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Gender and Chemicals

Questions, Issues and Possible Entry Points

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Introduction: Gender and Chemicals in International Policy

Although chemicals management has long been a topic of international policy and regulation, and chemicals nowadays undergo extensive assessment procedures, the need to account for sex and gender differences in exposure, susceptibility, and health impacts, and the need for gender analysis has only slowly gained the necessary consideration in international processes.

The goal of the MSP Institute project „Gender and Chemicals: Issues, Stakeholders, Strategies“ is to identify relevant questions, issues and stakeholders, and develop strategies towards increasing the participation of relevant actors and systematically including gender in the future of international chemicals and waste management.

Since the Rio Earth Summit in 1992, the safer use of chemicals is considered a vital part of sustainable development (UN 1992a). Agenda21 specifically considered women and children to be “most vulnerable groups” regarding the hazardous effects of chemicals (UN 1992b). Impact and risk assessment played a major role in these and other international processes on chemicals safety¹, eventually leading to the adoption of the *Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade*² in 1998 (entry into force: 24 February 2004) and the *Stockholm Convention on Persistent Organic Pollutants*³ (adopted on 22 May 2001, entry into force: 17 May 2004).

Subsequently, the Johannesburg Plan of Implementation in 2002 introduced the year 2020 as a milestone to achieve „that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment, using transparent science-based risk assessment procedures and science-based risk management procedures, taking into account the precautionary approach, [...], and support developing countries in strengthening their capacity for the sound management of chemicals and hazardous wastes by providing technical and financial assistance“ (UN 2002: 13).

The First International Conference on Chemicals Management (ICCM1) established the *Strategic Approach to International Chemicals Management (SAICM)* in 2006. This multi-stakeholder and cross-sectoral platform provides governments, inter-governmental organizations (IGOs),

¹ UNEP and the FAO created voluntary exchange programs during the 1980s. These resulted in the adoption of the International Code of Conduct on the Distribution and Use of Pesticides in 1985 and the London Guidelines for the Exchange of Information on Chemicals in International Trade in 1987. Subsequently, the Prior Informed Consent (PIC) procedure was introduced as a mechanism for information sharing in 1989. Agenda21 called for the establishment of a legally binding PIC procedure until 2000, which was realized by the adoption of the Rotterdam Convention.

² Rotterdam Convention website: <http://www.pic.int/Home/tabid/855/language/en-US/Default.aspx>

³ Stockholm Convention website: <http://chm.pops.int>

non-governmental organizations (NGOs) and industry with a forum to discuss and engage in achieving the 2020 goal.

SAICM's Overarching Policy Strategy (OPS) underlines the specific importance of women as stakeholders and their still evident lack of representation in the implementation and decision-making processes for the sound management of chemicals and chemical safety (SAICM 2012). Yet, specific and widespread knowledge on differentiated and long-term effects of chemicals on women and men is still lacking, and, even more so, comprehensive gender analysis of chemicals and waste management.

Since the use of chemicals is nearly ubiquitous, and gender dimensions are multi-disciplinary, looking at gender and international chemicals and waste management is a multi-dimensional exercise. It needs to pay attention to scientific risk assessments as well as cultural and social factors, technical capacities, decision-making procedures, education and professional occupations as well as governance processes at local, national and global levels, both binding and non-binding. With the year 2020 approaching, SAICM and its stakeholders are currently developing pathways for the international management of chemicals and waste. The coming years therefore present a unique *window of opportunity* to increase attention and achieve results.

The present paper cannot hope to be comprehensive. It rather aims to provide entry points to consider and ask useful questions. It aims to provide background for future discussion and engagement with stakeholders.

We begin with discussing the question **why gender and chemicals** is an issue worth looking at. We then summarize some of the **existing findings relating to sex and gender** in the context of chemicals, aiming to identify entry points for further (gender) analysis. Then we are looking at relevant **international policy processes** with the same goal of identifying entry points and opportunities to put forward gender and chemicals issues and advance the integration of gender in chemicals and waste management. We have also included a **glossary of terms** relating to gender, hoping to provide easy reference for readers not familiar with gender analysis. The paper also includes the **list of references** we consulted.

Questions: Why Gender and Chemicals?

Why are we dealing with issues and questions of gender and chemicals issues? In short, there are **three reasons**:

Firstly, women's and men's bodies are affected differently by certain chemicals – exposure, risk, and impacts can be different between the sexes.

Secondly, gender, as a social category, is linked to gender-specific norms of behaviour, roles in society as well as the development of 'feminine' and 'masculine' identities, which in turn influence people's behaviour, including their impact on the environment, their affectedness by environmental degradation, and their access to and power over resources.

Thirdly, gender analysis allows to ask questions that help us understand and unpack root causes of unsustainable behaviour and societies, and hence have a transformational potential. We need to tap into this potential in order to bring about sustainable development, justice and peace.

The following paragraphs will discuss these three reasons in more detail.

1. Physical differences between women and men

Women's and men's bodies differ in certain regards, and these differences have effects in relation to chemicals. Sex specific, reproductive, body parts (testicles / ovaries, uterus) and bodily functions (such as nursing) can react to exposure to chemicals, hence risks and impacts can differ dependent on sex. In addition, physiological differences, such as percentage of body fat, impact risks through exposure (e.g. POPs in fatty tissue being more prevalent in women as their bodies, on average, have more fatty tissue).

Most of the existing research on sex and gender in relation to chemicals is focused on physical and physiological differences. We will be summarizing some of them below (s. below: *Issues and possibly entry points*).

2. Gender as a social category

There are differences between women and men in terms of their roles in societies, their identities and their behaviour. These differences can lead to differences in exposure to chemicals, risk perception and behaviour, and consequently to differences in impact of chemicals on women and men, girls and boys.

Analysing gender roles and identities in relation to chemicals can include looking at the use of resources, consumption of goods and services, experiences of environmental degradation, exposure to health risks,.

For example, the majority of the workforce in the waged mining sector are men, and they are exposed to toxic mining chemicals. Women, on the other hand, traditionally bear the main responsibilities for work and care at home, and therefore are disproportionately exposed to

toxic chemicals found in products used for cleaning, personal care, and pest control, among others (SIDA 2016).

Around the world, women provide livelihoods for their families and manage the environment, e.g. in agriculture, housing, water, and so on. However, due to gender power relations, their knowledge is often overlooked, they are not included in decision-making, and they are not regarded as agents of change. Women and men should be agents in chemicals and waste management, including equal participation in decision making and policy processes. We need to include all perspectives and everybody's voice and agency – it is a matter of justice, and a matter of succeeding in bringing about sound chemicals and waste management.

When considering gender in the context of chemicals and the environment in general, it is important to recognise that women and men are not homogenous groups. Where women and men live, their age, education, income, social class, ethnicity, religion, sexual orientation and other variables, interact and impact the links between gender and chemicals. We need to understand interactions between social categories (*intersectionality*), including gender, to identify differentiated impacts and risks and manage them better.

Assessments that address the multi-dimensional aspects of gender-related exposure and effects are still few. An immediate problem is the complexity and interdependency of the issues. Critical substances can be grouped depending on their chemical properties, their effects on the environment and human health or according to possible ways of exposure. Focusing on one or more vulnerable groups defined by sex, age, income-level, occupation, professional status, or the levels of industrial development of countries are other ways of classification.

Understanding the link between aggregated figures and potential risk factors requires a closer analysis of the issues at hand and especially the differing effects and prevalence depending on age, sex, susceptibility, occupation, and gender-specific factors. With rising awareness of consumers and ongoing advocacy from NGOs, the scientific and political interest in these dynamics has increased in recent years.⁴

3. The transformational potential of gender analysis

We know that small changes will not be enough in order to achieve sustainable development. The 2030 Agenda and the SDGs clearly state that what is needed is fundamental change: transformation of economies and societies towards justice, environmental protection, and resource-efficiency.

⁴ This is, for example, reflected in the United Nations Development Programs' (UNDP) Environment and Energy Groups' publication Gender and Chemicals (UNDP 2011), a report based on an expert workshop titled Women and Chemicals by Caterbow & Hausmann (WECF, 2016, and the UNEP Global Gender and Environment Outlook (GGEO, 2016).

There is a range of ways of relating to the environment, dealing with risks, and prioritizing potentially conflicting needs and goals. These depend societal structures that people in societies live with - e.g. financially and politically –and on the opportunities that these structures provide. Within societies, conditions and opportunities further vary depending partly on characteristics like sex and gender, age, social and economic class, ethnicity, etc.

While sex and gender differences in terms of roles and identities are important in order to improve chemicals and waste management, it is not sufficient in order to understand - and address - root causes of environmental degradation. Gender analysis can help us find ways towards transformation by identifying and addressing root causes of inequities, injustice and unsustainable development.

These root causes include:

- the widespread perception (in dominant cultures) of a fundamental division between “me” (the conscious human) and “the world” (i.e. everything else: other humans, nature, artefacts, the universe as a whole);
- the construction of a hierarchical relationship between me / us and the world (the latter being everything that is non-human, and humans that are perceived as “other”);
- the widespread practice of exploitation of resources to maximize profit (natural, technological, and human resources);
- widespread greed for power, greed for wealth, and conspicuous consumption: material consumption beyond needs; and
- poverty leading to unsustainable practices that can degrade the environment.

