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Feminist approaches to global environmental change

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“I declare that I wrote the thesis independently using the sources dutifully cited and listed in the bibliography. The thesis was not used to obtain a different or the same title.”

Prague, January 2024 Davina Elena Vačkářová

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Abstract

We are witnessing unprecedented changes at the planetary level, a phenomenon denoted as the global environmental change. Expanding academic literature and scientific assessment are documenting widespread impact of human activities on the Earth´s systems. The policy response to global environmental change is represented by leading global sustainability and environmental policies which aim to decrease the human influence on planetary processes and improve well-being of all humans. Most of these policies have started to address existing gender inequalities and injustices only recently. The aim of the thesis is to critically analyse how feminist theory and gender inequality have been reflected in global environmental change and sustainability research and where they have been ignored. The guiding question is how innovative feminist conceptions can inform policy making and contribute to gender transformative action. The thesis focuses on a review of analytical frames that are useful for the feminist analysis of global environmental change. Drawing on feminist approaches, the thesis examines possible controversies within sustainability, climate change, disaster risk reduction and biodiversity policies, and analyses the selected themes resonating in these global policies. The feminist lens is applied to analyse core concepts used in global environmental change discourse to show possible gaps as well as future agenda for feminist approach to global environmental change and transformative sustainability change.

Keywords: global environmental change, feminist ecologies, critical frame analysis, gender transformative policy, sustainability

Abstrakt

Na planetární úrovni probíhají bezprecedentní změny, fenomén označovaný jako globální změna životního prostředí. Rozšiřující se akademická literatura a vědecká hodnocení dokumentují rozsáhlý dopad lidských činností na systémy Země. Politickou reakci na globální změny životního prostředí představují přední globální politiky udržitelnosti a životního prostředí, jejichž cílem je snížit vliv člověka na planetární procesy a zlepšit kvalitu života všech lidí. Většina z těchto politik začala řešit existující genderové nerovnosti a nespravedlnosti teprve nedávno. Cílem práce je kriticky analyzovat, jak se feministická teorie a genderová nerovnost promítly do výzkumu globálních změn životního prostředí a udržitelnosti a kde byly ignorovány. Hlavní otázkou je, jak mohou inovativní feministické koncepce informovat o tvorbě politik a přispět k genderově transformační akci. Práce se zaměřuje na přehled analytických konceptů, které jsou užitečné pro feministickou analýzu globálních změn životního prostředí. Na základě feministických přístupů práce zkoumá možné kontroverze v rámci politik udržitelnosti, změny klimatu, snižování rizika katastrof a biodiverzity a analyzuje vybraná témata rezonující v těchto globálních politikách. Feministická optika je použita k analýze klíčových konceptů používaných v diskurzu o globálních změnách životního prostředí, aby se ukázaly možné mezery a také budoucí přínosy feministického přístupu ke globální změně životního prostředí a transformativní změně směrem k udržitelnosti.

Klíčová slova: globální environmentální změna, feministická ekologie, kritická analýza rámců, genderově transformační politiky, udržitelný rozvoj

Table of Contents

List of tables and figures

Introduction

The current era calls for multiple transformation of the ways we are living on this planet. The global environmental crisis manifested by climate change, biodiversity loss, pollution and other environmental problems shows that human interaction with the planet has been largely unsustainable. This unsustainability has deeper roots than environmental drivers or consumer lifestyles, particularly in the Global North. Roots of current environmental crisis can be found in the human relationship to the planet, values related to the natural world and persistent power and gender inequalities. The calls for transformative actions and policies which would shift the society towards more sustainable pathways are still deeply rooted in anthropocentric and androcentric frames.

Global environmental change (GEC) represents a topic at the interface between environment and society, science and policy, local and global, past and future. The notion of GEC refers to a set of planetary-scale changes, ranging from large-scale changes related to the global geosphere and biosphere systems (e.g., nitrogen and carbon cycles, biodiversity loss) to changes at the local or regional scale and related specifically to human activities (Rockström et al. 2009, Steffen et al. 2015). To date, feminist approaches have begun to be increasingly applied to the analysis of global environmental change, but overall the feminist perspective remains still relatively scarce. At the same time, the practise and policy still face narrow gender assumptions (Lau et al. 2021). Critical of human exceptionalism and anthropocentrism, global environmental change initiatives and feminist approaches refigure the understanding of human – nature relations in the global North. This includes calls for transformative steps towards sustainable living on the planet (Turnhout and Lahsen 2022). Here feminist approaches can provide indispensable insights into human – environment relations and knowledge production. A revision of prevailing conceptual frames and analytical tools is required for achieving environmental justice and sustainability.

Scientist have suggested that we live in an era of “tipping points” in the planetary system and society. A climate tipping point is defined as a state where a small amount of extra climate forcing, usually linked to global warming – for example, greenhouse gas forcing – triggers a qualitative change in part of the climate system (Lenton 2021). The same tipping points can

emerge in society, too. Social tipping points have been defined as points where a small change in the behaviour can trigger an abrupt irreversible change in the social system (Juhola 2022). Women as well as gender and sexual minorities were until recently ignored in global environmental change research, or merely considered as victims. However, we can observe a "turning point" where women and even LGBTQ+[1] people (or subjects) are increasingly recognized as agents of change. This has been connected to the activity of women and LGBTQ+ grassroots movements, organizations promoting gender equity at multiple levels. At the same time, we are experiencing several "turns" within the fields of posthumanities, feminist science and technology studies, queer ecologies and other interdisciplines discussed in this thesis.

Exploring the change potential towards sustainability doesn´t mean that everything has been solved and our futures are bright and uncontested. While we can observe "seeds of change" of gender and environment transformative action, there is also latent and sometimes explicit backlash resulting from traditional and deeply established "truths" about nature and culture. Fritjof Capra in his influential visionary account of current civilization and scientific knowledge "The Turning Point" (Capra 1982) envisaged three persistent problems, including the patriarchal order, fossil fuels based energies and reductionist paradigms. All three aspects have been widely scrutinized by feminist scholars and still need to be explored on the way towards sustainability for all, together with other emerging problems. In words of Donna Haraway (2016), we need to "Staying with the Trouble" on our ponderous pursuit towards a planetary wellbeing (JYU.Wisdom community 2021), expanding our notion of wellbeing including non-human others.

In this context the aim of the thesis is to critically analyse how feminist theory and gender inequality have been addressed in global environmental change and sustainability research and where they have been ignored. The thesis focuses on a review of analytical concepts and "frames" that are useful for the feminist analysis of global environmental change. Drawing on feminist approaches, the thesis examines controversies within climate adaptation and

[1] While there is a plethora of acronyms used to signify gender and sexual minorities and gender nonconforming people, I use established LGBTQ+ for all identities including, but not limited to Lesbian, Gay, Bisexual, Transgender, Queer, Questioning, Intersex, Asexual, Aromantic, Agender, Non-binary, Two-spirited and others.

biodiversity policies and analyse selected themes resonating in global environmental policies. The feminist frame analysis identifies basic presumptions and conceptual foundations of existing policies, such as sustainable development, climate change adaptation, biodiversity conservation, and ecosystem services. These themes are analysed through a feminist lens to show possible gaps and pitfalls regarding gender, as well as future agenda for feminist approach to global environmental change and transformative sustainability change.

