Burkina Faso, Mauritania and Niger) (African Union Commission – Women, Gender and Development Directorate, United Nations Entity for Gender Equality and the Empowerment of Women, Office of the United Nations High Commission-

er for Human Rights and United Nations Population Fund 2020). Already limited capacities to help women overcome gender-based violence have been overwhelmed, as support services were greatly disrupted during the pandemic (World Health Organization 2020). Owing to the great disturbance to many programmes aimed at helping women and girls, it has been estimated that in the next decade there could be 2 million female genital mutilation cases globally and an additional 13 million child marriages due as a result of the COVID-19 crisis (United Nations Population Fund 2020).

More than 70 per cent of workers in the health and social workforce on the frontlines in the fight against the pandemic globally were women, although women make up less than 25 per cent of leaders in the global health sector (Harper *et al*. 2020). In sub-Saharan Africa community health workers, mostly unpaid and the majority of whom are women, contributed to fill the health care gap, thus putting themselves at greater risk of infection due to the informal nature of their work (International Labour Organization [ILO] 2020). Lockdowns and border closures have increased the already existing financial challenges faced by women, particularly in developing countries (Foley and Piper 2020; United Nations Conference on Trade and Development 2021).

Some of the sectors particularly affected by the COVID-19 economic downturn had a high percentage of female employees. In accommodation and food services, real estate, business and administrative activities, manufacturing, and the wholesale/retail trade women therefore risked job losses or a decline in working hours (Georgieva *et al.* 2020; ILO 2020). In 2020 these four sectors represented 41 per cent of total female employment globally, compared with 35 per cent of total male employment (ILO 2020).

From an economic perceptive, as reported by McKinsey & Company (2020), jobs held by women globally were 1.8 times more vulnerable than those held by men, with a potential loss of US$ 1 trillion in global gross domestic product (GDP) growth under a gender-regressive scenario. The COVID-19 crisis cost women around the world at least US$ 800 billion in lost income in 2020 alone, the equivalent of the combined wealth of 98 countries (AllAfrica 2021).

An increasing number of studies suggest that the negative impacts of COVID-19 could potentially lead to delays in the achievement of the Sustainable Development Goals (SDGs) (Shulla *et al*. 2021; Elavarasan *et al.* 2022; Hannan *et al.* 2022; Martín-Blanco *et al.* 2022; UN 2022). Such setbacks could hinder achievement of the road maps, identified in national SDG reports, for meeting targets related to women's empowerment, employment and economic inclusion, education, maternal and child health, early marriage, and gender-based violence.

Recovery efforts in the aftermath of the COVID-19 crisis should not be allowed to increase the gender divide in areas ranging from the economy to education, food security, health care, peace and security, participation in decision-making, and access to information. To ensure that women benefit equally from a recovery that is not only greener, but also gender-smart and more inclusive of women, girls and other population categories most at risk, decision-makers need to factor gender considerations into the way economic stimulus and recovery packages are designed and distributed.

By mainstreaming gender responsiveness into these packages, African countries can seize a once-in-a-generation opportunity to build more gender-equal societies and lay a solid foundation for better gender-inclusive productive systems as part of the transition towards decarbonized, circular and green economies and a PCB-free future.

Box 1.1: Government Responses to COVID-19: Lessons on Gender Equality for a World in Turmoil and the UNDP-UN Women COVID-19 Global Gender Response Tracker

Government Responses to COVID-19: Lessons on Gender Equality for a World in Turmoil (UN Woman and United Nations Development Programme [UNDP] 2022) analyses the overlapping impacts of the COVID-19 pandemic, accelerating climate disasters and geopolitical conflict as they present a threat to gender equality and women's rights globally. This report discusses what governments can do to prevent further rollbacks and recover lost ground, while enhancing resilience and preparedness for future shocks. Examining nearly 5,000 measures adopted by 226 countries and territories from the UNDP-UN Women COVID-19 Global Gender Response Tracker (UNDP 2023), the report finds that government responses overall paid insufficient attention to gender dynamics. At the same time, instances of innovation and learning provide important lessons for gender-responsive policymaking in times of crisis.

Methodology

Experience shows that when generic gender mainstreaming frameworks are applied to increasingly specialized areas of development practices, such as chemicals and waste management, these frameworks are usually not fit for purpose. They may not capture, for instance, the unique gender dynamics specific to POPs. The Gender Mainstreaming Strategy and Action Plan is meant to serve as a practical tool to ensure that gender considerations are adequately mainstreamed into project implementation.

A literature review of available resources was first conducted. Relevant data, approaches, lessons learned, and good practices were examined and used to develop a first draft of the Gender Mainstreaming Strategy and Action Plan. Feedback and inputs received from resource persons at national and regional levels were triangulated and reflected in the final version. A knowledge, attitude and practices (KAP) survey and a basic training workshop session were organized to establish a baseline, raise awareness about the GAP, and facilitate its adoption. These activities also laid the necessary foundation for potential future capacity-building efforts in the target countries.

THE GENDER CONTEXT OF PCBS MANAGEMENT

This section explores gender considerations in the general context of chemicals and waste management. It focuses, to the extent possible, on the specific gender narrative applicable to PCBs and Africa.

Section 3 looks at potential entry points for gender mainstreaming under the headings of enabling environment; stakeholder engagement; inventories and monitoring; alternatives to PCBs; knowledge management; the human health impact and cost burden of exposure to PCBs; mitigating the socio-economic impact of exposure to PCBs; and financing the phase-out of PCBs and adoption of safer alternatives.

Section 4 consists of a gender-responsive log-frame and monitoring and evaluation (M&E) framework (Table 4.1) and a risk matrix for gender-related considerations during project implementation (Table 4.2).

Conclusions are presented in Section 5.

> "All people, irrespective of gender identity, must have the same rights, responsibilities and opportunities in order to achieve the sound management of chemicals and wastes, and both are vital to achieve the majority of the 2030 Sustainable Development Goals. In order to identify and address inequalities, data that enable identification of impacts based on gender, i.e. the social attributes and opportunities associated with being male or female, and the biological sex is needed. Women are generally more disproportionally impacted by exposure to chemicals and wastes and have less access to participation in decision making. Women are also key agents of change. Women and chemicals is an underexplored topic that deserves more attention" (International Pollutants Elimination Network n.d.)

Context analysis

Polychlorinated biphenyls (PCBs) have 209 congeners (IARC 2015). These synthetic chemicals have properties such as low electrical conductivity, high resistance to thermal degradation, and high thermal conductivity. Owing to such properties, PCBs have been widely used as dielectric isolators in electrical equipment such as capacitors and transformers, as well as in hydraulic fluids (Erickson and Kaley 2011; Dorman and Reiner 2021; US EPA 2023; Stockholm Convention n.d.a).