Gender injustices and gender inequalities can be understood as symptoms of power differences in societies, and of the fact that in most societies, people of different social categories are being treated differently. Injustices are also symptoms of greed for power and resources, and a hierarchical relationship to nature and the world that is inherently unsustainable. Gender analysis points to the need to understand and reconsider people’s relationship to the world, and it can also open new ways of positioning and re-positioning as individuals, as groups and social categories, as nations, as humankind.

Gender analysis and a gendered approach also means to include all perspectives and voices, of all stakeholder groups, all sectors of societies, all people. It means **effective, meaningful, universal participation**, truly appreciating diversity.

It is sometimes confusing and misleading that much of the lines (i.e. differences) seem to be drawn along the lines of biological sex. Much of the world’s power today is in the hands of adult, older white, hetero-sexual males. At the same time, we have a lot of problems with environmental challenges and lack of sustainability. However, replacing the old white males from the Global North with young black females from the Global South, for example, mostly

likely won't do it - or not much. We need to understand the structures, institutions, conditions and value systems that determine how people relate to the world, and how that causes many of our problems. The way the old white males relate to the world is not exclusive to them – yet it happens that worldview and power correlate with sex and gender in this particular way.

Towards transformation

We believe that in order to bring about transformation, a dual, or multi-faceted approach is needed, which would include:

1. Stopping human rights and women's rights abuses, abuses of power and extreme wealth, discrimination of "minorities", dominance through violence, *and*
2. Understanding root causes of unsustainable systems, structures, cultures and behaviour, and developing ethics and values and governance systems that support transformation towards sustainable development, and that can serve as a fundament of culture(s) of sustainability.

Universal participation is needed to do this – everybody's contributions are needed in order to reflect and rebuild our societies towards justice, sustainable development, and dignity. Value systems are not a given; they are part of societal and economic structures and systems that define values, norms and questions and problems that people perceive as important. To some extent and under certain conditions, individuals and groups reflect on the impact of the cultures and systems they grow up and live in and make conscious choices towards change. Such reflection and choice is also supported by gender analysis, unpacking values, norms and structural conditions.

While engaging in fundamental considerations and deliberations about cultures, systems and structures, we need also to engage in 'small' steps of changing behaviour, enabling and promoting sustainable choices, providing information about environmental consequences, creating appropriate incentives, etc. These 'small' steps - which are not indeed small, neither politically nor economically - will complement re-considerations of systems and structures, values and ethics. They need to be in place in order to change behaviour, subversive as well as reinforcing. Given the fact that values influence actual behaviour only to a limited extent, new and different values will have to be reinforced by education, institutions and regulation, and the creation of new social images and desirable identities - as well as providing information, choices and access, and regulating as needed.

Dimensions of gender analysis

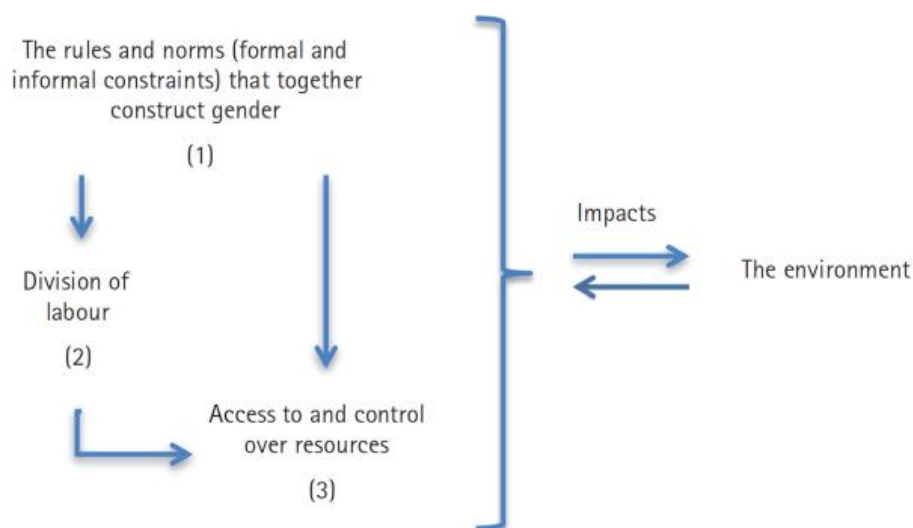
As outlined above, gender analysis is asking a range of questions at different levels. Aiming to understand linkages between gender and sustainable development, different authors and

organisations have developed different frameworks for gender analysis. We illustrate the questions that gender analysis may ask using three examples:

1. SIDA (2016)⁵, for example, is suggesting to use the following **three dimensions**:

- **Formal and informal constraints:** Rules and norms that shape the behaviour of actors in society, gender relations and identities.
- **Division of labour:** The tasks and responsibilities that men and women are expected to fulfil in private and public arenas.
- **Access to and control over resources:** The resources, in a broad sense, that men and women have access to and power to decide over.

The connections between these dimensions of gender analysis are shown in the graph below:



The authors describe the shown relationships as follows: “Formal rules include laws and regulations, for instance the right to own land or forest, or the right to perform certain jobs. Informal rules and norms include ideas on what is appropriate for women or men. (...) The formal and informal rules and norms form the basis and define the constraints for how organisations and individuals act and interact, also in relation to the environment. They set conditions for the division of labour in the household and the community, and directly and indirectly determine women and men’s access to and control over resources. This leads to gender differences in needs, use of and impact on the environment and in experiences of environmental degradation.” (SIDA 2016, pp. 1)

2. Another framework of gender analysis was developed by Hayn & Schultz (2004), Smykalla (2006) and others, in the context of on-going theoretical and political efforts to mainstream gender into the environment and climate debates. It identifies **four dimensions**:

⁵ SIDA adapted a framework developed by the Swedish Society for Nature Conservation (2015).

- **Representation** in political decision-making and society: This covers not only the involvement in political processes related to chemicals management, but also the division of labour between women and men, and their respective power to shape technology, science and politics.
- **Living conditions:** Especially in the international context, many differences exist between and within countries concerning levels of wealth and poverty, being affected by violence and exclusion, or living in rural or urban areas, and these differences may influence the risk of being harmed by chemicals in their various uses.
- **Resources:** Closely related to people's living conditions, this dimension refers to individual resources in terms of money, time, mobility or access to information, which influence the capacities to be and stay informed or to substitute harmful products.
- **Norms and Values,** especially social roles and stereotypes that, for example, may influence the division of labour, the organisation of family work and health, or structure the social construction and enforcement of rules of behaviour.

3. In the framework of a current research project on gender and climate change⁶ (Röhr, Alber & Göldner 2017) existing dimensions of gender analysis were harmonized and further developed. Synthesizing dimensions where there are significant differences between the sexes in many countries and/or that contribute significantly to inequalities, **seven gender dimensions** were identified (2017, p. 17):

- **Care economy / care work** (sex specific responsibilities for work and decisions inside the house and household; cost-benefit-analysis of care; logic and criteria of the care economy)
- **Income economy / paid work** (sex-specific division of labour of paid and unpaid work; gender pay gap; poverty and poverty risks; distribution of wealth)
- **Public resources: provision, design, access, usability of public services and infrastructures** (distribution of public space, public finance, quantity and quality of services & infrastructures, access to resources)
- **Structural aspects: symbolic order** (dominant societal constructions of gender and gender identities, including perceptions, attitudes, risk assessments, and problem identification)
- **Structural aspects: institutionalized andro-centrism** (institutional rationalities that determine the understanding of tasks, processes, organisation and outcome; models of masculinity as the norm, conceptualization, methods, production of knowledge)
- **Power of definition and decision-making of actors** (processes, decisions, power relations and governance structures, participation, empowerment, choice of instruments)

⁶ “The contribution of gender justice to successful climate politics: impact assessment, interdependencies with other social categories, methodological issues and options for shaping climate policy”, see <http://gendercc.net/our-work/current-projects/ufoplan.html>

- **Body, health, intimacy** (physical differences between the sexes and age groups, sexual harassment, reproductive health, sex-specific responsibilities for health, sex-specific perception of physical risks).

These seven dimensions are quite comprehensive, and they allow to conduct gender analysis based on concepts and data from a variety of disciplines – psychological, societal, cultural, political, economic, etc. Hence, they allow to include the second and third aspects discussed above (*Why gender analysis?*):

- Identifying differences between genders in terms of roles, identities and behaviour that lead to differences in exposure and impact; and
- Leveraging the transformational potential of gender analysis by identifying and addressing root causes of inequities, injustice and unsustainable development.

In addition, **Gender Impact Assessments** (GIAs) are being developed and used in order to examine and optimize particular decisions, policies, and regulations. GIAs tend to be focused on identifying sex- and gender-specific impacts with the goal of eliminating injustices and inequalities.

Issues and possible entry points:

What is relevant in the context of gender and chemicals?

Below, we summarize findings on a variety of issues relating to sex, gender and chemicals that are relevant in the context of chemicals and waste management. The majority of them are issues of health and occupational health.