The aim of the thesis is to provide a critical examination of frames used in the discourse of global environmental change and evaluation of global environmental policies from a gender and feminist perspective. Specifically, the thesis aims to answer following questions:

1. How are feminist concepts reflected in major concepts of global environmental change?
2. What is the feminist critique of major frames used in global environmental change discourse?
3. What is the status of gender mainstreaming in global environmental and sustainability policies?
4. To what extent are current global policies gender-transformative?

The thesis is organized as follows: Section 1 focuses on the theoretical background and literature review of approaches to the feminist analysis of global environmental change. It highlights major concepts and developments rooted mainly in feminist literature but with insights from other fields, such as sustainability studies, ecological economics and others. Section 2 introduces methodological framework of this thesis, including critical frame analysis and gender evaluation of major global environmental and sustainability policies. Section 3 presents results of the frame analysis of selected key concepts resonating in current discourse of global environmental change from feminist perspective and includes the analysis of gender-transformative potential of key policies. Section 4 discusses the main findings and Section 5 summarizes main conclusions.

1. Gender and environmental change: Theoretical background

In this chapter, I review key approaches, areas and assumptions important from the theoretical perspective for the analysis of gender and global environmental change. The aim of this part is to provide an initial literature review and highlight concepts which serve as a theoretical basis for the thesis.

Theoretical background for this thesis builds on extensive scholarship at the intersection of gender studies and environmental studies. Feminist approaches have been applied to analyse the outcomes of environmental policies and sustainability strategies. While environmental, climate and sustainability strategies shape the direction of amelioration of environmental impacts, they frequently have not recognized differential impact by and on various segments of society. Here the current dominating gender order based on heteronormative and binary perception of gender implies that environmental policies itself present a reflection of this world and gender order.

Feminist approaches to global environmental change can be historically traced from a focus on women (and their vulnerability and victimhood) to a focus on gender (gender equity and intersectionality) and feminist advanced approaches (e.g. feminist epistemology, feminist political ecology, feminist science and technology studies, posthumanist and decolonial approaches and queer ecology). Those identified as women were and still are subjected to a universaling perspective homogenizing them as victims of global environmental change. From 2015, international policies and processes such as Sustainable Development Goals, Intergovernmental Panel on Climate Change and recently Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services have developed commitments and agenda to "mainstream gender" into decision-making and knowledge production. Incorporating anti-racist and decolonial perspectives, feminist approaches provide a framework for the revision of current policies as well as for the transformation of human relation to nature. However, there is still an ongoing critique of current hegemonic Western science domination in setting the global agenda for sustainable development and global environmental change policies, that fails to consider other knowledge systems (such as indigenous peoples) or situated perspectives of various groups, such as women of colour from the global South, indigenous

transgender women etc. The chapter addresses theoretical concepts and disciplines important for the understanding of the development and conceptual framing of feminist analysis of global environmental change.

1.1. Feminist technoscience studies and epistemic injustice

This section reviews epistemological basis of knowledge production which is important from the perspective of feminist critique of traditional (Western) science as the only source of our knowledge on environmental change. Feminist technoscience studies and technoecologies are introduced as a theoretical basis fir the feminist analysis of global environmental change. Related concepts such as epistemic injustice are introduced and discussed in the environment context.

Current discourse and policies in global environmental change are strongly rooted in science, especially the physical and natural sciences. Despite the increasing recognition of social sciences and humanities as an indispensable component of the science and solution for global change, the prevailing worldview in area of global environmental change is shaped by natural sciences. While for example recent framing of Earth System Boundaries (Rockström et al. 2023) incorporated justice perspective, it's still based solely on the biophysical variables (°C, % of land area, Tg N, µg per m^3 etc.) as "boundaries" within planetary system. The science has been often called as an "independent" and "objective" approach to the study of global change as well as one of the major solutions to tackle global change problems. This view has been deeply challenged by feminist science and technology studies (STS), called also feminist technoscience studies. Feminist technoscience studies emerged from feminist critiques and challenged the assumptions of independent and objective "science". Feminist science studies showed how science is socioculturally embedded in modes and network of its production (Åsberg and Lykke 2010). As the feminist technoscience studies contributed to the revision of feminist knowledge production, I review main concepts applied also in the critique of solely technoscience solutions to the global environmental change problems.

The historical roots of feminist science studies can be tracked to Donna Haraway (1988). One key concept within feminist epistemology is “situated knowledges”. Coined by Donna Haraway in her influential essay “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective” (1988), situated knowledges argue that knowledge is always produced from a particular standpoint or location. Haraway challenges the idea of an objective, universal truth (the god trick of seeing everything from nowhere) and argues for the recognition of diverse and situated perspectives. The knowledge and feminist objectivity are always located, situated and embodied. This concept emphasizes the importance of acknowledging the social, cultural, and historical context in which knowledge is produced. This and subsequent work of Donna Haraway laid the foundation for new materialism and influenced thinking about the global change in at least four related planes - epistemological, ontological, ethical, and political (Rogowska-Stangret 2018).

Another important dimension of feminist epistemology is “strong objectivity”, a term introduced by Sandra Harding. In her work “The Science Question in Feminism” (1986), Harding argues for a standpoint epistemology that not only recognizes the situatedness of knowledge but also asserts that some perspectives may be more objective precisely because they arise from marginalized or oppressed standpoints. Strong objectivity calls for a reevaluation of what counts as objective knowledge, challenging the traditional notion that objectivity is best achieved by distancing from the subject of study. As noted by Harding (2015), the prevailing standard of scientific objectivity failed to recognize sexist and androcentric assumptions and practices to shape some of the very best research in biology and the social sciences.

In addition to situated knowledges and strong objectivity, another important concept within feminist epistemology is “epistemic privilege”. Epistemic privilege refers to the differential access to and authority over knowledge that individuals or groups possess based on their social position and identity. It is a concept within epistemology that highlights the unequal distribution of epistemic resources, such as the ability to produce, disseminate, and validate knowledge. This concept highlights how societal power dynamics, including those related to gender, race, class, and other social categories, can grant certain individuals greater credibility and influence in the construction and validation of knowledge. Feminist epistemologies address the intersection of philosophy of science, postcolonial/decolonial and feminist studies

to uncover related forms of oppression and dominance in the context of knowledge production (Fricker 1999, Harcourt et al. 2023). Understanding epistemic privilege within feminist epistemology involves recognizing how certain perspectives are privileged while others are marginalized or dismissed. This recognition is crucial for challenging and transforming the unequal distribution of epistemic authority and ensuring a more inclusive and equitable knowledge production process within global environmental change discourse.

In the context of feminist epistemology, scholars such as Miranda Fricker have expanded on the concept of epistemic privilege. Fricker, in her work "Epistemic Injustice: Power and the Ethics of Knowing" (2007), introduces the idea of testimonial injustice, which occurs when someone is not given the credibility or trust they deserve based on their social identity. This concept is particularly relevant to feminist epistemology, as it underscores how gendered stereotypes and biases can impact the way women´s voices and experiences, as well as voices and experience of other marginalized groups, are heard and acknowledged. Miranda Fricker introduced also hermeneutical marginalization and hermeneutical injustice, illustrating these concepts using trans* lives (Fricker and Jenkins 2017). In the context of this thesis, the concept of epistemic injustices provides valuable insights at the intersection of gender, marginalizations and environment (see section 2.2.1. for application of this framework).