An overview of the existing literature accessible at the time this research was carried out shows that while there has been encouraging progress (noticeable in efforts made during the past two decades), gender dynamics in the context of POPs management in general and management of PCBs in particular remain understudied and under-recognized overall. Consequently, such gender aspects are yet to be fully addressed in line with the guidance provided in the BRS Gender Action Plan (BSR Conventions 2013) or with national priorities to achieve the relevant SDGs.

In designing strategies and action plans to phase out PCBs, it is crucial that the decision-makers and other key stakeholders involved go the extra mile to investigate the interplay between gender inequalities and the wide array of health, environmental and socio-economic risks arising from exposure to these harmful chemicals. Thus countries can address the multi-layered flows of gender norms, stereotypes, perceptions and social roles assigned to women and men in a given social context. Light can also be shed on how the interplay between such flows may shift the tide of exposure to affect specific social categories disproportionately, making them more vulnerable; hence the need for greater attention and support through gender-transformative interventions.

Trends and figures

Even in countries where applications of PCBs have been restricted, including their use in transformers and capacitors and as hydraulic oils, PCBs can be found in the environment, including air, ground and surface water, soils, dust and sediments.[7]

The 33 member countries of the European Environment Agency (EEA) reported an overall decrease in POPs emission levels between 1990 and 2017, including an 83 per cent decrease in emissions of PCBs. Decreased PCB emissions were mainly due to reductions in "industrial processes and product use", which accounted for 87 per cent of the total decrease in this period (European Environment Agency [EEA] 2021).[8]

Many studies have reported on environmental and occupational exposure to PCBs derived from electrical equipment and building materials (e.g. plasticizers, flame retardants, paints, caulking compounds, sealants, fluorescent light ballasts). In several countries the highest concentrations of PCB contamination have been detected at e-waste recycling sites. There is a need for the remediation of these areas to help protect the health of workers and local populations (Montano *et al*. 2022).

A recent study on long-term temporal trends of 20 POPs in nine African countries (including Mali and Mauritius) showed that concentra-

[7] See, for example, Barakat, Khairy and Aukail (2013) (Egypt); Bogdal *et al*. (2013); Wu *et al*. (2015) (China); Sun, J. *et al*. 2016 (China); Arinaitwe *et al*. 2018 (Lake Victoria, East Africa); Jing, Fusi and Kjellerup (2018); Cui *et al*. (2020) (China); Chukwujindu *et al*. (2022); Ngoubeyou *et al*. (2022); Othman *et al*. (2022); Shi *et al*. (2022) (China). In samples collected in a heavy polluted rural area of the North China Plain, Sun, H. *et al*. (2020) found that waste incineration and industrial activities were the main sources of PCBs in PM2.5 (particles less than 2.5 microns in diameter), contributing 76.8 per cent and 12.7 per cent, respectively. In the same area Jiang *et al*. (2023) estimated that biomass burning contributed 9.3 per cent to the total PCB and organochlorine pesticide (OCP) mass.

[8] Under Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls, EU Member States were to carry out inventories of big equipment containing PCBs or polychlorinated terphenyls (PCTs); adopt plans for the disposal of this equipment, and safely dispose of it (the deadline for disposal was the end of 2010); and prepare outlines for collecting and disposing of non-inventoried equipment containing PCBs and PCTs (e.g. most household appliances manufactured prior to the ban on these chemicals). Under the recast 1996 POPs regulation, all remaining PCBs within dielectric equipment in concentrations above 0.005 per cent and in volumes greater than 50 milliletres (ml) must be destroyed or irreversibly transformed by the end of 2025 at the latest (European Commission 2023).

tion levels of many POPs, including PCBs, had declined significantly during the previous ten years while the levels of others had remained stable or were increasing in some locations, which was attributable to the prevalence of open burning of waste (particularly e-waste) across Africa (White *et al.* 2020).

E-waste contains numerous chemicals, including PCBs and other POPs, that are harmful to human health and the environment (Parvez *et al.* 2021; Lin and Achal 2021; Lin, C. *et al.* 2022; Lin, S. *et al.* 2022). A large percentage of the world's e-waste remains undocumented at its end of life (Maes and Preston-Whyte 2022). According to *The Global E-waste Monitor 2020* (Forti *et al.* 2020), less than 18 per cent of the e-waste generated globally in 2019 (about 53.6 million metric tons) was properly documented and recycled.[9] Li and Achal (2020) reported that in Guiyu, China, where approximately 70 per cent of the world's total e-waste was ending up, as little as 25 per cent was recycled in formal recycling centres with adequate protection for workers.

Much of total global e-waste is accumulating in open dumpsites in several African countries. Based on available data, Maes and Preston-Whyte (2022) concluded that the main African recipients of e-waste were Nigeria, Ghana and Tanzania (one of the 12 target countries), while Kenya, Senegal and Egypt were countries of concern. The authors estimated that the total volume of e-waste in Africa in 2019 (locally produced plus imported e-waste) was between 5.8 and 3.4 metric tons, but considered this figure to be an underestimate since large data gaps exist. South Africa also faces a growing e-waste problem (Borthakur 2020; Moyen Massa and Archodoulaki 2023).

[9] The Global E-Waste Monitor (Forti *et al.* 2020, Annex 3) provides estimates of e-waste generated per country, and per person, in 2019 in most countries including each of the target countries. Figures for e-waste to be documented for collection and recycling are presented for Mauritius, Namibia and Zimbabwe. In addition, Tanzania's first National E-Waste Statistics Report (Tanzania National Bureau of Statistics and United Nations University, ViE – SCYCLE 2019a) presents, inter alia, volumes of e-waste generated in Mainland Tanzania, in the years 1998-2017. At the same time, this report cautions that data on e-waste remain limited. See also Tanzania National Bureau of Statistics and United Nations University, ViE – SCYCLE (2019b).

Lack of adequate data and differing definitions of e-waste are two of the reasons it is impossible to provide a global figure for employment in the e-waste sub-sector (ILO 2019a; Forti *et al.* 2020). Obtaining reliable data related to e-waste is complicated by differences in labelling, as well as in reporting between formal and intermittent informal importers (Maes and Preston-Whyte 2022). It is estimated that approximately 80 per cent of the world's 24 million waste workers are informal. They are involved at all levels of waste management, from direct collection to recycling and waste treatment (Süss 2023).

Informal waste economies are dominated by women, who tend to perform the lowest paying tasks upstream in the value chain (Gunsilius, Chaturvedi and Scheinberg 2011; ILO 2014; UNEP 2022a, b). In developing countries the percentage of women workers who are informally employed (92 per cent) is substantially higher than the percentage of men workers (87 per cent). Moreover, in a majority of countries (56 per cent) the percentage of women workers in informal employment is greater than the percentage of men workers (Bonnet, Vanek and Chen 2019).

ILO (2019b) reported that "While there is a lack of hard statistics, there are reports that in some countries a higher proportion of women than men work in particularly vulnerable situations, and that the work is sometimes carried out by children in contravention of the ILO's Worst Forms of Child Labour Convention, 1999." WHO (2021) estimated that as many as 18 million children and adolescents and 12.9 million women, including an unknown number of women of childbearing age, could be at risk from adverse health outcomes linked to e-waste recycling.