This brief summary is by no means exhaustive - but illustrates a) the need to study and consider sex and gender in relation to chemicals and waste, and b) the fact that most available research relates to sex differences.

The issues mentioned are but **entry points to gender analyses** that could potentially be transformational. In order to do that, further research is needed to identify meaningful questions and promising approaches in this regard. The depth of analysis seems to be necessary – while the struggle for justice, non-discrimination and equal treatment goes on in order to eradicate harm done due to discrimination and injustice based on sex.

Chemicals are ubiquitous: they surround us in our environment; increase productivity and efficiency of industries; and give products specific characteristics and longer shelf lives. In line with increasing demand and usage, global sales of chemicals grew by 14 % between 2014 and 2015 (CEFIC 2016).

However – depending on dosage and handling – they can also be harmful. Experience and research about interactions of different mixtures, potential accumulation in soil and water, long-term human health effects, and specific susceptibilities are still insufficient in many areas – but we do know that exposure can be harmful to health and environment.

Health

With non-communicable diseases (NCDs) now accounting for about 70% of global deaths (40 million people) annually, they represent the main cause of death and disease worldwide (WHO 2017a). Primary risk factors for cardiovascular diseases, cancer, and chronic respiratory diseases, are typically physical inactivity, unhealthy diets and alcohol and tobacco consumption. But the effects of **environmental risk factors** that are not based on individual live-style choices, like in- and outdoor air pollution and the exposure to chemicals, whether at home, the workplace, or through inhalation and digestion, are accounting for a growing share of all environmental and non-communicable diseases (WHO 2017b). This factor is also addressed in the Sustainable Development Goals (SDGs), with target 3.9 committing signatories to “by 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination”.

Calculating the **global burden of disease** attributable to chemicals is complex. The most recent study calculated it at 4.9 million deaths and 86 million Disability-Adjusted Life Years

(DALYs)⁷, representing 8.3% and 5.7% of all deaths and DALYs, respectively, in 2004 (Prüss-Ustün et. al. 2011). While these figures include exposures that are not addressed under SAICM, e.g. self-inflicted injuries with pesticides, second-hand smoke, and outdoor air pollutants, limited data availability also indicates that these numbers underestimate the toxic effects and the real burden of disease attributable to chemicals. We need more research on specific chemicals, long-term exposures and undocumented ways of exposure, and about physical mechanisms by which substances cause death and disease (Prüss-Ustün et. al. 2011).

Women and men's exposure to toxic chemicals often varies due to the division of labour between the sexes in most societies. For example, women comprise, on average, 43 percent of the agricultural labour force in developing countries. Yet, they are more affected by indirect exposure, e.g. through harvesting and handling chemically treated crops or contaminated clothes, while men are often more directly exposed, e.g. when mixing chemicals (UNDP 2016). Women are also more affected by indoor pollution from burning household fuels, especially in poor communities (WHO 2009; UNDP 2011).

Focusing on women, especially the correlation between chemical exposure and health effects like breast cancer and endocrine disruptions has received increasing attention (see for example Lynn 2007; Kortenkamp 2008; WHO & UNEP 2013; Watts 2013; IPEN & PAN 2017). The disruptive effects of chemicals on the endocrine system of women and men are also of vital importance when considering inter-generational justice. By influencing the neuronal development of unborn children, these effects don't stop at the individual body, but are passed on to future generations. This issue is especially of concern in terms of the violation of human and children's rights and impeding socio-economic development (PAN Asia Pacific 2017).

Being exposed to chemicals is an especially important factor for work related diseases. The International Labour Organization (ILO) estimated that about 440.000 persons died 2005 due to exposure to hazardous substances in the workplace with various forms of cancer accounting for the majority of occupational diseases (ILO 2007). Most critically, issues of occupational health with regards to chemical exposure relate to the **repeated and long-term contact**. Because labour force participation by men and women is unequal across the world and often highly concentrated in specific sectors, the relevant issues vary across sectors, regions & countries, and socio-economic contexts.

Examples include:

With the globalization of supply chains, labour-intensive and high-risk jobs are often being moved to **developing countries and countries in transition**. While this could provide opportu-

⁷ The concept of *Disability-Adjusted Life Years* or *Disease-Adjusted Life Years* combines the calculation of years lost due to premature mortality with the number of years lived with disease or disability (Prüss-Ustün et. al. 2003).

nities for economic growth, the environmental and human health risks are often transferred alongside: production moves to countries with lower labour costs as well as less restrictive health, safety, and environmental standards or less effective capacities to enforce them. This affects **informal sectors**, e.g. artisanal and small-scale mining, waste picking, and the recycling of electronic products. It also applies to **formal employment**, especially in the textile and manufacturing industries, where high percentages of women are involved at certain stages of production. Relevant hazards concern the exposure to solvent chemicals, respiration and skin contact with dyes and glues, inhaling smoke from burning plastics used as insulation or contact with substances used in the production of electronic goods.

In agriculture, the long-term effects of chemicals, especially pesticides, include variations in agricultural technologies and intensive application that may diminish a product's effectiveness over time (Duke & Powles, 2009; Dill *et al.* 2010). This increases the necessity to apply ever more of the product in order to achieve desired results - a factor that is usually not accounted for in risk assessments, and is amplified when regulatory capacities as well as education and training are lacking (FAO 2007). And while the discussion about large-scale agricultural licensing of critical chemicals receives wide media coverage and respective public attention (see box below: *glyphosate*), the residential use of insecticides and herbicides is less strictly regulated, let alone controlled, at the individual household level.

Another example is the global industry for **cut-flowers**, with Colombia, Kenya, Ecuador, and Ethiopia now accounting for the largest share of global production and high participation rates of women. Because flowers are not subject to the much stricter regulations applicable to food crops, pesticides are more extensively used in this sector, increasing the environmental and human health risks (Buckingham 2016; WECF 2016). In combination with weak health care systems, the effects of these harmful exposures to various chemicals are also less likely to be detected at an early stage or are not sufficiently treated at all. This, in turn, reduces life expectancy, prolongs poverty, and ultimately hinders sustainable development.

In the health, education, and social sectors women represent the majority of the workforce (ILO 2017). At the individual level, the extensive use of disinfectants and biocides to avoid the spreading of diseases in these occupations poses critical risks (UNDP 2011). This affects the development of respiratory diseases and also increases the risk of accumulating harmful substances in the body.

The **health sector** itself, however, is also an important consumer of chemicals, whether for the production of pharmaceuticals, medical devices and technologies, or for laboratory testing. Considering potential side effects of these products, e.g. the development of resistances due to the increasing intake of antibiotics, or the critical assessment of benefits and hazards of

innovations like nanotechnologies and possibilities for their safe application at an early stage is therefore an important issue (FoE & HCWH 2009). Again, studies need to include sex-disaggregation in order to identify physical differences in effects of exposure. In addition, due to gender roles and gender-typical occupations, risks and harmful effects may be unevenly spread at different levels and subsectors of the workforce. Risk management strategies may need to be specific: for example, to accommodate different levels of literacy and education.

While ingredients in cosmetic products will be discussed in the next section, **cosmetic service industries** are another sector with high participation of women. The prolonged contact with hair dyes, lotions, nail polishes or acrylic materials exposes professionals to chemicals with genetic, developmental, and reproductive toxicity.

As mentioned above, **chemical residues in agricultural products** are of specific concern, since they can be found in most conventionally grown supplies, whether food or cotton for textiles. The same holds true for conventionally raised meat and poultry, which is often intensively treated with pharmaceuticals to prevent the outbreak of diseases. Environmentally persistent pharmaceutical pollutants are not only an issue from unregulated pharmaceutical factories abroad, but something most people consume everyday as part of their regular diet. Due to insufficient sewage facilities and improper disposal, the residues of antibiotics end up in rivers and oceans, even far away from coastlines (Gaw et al. 2014). Albeit comparatively low or sub-lethal concentrations, this affects not only the reproductive cycles of marine species but also enhances their antibiotic resistances, which might transfer to humans. The issue of neglecting low dose exposures for risk assessments is indeed relevant (e.g. glyphosate). Gaw et. al. (2014) also note the lack of data for some regions, especially Africa and South America (ibid.: 8). And while consumer awareness of these aspects has increased, not all households are able or willing to substitute conventional products.

In close relation to aspirations for economic growth, consumption of plastics, metals, and synthetic chemicals has greatly increased during the last decades. Globalized supply chains further increase potential risks and the need for international management in order to ensure that safety measures and standards are applied and adhered to in a consistent manner. This specifically relates to **chemicals in products**, an issue acknowledged as an emerging policy issue (EPI) in SAICM.

At the household level, various chemicals are found in cleaning and personal care products, jewellery and cosmetics, but also textiles and furniture, as well as decoration and building materials (UNDP 2011; UNEP 2013). Women tend to spend more time at home than men – they participate less in the formal workforce, they more often work part-time (ILO 2017), and they grow older, leaving many elderly women living alone in their homes. Women are more

likely to fulfil unpaid duties at home like household work and care taking, which puts them more frequently in touch with chemicals at the **household level**. This concerns not only the direct exposure to materials in food packing, cleaning products or insecticides, but also indirect transmissions.