Feminist technoscience studies are related to feminist technoecologies framework which might assist further transdisciplinary investigations (Lorenz-Meyer et al. 2017). Technoecologies integrate relations between new materialism and feminist theory, reflecting ethics of care, affect and response-ability in the critique of the split between nature, culture, and technology which all manifest agency and corporeality. The concept of "agential realism" is particularly relevant to feminist epistemology and new materialism. In her influential work "Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning" (2007), Karen Barad introduced the idea that agency and the material world are mutually constitutive. She argues for an understanding of the world in which the boundaries between the human and non-human, subject and object, are blurred. Barad´s agential realism challenges traditional dualisms and emphasizes the entanglement of matter and meaning in the production of knowledge, denoted by Donna Haraway as material-semiotic. This perspective aligns with feminist epistemology by highlighting the inseparability of the knower from the known, emphasizing the embodied and relational nature of knowing.

In summary, feminist epistemology brings attention to the ways in which power dynamics, social structures, and gender influence the production of knowledge. By incorporating diverse perspectives and challenging traditional epistemic norms, feminist epistemology contributes to a more robust and inclusive understanding of knowledge. This is particularly important in the context of global environmental change. Outlined feminist epistemologies and feminist technoscience studies frameworks have been applied within the exploration of knowledge production and analysis of human-nature relationship. At the same time, it provides a basis for the feminist appraisal of environmental change and sustainability policies within feminist political ecology and related concepts (Di Chiro 2008, Nightingale 2015, Harcourt 2017, MacGregor 2021).

1.2. From gender blind to gender transformative environmental policies

This section introduces context of development of major global policies in global environmental change and sustainability. It also covers historical root of gender and environment debate.

Current integrated assessments of global environmental change have concluded that the transition towards sustainability should include transformative change. Transformation has been defined as a fundamental, wide-scale change including not only systemic reorganization across technological, economic and social domains but also change in paradigms, goals and values (IPBES 2019). Gender as an epistemological orientation and analytical perspective is recognized as relevant and vital factors in navigating sustainability transitions (Wolfram and Kienesberger 2023). The aim of this section is to provide an overview of the historical development and roots of gender-transformative policies in gender-environment nexus which led to the gender-responsive policies in the area of global environmental change.

Gender transformative approaches emerge as a critical approach to research, policy and practice of sustainability. While not completely new, these approaches challenge implementation of existing policies within existing structural processes that create and perpetuate of social inequality (racism, classism, patriarchy and cisnormality) which pervade

social, political and economic systems (MacArthur et al. 2022). Gender-transformative change aims toward transforming the power dynamics and structures that serve to reinforce gendered inequalities (Hillenbrand et al. 2015, Resurrección et al. 2019).

Many scholars have repeatedly called moving from gender-blind to gender responsive and gender transformative policies. The uptake of gender in environmental policies follows the general efforts of gender mainstreaming, that is the inclusion of gender equality targets and evaluation. Early efforts are evident in the changing discourses on gender and development, which are closely linked to environmental issues. Various initial phases in international gender mainstreaming such as Women in Development (WID), Women, Environment and Development (WED), and Gender and Development (GAD) were instrumental in the evolution of discourse around women, gender and environment (Arora-Jonsson 2014).

The approach of Women in Development (WID) emerged in the 1970s, focusing on the role of women in development processes. It highlighted the need to address gender disparities in development efforts, aiming to integrate women into mainstream development activities. Here the WID approach emphasized women's access to education, employment, and healthcare, aiming to enhance their economic and social empowerment. While it made women more visible in economic production (although often on a small-scale such as handicrafts), the WID approach has often been criticized for failing to address the root inequalities and power relations (Wilson 2015) and effectively leading to further exploitation of women´s work. More specifically, the efforts to incorporate women into the capitalist system of production often lead to increasing the burden of women, in what is referred to as their “triple burden”. Women were not released from their reproductive obligations and additionally increasingly participating in waged work and development and environment activities.

The Women, Environment, and Development (WED) perspective emerged as a reaction to increasing environmental awareness, ecofeminism and sustainable development in 1970´s (Braidotti et al. 1994). It recognizes the interconnectedness of women, the environment, and development. It is associated with the ecofeminism rooted in the Global South, movement such as Chipko movement, and scholars such as Maria Mies and Vandana Shiva. It emphasizes the unique experiences and contributions of women in environmental conservation, sustainability, and natural resource management. The WED approach advocates for gender equality in decision-making processes related to environmental issues and

acknowledges the disproportionate impacts of environmental degradation on women (Wilson 2015). Concurrently, it problematized the inclusion of women in processes of capital accumulation and shifted the perspective to the context of gender and power relations and inequalities. The critique of WED was related to the critique of ecofeminism. It challenged the idea of universal women as a natural constituency for environmental projects, women be treated as a disaggregated group of subjects and taking into account their diverse experiences (Resurrección 2017).

Gender and Development (GAD) emerged in the 1980s as another response to the limitations of the WID approach and established current theorizing about women, development and environment. GAD recognizes that gender is a socially constructed concept that affects both men and women. It aims to address the underlying power dynamics and social norms that perpetuate gender inequalities and established the new paradigm of gender mainstreaming (MacArthur et al. 2022). The GAD approach particularly promotes gender mainstreaming, which involves integrating a gender perspective into all stages of development planning, implementation, and evaluation. It emphasizes the need for transformative change to achieve gender equality and women´s empowerment. The GAD approach focused on the role of social reproduction which remained invisible or naturalized (Wilson 2015). It laid the basis of current gender responsive policies and recognized that women should not be treated as a universal and homogeneous group. It also highlighted the unequal gender distribution of resources and power within households and thereby laid the grounds for gender transformative actions and policies.

And yet, despite these efforts to incorporate gender into the development and environment processes, early multilateral environmental agreements adopted at The United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit in Rio de Janeiro in 1992, were gender blind and didn´t addressed gender inequalities and relations (Table 1). This is why within the last decade, the majority of multilateral environmental agreements adopted gender action plans and gender-responsive approaches.

Gender responsive policies, recently, have become a component of major global multilateral environmental agreements, including the Sustainable Development Goals (SDGs), the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention to Combat Desertification (CCD). In a

nutshell, a gender-responsive approach is one that moves beyond only identifying or raising awareness of gender issues ("do no harm"), to taking measures to actively address gender inequalities ("do better") (CBD 2019). Currently, there are strong connections among multilateral environmental agreements and women´s organizations. Sixty-sixth session of the Commission on the Status of Women in 2022 reflected importance of these links, under the policy priority topic "Achieving gender equality and the empowerment of all women and girls in the context of climate change, environmental and disaster risk reduction policies and programmes" (UN Commission on the Status of Women 2022).

However, as a more detailed review of the literature shows, the level of implementation and the level of incorporation of gender and feminist concerns differ considerably (see section 3.2). The outlook for gender-transformative policies depends, among other, on the uptake of gender and feminist concepts and their appropriate reflection in the operation of global environmental policies.

Table 1. Overview of approaches to gender in environmental policies.

	Gender-blind	**Gender-responsive**	**Gender-transformative**
Policies	Early multilateral environmental agreements	Agreements and gender action plans	Integrated transformative policies
Time period	1992 - 2010	2010-2020	Post-2020 (2030-2050)
Main outcome	Gender not considered	Gender equality and mainstreaming	Challenge gender norms, assumptions and stereotypes

1.3. Gender equality on sustainability agenda

As noted by Arora-Jonsson (2014) in her longer-term reflection of gender in environmental policy, while the theorizations of gender have become strong, the impact of gender theory on environmental practice has been marginal. Arora-Jonsson argues that gender concepts and analytics may be regarded as too complicated by practitioners in daily decisions and interventions. Therefore, major concepts used in environmental policy is gender equality, albeit narrowly defined. On the other hand, if gender equality and gender mainstreaming are properly implemented, they possess high transformative potential. Gender equality was directly incorporated into Sustainable Development Goals (SDGs) – Goal 5: Achieve gender equality and empower all women and girls. Gender equality in sustainability can be regarded from multiple perspectives. Within the context of this thesis, gender equality is relevant especially from the perspective of policy goals to promote gender equality and from the perspective of knowledge production to formulate these goals at the science-policy interface.