Since China announced in 2018 that it would no longer accept other countries' plastic waste there has been an increase in plastic waste exports to Africa, much of which is difficult to recycle and ends up in rivers and the ocean. Countries including Ethiopia, Ghana, Kenya, Senegal, Tanzania and Uganda are being flooded with plastic waste, with adverse effects on

people who are poor and socially marginalized, particularly women (Lerner 2020; Wakunuma 2021; IPEN 2022; WHO 2023b).

In Africa pollutants found in e-waste, including PCBs, have been identified at elevated levels in air, water, soil, dust, fish, agricultural products, and human matrices such as blood, urine and breast milk. This points to the fact that risks from exposure to e-waste in Africa can go beyond occupational workers and nearby communities to encompass the general population as well as future generations (Orisakwe *et al.* 2019).

In a study on POPs contamination in ambient air in Africa, Latin America, the Caribbean and the Pacific Islands, Bogdal *et al.* (2013) found that ambient air concentrations of PCBs in Africa were relatively high when compared to other regions. They suggested that waste (particularly e-waste exported to Africa from industrialized countries) could be a possible source of PCBs in Africa, as PCBs had never been extensively used or produced there.

In Nigeria, which has a large stock of PCB-containing oil and equipment (Ahmad and Oluwaguby 2021), environmental media contaminated by PCBs are found near installations where they are used and elsewhere (Aganbi, Iwegbu and Martincigh 2019; Iniaghe and Kpomah 2022). Discarded transformer oil has been used by people, unaware of PCBs' adverse health effects, for purposes including cooking, lice and skin treatment, killing weeds, roasting animal hides, and open agricultural burning (Abutu and Adibe 2014; WECF 2017; Okoh 2015; Chime 2022). Nigeria is also the leading importer of electrical and electronic equipment on the African continent, with over half a million metric tons of electronic products being discarded every year. Approximately 100,000 people work in the country's e-waste recycling sector, providing an important source of livelihoods (UNEP 2023b).

A comparative study conducted between 2012 and 2019 and reported by Krätschmer, Malisch and Vetter (2021) analysed 57 official nation-wide pooled milk samples from 53 countries on five continents (Africa, Central/South America, Asia, Europe, and Australia/Oceania). There were relatively high levels of PCBs in samples collected in Africa compared with those from other regions, with a few exceptions.

High levels of PCBs and other POPs observed in Ghana in breast milk samples, especially in larger cities, raised concerns about PCBs in dirty oils and obsolete equipment as well as the unregulated disposal and recycling of e-waste (Asante *et al.* 2011). Findings from an analysis of plastic resin pellets along Ghana's coastline suggested that river pollution with PCBs was related to e-waste activities (Hosoda *et al.* 2014).[10]

In the first study on organochlorines, including chlorinated pesticides and PCBs, in breast milk in Tanzania (Müller *et al.* 2017) the estimated daily intake of nondioxin-like PCBs was found to exceed the provisional tolerable daily intake in 48 out of 95 nursing infants. A study by Müller *et al.* (2019) assessed prenatal POPs exposure to Tanzanian infants and evaluated the distribution of POPs between breast milk, maternal blood, placenta and cord blood. Tanzanian infants were found to be exposed to a wide range of POPs, including PCBs, during faetal life, raising concerns for potential health effects. The authors also found that maternal blood concentrations could lead to underestimation of prenatal exposure, while breast milk collected close to delivery might be a more suitable indicator of prenatal exposure.

A study of POPs levels and trends in Guinea-Bissau showed that serum levels of PCBs significantly decreased between 1990 and 2007. The authors suggested that national and international POPs management could be responsible for an observed decrease in organohalogen compound concentrations in humans in that country, as in the case of decreases in developed countrie (Linderholm *et al.* 2010).

[10] For PCB levels in breast milk in Ghana and Uganda, respectively, also see Asamoah *et al.* (2018) and Matavu *et al.* (2021).

POPs, including PCBs, are among the most important and hazardous soil pollutants. Food producing animals such as chickens, cattle, sheep and goats can take up PCBs-contaminated soils. Contamination of soils and feed with PCBs can lead to high levels being found in animal food products (Weber *et al.* 2018, 2019).

Petrlik *et al.* (2019) investigated POPs contamination at what was then the world's largest e-waste scrap yard in Agbogbloshie (Ghana), medical waste incinerators in Accra (Ghana) and Kumasi (Ghana), and two open-burning waste dump sites in Yaoundé (Cameroon). POPs in eggs were measured because free-range chickens are "active samplers" of materials on the ground. Eggs also represent an important human exposure pathway through consumption. Some of the highest levels of POPs ever measured in eggs were found in samples collected at Agbogbloshie. Indicator PCBs these eggs were four times higher than the European Food Safety Authority (EFSA) standard. Although PCBs near the medical waste incinerators did not exceed limits, significant levels were found.

There have been an increasing number of reports on contamination of eggs from free-range poultry with polychlorinated dibenzofurans (PCDD/F) and PCBs during the last two decades (Petrlik *et al.* 2022). In an investigation of wild bird eggs in South Africa's industrialized areas by Quinn *et al.* (2013) PCBs were detected in all eggs, while 30 congeners were found in more than 80 per cent of the samples covered by the study.

An analysis of POPs in maternal plasma, including 15 PCB congeners, carried out in South Africa showed low levels of PCBs, although there were differences across geographical regions (Röllin *et al.* 2009). A study on South Africa's Tswana population suggested that regular exposure to the combustion of solid biofuels used for cooking and heating in households was associated with higher serum levels of PCBs, including dioxin-like PCBs (DL-PCBs) (Pieters and Focant 2014). An investigation of POPs in South African estuaries, based on data from 1960 to 2020, found that PCBs exceeded recommended levels in drinking water (Olisah, Adams and Rubidge 2021).

Gender-based differentiation in the context of PCBs

There is an urgent need to mainstream the gender aspects of PCBs and other POPs in order to address existing limitations in environmental health research and the wider narrative of PCBs' health effects on everyone. Paeck and Bolte (2016) reported that out of 552 studies exploring social inequalities in environmental health, concepts related to sex and gender were analysed in only 11 studies and were mentioned in another 45 abstracts. Beery (2018) found that In animal research models female subjects were still under-represented. Many investigators remain resistant to the use of female subjects in research (Zucker and Prendergast 2020; Zucker *et al.* 2021).

There is also a need to break out of silos, and to bring scientists and other experts together to work in synergy in cross-functional teams as well as maintaining a permanent dialogue aimed at establishing gender-inclusive approaches to data collection and analysis (Bolte *et al.* 2018).