Furniture treated to avoid staining or conform to flame retardant standards or building materials containing plasticizers and lead-based paint, can release the respective chemicals over time, leading to the contamination of indoor air and dust. These relatively low dosed but long-term exposures are mostly exempted from common methods of risk assessments, but linked to increased risks of breast, testicular and prostate cancers, decreased sperm counts and quality, neurological and behavioural disorders in children, miscarriages, diabetes, and impaired immune function (WECF 2016; Harvard School of Public Health 2016; UNDP 2011). Children with little knowledge about potential hazards and infant behaviour face even higher risks of taking up these substances through inhalation and ingestion. In combination with their less resistant physiology this makes them especially vulnerable of harmful exposure and subsequent impacts. This is particularly critical for products like cups, pacifiers, and toys, which are in direct and frequent contact with the infant.

Personal care products and cosmetics in turn are often specifically targeted at women. The direct contact with the skin increases the exposure and due to their higher body fat ratios, women are more likely to accumulate critical chemicals. Many substances found in cosmetics, like antioxidants, UV-filters, parabens, solvents, synthetic fragrances, and antimicrobial chemicals can mimic hormonal activity and act as carcinogens. This is especially a problem when considering the cumulative and combined effects with each other and additional chemicals, e.g. environmental pollutants from food and pharmaceuticals (Lynn 2007; Kortenkamp 2008). These factors are often omitted from conventional testing and regulation and information on potentially hazardous ingredients remains insufficient or only hard to obtain at the retail level. Apart from physiological differences that influence the effects of chemicals in men, women and children differently, women face specific critical periods of susceptibility, e.g. during pregnancy and lactation – both presenting risks of transmitting harmful substances to unborn and infant children, causing damages for their neuronal and physical development as well as increasing risks of disease at later stages in life.

Work, employment, decision-making

Women comprise comparatively larger shares of the workforce in some occupations that manufacture or use chemical products, whether for the subsequent manufacturing of other products or to deliver specific services. Yet, their **representation in decision-making and supervisory bodies** in the industry and the specific sectors is still way below equal. In fact, the concentration is two-fold: large multi-national companies characterize the chemical industry

and male executives dominate management positions in these companies. In 2016 women occupied 16.7% of a total of 430 board director seats and 14.2% of 402 executive positions of 42 large U.S. chemical companies. In the 13 largest European companies their share of supervisory positions is higher, with women occupying 28.6% of the 154 board seats, but lower for executive positions with only 10% (Tullo 2016). Since the “equal participation of women in decision-making on chemicals policy and management” is part of the SAICM OPS (16.h) this issue needs attention during the Intersessional Process until 2020.

Without equal representation, gender issues and considerations are more likely to be systematically neglected. Equal representation increases the likelihood that neglected perspectives and insights can enter and benefit the discussion. Women and gender experts can represent stakes and interests; and gender analysis can help address root causes of unsustainable development. While women’s representation is slowly increasing in the industry, international and multi-stakeholder processes like SAICM are necessary in order to highlight issues and questions that affect all. Ultimately, only equal access to transparent and well-governed decision-making, by all affected people and groups, can ensure that decisions are balanced.

Risk perception and behaviour

Given the fact that men have better access to chemical agricultural inputs, they are not only deciding about the use of chemicals in the first place, but their roles often involve direct contact with agricultural chemicals, e.g. through mixing substances (UNEP 2016).

Socio-cultural standards and gender dynamics influence the compliance with risk-mitigation measures, e.g. the willingness to wear protective equipment or follow specific rules of behaviour to minimize risks. For example, women tend to follow precautionary measures, like wearing protective equipment when available or follow instructions for safe handling, more thoroughly than their male co-workers (Andrade-Rivas & Rother 2015).

“The ILO field tests highlighted the role of preconceived or cultural notions of what women and men “should” be involved in when gauging their response—the ILO field tests, for example, found that in some contexts men were unwilling or uncomfortable to answer questions related to activities to provide services for own final use, such as cleaning or cooking. Women who were contributing workers in the family business often said they were not employed, but after posing some follow-up questions, they talked about their role in helping the family business.”

Discussing and communicating the detrimental effects of pesticides should therefore not only focus on different physical attributes of women, men, and children, but also account for indirect ways of exposure and gender-specific norms and rules.

Education and training

Direct exposure for women most often relates to spraying of pesticides, often without exact knowledge of the substances and possible precautionary measures. Differences in exposure are therefore closely linked to the general level of **education and specialized knowledge** about pesticides to ensure their safe handling and usage.

Gupta *et al.* (2012) show in a questionnaire-based study among 200 men and 120 women in India, that women know less about standardized labels and safety precautions than men. The authors highlight that this is especially a problem in developing countries due to lower literacy rates, less training and income as well as small-scale or subsistence operations with less capacities for and control of systematic risk mitigation strategies.

Access to Resources

Women's access to productive and financial resources is considerably lower than for men, including in agriculture and food production. This correlates with the fact that women headed households use less chemical fertilizers, insecticides and machines than households headed by men (Peterman *et al.* 2010). Although differences exist between and within countries, this significantly limits women's opportunities to increase productivity. In combination with time-consuming household duties, it constrains especially female smallholder farmers in rural areas (FAO 2011).

A recent example for extended debates about **risk and precaution** is the pending **license renewal for glyphosate** in the European Union. Risk assessments by the *International Agency for Research on Cancer* (IARC), the *European Chemicals Agency* (ECHA), the *European Food Safety Authority* (EFSA) and the German *Bundesanstalt für Risikobewertung* (BfR) arrived at different conclusions, considering the chemical to be:

- “probably carcinogenic to humans (group 2A)” (IARC 2015),
- “causes serious eye damage, may cause damage to organs through prolonged or repeated exposure, toxic to aquatic life with long lasting effects” (ECHA 2016),
- “unlikely to pose a carcinogenic hazard to humans” (EFSA 2015), or
- to present “limited [harmful, *the authors*] evidence in humans” (BfR 2015), respectively.

Although the substance is not listed in Annex III of the Rotterdam Convention and also not considered to be a *Highly Hazardous Pesticide* (HHP) as defined by the joint FAO/WHO Panel of Experts on Pesticide Management (JMPM), the results mirror an important problem with risk assessments: due to differing methodologies, their comparability is often limited and national regulatory decisions vary accordingly. On some critical factors, e.g. susceptibility, no data at all was identified by the IARC Working Group (IARC 2015). On the other hand, data was considered to be „conclusive but not sufficient for classification“ with regard to different hazard classes (ECHA 2016).

NB: Data that controlled for effects on women and men was not mentioned in any of the assessments.

Reviewing the European risk assessment for glyphosate, the International Pesticide Action Network concluded that especially hazards from low-dose exposures were systematically excluded from the assessments (IPEN 2017).

This example shows that chemicals might be considered „safe“ despite scientific uncertainty and insufficient knowledge of regulators about critical ways of transmission and long-term effects. This is why organisations have long been advocating for applying the **precautionary principle** during regulatory processes (EEA and UNEP 1998; EEA 2001; ChemSec 2006; WECF 2016) – a principle enshrined in the Rio Principles (1992) and all sustainable development agreements since.

When we do not have sex-disaggregated data, but know from other substances that women’s and men’s bodies may react differently to substance exposure, pre-caution would mean to **study first, and study thoroughly – and then decide.**

Recommendations: What could be next for gender and chemicals?

The following steps could be considered in order to address gender in relation to chemicals and waste management more effectively:

Research: First of all, it is clear that we are rather at the beginning of gender analysis here. We can learn a lot from gender analyses, and respective tools, that have been developed in other areas of environmental issues, such as climate change, agriculture, biodiversity, among others.

What would it mean to unpack the way we relate to the world, the way we organized decision-making, the way that power is distributed - in the context of chemicals and waste management? We need research to address these questions. What do we see when we do gender analysis in chemicals and waste? Which root causes can we discover? Which alternatives, which pathways to change? Which institutions (in the widest sense: laws, organisations, contracts) do we need in order to embed (gender) equality and justice in our societies? How can gender mainstreaming be done in order to achieve results? How do we transform our cultures and societies towards (gender) justice? How can the transformational potential of gender analysis be leveraged in the context of chemicals and waste management?

We need to use **gender analysis** to conduct systematic reviews of gender and chemicals-related issues of production, consumption, re-use and recycling. Questions to be asked could include: Does the analysis indicate that men and women in their respective societal roles have different impact on the environment? Or show that environmental challenges have differentiated impact on women and men or particular groups of women and men (elderly, children, poor, rural, urban...)? And does the analysis suggest how both women and men can contribute to solving environmental problems? (SIDA 2016)

As one important basis of gender analysis, it will be key to increase availability and dissemination of **sex-disaggregated data** through supporting and/or consistently reviewing research providing such data and statistics and their analysis; and to develop baselines where these are missing, in order to be able to track change and measure impact.

Local stakeholders should also be supported in developing tailored approaches to address gender-disaggregated perspectives at the local level.