Current environmental and sustainability policies have expanded the gender equality agenda (as promoted in major global gender policies, such as 1995 Beijing Declaration and Platform for Action). Sustainable Development Goals (section 3.2.1.) make gender equality and empowerment of women and girls an integral part of sustainable development policies. The Commission on the Status of Women (UN Women) as the major intergovernmental body dedicated to the promotion of gender equality and the empowerment of women contributes to the 2030 Agenda for Sustainable Development. As argued by Leach (2016), gender inequality is produced by political-economic relations in late capitalism that support particular types of neoliberal, market-led growth. This argument follows the common feminist analysis of the root causes of gender inequality. She talks about the crises of social reproduction where women´s labour, bodies and provision of unpaid care are exploited to support political-economic system. The same political-economic relations lead to current environmental problems.

At the international level of environmental policy negotiation, gender equality has been promoted by increasing representation of women scientist in science-policy bodies. As recent analysis shows, women's representation has grown from just 8% of authors in the first climate change assessment report in 1990, to 30% in the Sixth Assessment Report of the Intergovernmental Panel on Climate Change in 2021 (Liverman et al. 2022). But challenges

even in the gender equality persist, as women are still underrepresented at senior level, don´t have sufficient voice or power, and facing barriers related to lack of time and childcare (Grogan 2019, Liverman et al. 2022). This lack of gender equality in environmental science and policy arena reflects the general patterns of gender inequality in STEM (Science, Technology, Engineering and Mathematics).

The search for understanding the so called "productivity puzzle" found that women have significantly shorter scientific carriers, by 17% compared to men (Huang et al. 2020). This has been termed as the "leaky pipeline" metaphor (Grogan 2019) where women are leaving science in response to facing several structural barriers and biases ranging from receiving less funding and underrepresentation in publishing to less recognition and visibility and even sexual harassment and other forms of gender-based violence. The evidence shows that women, and most particularly women of colour and other marginalized groups face cumulative disadvantage which perpetuates funding and other barriers in science (Jebsen et al. 2022). Theorists have identified several other barriers and challenges in supporting gender equity. Tokenism occurs when a woman is put into a position to give the appearance of gender equity, which does not necessarily exist. Maleta (2020) shows that environmental politics has still patriarchal control and men and masculinities are privileged. Women are experiencing tokenism, sex-segregation and glass ceilings which underscore gender equality.

Despite the importance to promote gender equality, the discourse in sustainable development has been predominantly limited to women – men equality. Next section shows that feminist and gender policies should move beyond these binaries which promote existing stereotypes and, in some cases, lead to counterproductive outcomes for some women and other marginalized groups.

1.4. Gender binaries and stereotypes in environmental policies

Gender policies in environment and sustainability have often assumed gender as a binary category and conflated gender with sex. This has been manifested for example by incorporating sex-disaggregated data as an important component of gender action plans in

climate and other environmental policies (see section 3.2 for details). Sex and gender binaries potentially threaten outcomes of transformative policies and they are only promoting existing assumptions, stereotypes or “myths”. Lau et al. (2021) analysed four of these prevailing gender assumptions in the context of climate policy. These assumptions include that (i) women are caring and closely connected to the environment, (ii) women are homogeneous and vulnerable, (iii) gender equality is a women´s issue, and (iv) gender equality is a number´s game, which means that equal numbers can´t be used as a proxy for empowerment.

A focus on women and the inclusion of their voices has been an important part of a feminist agenda, as noted by Arora-Jonsson (2014), besides the decentering of the male subject of environmental policy, through paying greater attention to women, other marginalized social groups in development and environmental initiatives came into view in the gender and environment debate, promoting the understanding that environments mean different things to different groups of people. Originally introduced by ecofeminist theorizing, “women” who are often responsible for reproduction and subsistence have been presented as closely related to the environment and sharing some “essential” characteristics which make them more sensitive to environmental change.

Gender binaries often rely on essentialist assumptions that link certain traits or characteristics to either masculinity or femininity. This oversimplification disregards the rich diversity of human experiences and perpetuates harmful stereotypes highlighted by Lau et al. (2021). Feminism challenges the notion that there are inherent, fixed qualities associated with each gender and instead emphasizes the importance of recognizing individual autonomy and agency. This includes challenging the idea that gender is strictly limited to a binary system of male and female. Gender is rather recognized as a social construct and that individuals do not fit neatly into the categories of "male" or "female", which is illustrated by non-binary, trans* and queer identities (see section 1.7).

Binary gender systems contribute to the marginalization and exclusion of individuals who do not conform to gender societal norms. Transgender and gender non-conforming people face significant challenges and discrimination due to the rigid normative institutionalized gender binary. Current gender theorizing seeks to challenge these norms and inclusively incorporate the identities and experiences of all individuals. Non-binary, trans* and other gender non-

conforming individuals exist and have their own unique experiences, which are often overlooked or invalidated within a binary framework.

Similar argumentation can be currently found in majority of literature on gender and environment. However, existing stereotypes assumptions are still present. For example, Djoudi et al. (2016) in their review on how gender is framed in climate change adaptation research found that majority of studies still handle gender as a female-male dichotomy and ignore structural inequalities and gendered power relations. Doss et al. (2018) analyse in a similar line of argumentation persistent myths about role and vulnerability of women in agriculture. They question the established stereotypes about the women as poor, victims and saviors of the environment. As they remark:

> "Victim myths assume it is obvious what women need; savior myths assume women want to and can solve all the problems. Both represent a missed opportunity to learn from women and build on their strengths, networks, and knowledge. They also risk increasing women's already heavy work burden, or missing the complementary resources that are needed for women to effectively contribute to sustainable food security." (p. 73).

Overall, it is essential for climate change policies that gender and feminist approaches criticize gender binaries or dichotomies as restrictive, exclusionary, and reinforcing of oppressive systems. They strive for a more inclusive and intersectional understanding of gender, considering individual autonomy and diversity.

1.5. Intersectionality as a lens for global environmental change

Intersectionality is a crucial concept within feminist theory that emphasizes the interconnectedness of different social identities and systems of oppression. Originally introduced by Kimberle Crenshaw (1991) as a perspective on intersections of gender and race in gender-based violence, intersectionality perspective recognizes that gender is just one aspect of a person's identity, and it intersects with other axes of oppression such as race, class,

sexuality, and ability. Advocating for a gender binary fails to recognize the diverse experiences and challenges faced by individuals who always exist at the intersections of multiple subject positions and identities. The intersectionality lens has been recently introduced into the studies of global environmental and climate change (Kaijser and Kronsell 2014, Djoudi et al. 2016, Dietz et al. 2020, Walker et al. 2020, Magnusdottir and Kronsell 2021).

The arguments to incorporate intersectionality into the study of global environmental change, including climate change, include concerns that current approaches to tackle global challenges are based predominantly on technological and economic solutions and don´t appropriately reflect current developments in social sciences and humanities. Another dimension of reasons to think in intersectional perspective is a need to move beyond gender binary, as the extent and intensity of impacts of global environmental change is influenced not only by gender or sex but rather dependent on the position within the society, or better said within the social-ecological systems (Lawless et al. 2021). Therefore, current frameworks aim to analyse the complexity of impacts through the intersectionality lens.