Across different economic sectors where PCBs are used, the interplay between poverty, sex, gender norms, and exposure to these harmful chemicals is likely to shift the burden more towards those population groups that are most vulnerable, thus disproportionately affecting women. It is critical to understand the working conditions of these poorest workers who end up bearing the triple burden of mortality, fertility, and intergenerational health complications (McAllister, Magee and Hale 2014).

A study in Viet Nam showed that women working at e-waste recycling sites had increased exposure to low-chlorinated PCBs and high-brominated polybrominated diphenyl ethers (PBDEs), possibly as a result of inhalation and

ingestion of dust (Tue *et al.* 2010). Understanding these realities is crucial in regard to policy interventions, such as working to shift the flow of solid waste into the formal economy. Relatively higher incomes and increased workloads in the formal sector may drive greater competition from men and discourage women from assuming professional duties on top of the domestic and caregiving responsibilities assigned to them based on underlying gender norms.

Women and children, who are typically responsible for household chores such as cooking, bear the greatest health burden from the use of polluting fuels and technologies in homes globally (WECF 2016, 2017a; Wahlang 2018; WHO 2022). Women can be disproportionately affected by indoor air pollution from a wide range of sources, including unhealthy energy sources used for cooking. As of 2020, roughly 2.4 billion people globally lacked access to clean cooking.

Reliance on polluting fuels is especially pronounced in sub-Saharan Africa, where only 17 per cent of the population currently uses clean solutions; in addition, between 2000 and 2020 the number of people in this region without access to clean cooking increased by almost 50 per cent as population growth outpaced the increase in access; use of polluting fuels is estimated to cause approximately 3.2 million premature deaths annually while impeding progress on gender equality and environmental quality goals (Khavari *et al.* 2023). It has been reported that women more often than men dispose of household waste by burning it in open fires in homes and yards, thus releasing and being exposed to furans and dioxins (unintentional POPs) (WECF 2017a).

A number of studies examine ways in which air pollution can exacerbate gender inequalities and increase the health burden on women (Stockholm Environment Institute (2020). One study has demonstrated that women tend to work less during high pollution weeks due to the social caregiving roles assigned to them, as their children are unable to attend schools (Montt 2018). Another suggests that the cognitive functions of elderly women are more affected in comparison to their male counterparts as by exposure to outdoor air pollution (Kim *et al.* 2019).

While various studies point to the health burden and economic costs associated with air pollution, which may disproportionately affect women among other vulnerable social groups, further investigation is needed to improve the current understanding of the transport patterns PCBs and other POPs and resulting exposures (Hung *et al.* 2013). More research is also needed to better understand underlying gender norms, based on national and local circumstances, in order to prototype gender-informed responses to PCBs management that are context-specific and fit for purpose.

In the areas of capacity building and awareness-raising a major blind spot that should be investigated – and prioritized by decision-makers and development practitioners working in the areas of PCBs management – is the design and implementation of gender-responsive capacity building and awareness-raising interventions. Since women may not be seen on the PCBs frontlines as users or workers in maintenance or storage facilities, there could be a misleading risk perception bias towards men. This is an aggravating factor in circumstances where women may not be considered as priority targets to benefit from training, hazard warnings and preventive measures, among other awareness-raising interventions. Women could thus be exposed to greater risks and become even more vulnerable to exposure to PCBs when the prevailing risk perception fails to capture the different ways they by them are affected directly or indirectly.

By removing PCBs from transformers and other electrical equipment and making room for PCB alternatives, the GEF project will contribute to breaking the cycle nurtured by the interplay between sex, gender and exposure to PCBs. This means women will be less impact-

ed in various ways (e.g. maternal and children's health, indoor pollution, intake of contaminated foods such as fish from contaminated waterbodies and agricultural products from contaminated soils). Given the complexity of the issue and the few data available, the project can use holistic thinking to provide practitioners working with PCB on the frontlines with the guidance needed to identify entry points for gender mainstreaming.

Gender-responsive management of PCBs: challenges and opportunities

The current state of research suggests that the multiple ways in which women may be impacted by exposure to PCBs (similarly to exposure to other POPs) tend to be understudied and under-recognized. This situation can largely be explained by socio-economic factors, but also by underlying cultural norms and drivers of gender inequalities. For instance, some stereotypes prevail, certain social roles are specifically assigned to women, and there is an expectation that women will behave in certain ways or fulfil specific functions.

As an example, it has been found that women are prone to consume higher intakes of traditional food such as fish as part of maternal diets which have been associated with higher exposure to PCBs among women than in men (Knudsen *et al.* 2015). Women also have lower household incomes and suffer greater food insecurity and economic hardship than men. Because of such conditions and pressures, women tend to take higher risks to provide for their families (Ivers and Cullen 2011; Oxfam International 2019). While the same thinking could be applied to men facing high risks, the key necessity is to bring the different pieces of the gender equality puzzle together to see the big picture: this is essential in order to understand how gender in a specific social or geographical context may exacerbate existing vulnerabilities to PCBs and other POPs.

Over the last decades significant progress has been made towards gender-responsive management of POPs at national and global levels. Nevertheless, several challenges persist and are yet to be addressed.

We now know more about how women and men are exposed to PCBs, similarly to exposure to other POPs, and how they are affected, given that aspects related to sex and biology have been studied to some extent. However, very little is known about the interactive processes according to which the cumulative impacts associated with exposure to these chemicals are a function of socio-economic factors. These processes include underlying gender dynamics that are often complex and largely under-recognized. In other terms, understanding how exposure is amplified and impacts are exacerbated is not a linear equation, but a multidimensional matrix.

To set the scene and understand the extent to which human health and the environment are affected by exposure to PCBs and other POPs, availability of and access to quality data remain a key challenge. Sex-disaggregated and gender-sensitive data are critical. They are also crucial for determining how the invisible gender dynamics specific to a given development intervention could exacerbate the harmful effects associated with these silent chemicals.

In cases where a growing body of research does exist with regard to specific POPs, silos need to be broken through cross-functional teams bringing together PCB specialists, health researchers, and gender specialists. Knowledge management mechanisms such as the Strategic Approach to International Chemicals Management (SAICM) knowledge platform (SAICM n.d.) are much needed in an overall context of data scarcity.

The data challenge is becoming even more crucial going forward. Significant progress has been made during the last decades in generating much needed sex-disaggregated and gen-

der-sensitive data. An example of gender-sensitive data can be found in the GAP (see Part 4), which pays attention to similarities and differences between the experiences and opinions of women and men while conducting inventories and other types of research related to PCBs. However, much more data are needed as environmental health research works hard to keep up with the speed at which industries are incorporating new chemicals into complex formulations, including regrettable substitutions (Maertens, Golden and Hartung 2021; Food Packaging Forum 2022). Further investigation will be needed to determine whether such substances have potentially harmful effects on human health and the environment, as well as the extent to which their use could worsen existing gender inequalities in specific contexts and geographies.