Further research & development should also include: enhancing the knowledge about the human and economic costs of chemicals by conducting studies about the burden of disease due to chemicals with a specific focus on gender-disaggregated information; developing gender-sensitive and sector-specific educational and awareness activities, including use practices, safety precautions, risk communication, and training.

Gender Impact Assessment tools need to be made available, and be used when developing and reviewing policies, decisions, and regulations.

In order to add the necessary knowledge and perspectives, it is key to increase the involvement of women and gender experts in national and international decision-making and implementation processes of international chemicals and waste management.

Creating effective mechanisms within the intergovernmental system, such as a **Gender Focal Point** in SAICM (or in UNEPs Chemicals & Waste Branch): tasks could include to engage with SAICM stakeholders on gender analysis, organize in-session workshops on gender, and make sure that gender issues regularly come onto the agenda of SAICM meetings, organizing “Gender Days’ or similar events at meetings to share knowledge, strategies, and best practice. This also include to purposefully learn from other intergovernmental processes, identifying what works and what doesn’t when integrating gender.

Using effective strategies to communicate the importance and urgency of sustainable and gender-transformative (*see Glossary below*) chemical and waste management that attracts public as well as political attention (UNEP et al. 2016; Honkonen, Khan 2017). Such a “**new narrative**” should be designed to span across technical classifications and economic as well as structural differences and focus on the common interest to prevent harm and ensure equal participation.

Gender Action Plan (GAP) for SAICM Beyond2020 (SIDA; Röhr et al), in consultation with the stakeholders, using other sustainable development related organisations’ experiences with GAPs, and including effective monitoring and evaluation systems so as to institutionalize a learning process and mechanism within SAICM. This could be decided at ICCM5 in 2020 and then developed by the end of 2021.

Ensure the **full inclusion of women in decision making** at all levels: This includes planning, financing, gender budgeting, and policy-making. Promote women’s equal participation at the international level, and in national planning, policy and monitoring processes at the national level. Women’s equal participation is also key at local levels, in community based organisations and in the identification of strategies and techniques.

Provide **information about financing for women** working on chemicals and waste: Women entrepreneurs and women’s organisations often encounter formal and informal constraints that limit their access to financing and capital. Women’s organisations need to be informed of and have access to financing for work on chemicals and waste, and be consulted when designing financing mechanisms.

Involve women in the **transfer of environmentally sound technologies** that are context sensitive, and that women's knowledge and innovation capacity. Women can take leadership roles in developing and implementing environmentally sound technologies (see examples showcased at UNEA-3!).

Processes and possible entry points: where to address gender and chemicals?

Where and when the necessary discussions about gender and chemicals take place? Where and when do we find, and create, the opportunities to ask the questions that need asking: about sex-disaggregation, about gender roles and identities, and about root causes of injustice and unsustainable development?

Do these questions sound too broad or too radical for processes discussing international chemicals and waste management? Or are the problems we have with chemicals and waste management not the results of culture(s), economic systems and political cultures that support and perpetuate injustice and unsustainable development? Do we not need to address the root causes so as to get onto a track of development that actually merits the term '**transformational**'?

SAICM Beyond2020

As mentioned in the introduction, the OPS of SAICM address the role of women and other vulnerable groups. The last progress report for the years 2011-2013 states, that women were targeted by nearly 40% of SAICM stakeholders with strategies for communicating on chemical safety (SAICM 2014). Yet, further research on gender and chemicals and sex-disaggregated data on the effects of chemicals is necessary (UNDP 2011; UNEP et al. 2016; WECF 2016).

Since the establishment of SAICM in 2006, the international policy landscape has evolved further: in 2012, the United Nations General Assembly Resolution *The Future We Want* reaffirmed the specific role and importance of women for sustainable development (UN 2012) and since 2015 the 2030 Agenda for Sustainable Development with its seventeen SDGs and 169 related targets explicitly „seek to realize the human rights of all and to achieve gender equality and the empowerment of all women and girls.” (UN 2015: 1). Furthermore, the sound management of chemicals and waste is addressed in SDG 3 (Good Health and Well-being), SDG 6 (Clean Water and Sanitation), and, as mentioned above, in SDG 12 (Sustainable Consumption and Production). SDG5 is dedicated to gender equality and women's rights.

→ The current process of developing a strategy for SAICM Beyond2020 provides a unique window of opportunity to address the link between chemicals and waste management, gender, and the SDGs in a multi-stakeholder and multi-sectoral setting.

Inter-Organisation Programme for the Sound Management of Chemicals (IOMC)

The IOMC was established in 1995, following the recommendation of Agenda21. It combines and seeks to harmonize the expertise and individual chemicals programs of FAO, ILO, UNEP, UNIDO, WHO, OECD, UNITAR, the World Bank, and UNDP. It provides an online *Toolbox for Decision Making in Chemicals Management*, „a problem solving tool that enables countries to identify the most appropriate and efficient national actions to address specific national problems related to chemicals management“(IOMC 2017).

→ Gender aspects are not yet part of the toolbox, but gender-related tools, such as Gender Impact Assessments, Gender Action Plans, etc, could be made available here – once more gender analysis on chemicals and waste has been undertaken. As so many relevant organisations are part of IOMC, it could also help to identify gender analyses and strategies in other areas of sustainable development, which could be put to use in SAICM. This could possibly be done by IOMC in collaboration with UN Women.

Basel, Rotterdam and Stockholm (BRS) Conventions

The BRS Secretariat developed a Gender Action Plan in 2013, which was updated in 2016. Its objectives are:

- Developing an understanding amongst and support from BRS staff on the issue of gender equality, particularly in the context of BRS operations and activities;
- Developing a baseline on gender-related issues and measuring progress in achieving GAP objectives and implementing activities;
- Ensuring that the Secretariat’s programs and projects are planned and implemented from the gender equality perspective;
- Promoting the consideration of gender issues in hazardous chemicals and wastes management at the national and regional levels; and
- Supporting staff in achieving a sustainable work-life balance. (BRS 2016)

Apart from internal efforts to create awareness and mainstream gender-equality within the Secretariat and its operations, two projects are assessing national and regional implementation, as well as representation in the decision-making bodies, national focal points, and reporting mechanisms, respectively. The latter found that 91% of National Implementation Plans to the Stockholm Convention contained some sort of reference to women and/or gender (Gilligan, Sabater 2017).

While this is an important fact regarding the mainstreaming of gender issues into the implementation of the BRS-Conventions, the Report of the United Nations Secretary-General on Progress Toward the Sustainable Development Goals of 2017, states that „[...] from 2010 to 2014, only 57 per cent of the parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 71 per cent of the parties to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and 51 per cent of the parties to the Stockholm Con-

vention on Persistent Organic Pollutants provided the requested data and information. All parties reported to the Montreal Protocol on Substances that Deplete the Ozone Layer“ (UN 2017).

→ This shows that overall implementation and especially the reporting mechanisms for the individual conventions can benefit from further assistance.

World Health Organisation (WHO)

The International Programme on Chemical Safety (IPCS) of the WHO seeks to support scientific research and strengthen national capacities for the sound management of chemicals (WHO 2017c). It addresses health impacts by providing information and assessment materials and trainings as well as a forum to promote the objectives of SAICM, currently focusing on nanomaterials and combined exposures, among others. Based on a study from 2011, a recent report not only provided estimates for the burden of exposure to selected chemicals, but also exemplified economic benefits of effective interventions (WHO 2016). Similar to the lack of sex-disaggregated data on chemical exposure, this topic has so far only received little attention.

→ Combining both topics could help developing effective arguments for international management of chemicals and waste, based not only on avoiding harm but also on expected benefits.

UN Commission on the Status of Women

As a Functional Commission of the United Nations Economic and Social Council (ECOSOC) the UN Commission on the Status of Women (CSW) is an inter-governmental body responsible for promoting gender equality and the empowerment of women. Although chemicals management is only considered within the context of the SDGs, the mandate of CSW includes ensuring high-level engagement and addressing emerging issues, trends, and focus areas, as well as advocacy for leadership and political participation.

While CSW provides an important forum at the intergovernmental level, with an outward focus and the advantage of attaining high public awareness, simultaneous engagement with the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) could support the implementation of respective gender considerations for the relevant Conventions in the UN Member States, especially with regard to technical and financial support.

→ With „Challenges and opportunities in achieving gender equality and the empowerment of rural women and girls“ being the priority theme in 2018 and „Women’s empowerment and the link to sustainable development“ a review theme in 2019 the commission’s agenda might provide opportunities to discuss and set the agenda for future priorities concerning gender-specific aspects of international chemicals and waste management during the development of a strategy beyond 2020.

United Nations Environment Programme (UNEP)

UNEP is the main UN entity for environmental issues, and at its 3rd UN Environment Assembly is addressing the issues of pollution. Within UNEP, the Chemicals and Waste Branch forms a leading institution on capacity and policy instruments, including regulatory frameworks, as well as scientific and technical knowledge and tools. UNEP is also the implementing agency of the Global Environment Facility (GEF), thereby acting as a facilitator for chemical related project financing. Key resources in recent years included the first Global Gender and Environmental Outlook (GGEO; UNEP 2016) and the Global Chemicals Outlook (UNEP 2013).