The example of an approach based on intersectionality is ISE4GEM framework (Stephens et al. 2018a, 2018b) which is further introduced in this thesis and applied as an analytical and methodological framework for the analysis of global environmental change policies (section 2.2.1.). Within this framework, intersectionality represents one of the approaches of systems thinking which enables to navigate through complexity in gender, environment and sustainability analysis. Walker et al. (2020) considers intersectionality within the contextual and value-based dimensions of climate change and hazards. Contextual approaches acknowledge the underlying social, economic and political conditions that influence diverse experiences of, and responses to, climate change (Walker et al. 2020, p. 172). Intersectionality enables analysis of differential social impacts and vulnerabilities based on gender, race, age, class, education, disability, and other factors. Concurrently, value-based approaches recognize diverse values of different social groups and reveal power relations which can result in prioritization of some values.

Intersectionality perspectives can differ in developing or developed contexts. Magnusdottir and Kronsell (2021) look at intersectionality from the perspective of institutional feminism in industrialized nations. Industrialized countries usually present regions with high emissions of

greenhouse gases, thus contributing disproportionally to anthropogenic climate change. They are also the centres where current climate policies are being developed and implemented. Magnusdottir and Kronsell (2021) show how representation of women in climate institutions, narrow understanding of "gender" and path dependence in climate institutions still influence how we grasp the complex issue of climate change, as well as the need to generate responses according to the intersectional approach.

In developing regions, global environmental change has been manifested mainly by vulnerability and adaptation discourse (Djoudi et al. 2016). These are regions which are expected to suffer most from climate change, ongoing industrialization and land use change. However, as illustrated by Djoudi et al. (2016), the majority of adaptation studies ignore intersectionality, structural inequalities and gendered power relations. Available evidence shows rather narrow understanding of the concept of gender and often propagates established stereotypes, mainly women – men binaries (section 1.4). The implementation of intersectional approach could help to revise gender analysis in global environmental change and reveal existing power inequalities, oppression systems and injustices from all sources, including capitalism, rationalist science, colonialism, racism, (hetero)sexism and speciesism (MacGregor 2017).

1.6. Feminist political ecology

Feminist political ecology (FPE) is a discipline that embraces majority of scholarship on feminist aspects of global environmental change (Salleh 2009, Elmhirst 2015, Harcourt and Nelson 2015). Roots of the feminist political ecology are in political ecology and related fields, such as feminist cultural ecology, feminist political economy and feminist geography (Rocheleau et al. 1996). Political ecology itself stems from the combination of ecology and political economy and it introduces political dimension into environmental problems. Feminist political ecology emerged as a critic to the traditional science and economy model that undergirds the existing policies of global environmental change. It aims to unveil limits of the economic system regarding the unsustainable use of resources, energy and nature (see section 3.1.1.). Additionally, feminist political ecology develops a critique of marginalization and exploitation of women from environmental perspectives.

Theorizing in feminist political ecology addresses the nature-society relations through a feminist lens. The key issues include the implications of various forms of oppression for the degradation of nature, the exclusion of women and other intersectional identities from science, and the exclusion of women from development and policy-making. Therefore, feminist political ecology builds extensively on ecofeminism, feminist science studies and feminist critiques of development (Sundberg 2017). Feminist political ecology embraces multiple perspectives on global environmental change. It has been convergent of what is described as ecological feminisms or feminist ecologies (Ojeda et al. 2022).

One of the key issues in feminist political ecology has been unequal environmental impacts across space, power relations and gender. Ojeda et al. (2022) devote in their review of feminist ecologies attention to the feminist critique of extractivism. Extractivism can be defined as a model of considering "nature" as mere commodity or resource for human uses, leading to overexploitation of nature under which local communities and environments suffer the damage, but do not benefit from extractivist activities (Ojeda et al. 2022, p. 153). The nature within the capitalist, colonial, patriarchal and racialized system is a source of wealth for some people at the expense of others as well as non-human nature. The extractivism multiplies the boundary between production and reproduction, where social reproduction only supports and serves the capitalist economic production. Clearly, outcomes of these patterns are gendered, and not distributed equally regarding gender and other intersecting categories. Current economic growth and exploitation model has been denoted as a crisis of social reproduction (Agostino et al. 2023).

Feminist political ecology traditionally draws inspiration from feminist science studies (see section 1.1). Theorists such as Donna Haraway have questioned the established mechanisms of knowledge production in the form of situated knowledges (Haraway 1988) and plural interpretations of the ways of knowing, including the importance to account for the apparatuses of knowledge production. Moreover, questioning the divide of nature and culture (Haraway 2016) brings novel ways of theorizing about the ecologies from a feminist perspective. Current thinking in feminist political ecology addresses multidimensional aspects of global environmental change. Intersectionality and incorporation of multispecies justice reflects this multidimensionality (Ojeda et al. 2022). Recently used terms feminist ecology or

ecological feminism better reflect current developments in the theory and practice of feminist political ecology.

Another important source of knowledge in feminist political ecology is ecofeminism. Ecofeminism has been for some time isolated from the mainstream of political ecologies but is subject to critical revision. Ecofeminism constitutes an influential background for the feminist analysis of environmental politics. By linking the oppression of women to the exploitation of nature and consequently, articulating nature/human dualism as a root cause of current environmental crises, ecofeminism initiated theorizing and practice of feminist ecologies reflected in environmental as well as everyday politics. There have been more strands in ecofeminism theory (Warren 2000, Mellor 2013) and it´s beyond the scope of the thesis to discuss a history of ecofeminism in depth. As early ecofeminism struggled with linkages to cultural feminism and sometimes manifested gender essentialism (i.e., women are closer to nature), there are attempts to redefine ecofeminism and make visible inspiration and interlinkages with current materialism, posthumanities and queer thinking. MacGregor (2021) argues that ecofeminist political thought has been largely excluded from current environmental policy debates. The focus is on "everyday environmentalism" in reproductive labour and social reproduction which was a traditional focus of ecofeminism. Gaard (2011, 2015) stresses the ecofeminism's theoretical perspectives on interspecies relations, standpoint theory, intersectionality and queer ecology, to which I turn in next section.

1.7. Queer ecology perspective

Queer ecology interconnects ecological, environmental and evolutionary thinking with feminist science studies, ecofeminism, and queer theory. The focus of queer ecology has been a mutual interaction of nature, gender and sex, and its implications for environmental politics (Mortimer-Sandilands and Erickson 2010). The major concern is to incorporate non-heterosexual and non-binary considerations into the theorizing about nature and materiality of world in general. In simple words, it fosters the interactions between queer studies and environmental studies. However, the programme of queer ecology has grown much wider and

considers complex interactions among human and nonhuman natures in all their intersections and trans*disciplinary approaches.