Awareness-raising is another key challenge in planning and implementing interventions in areas related to PCB management. It may not be possible to travel the last mile towards achieving a gender-transformative approach to the management of PCBs without explaining technicalities, acronyms, exposure scenarios, and potential health and environmental impacts in a simplified language understandable by everyone – a language that leaves no one behind, especially those disproportionately affected including women, children, occupational workers, refugees and migrants, those living in poverty, minorities, and other social groups such as people living in hardship conditions or facing discrimination.

However, there are promising opportunities to harness the potential of innovations and technologies to shift towards a PCBs-free world with healthy future generations. As a consensus is building on the harmful effects of PCBs and other POPs, technological advances are bringing much-needed impetus to advancing gender-sensitive research. This means efficient pathways for effective and gender-transformative management can be identified for PCBs in particular and POPs in general. Such dynamics can be seen, for instance, in areas where safer alternatives to PCBs are being developed using the principles of green chemistry.

Mainstreaming gender considerations into sound management of PCBs will not only improve the lives of women and men living today, but also those of future generations. Awareness-raising on how exposure to PCBs can become a health issue remains essential. It is also essential to shed light on how exposure to PCBs can transcend cross-generational space through maternal and children's health. Data related to exposure history and dietary patterns remain critical when it comes to women of reproductive age. The same can be said of those, across economic sectors, who are most exposed to higher risks in securing an income and providing for their families (Wahlang 2018).

While prevailing social and cultural norms in a given development context could be the drivers of gender-differentiated exposure to PCBs and POPs, it may not be possible to challenge root causes overnight. Sheltering the most exposed and most vulnerable social groups from the far-reaching impacts of harmful chemicals has become increasingly specialized. Stereotypes and assumptions in the gender sphere could be challenged over time by identifying the right entry points for mainstreaming gender.

MAINSTREAMING GENDER CONSIDERATIONS INTO NATIONAL PCB POLICIES, REGULATIONS, PHASE-OUT PLANS AND IMPLEMENTATION PROCESSES

Policy, regulatory and institutional frameworks

Enabling environment

Despite the huge efforts made to develop legal frameworks for the sound management of PCBs, gaps and loopholes may persist in national legislation, regulations and policies given the evolving nature of the economic sectors and industries using these chemicals. Even in situations where extensive regulations are in place, the last mile of enforcement and effective operationalization remains a key challenge for many countries.

Approving and enforcing legal processes is not an easy task, hindering a country's ability to come up with timely legal responses. Flexible policies and dynamic regulatory responses for the sound management of PCBs are crucial if countries are to keep up with the rapidly shifting use patterns and business models associated with the presence of PCBs and PCB-like chemicals in a continuously evolving industrial landscape.

Lawyers and economists should not work in silos, as better results could be achieved through the use of blended packages of legal and economic measures such as taxes, fees, tradeable permits, extended producer responsibility, "pay as you throw" initiatives, and deposit-refund schemes (SAICM 2020). This approach is even more relevant as part of stimulus packages to support the rebound of national economies in the aftermath of the COVID-19 crisis. Such packages could be used as entry points, not only to catalyse the transition towards green and circular economies but also to mainstream gender considerations and achieve economies of scale.

An important trend to consider while developing legal frameworks is the use of information and communications technology (ICT) to promote citizen engagement. For example, the UN Economic and Social Commission for Western Asia (ESCWA) has developed a Citizen Engagement Toolkit to support the incorporation of ICT tools in the decision-making process (United Nations Economic and Social Commission for Western Asia 2021). However, there is a wide gender gap in Africa (African Union 2019; Kwakwa 2023), with a gender parity score in 2022 of .75 (International Telecommunication Union [ITU] 2022).[11] The fact that men are more likely to be connected to the Internet means there will probably be lower participation and engagement of women in the development and implementation of PCBs and POPs related regulations than if this ratio were higher.

Potential entry points for gender mainstreaming:

› Promote a science-policy interface to enable gender-informed decision- making based on sex-disaggregated data and gender-sensitive research protocols (UN Women 2021).

› Use gender-sensitive wording (UN n.d.b) in drafting national legislation such as laws, bills and decrees to incorporate gender aspects in the legal basis for sound disposal and management of PCBs.

› Seek gender balance in forming legal teams in charge of drafting and enforcing PCBs legislation and regulations to ensure that the perspectives of women and men are equally reflected.

› Assign gender quotas in governance bodies in charge of the sound management of PCBs at national and subnational levels.

› Provide gender training benefiting legislators, regulators and policy makers to determine how the socio-economic impacts of PCBs may disproportionately affect women and men and explore possible entry points for gender mainstreaming.

› Empower women to use ICT tools to ensure women's equal participation in legal processes related to PCBs management.

› Promote gender equality along supply chains of products containing or contaminated with PCBs to reduce the economic hardship on women and men and reduce their exposure.

› Empower women, through capacity building, to benefit equally from stimulus packages, market signals, and behavioural change incentives using a mixture of legal and economic instruments to phase out the use of PCBs.

Stakeholder engagement

As in the case of other POPs, there is still a poor understanding by the general public of the large number of products that contain or are contaminated with PCBs, as well as of their geographic distribution. While industrial workers handling electrical fluids in capacitors and transformers may be aware of the potential health risks associated with exposure to PCBs, they may not grasp the extent to which PCBs are present in their daily lives in a wide range of products including adhesives and plastics. The same applies to communities living close to exposure hotspots such as recycling facilities, storage areas or maintenance units. Many products containing PCBs have remained in use for decades after they ceased to be manufactured (Erickson and Kaley 2011).

A mistaken belief regarding stakeholder engagement is that gender mainstreaming can be achieved through ensuring that equal numbers of women and men attend meetings and workshops. While equal participation is funda-

[11] The gender parity score is calculated as the proportion of women who use the Internet divided by the proportion of men. A value less than one indicates that men are more likely to use the Internet than women, while a value greater than one would indicate the opposite. Gender parity is considered to be achieved if the value lies between 0.98 and 1.02. In 2022 the gender parity scores in the Americas and Europe were 1.0 and .98, respectively (ITU 2022).

mentally important, effective participation by women and other vulnerable social groups in processes related to the phase-out and sound management of PCBs will only be possible where appropriate empowerment measures are factored into the equation.

It would be safe to assume that there is relatively weak participation, overall, by some stakeholder categories such as the private sector and local communities. That fact may not reflect the diversity of all those managing PCBs or at risk due to exposure to them. This is an area in which more efforts are needed to reach out to all those whose views and collaboration matter for effective phasing out and sound management of PCBs.

Given the complex nature of the economic sectors and industries using products that contain or are contaminated with PCBs, establishing effective communication channels with all relevant stakeholders can be challenging. Additional efforts should be made to involve the "silent majority" represented by women, children, socio-professional categories at higher risk, and other vulnerable social groups.

Potential entry points for gender mainstreaming:

› Carry out extensive consultations with representatives of the social groups most at risk from exposure to PCBs, including women and children.

› Reach out to women and men from all relevant stakeholder categories and vulnerable social groups in order to have a good representation of all targeted sectors.