→ For the next edition of the Global Chemicals Outlook, currently being prepared, it has been suggested to also specifically address the need to include sex-disaggregated data. In subsequent editions, systematic gender analysis should also be included.

International Labor Organisation (ILO)

The ILO addresses gender aspects as one area of work considering occupational health and safety. An information note in 2010 specifically considered the mutagenic effects of certain chemicals as well as the high representation of women in micro-electronic manufacturing jobs in developing countries resulting from new technologies and the corresponding transfer of production facilities (Forastieri 2010). Although the most relevant Convention No. 170 on *Safety in the use of Chemicals at Work* (ILO 1990a) does not mention women or gender, the respective Recommendation No. 177 recognizes the specific right of pregnant or breastfeeding women to alternative work that would not harm the child (ILO 1990b). Other relevant conventions include No. 162 on Asbestos, No. 148 on the Working Environment, No. 174 on the Prevention of Major Industrial Accidents, No. 139 on Occupational Cancer, No. 13 on White Lead in Paint, and No. 136 on Benzene Poisoning. Only the latter addresses pregnant or nursing women with specific reference to the susceptibility of unborn and infant children as well as young persons under the age of 18.

→ Further sex-disaggregated statistics about women's and men's participation in different sectors could help to close data gaps and support further research about gender dimensions of employment and chemical exposure.

Organisation for Economic Cooperation and Development (OECD)

The OECD's work on chemical safety and biosafety focuses on the development and harmonization of risk management strategies and assistance for developing countries, currently including eight issue areas: testing; assessment; risk management; chemical accident prevention, preparedness, and response; pollutant release and transfer register; safety of manufactured nanomaterials; agricultural pesticides and biocides; and biosafety.

Gender aspects are not specifically addressed. However, risk assessment projects like SACAME (**S**ocio-economic **A**nalysis of **C**hemicals by **A**llowing a better quantification and monetisation of **M**orbidity and **E**nvironmental impacts), can help inform the strategically important, yet

technically complex, issue of effects of hazardous substances on humans and the environment.

→ The OECD's existing work on gender equality, especially in development cooperation, education, and public governance, could be used to inform programs for chemical safety and risk assessment.

Sustainable Development Goals & the United Nations High-level Political Forum (HLPF)

Realizing **gender equality** by promoting women's rights and strengthening the visibility of social norms and values that shape expectations and conformity to roles, is at the core of the SDGs. Target 5.5 specifically calls for "women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life". This also includes ensuring the equal distribution of and access to resources (Target 5.A), as discussed above for the agricultural sector, as well as the need to recognize and value unpaid care and domestic work (Target 5.4). In the context of chemicals management, SDG Target 12.4 calls for achieving "the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment". While the target specifically considers the perspective set by the Johannesburg Plan of Implementation to achieve this by 2020, life cycle management of chemicals also provides vital opportunities for collaboration among governments, producers, experts, and consumers, during the current process of developing a strategy for SAICM beyond this date with a distinct focus on gender-specific aspects.

→ The HLPF annually reviews the implementation and progress towards small subsets of the SDGs, and considers National Voluntary Reviews. This may provide useful entry points for collecting and presenting sex-disaggregated data, create opportunities for conducting gender analyses, and for engaging with relevant stakeholders.

Other processes to look at for entry points on gender and chemicals include:

- The **Sendai process on Disaster Risk Reduction**
- **UN Habitat and the New Urban Agenda (NUA)**, which, for example, addresses women's participation in planning and decision-making and gender aspects of urban development
- **CEDAW**: while the CEDAW Committee is primarily focusing on receiving and discussing Parties' reports on progress, deliberations do pay attention to environmental issues. A recent decision on the impacts of fossil fuels on women's rights, when discussing Norway's progress report, is an interesting example. (REF)
- **UNCBD** and **UNCCD**: processes on biodiversity and desertification that from the beginning included stronger reference to gender and attention to women's issues – it may be worthwhile studying these processes and learn from them what worked, and what didn't.

Glossary of Terms

NB: If not otherwise indicated, the definitions provided below have been copied, or adapted, from UN Women's Gender Equality Glossary⁸.

Whereas the term '**sex**' refers to biological differences between women and men, the term '**gender**' refers to social differences. In societies, different gender roles are attributed to women and men, and gender stereotypes describe 'typical' or 'ideal' sets of characteristics of women and men. Based on the societal 'images' of what is feminine and what is masculine, individuals develop gender-specific identities. As a reflection of roles, stereotypes and identities, women and men differ with regard to motivation and behaviour.

These roles and relationships are not fixed, but can and do change. (UNDP 2011)

Gender determines what is expected, allowed and valued in a woman or a man in a given context. In most societies there are differences and inequalities between women and men in responsibilities assigned, activities undertaken, access to and control over resources, as well as decision-making opportunities. Gender is part of the broader socio-cultural context, as are other important criteria for socio-cultural analysis including class, race, poverty level, ethnic group, sexual orientation, age, etc.

Social acceptance is one of the consequences of fulfilling gender roles, and social sanctions are likely to occur when people do not comply with gender roles - with some flexibility determined by subgroup membership and individual interpretation.

The ways in which women and men pursue certain goals differ. For example, women and men share the need for social acceptance and hence a basic motive to be accepted by their peer groups. However, based on their gender-specific roles and identities, they differ with regard to which behaviour will serve the goal of being accepted.

Gender identity refers to a person's innate, deeply felt internal and individual experience of gender, which may or may not correspond to the person's physiology or designated sex at birth. It includes both the personal sense of the body, which may involve, if freely chosen, modification of bodily appearance or function by medical, surgical, or other means, and other expressions of gender, including dress, speech, and mannerisms.

Gender equality (equality between women and men): This refers to the equal rights, responsibilities and opportunities of women and men and girls and boys. Equality does not mean that women and men will become the same but that women's and men's rights, responsibilities and opportunities will not depend on whether they are born male or female. Gender equality

⁸ <https://trainingcentre.unwomen.org/mod/glossary/view.php?id=36>

implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men. Gender equality is not a women's issue but should concern and fully engage men as well as women. Equality between women and men is seen both as a human rights issue and as a precondition for, and indicator of, sustainable people-centered development.

The preferred terminology within the United Nations is **gender equality**, rather than gender equity. **Gender equity** denotes an element of interpretation of social justice, usually based on tradition, custom, religion or culture, which is most often to the detriment to women. Such use of equity in relation to the advancement of women has been determined to be unacceptable (see Beijing 5th World Conference on Women, 1995).

Gender analysis is a critical examination of how differences in gender roles, activities, needs, opportunities and rights/entitlements affect men, women, girls and boys in certain situation or contexts. Gender analysis examines the relationships between females and males and their access to and control of resources and the constraints they face relative to each other. A gender analysis should be integrated into all sector assessments or situational analyses to ensure that gender-based injustices and inequalities are not exacerbated by interventions, and that where possible, greater equality and justice in gender relations are promoted.

Gender (or sexual) division of labor: This is an important concept in basic gender analysis that helps deepen understanding about social relations as an entry point to sustainable change through development. The division of labor refers to the way each society divides work among men and women, boys and girls, according to socially-established gender roles or what is considered suitable and valuable for each sex. Anyone planning a community intervention needs to know and understand the division of labor and allocation of assets on a sex-and-age disaggregated basis for every community affected by development interventions. Within the division of labor, there are several types of roles:

- **Productive roles:** Activities carried out by men and women in order to produce goods and services either for sale, exchange, or to meet the subsistence needs of the family.
- **Reproductive roles:** Activities needed to ensure the reproduction of society's labor force. This includes house work like cleaning, cooking, childbearing, rearing, and caring for family members. These tasks are done mostly by women.
- **Community managing role:** Activities undertaken primarily by women at the community level, as an extension of their reproductive role, to ensure the provision and maintenance of scarce resources of collective consumption such as water, health care and education. This is voluntary unpaid work performed during "free" time.

- **Community politics role:** Activities undertaken primarily by men at the community level, often within the framework of national politics. This officially-recognized leadership role may be paid directly or result in increased power or status.
- **Triple role:** This refers to the fact that women tend to work longer and more fragmented days than men as they are usually involved in three different roles: reproductive, productive and community work.

Stereotypes are cognitive representations or impressions of a social group that people form by associating particular characteristics and emotions with the group (e.g. Mackie and Hamilton, 1993; Zanna and Olson, 1994).

Gender stereotypes are simplistic generalizations about the gender attributes, differences and roles of women and men. Stereotypical characteristics about men are that they are competitive, acquisitive, autonomous, independent, confrontational, concerned about private goods. Parallel stereotypes of women hold that they are cooperative, nurturing, caring, connecting, group-oriented, concerned about public goods. Stereotypes are often used to justify gender discrimination more broadly and can be reflected and reinforced by traditional and modern theories, laws and institutional practices. Messages reinforcing gender stereotypes and the idea that women are inferior come in a variety of “packages” – from songs and advertising to traditional proverbs.