Equivalently to feminist political ecology, queer ecology has been strongly inspired by ecofeminism. Queer ecology builds on this foundation by expanding the discussion to include diverse sexualities and gender identities. It argues that the oppression of both nature and marginalized communities is interconnected and rooted in similar power structures. Gaard (2015) explores the climate change from the perspective of queer feminist ecology and provides multiple examples of queer approach to ecology. She proposes queer feminist posthumanist climate justice perspectives at the local, national, and global levels, which are needed to intervene and transform both our analyses and our solutions to climate change (p. 21). Queer ecology critiques the heteronormativity inherent in the discourse of global environmental change, such as overpopulation or nature conservation in national parks. Mainstream environmentalism has often been critiqued for its heteronormative assumptions and exclusionary practices. For example, Gosine (2010) revealed the connections among nature conservation, normative white heterosexuality, non-white and homosexual sex and nationalist and colonial projects. These practices can – intentionally or unintentionally – reinforce traditional gender roles and heteronormativity. Queer ecology challenges this normativity, recognizing and valuing the diversity of human identities and relationships with nature.

Among the roots of queer ecology are evolutionary biology and animal studies, revisited from a queer perspective. One of the most influential books in this area is “Evolution´s rainbow” by Joan Roughgarden (2004). Roughgarden provides an extensive account of gender and sex diversity in nature and culture. This includes animal behaviour and same-sex sexuality or gender transitions and transgender in different groups of organisms, including humans. The queer view on evolutionary theory led her to the criticism of “sexual selection” and the proposal of “social selection” theory. However, as observed by Morton (2010), Darwin´s sexual selection theory is not incompatible with queer ecology (Morton 2010). Indeed, as documented by current research, same-sex behaviour could be an early component of the sexual behaviour of species and not just recent derivation from heterosexuality (Monk et al. 2019). Biology can be non-essentialist, as already argued by Morton (2010). Evolution

abolishes rigid boundaries between and within species, and binary essentialism projected into the biology is just manifestation of the prevailing gender order.

Queer ecology can be connected to the "animal turn" in the social sciences and humanities. Eva Hayward intertwines trans* and queer theory with animal theory (Hayward 2010, Hayward and Weinstein 2015). More generally, queer ecology explores wider conceptualizations of nonhuman meanings and deconstructs traditional gender (men/women) and nature (nature/culture) binaries. Trans* perspectives played an important role in defining explorations of queer ecologies, because of the valuable insights into various trans* configurations, trans* ecologies, trans*formations, and trans*corporealities. Explorations of the divisions between nature, nonhuman and human, as well as revision of the relationship between these from the materialist and posthumanist perspectives have been all focus of queer ecology. Recent accounts indeed include porous boundaries between human bodies, sexuality, environment and animals (Vakoch 2020, Wölfle Hazard 2022). Trans* identities have been especially attentive to and critical of existing oppressions and omissions resulting from the cisnormative and heteronormative binaries of the established gender order.

1.8. Anthropocene feminism

Anthropocene feminism was developed to highlight the ways in which feminism and queer theory might offer alternatives to the concept of Anthropocene (Grusin 2017). Anthropocene emerged as one of the influential concepts in global environmental change (see section 3.1.2.). The Anthropocene as a concept has not been limited to natural and environmental sciences and became extensively reflected in humanities and gender studies (Walton 2020). Anthropocene feminism was proposed to highlight the ways in which feminism and queer theory might offer alternatives to masculinist and technonormative approaches to the Anthropocene (Grusin 2017). The recognition that "humans" cause change of the geological scale opens questions about the beginning ("spikes") of the Anthropocene era and about the concept itself.

Anthropocene feminism seeks to explore what feminism can say to the Anthropocene and how does the concept of the Anthropocene influences feminism (Grusin 2017). The Anthropocene feminisms studies emerge from ecofeminism and queer ecology, later building on theorizing in environmental humanities (Neimanis et al. 2015), new materialism and feminist posthumanities (Åsberg and Braidotti 2018). All these disciplines are concerned with the human-nature relations beyond simple dualism, deeper intertwining of environmental and social sciences and humanities, and incorporation of non-human, more-than-human and multispecies situations.

The important contribution of feminist studies to the Anthropocene debate is the focus on capitalist and colonial roots of the Anthropocene era. Jason Moore (2017) in his account of these historical roots of the Anthropocene introduces the concept of Cheap Nature to describe the commodification and exploitation of nature by capitalism. The term “cheap” refers not only to low-cost inputs but also to the ways in which nature´s resources and processes are devalued and treated as external to the economic system. All activity outside of the “economy” system was devalued and appropriated by the capitalist modes of commodification. Therefore, Moore introduces the term “Capitalocene” to characterize largely hidden zones of appropriation of cheap labour, food, energy and resources.

Another source of feminist account of the Anthropocene is provided by Donna Haraway and her concept of the Plantationocene (Haraway et al. 2016). The Plantationocene emphasizes the historical and ongoing impact of plantation systems on the Earth´s ecosystems and societies. It challenges the narrative that the Anthropocene is solely a result of industrialization and instead points to the profound influence of colonial and plantation histories. Haraway argues that the Plantationocene recognizes the long-standing impact of colonialism and the establishment of large-scale agricultural plantations on shaping landscapes, ecosystems, and human societies. It challenges the Eurocentric perspective that places industrialization as the sole driver of environmental change.

Similar to Jason Moore´s emphasis on capitalism in the Capitalocene, Haraway´s Plantationocene underscores the role of capitalist agriculture in shaping global environments. The large-scale cultivation of crops, often monocultures, for profit has had profound and lasting effects on biodiversity, soil health, and water systems. The example is introduction of palm oil plantations which have profound effects on soil carbon and biodiversity in tropical

areas. Haraway´s Plantationocene concept intersects with Jason Moore´s Capitalocene in recognizing the historical roots of environmental exploitation within capitalist systems. Additionally, it resonates with Haraway´s broader vision of the Chthulucene, which calls for acknowledging and nurturing more sustainable and just multispecies relationships (see section 3.1.2).

2. Methods and methodology

This thesis asks how feminist approaches to global environmental change are translated into action at the level of global environmental change and global sustainability policies. Subsequent question is to what extent has been gender incorporated into these strategies and policies. These question are researched through methodological framework of critical frame analysis and policy evaluation of gender integration in strategies and policies. In order to address these questions, the thesis uses a qualitative research approach that combines critical frame analysis with policy evaluation. Four key policies were selected for analysis that include the Sustainable Development Goals, the Disaster Risk Reduction, the UN Framework Convention on Climate Change, and Convention on Biological Diversity.

This thesis applies critical frame analysis approach to the analysis of gender dimension of global environmental change. First, critical frame analysis was developed for the analysis of gender-related frames that shape environmental policies. Methodological approach to critical frame analysis is described in section 2.1. Second, selected policies in the area of global environmental change were evaluated using approaches and tools of gender analysis of environmental policies based on gender integration scale. This enables to analyse the level of gender responsiveness of the policy and future transformative potential. Both areas are mutually inter-related, as the analysis of frames directly translates to the framing in policies. The overall approach could be defined as a "critical policy frame analysis". Gender analysis of policies of global environmental change was performed using the gender scale explained in section 2.2.2.

2.1. Critical frame analysis

Critical frame analysis reflects a discursive approach to the policy analysis and has been approached by various methodological and semantic concepts. Critical frame analysis has been theoretically developed within the social movement analysis but it has been widely applied in gender analysis, public policy and related fields. Critical frame analysis is related to

the discourse analysis. Both are based on similar ontological and epistemological assumptions but may serve different purposes (Lindekilde 2014). As described by Lindekilde (2014, p. 196) on the goals of critical frame analysis:

> "The analytical focus is on how ideas, culture, and ideology are used, interpreted, and spliced together with certain situations or empirical phenomena in order to construct particular ideative patterns through which the world is understood, and which can be used to mobilize support of particular political goals."