› Create an enabling space in which women's groups and their representatives, among other stakeholders, are empowered to provide their perspectives.

› Ensure that women are equally represented in the decision-making processes related to the phase-out and sound management of PCBs.

› Engage women representatives not only in the formal sector, but also in the informal sectors or subsectors of the economy exposed to PCBs.

› Establish cross-sectoral and gender-sensitive communication channels using local languages, social media, and other dissemination platforms such as workers' unions, family health centres and consumer protection associations.

Technical and environmental aspects

Inventories and monitoring

There is an emerging trend for scientific and policy expertise related to the management of chemicals, including PCBs, to become more diffused to developing countries. While this is an encouraging development, gender balance is yet to be addressed as countries, whether developed or developing, are striving to train skilled experts and negotiators in their attempts to advance the multilateral architecture of chemicals governance.

Potential entry points for gender mainstreaming:

› Provide gender training that assists technical staff in charge of planning and conducting PCB inventories to identify relevant entry points for gender mainstreaming.

› Conduct gender-sensitive PCB inventories, to the extent possible, by describing, documenting and breaking down their differentiated impacts by sex and gender.

› Upgrade PCB monitoring mechanisms by collecting sex-disaggregated and gender-differentiated data (e.g. the POPs Global Monitoring Plan projects monitor POPs including PCBs in human milk [Stockholm Convention 2013; n.d.d);

› Seek gender balance while preparing the terms of reference for various tech-

nical and managerial positions such as consultants, experts and negotiators.

Alternatives to PCBs

In general, while there are promising safer alternatives to PCBs countries still face numerous obstacles including lack of funding to meet switching costs, poor research and development (R&D) infrastructure, unqualified human resources, lengthy reforms to tackle harmful subsidies, or behavioural resistance to change.

Potential entry points for gender mainstreaming:

› Conduct awareness-raising activities to unpack the potential impacts associated with exposure to PCBs into a simplified language that is understood by everyone, especially those disproportionately affected including women, children, occupational workers, refugees and migrants, people living in poverty, minorities, and other social groups such as those living in hardship conditions or facing discrimination.

› Ensure that women and other vulnerable social groups are empowered to access productive assets and financial services while providing financial and economic incentives to switch to safer PCB-alternatives.

› Provide market signals to enable women to be equally represented in leadership positions and break through glass ceilings, especially in sectors benefiting from a mix of policy and economic tools as part of stimulus packages to boost domestic R&D capabilities through public-private partnerships.

› Provide sex-disaggregated cost estimates of exposure to PCBs to build a stronger case for action and prioritize those most at risk including women; see, for example, the studies conducted by the World Bank and the Institute for Health Metrics and Evaluation (2016) and SAICM (2020).

› Enable women and men, despite the social roles assigned to them as caregivers and breadwinners, to fully benefit from capacity building interventions meant to strengthen institutional and human capacities needed to accelerate the adoption of safer alternatives to PCBs.

› Use context-specific approaches to raise awareness about safer PCB alternatives among women and other vulnerable groups, such as through field schools and locally recruited volunteer teachers.

Knowledge management

Undoubtfully, huge efforts were made over the last decades to generate a critical body of knowledge to better understand the complex interactions between exposure to PCBs and the existing socio-economic factors, including context-specific gender dynamics.

While scientific research has made commendable advances to some extent in decoding how the interplay between sex, gender, and exposure can influence the flows of impact on human health and the environment, pieces of knowledge remain scattered, limited to a few circles of expertise, and the full picture is yet to be drawn.

Even more challenging is the speed at which chemicals exhibiting PCB-like behaviour, as well as other chemical-alternatives to PCBs, are being adopted across industries and incorporated into a wide range of products spread across borders and geographies. It can be concluded that we still know very little about the true social burden and cumulative costs of PCBs (similarly to other POPs) on human development, economies, and the environment.

Potential entry points for gender mainstreaming:

› Involve gender specialists together with policymakers and PCB experts in domestic and global knowledge management platforms to bridge the knowledge gaps in gender mainstreaming and PCBs management.

› Build institutional capacities to walk the talk of gender mainstreaming strategies and translate action plans into concrete interventions.

› Invest in gender focal teams, instead of gender focal points, at institutional levels to ensure continuity and maintain an institutional memory despite turnovers.

Health aspects

Health impact and cost burden of exposure to PCBs

A cross-disciplinary study covering 1000 randomly selected 70-year-olds suggests that high blood levels of PCBs are associated with premature death (Lind *et al.* 2019). Studies on rats to assess the effects of exposure to certain PCB congeners showed different alterations of motor activity in males and females (Cauli *et al.* 2013). Another study suggested that the expression of genes regulated by thyroid hormones was activated by certain PCBs and their hydroxylated congeners (Zheng *et al.* 2017).

In sub-Saharan Africa health costs resulting from exposure to pesticides represent an economic burden of approximately US$ 90 billion (SAICM 2020). The same approach could be used to investigate the economic costs associated with exposure to PCBs. The harmful impact of PCBs is exacerbated by the global food trade, by means of which harmful food contaminants can be distributed. A recent study suggested that marine fish exports from Europe to sub-Saharan Africa accounted for 84 per cent of consumer exposure to the PCB-153 congener (Huang *et al.* 2020).

The gendered roles assigned to women and men in their homes and workplaces translate into differentiated health impacts associated with exposure to PCBs, similarly to those of other POPs. Thus it is crucial to use a gender lens when exploring the cumulative health impact and real cost of exposure to PCBs. Only in this way can policymakers raise the political profile of PCBs and make gender-informed decisions towards better a understanding of gender-transformative impacts in the specialized fields of chemicals and waste management.

Potential entry points for gender mainstreaming:

› Establish multidisciplinary task forces to mainstream gender considerations into environmental health research frameworks and protocols.

› Invest in the production of gender-sensitive and sex-disaggregated data to better understand the complex interplay between, sex, gender, exposure and impacts applicable to environmental health research (e.g. through environmental health research protocols).

› Assess the cumulative costs of exposure to PCBs, including on maternal health and the health of future generations. For instance, data on PCBs in human milk are available through the UNEP/GEF POPs Global Monitoring Plan projects (UNEP n.d.b, c).

› Increase awareness about the true scope of the general public's exposure to PCBs, with a specific emphasis on women of reproductive age, among other vulnerable groups.

Socio-economic aspects

Mitigating the socio-economic impact of exposure to PCBs

If mitigation measures are to be effective and fully operational, those at risk and the general public alike need to be aware of the hidden part of the iceberg: not only that PCBs are harmful, but the full story of their cumulative economic costs, most of which are invisible, as well as their health impact including the share passed on to future generations.

Once this milestone is achieved, raising awareness is a necessary step. However, awareness-raising is not sufficient to trigger behavioural change and a shift from business-as-usual. It is therefore of utmost impor-

tance to combine awareness-raising efforts with meaningful approaches to boost alternative livelihoods and enable a transformational change towards a PCBs-free future.