Gender mainstreaming has been defined by the United Nations Economic and Social Council as ‘a strategy for making women’s as well as men’s concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of the policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated’. The relative status of women and men, the interaction between gender and race, class and ethnicity, and questions of rights, control, ownership, power, and voice—all have a critical impact on the success and sustainability of every development intervention.

In practice, gender mainstreaming means identifying gaps in gender equality through the use of sex-disaggregated data; developing strategies to close those gaps; putting resources and expertise into implementing strategies for gender equality; monitoring implementation; and holding individuals and institutions accountable for results. Gender mainstreaming is not an end in itself; it is a process whose ultimate goal is to achieve gender equality (Millennium Development Goal 3). (UNDP 2011)

Gender mainstreaming is the chosen approach of the United Nations system and international community toward realizing progress on women’s and girl’s rights, as a sub-set of human rights to which the United Nations dedicates itself. It is not a goal or objective on its own. It

is a strategy for implementing greater equality for women and girls in relation to men and boys.

Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programs, in all areas and at all levels. It is a way to make women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programs in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality.

Gender-neutral, gender-sensitive, and gender transformative:

The primary objective behind gender mainstreaming is to design and implement development projects, programs and policies that:

1. Do not reinforce existing gender inequalities (Gender Neutral)
2. Attempt to redress existing gender inequalities (Gender Sensitive)
3. Attempt to re-define women and men's gender roles and relations (Gender Positive / Transformative)

The degree of integration of a gender perspective in any given project can be seen as a continuum (adapted from Eckman, 2002):

Gender Negative	Gender inequalities are reinforced to achieve desired development outcomes Uses gender norms, roles and stereotypes that reinforce gender inequalities
Gender Neutral	Gender is not considered relevant to development outcome Gender norms, roles and relations are not affected (worsened or improved)
Gender Sensitive	Gender is a means to reach set development goals Addressing gender norms, roles and access to resources in so far as needed to reach project goals
Gender Positive	Gender is central to achieving positive development outcomes Changing gender norms, roles and access to resources a key component of project outcomes
Gender Transformative	Gender is central to promoting gender equality and achieving positive development outcomes Transforming unequal gender relations to promote shared power, control of resources, decision-making, and support for women's empowerment

Gender reflective: understanding and reflecting upon the impacts of gender relations, e.g. in decisions taken, solutions considered, strategies developed, dominant narratives... rather than merely reacting or responding to gender differences.

The term '**gender perspective**' is a way of seeing or analysing which looks at the impact of gender on people's opportunities, social roles and interactions. This way of seeing is what enables one to carry out gender analysis and subsequently to mainstream a gender perspective into any proposed program, policy or organisation.

Gender relations are the specific sub-set of social relations uniting men and women as social groups in a particular community, including how power and access to and control over resources are distributed between the sexes. Gender relations intersect with all other influences on social relations – age, ethnicity, race, religion – to determine the position and identity of people in a social group. Since gender relations are a social construct, they can be transformed over time to become more equitable.

Gender roles refer to social and behavioural norms that, within a specific culture, are widely considered to be socially appropriate for individuals of a specific sex. These often determine the traditional responsibilities and tasks assigned to men, women, boys and girls (see gender division of labour). Gender-specific roles are often conditioned by household structure, access to resources, specific impacts of the global economy, occurrence of conflict or disaster, and other locally relevant factors such as ecological conditions. Like gender itself, gender roles can evolve over time, in particular through the empowerment of women and transformation of masculinities.

Gender norms are ideas about how men and women should be and act. We internalize and learn these "rules" early in life. This sets-up a life-cycle of gender socialization and stereotyping. Put another way, gender norms are the standards and expectations to which gender identity generally conforms, within a range that defines a particular society, culture and community at that point in time.

References

Andrade-Rivas, Federico; Rother, Hanna-Andrea (2015): Chemical exposure reduction: Factors impacting on South African herbicide sprayers' personal protective equipment compliance and high risk work practices. *Environmental Research* 142, p.34–45.

BfR (Bundesinstitut für Risikobewertung) (2015): BfR hat die epidemiologischen Studien zu Glyphosat umfassend geprüft. Hintergrundinformation Nr. 033/2015 des BfR vom 22. September 2015.

<http://www.bfr.bund.de/cm/343/bfr-hat-die-epidemiologischen-studien-zu-glyphosat-umfassend-geprueft.pdf>

Buckingham, Kathleen (2016): Love hurts: environmental risks in the cut-flower industry. APPS Policy Forum, February 9, 2016. <https://www.policyforum.net/love-hurts-environmental-risks-in-the-cut-flower-industry/>

BRS (Secretariat of the Basel, Rotterdam and Stockholm Conventions) (2016): Gender Action Plan of the Secretariat of the Basel, Rotterdam and Stockholm Conventions (BRS-GAP) for 2016-2017. Updated version, 6 September 2016.

<http://www.brsmeas.org/Gender/BRSGenderActionPlan/tabid/3652/language/en-US/Default.aspx>

CEFIC - The European Chemical Industry Council (2016): Facts and Figures. Chemicals Industry Profile.

<http://www.cefic.org/Facts-and-Figures/Chemicals-Industry-Profile/>

ChemSec (2006). Toxic Chemicals – What is the Problem. <http://chemsec.org/wp-content/uploads/2016/10/Toxic-chemicals-what-is-the-problem-2006.pdf>

Data2x (2017): Women's Work and Employment Partnership. Phase One Activities and Outcomes. Technical Summary, October 2017. <http://www.data2x.org/wp-content/uploads/2017/10/WWE-Technical-Summary-10.2017.pdf>

Dill, Gerald M.; Sammons, R. Douglas; Feng, Paul C. C.; Kohn, Frank; Kretzmer, Keith; Mehrsheikh, Akbar; Bleeke, Marion; Honegger, Joy L.; Farmer, Donna; Wright, Dan; Hauptfear, Eric A. (2010): Glyphosate: discovery, development, applications, and properties. In: Nandula, Vijay K. (ed.): *Glyphosate resistance in crops and weeds: history, development, and management*. Hoboken (NJ): Wiley. Pp. 1–33.

Duke Stephen O., Powles Stephen B. (2009): Glyphosate-resistant crops and weeds. Now and in the future. *AgBioForum*, 12(3&4):346–57

European Chemicals Agency (2016): CLH Report. Proposal for Harmonised Classification and Labelling. Substance Name: N-(phosphonomethyl)glycine; Glyphosate (ISO).

<https://echa.europa.eu/documents/10162/9fb5d873-2034-42d9-9e53-e09e479e2612>

European Energy Agency (2001): Late lessons from early warnings: the precautionary principle 1896-2000, Environmental issue report No 22.

https://www.eea.europa.eu/publications/environmental_issue_report_2001_22

European Energy Agency and United Nations Environment Programme (1998): Chemicals in the Environment: Low Doses, High Stakes? <https://www.eea.europa.eu/publications/NYM2>

- European Food Safety Authority (2015): Conclusion on the peer review of the pesticide risk assessment of the active substance glyphosate. *EFSA Journal* 13(11): 4302, 107pp. <http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2015.4302/epdf>
- Food and Agriculture Organization of the United Nations (2011): Women in Agriculture. Closing the gender gap for development. Rome, 2011. <http://www.fao.org/docrep/013/i2050e/i2050e.pdf>
- Food and Agriculture Organization of the United Nations (2016): Did You Know? Men and women in agriculture. Available at: <http://www.fao.org/gender/gender-home/gender-why/did-you-know/en/>
- FoE - Friends of the Earth Australia, HCWC (Health Care Without Harm) (2009): Nano & biocidal silver: Extreme germ killers present a growing threat to public health. https://noharm-europe.org/sites/default/files/documents-files/2671/2009-09_Nano-silver%20Report.pdf
- Forastieri, V. (2010): Women workers and gender issues on occupational safety and health. Information Note. International Labour Office, Geneva. http://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/briefingnote/wcms_146255.pdf
- Gaw, Sally; Thomas, Kevin V.; Hutchinson Thomas H. (2014): Sources, impacts and trends of pharmaceuticals in the marine and coastal environment. *Philosophical Transactions of the Royal Society B*. Vol. 369, Issue 1656: 20130572. <http://dx.doi.org/10.1098/rstb.2013.0572>
- Gilligan, Molly; Sabater, Laura (2017): Women's participation and gender considerations in country representation, planning and reporting to the BRS Conventions. Washington, USA: IUCN.
- Gupta, Chetna; Gupta, Vaibhav K.; Nema, Pallavi; Patel, Jitendra (2012): Gender Differences in Knowledge, Attitude and Practices Regarding the Pesticide Use Among Farm Workers: A Questionnaire Based Study. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 3(3), 632-639.
- Harvard School of Public Health (2016): Exposure to phthalates may raise risk of pregnancy loss, gestational diabetes. Featured News Story, November 8, 2016. <https://www.hsph.harvard.edu/news/features/phthalates-exposure-pregnancy-loss-gestational-diabetes/>
- Hayn, Doris; Schultz, Irmgard (2004): Scientific consultancy for the introduction of gender mainstreaming in the daily practice of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. Summary of the final report. <http://www.isoe.de/fileadmin/redaktion/Downloads/Gender/gia-consult-summary-isoe-2004.pdf>
- Hemmati, Minu (2000): Gender-Specific Patterns of Poverty and (Over-)Consumption in Developing and Developed Countries. In: E. Jochem, J. Sathaye & Daniel Biulle (eds.). *Society, Behaviour, and Climate Change Mitigation*. Proceedings of IPCC Expert Group Meeting on Social Scientific Approaches to Climate Change Mitigation. pp169-190. Kluwer Publications.
- Hohnen, Paul (2017): A winning formula for sustainable chemical startups. *Innovation Forum*, October 18, 2017. <https://innovation-forum.co.uk/analysis.php?s=a-winning-formula-for-sustainable-chemical-startups>
- Honkonen, Tuula; Khan, Sabaa A. (2017): Chemicals and Waste Governance Beyond 2020. Exploring Pathways for a Coherent Global Regime. Nordic Council of Ministers 2017.