Difference between the discourse analysis and frame analysis is often subtle. Lindekilde (2014) compares both methodological approaches. Discourse analysis can then be defined as the study of how social reality is linguistically constituted, via analyses of the interplay between texts, discourses, and wider contexts. It studies how texts are used to communicate particular meanings. Frame analysis focuses on how more or less established ideological constructs are used strategically to frame a particular topic, highlights the strategic and deliberative side of language usage of various actors and explains direction of collective action. In this thesis, the critical frame analysis is applied especially to uncover ideological origins of frames and their feminist revision or critique.

Frames has been described as "schemata of interpretation" and introduced by sociologist Erving Goffman (1986). Frames structure the meaning of reality and they can originate in routines and rules that commonly are applied in certain contexts without an awareness (Verloo 2007). Applied to the analysis of policies, the analysis of frames can provide access to understanding otherwise hidden institutional barriers and constraints in policy making, which relate to differences in knowledge, values, and beliefs that are represented by different frames used by policy actors. As stated by Lakoff (2010), political ideologies are characterized by systems of frames. In his view, there are limited possibilities for changing frames as introducing new language is not always possible. The new language must make sense in terms of the existing system of frames.

Frame analysis has been applied to environmental and gender policy analysis for the analysis of complex policy issues. Policy frames are interpretations of a policy problem that name the phenomenon, determine what actors consider as facts, and normatively imply a course of action. Bosomworth (2015) embeds frame analysis in a discursive-institutional perspective,

which explicitly recognizes that policy and its associated practices are more than technical processes. It highlights the role of frames in shaping decision-making paths of policy and governance, by emphasizing that discourse, which expresses those frames, both structures and is reinforced by policy and practice (p. 1451). Frame analysis has been frequently applied in the area of climate change adaptation policy. Füngfeld and McEvoy (2014) analyse diverging frames in climate change adaptation at the local level. These frames can include for example "avoiding disasters", "community resilience" or "averting organisational risk".

However, frame analysis can also be applied more broadly to the discourse of global environmental change and sustainability. Frame analysis as a method has been applied to analyse themes resonating in environmental sustainability discourse and policies (Woroniecki et al. 2020, Patterson et al. 2021). In the analysis of gender dimension of global environmental change, we can examine how gender frames relate to environmental frames. In the context of this work this means application of gender lens to topics that resonate in environmental discourse and shape policies responding to global environmental change. This could be interpreted as "frame bridging" - the linkage of two or more ideologically congruent but structurally unconnected frames regarding a particular issue or problem (Snow et al. 1986).

Here Fischer (2003) provides a valuable methodological perspective on the analysis of policy discourses and frames within the context of interpretive policy analysis. Frames are organizing principle that transforms fragmentary information into a structured and meaningful whole. Fischer stresses that frames highlight some issues but at the same time exclude others. Competing frames reflect focus on different elements of a policy issue and different sets of beliefs and values assigned to these elements. He also introduces a concept of policy storylines, which are constructions of complex theoretical background and can be considered as narratives which give meaning to specific ecological or social phenomena. He provides an example of "sustainable development" storyline (p. 88) and illustrates how discursive structures are reproduced and established within different positions of actors (environmental protection and economic development, in this case). Policy frames and their underlying appreciative systems can be uncovered through the analysis of the stories of the various participants are disposed to tell about policy situations (p. 145).

The critical frame analysis can be closely linked to the gender analysis of global environmental change policies. However, the frame analysis reflects current discourse and gender analysis is focusing on the content and reflection (or ignorance) of these concepts in environmental policies from gender perspective (or GEMs perspective, respectively). I selected frames dominating the current discourse in sustainability and global environmental change (Table 2). These frames were selected mainly based on my experience with the scientific literature on global environmental change and experience in sustainability discourse. Rather than presenting systematic search of literature, they represent macro-concepts supporting the current sustainability discourse and concepts with extensive impact in scientific community. Indeed, frame analysis can be operating on various levels: at the macro level (such as for a whole society, nation or on the global level), at the meso level (such as for type of actors or policy domain), as well as on the micro level when referring to framing processes by individual actors (Dombos et al. 2012). The selected frames are relevant to the communication of the importance of global environmental change and at the same time they are reflected in scientific assessments supporting the operation of the multilateral environmental agreements and strategies analysed in the next section.

The critical frame analysis can be approached from several perspectives. My approach is focusing on the selection of presented "mega-frames" and further analysis of these frames from a feminist perspective. Within identified frames, there could be identified multiple accompanying frames and discourses.

Table 2. Frames analysed in this thesis from a feminist perspective.

Frame	**Storyline**
Degrowth	Degrowth challenges the established paradigm of economic growth and sustainable development. It calls for reducing material and energy consumption and enhance human well-being.

Anthropocene	Anthropocene depicts new planetary epoch, where humans have become the dominant force shaping Earth's bio-geophysical composition and processes. Feminist critique challenges the universality of the Anthropocene.
Planetary boundaries	Planetary boundaries are human-determined values of the control variable set at a "safe" distance from a dangerous level or from its global threshold. However, the contribution to the exceedance of boundaries is unequal.
Climate change	Human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability. The impacts of climate change are not equal for all.
Ecosystem services	Nature provides multiple benefits for people. The distribution of these benefits is inequitable. Moreover, traditional utilitarian view of nature as a source of economically valued services is challenged.

2.2. Gender analysis of global environmental change policies

The analysis of key policies of global environmental change combined GEMs framework with the gender integration continuum to evaluate the gender mainstreaming in strategic policy documents. All key policies, including Sustainable Development Goals, Disaster Risk Reduction, UN Framework Convention on Climate Change, and Convention on Biological Diversity were analysed regarding the incorporation of gender aspects in their operation and implementation. This section introduces frameworks applied in the gender analysis of environmental policies and describes methodological approach to the evaluation. The

framework used for this analysis is the Inclusive Systemic Evaluation for Gender Equality, Environments and Marginalized Voices (ISE4GMES) which represents a suitable framework for the analysis of gender, environments and marginalized voices. Gender equality scale was applied to evaluate the level of gender outcomes in policies of global environmental change (section 2.2.2.).

2.2.1. Inclusive Systemic Evaluation for Gender Equality, Environments and Marginalized Voices

The Inclusive Systemic Evaluation for Gender Equality, Environments and Marginalized Voices (ISE4GEMs) was developed as a tool for integrated evaluation of sustainable development policies (Stephens et al. 2018a, 2018b). I apply the ISE4GEMs as a guiding framework for the gender analysis of policies around global environmental change. Throughout the thesis, this conceptual framework is denoted as "GEMs" (Gender, Environments and Marginalized Voices).

Methodological and conceptual framework of ISE4GEMs helps to understand and evaluate the combination of challenges, represented by the 17 Sustainable Development Goals (SDGs) introduced by the UN agenda, whose plan is to achieve a better and more sustainable future for all by 2030. ISE4GEMs presents a framework for integrating gender, environment and marginalized voices (GEMs). However, this is not a specific methodological procedure, but presents a conceptual transdisciplinary framework that enables the use of a wide range of methods, including participatory approaches. Within this thesis, GEMs framework (see below) has been applied as a basic organizing framework for the gender analysis of policies in the area of global environmental change.

The evaluation framework ISE4GEMs is based on systems thinking and complexity. ISE4GEMs uses system evaluation methodology, supports methods transdisciplinary evaluation and represents the framework of GEMs, which evaluates social progress in terms of fulfilling the SDGs with regard to the three cross-cutting themes of the sustainable development goals - the environment, the marginalized voices and gender equality (Fig. 1).