This is one recipe for building sustained resilience in communities and populations that are most at risk. By using a gender-response approach to building resilience, the development co-benefits of boosting gender equality could be further multiplied across the SDGs.

Potential entry points for gender mainstreaming:

› Ensure that awareness-raising activities are adapted to local contexts and are inclusive of those most at risk, not only those on the frontlines, including women of reproductive age, children, youth and the elderly working in the informal sector.

› Where workers are exposed to PCBs, assign low-risk tasks to women of reproductive age to mitigate the health burden including that passed on to future generations.

› Develop tailored gender-sensitive content for advocacy and awareness-raising, instead of one-size-fits-all campaigns, including through the use of information and communication technologies (ICTs) and other educational approaches to reach those who are usually inaccessible and nudge those who may be resistant to change.

› De-risk investments in childcare facilities to foster children's education and tackle child labour issues in sectors such as those along the e-waste value chain.

› Promote the use of PCBs-free products and energy sources in households;

› Generalize access to social security services, including for those in the informal sector, to mitigate exposure to PCBs, especially among women, children and those in other vulnerable social categories who work under poor conditions to gain their livelihoods.

› Support women's equal access to training, productive assets and financial services so as to reduce exposure and improve their livelihoods.

Financing the phase-out of PCBs and adoption of safer alternatives

Financing for development faces unprecedented obstacles in light of the slow pace of recovery from the COVID-19 crisis (United Nations Department of Economic and Social Affairs 2023). This problem can be seen in the mismatch between the funding needed to tackle exposure to PCBs and other POPs and the scarcity of financing available at domestic and global levels.

Consequently, countries need to do more with less. To close the funding gap in financing the phase-out of PCBs and the adoption of safer alternatives, innovative financing instruments could be explored to de-risk public-private investment and optimize domestic financing. One way of doing this is to mainstream gender into development projects in the areas of waste and chemicals management, such as those financed by the GEF in line with its gender policy based on a "do-good" instead of a "no-harm" approach.

Potential entry points for gender mainstreaming:

› Empower women to benefit equally from traditional financing mechanisms, as well as from innovative financing schemes such as the use of mobile money and digital wallets.

› Promote gender-responsive microfinancing schemes to benefit women's groups that are usually underserved by traditional financing systems.

› Use gender-sensitive budgeting in development projects to ensure that women's groups and those in other vulnerable social categories fully benefit from development interventions.

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GENDER-RESPONSIVE LOGFRAME AND MONITORING AND EVALUATION (M&E) FRAMEWORK, AND RISK MATRIX FOR GENDER-RELATED CONSIDERATIONS DURING PROJECT IMPLEMENTATION

Table 4.1: Gender-responsive logframe and monitoring and evaluation (M&E) framework

Outcomes	Outputs	Gender-sensitive Indicators	Target	Illustrative entry points for gender mainstreaming
1. National regulations and international requirements identified in 12 participating countries, including infrastructure and enforcement capacities, resulting in a harmonized approach for the environmentally sound management of PCB oils, equipment and wastes	1.1 National regulations in 12 countries on the environmentally sound management (ESM) of PCBs and PCB wastes in the context of the Stockholm and Basel Conventions reviewed	Percentage of women and youth who are members of National Coordinating Committees	At least 30 per cent	• Enable women and youth from key partner institutions and administrations involved, as well as project target areas, to effectively contribute and inform the drafting and implementation of national PCB regulations by raising their awareness and strengthening their capacities, including by providing specific training on PCBs control mechanisms, public speaking, advocacy, and conflict mediation • Establish a quota of at least 30 per cent to designate the members of the drafting committees in charge of developing national regulation on the ESM of PCBs and PCB wastes in the context of the Stockholm and Basel Conventions • Hire gender specialists as part of the legal drafting teams of experts to identify and propose legal provisions on gender equality, recognizing that women and youth are disproportionately affected by exposure to PCB oils, equipment and wastes and stipulating mechanisms through which women can champion the ESM of PCBs at national and regional levels in southern Africa (including through capacity building to strengthen their technical and managerial skills related to PCBs management, as well as to facilitate their access to financial services and enhance their livelihoods) • Raise awareness among women and men, representing the targeted administrations, about the interplay between sex, gender, and health/environmental impacts associated with exposure to PCBs and the role of gender-smart interventions in mitigating the burden of exposure to PCBs.
		Number of countries that submitted gender-sensitive PCB regulations for adoption (e.g. policies and regulations that recognize the disproportionate impacts resulting from exposure to PCBs on women and men, using gender sensitive wording and sex-disaggregated data)	12 (all target countries)	
		Number of countries that adopted gender-sensitive PCB regulations	6 (at least 50 per cent of the target countries)	
		Percentage of women members of the drafting teams in charge of developing PCB related regulations and guidance documents	At least 30 per cent	
	1.2 Improved administrative capacity for controlling PCB in 12 participating countries	Number of women inspectors and customs staff trained across 12 countries	At least 30 per cent (20 out of 60)	
		Number of women designated as responsible persons for PCBs in power supply utilities and other stakeholders (M)	At least 30 per cent (84 out of 250)	
		Number of training sessions on mainstreaming gender into PCBs management in the 12 participating countries. These could combine generic trainings addressing the key entry points for gender mainstreaming to level the ground and bridge existing knowledge gaps, together with country-specific deep dives focusing on the specific gender contexts of the participating countries to further inform the content and methodology used by the trainers.	At least two per country: one basic session at regional level for the 12 participating countries and one advanced session at national levels, adapted to each country's needs, for persons responsible for PCBs.	

Outcomes	Outputs	Gender-sensitive Indicators	Target	Illustrative entry points for gender mainstreaming
2. 12 countries monitoring PCB-containing equipment in service and using tracking system established to follow PCBs in electrical equipment until their final phase-out	2.1 Detailed inventories of PCB-containing oils and equipment held by utility companies in 12 participating countries developed (in-use and waste)	Percentage of women and youth from key institutions and partner entities involved in developing detailed national inventories of oils and equipment containing PCBs held by utility companies	At least 30 per cent	• Assign quotas of at least 30 per cent for women while designating national and regional committees in charge of inventories of PCBs held by utility companies and in other sectors • Hire gender experts to upgrade the existing inventories and monitoring mechanisms by collecting sex-disaggregated data and communicating these data to the general public to stimulate behavioural changes, as well as to decision-makers in order to enable informed decision-making. This could be done, for instance, by describing, documenting and breaking down by sex and gender the respective data related to exposure to PCBs and associated potential impacts in order to identify hotspots, trends, and priority intervention areas
		Percentage of women trained for identification and quantification of PCB containing oils and equipment	At least 50 per cent	
	2.2 Development of detailed inventories of PCB-containing oils and equipment held by other sectors in 12 countries	Percentage of women and youth from key institutions and partner entities involved in developing detailed national inventories of oils and equipment containing PCBs held by other sectors	At least 30 per cent	
	2.3 Phase-out plan endorsed by utility companies and other PCB-containing equipment owners	Number of phase-out plans endorsed by utility companies and other equipment owners containing sex- and age-disaggregated data and recognizing the role of women and youth in ESM of PCBs	12 (one in each target country)	