International Agency for Research on Cancer (2015): Monograph on Glyphosate.

<http://monographs.iarc.fr/ENG/Monographs/vol112/mono112-10.pdf>

International Labour Organization (1990a): Convention concerning Safety in the use of Chemicals at Work http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C170

International Labour Organization (1990b): R177 - Chemicals Recommendation, 1990 (No. 177).

http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:55:0::55:P55_TYPE,P55_LANG,P55_DOCUMENT_P55_NODE:REC,en,R177,/Document

International Labour Organization (2007): Background information for developing an ILO policy framework for hazardous substances. Document for discussion at the Meeting of Experts to Examine Instruments, Knowledge, Advocacy, Technical Cooperation and International Collaboration as Tools with a view to Developing a Policy Framework for Hazardous Substances.

http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_092031.pdf

International Labour Organization (2017): World Employment Social Outlook. Trends for Women 2017. Executive Summary. http://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_557077.pdf

Inter-Organisation Programme for the Sound Management of Chemicals (2017): IOMC Toolbox for Decision Making in Chemicals Management.

<http://iomctoolbox.oecd.org/default.aspx?idExec=c89a15e6-25d1-45ee-8e47-46bf4b2557a7>

International POPs Elimination Network & Pesticides Action Network (2017): Beyond 2020: Women and Chemical Safety.

<http://ipen.org/sites/default/files/documents/Beyond%202020%20Women%20and%20chemical%20safety%2024%20Jan%202017.pdf>

Kortenkamp, Andreas (2008): Breast cancer and exposure to hormonally active chemicals, An Appraisal of the Scientific Evidence. A background briefing paper. The School of Pharmacy, University of London. <http://www.env-health.org/IMG/pdf/2->

[Breast_cancer_and_exposure_to_hormonally_active_chemicals_-_an_appraisal.pdf](http://www.env-health.org/IMG/pdf/2-Breast_cancer_and_exposure_to_hormonally_active_chemicals_-_an_appraisal.pdf)

Lynn, Helen (2007): Politics and prevention: Linking breast cancer and our environment. WECF.

Pesticides Action Network Asia Pacific (2017): Global Governance Of Hazardous Pesticides To Protect Children: Beyond 2020. <http://files.panap.net/resources/SAICM-PANAP-Children-and-Pesticides.pdf>

Peterman, Amber; Behrman, Julia; and Quisumbing, Agnes (2010): A Review of Empirical Evidence on Gender Differences in Nonland Agricultural Inputs, Technology, and Services in Developing Countries. IFPRI Discussion Paper 00975. International Food Policy Research Institute, Washington, DC.

Prüss-Ustün, Anette; Vickers, Carolyn; Haefliger, Pascal; Bertollini, Roberto (2011): Knowns and unknowns about the burden of disease due to chemicals: a systematic review. *Environmental Health* 10:9.

<https://doi.org/10.1186/1476-069X-10-9>

Prüss-Ustün, Anette; Mathers, Colin; Corvalán, Carlos; Woodward, Alistair (2003): Introduction and methods: Assessing the environmental burden of disease at national and local levels. Environmental burden of disease series No. 1. World Health Organization, Geneva.

- Röhr, Ulrike (2014): Klimapolitik und Gender aus nationaler und internationaler Perspektive. Artec Kolloquium 2014/2015. http://www.uni-bre-men.de/fileadmin/user_upload/single_sites/artec/artec_Dokumente/Kolloquien/roehr_gender_und_klimapolitik.pdf
- Röhr, Ulrike; Alber, Gotelind; Göldner, Lisa (2017): Gendergerechtigkeit als Beitrag zu einer erfolgreichen Klimapolitik: Wirkungsanalyse, Interdependenzen mit anderen sozialen Kategorien, methodische Aspekte und Gestaltungsoptionen – 1. Zwischenbericht. Berlin, 30.6.2017. UFOPlan Vorhaben des BMUB/UBA
- Smykalla, Sandra (2006): Was ist Gender? GenderKompetenzZentrum Humboldt Universität Berlin
- Strategic Approach to International Chemicals Management (2012): SAICM Texts and Resolutions of the International Conference on Chemicals Management. http://www.saicm.org/Portals/12/Documents/saicmtxts/New%20SAICM%20Text%20with%20ICCM%20resolutions_E.pdf
- Strategic Approach to International Chemicals Management (2014): Progress and gaps towards the achievement of the 2020 goal of sound chemicals management: progress in achieving the objectives of the Strategic Approach Overarching Policy Strategy. Second progress report (2011-2013). <http://www.saicm.org/Portals/12/Documents/reporting/k1403579-eowg2-inf4-second-progress-report.pdf>
- Schultz, Irmgard (1998): [Umwelt- und Geschlechterforschung - eine notwendige Allianz](#). ISOE-DiskussionsPapiere, 2. Frankfurt am Main: ISOE - Institut für sozial-ökologische Forschung.
- Swedish International Development Cooperation Agency (2016). Brief: Gender and the Environment. Gender Tool Box. http://www.sida.se/contentassets/3a820dbd152f4fca98bacde8a8101e15/gender_and_environment.pdf
- Swedish Society for Natural Conservation (2015): Protecting the environment: Why a gender perspective matters. Stockholm
- Tullo, Alexander H. (2016): Women in industry 2016. Chemical & Engineering News, Volume 94, Issue 34 (August 29, 2016), pp. 22-25. <https://cen.acs.org/articles/94/i34/Women-industry-2016.html>
- United Nations (1992a): Report of the United Nations Conference on Environment and Development. http://www.unesco.org/education/pdf/RIO_E.PDF
- United Nations (1992b): United Nations Conference on Environment and Development. Agenda21. <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>
- United Nations (2002): Johannesburg Plan of Implementation. http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf
- United Nations (2012): The future we want. A/RES/66/288, 11 September 2012. http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/66/288&Lang=E

United Nations (2015): Transforming our world: the 2030 Agenda for Sustainable Development. A/RES/70/1, 21 October 2015.

http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

United Nations (2017): Progress towards the Sustainable Development Goals. Report of the Secretary General. E/2017/66. http://www.un.org/ga/search/view_doc.asp?symbol=E/2017/66&Lang=E

United Nations Development Programme (2011): Chemicals and Gender. Energy & Environment Practice. Gender Mainstreaming Guidance Series. Chemicals Management. UNDP Environment and Energy Group. <http://www.undp.org/content/dam/aplaws/publication/en/publications/environment-energy/www-ee-library/chemicals-management/chemicals-and-gender/2011%20Chemical&Gender.pdf>

United Nations Environment Programme (2007): Life Cycle Management. A Business Guide to Sustainability. United Nations Environment Programme, Nairobi, Kenya. <http://www.lifecycleinitiative.org/wp-content/uploads/2012/12/2007%20-%20LCM.pdf>

United Nations Environment Programme (2013): Global Chemicals Outlook – Towards Sustainable Chemicals Management. United Nations Environment Programme, Nairobi, Kenya.

United Nations Environment Programme (2016): Global Gender and Environment Outlook. United Nations Environment Programme, Nairobi, Kenya.

Women Engaging for Our Common Future (2016): Women and Chemicals: The impact of hazardous chemicals on women. Women in Europe for a Common Future (WECF), http://www.wecf.eu/download/2016/March/WomenAndChemicals_PublicationIWD2016.pdf

World Health Organisation (2009): Women and Health: today's evidence tomorrow's agenda. World Health Organization, Geneva.

World Health Organisation (2016): Public health impact of chemicals: knowns and unknowns. http://apps.who.int/iris/bitstream/10665/206553/1/WHO_FWC_PHE_EPE_16.01_eng.pdf?ua=1

World Health Organisation (2017a): Fact Sheet Noncommunicable diseases. Updated: June 2017. <http://www.who.int/mediacentre/factsheets/fs355/en/>

World Health Organisation (2017b): Preventing noncommunicable diseases (NCDs) by reducing environmental risk factors. Geneva: World Health Organization.

World Health Organisation (2017c): International Programme on Chemical Safety. Website: <http://www.who.int/ipcs/en/>

World Health Organisation and United Nations Environment Programme (2013): State of the science of endocrine disrupting chemicals - 2012. United Nations Environment Programme (UNEP) and World Health Organization (WHO).