Outcomes	Outputs	Gender-sensitive Indicators	Target	Illustrative entry points for gender mainstreaming
3.Disposal of PCBs and PCB-containing equipment from the 12 countries in an environmentally sound manner, in accordance with the Stockholm Convention	3.1 Training utilities in collection, draining of transformers, and transport of PCB-contaminated oil	Percentage of women and youth who benefited from training of utilities in collection, draining of transformers, and transport of oils contaminated with PCBs	At least 50 per cent	• Work with national and regional partners to identify key gender stakeholders, as well as women and men who will be gender champions and influencers with whom to team up during training • Schedule training at times suitable for participation by women and youth which do not compete with their productive, reproductive and community activities • During interactive training sessions, provide women and youth with an enabling space to express their viewpoints without fear of being confronted
		Percentage of women who manage/own companies/entities licensed to collect, drain and transport materials and equipment containing or contaminated with PCBs in the southern African region	At least 10 per cent	
		Percentage of companies licensed to collect, drain, and transport PCB hazardous waste available in the region with a gender representation at entry, mid and senior management levels	At least 30 per cent	
	3.2 Storage of 4300 metric tons of PCB oil, PCB-contaminated oil and PCB equipment at national facilities	Percentage of women and youth involved as part of the project teams in charge of storage of PCB materials at national facilities	At least 30 per cent	
	3.3 Collection of at least 1000 capacitors containing PCB oil identified and collected for export	Percentage of women and youth involved as part of the project teams in charge of the identification, collection, and export of various materials including oils, transformers, and capacitors containing or contaminated with PCBs	At least 30 per cent	• Establish a quota of at least 30 per cent for women and youth, while designating the members of national and regional task forces in charge of the identification, collection, storage and export of various materials including oils, transformers and capacitors containing or contaminated with PCBs
	3.4 Export of 500 metric tons of Askeral transformers, capacitors, and PCB- contaminated oil (concentrations >2000 ppm) for destruction at a dedicated facility			

Outcomes	Outputs	Gender-sensitive Indicators	Target	Illustrative entry points for gender mainstreaming
4. Stakeholders are aware of the need to phase out PCBs in an environmentally sound manner, and best practices are developed for implementing ESM in ongoing management of in-use transformers in project countries and for subsequent projects	4.1 National and regional communications/outreach/ awareness strategies developed and implemented	Number of national and regional communication strategies, including a component on risk reduction and awareness, which contain gender-sensitive language and sex-disaggregated data	12 (one in each target country)	• During awareness-raising interventions, provide women and youth with the enabling space to express their viewpoints without fear of being confronted • Hire gender experts to work with communication and knowledge management specialists to conduct gender analyses and develop/implement gender-responsive strategies and action plans
		Number of nationally specific gender analyses conducted in the target countries (analyses should focus on the target sites and landscapes where PCB phase-out interventions are taking place)	12 (one in each target country)	
		Percentage of women and youth who participated in the design, and who were involved in the implementation of communication and outreach strategies and national and regional levels	At least 30 per cent	
	4.2 Development of lessons learned framework for replication and extension at national level following adoption by national authorities	Number of national policies, integrating lessons learned from project implementation, which contain gender-sensitive language and sex-disaggregated data	12 (one in each target country)	• Hire gender experts to document lessons learned, case studies and success stories in the area of gender mainstreaming into PCBs management. These experts could feed into national policies for upscaling and replication in the southern African region and beyond.

Table 4.2: Risk matrix for gender-related considerations during project implementation

Risk	Impact/probability rating (low: 1 to high: 5)	Management/mitigation strategy
Resistance among project stakeholders to challenges to traditional norms and stereotypes on the basis of which gendered roles are assigned to women and men with regard to the safe and sound management and phase-out of PCBs	Impact: 4 Probability: 3	Gender considerations proactively mainstreamed into project interventions through the present Gender Action Plan (GAP) to raise awareness, empower women's groups, and challenge existing gender inequalities Development of a gender-sensitive M&E system based on the project logframe to track progress against targets and to trigger the necessary managerial responses should the expected gender results not be met during a given milestone of project implementation
The executing partners do not provide the support required to mainstream gender into project interventions	Impact: 3 Probability: 1	Gender considerations strongly embedded in the project results framework through specific gender-responsive indicators and targets Gender experts can be hired to provide tailored gender mainstreaming training in order to build critical capacities among project stakeholders and raise necessary awareness
The COVID-19 crisis has exacerbated underlying gender inequalities and triggered a "priority shift"	Impact: 4 Probability: 4	Special attention should be given to showcasing the importance of bringing the gender equality agenda to the forefront of building back better efforts and stimulus packages at domestic and regional levels

CONCLUSIONS

In conclusion, this report highlights the significance of applying a gender lens to understand the intricate gender dynamics concerning exposure to POPs, with a particular emphasis on PCBs. It acknowledges that certain social categories may experience disproportionate effects resulting from the interplay of sex, gender, and exposure to POPs. Women, children, and men are identified as vulnerable groups that can be disproportionately affected by PCBs and other POPs. Nevertheless, the existing research indicates an evident gap in comprehending the various ways in which women may be impacted due to their exposure to PCBs, indicating a need for further investigation and recognition.

Furthermore, the report underlines the importance of recognizing differentiated impacts based on gendered roles assigned to individuals in their daily lives. While PCBs and other POPs are pervasive environmental contaminants, the effects of exposure can vary significantly among different social groups. Consequently, identifying these distinctions is crucial in formulating effective solutions. However, a notable challenge lies in the availability and access to quality data, particularly sex-disaggregated and gender-sensitive data, which play a vital role in understanding the extent to which human health and the environment are affected by these harmful substances.

Despite the growing awareness of the adverse health and environmental impacts of PCBs, gender dynamics in the context of POPs management, particularly PCBs, remain understudied and under-recognized. To address this, it is important to emphasize the necessity of raising awareness on how exposure to PCBs can affect the health of both women and men. The implementation of a Gender Action Plan (GAP) is proposed as a means to generate sex- and gender-disaggregated data, conduct outreach interventions aimed at vulnerable populations, and enables effective disposal and destruction of PCBs and PCB-containing or contaminated waste with gender sensitive approaches. By doing so, the report aims to increase awareness of the intricate interplay between sex, gender, and health/environmental impacts associated with PCB exposure, and provide practical guidance to support gender integration in the phasing out of PCBs, ultimately benefiting women and men alike. This targeted approach is expected to result in mitigating impacts on maternal health, children's health, indoor pollution, and food consumption from contaminated sources, thus creating a more equitable and healthier environment for all.

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