Interconnection of these dimensions and their inclusion in the evaluation analysis is what makes ISE4GEMs a completely unique system evaluation concept. ISE4GEMs approach views individual social categories as dependent on different contexts and time-space standards and therefore it cannot be said that there would be identification of groups of actors for every issue universal.

Gender

Many cultures still view gender as a binary concept based on physical anatomy a person comprising only a man and a woman. However, this biological concept fails to capture diversity located along a continuum of diverse gender identities. The concept of ISE4GEMs defines gender equality very broadly and that is because it also applies to sexual minorities and intersex, transsexual and transgender identities generally captured under the acronym LGBTQ+ (Lesbian, Gay, Bisexual, Transgender, Queer and other gender-diverse and gender-non-conforming identities). Achieving gender equality continues to be adversely affected by, for example, poverty or climate change, whose impacts and experiences with them make it abundantly clear that they are not gender neutral. Women, men, as well as transgender people who identify differently may be subject to these influences in completely different ways, especially due to their gender roles or different degrees. The ISE4GEMs concept uses assessment procedures that aim to be gender sensitive, gender transformative and actively contributes to changes in norms, cultural values and power structures that underlie gender inequalities and discrimination.

Environments

At the same time, the ISE4GEMs concept calls for greater efforts to assess the impact of social interventions and environmental policy. The term environment captures both the natural landscape and human-altered landscapes and systems. It includes human-made environments (e.g. cities, refugee camps, parks, gardens), natural environments (e.g. forests, mangroves, marine ecosystems) and socio-ecological features of the landscape of great importance (e.g. farms, mines, oil fields, dams). Impacts caused by climate change and the

depletion of natural resources can include, for example, shortages water, food insecurity, energy infrastructure challenges, disputes over land and its degradation. All these impacts must be considered in terms of current and future climate change. The ISE4GEMs concept uses the term liveability as one way of looking at it on habitability, site ecological diversity, sustainability and health. The ISE4GEMS concept also further considers how the environment affects the ways in which people live (e.g. displacement of people due to conflicts or natural hazards). An important aspect of environmental dimension is also management and decision-making over natural resources – who should be included in decision-making and administration and who is excluded, those most affected have a say, etc.

Marginalized voices

Marginalized voices can include any voice that is more permanently disadvantaged, neglected or not included in decision-making processes. These are groups of people whose voice is given less importance, is discriminated against or even completely excluded from the process decision making. It can be seniors, young people, LGBTQ+ communities, various religious and ethnic groups, gender, persons with disabilities, indigenous peoples, migrants, refugees, HIV-positive, etc. In addition, marginalized voices may also include non-human voices (e.g. the voice of flora and fauna, culture, language, thought, etc.). The ISE4GEMs concept takes into account power relations, it is very important for the evaluator to observe power dynamics. Practicing professional should also be able to question his own position in the system, the difference between herself and stakeholders in the process, should further verify who are the marginalized voices and put questions about important differences, problems and causes of oppression in order to work with them further.

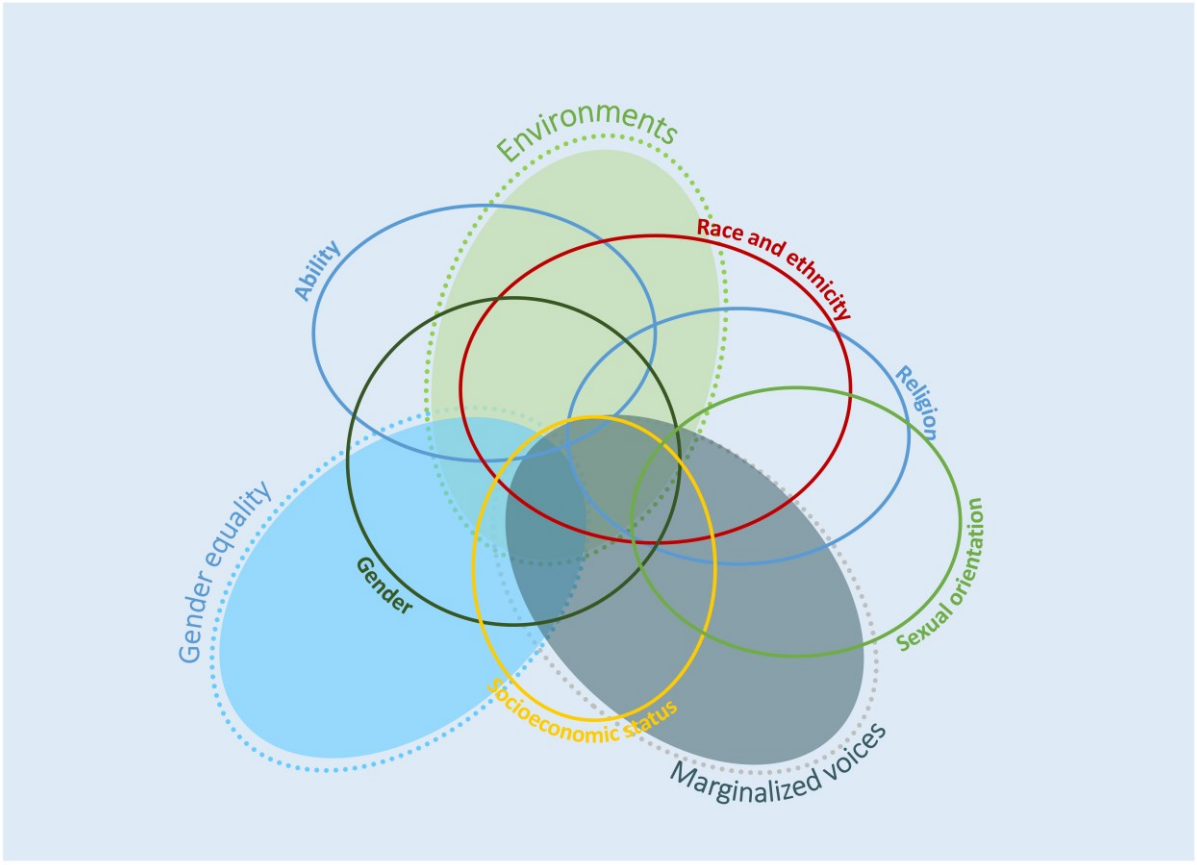

Figure 1. Intersectional systems analysis and GEMs framework. Adapted from Stephens et al. 2018a.

Intersectional systemic analysis considers, in addition to gender equality, the environment and of marginalized voices also the position of the individual in society. ISE4GEMs approach takes into account gender, disability, race, ethnic origin, religion, sexual orientation, social status of the individual (Figure 1). A systems assessment assesses the interactions between economic influences, social influences, structures and people as interrelated systems for purpose elimination of existing inequalities and stereotypes in society. It is important to note that all the GEM dimensions may not always have the same relevance. Some social interventions may be required a deeper analysis of environmental problems and some conversely a deeper analysis of the cultural context (e.g. the concept of recycling may not be common to all cultures).

2.2.2 Gender integration continuum

Gender integration continuum, sometimes called gender equality continuum or gender scale has been introduced as a planning and policy evaluation framework. Originally, it was proposed as a Gender results effectiveness scale (GRES) in the evaluation of UNDP's contribution to gender equality and women's empowerment (UNDP 2015). GRES introduces a scale to assess the outputs or outcomes that have been found to be contributing (positively or negatively) to gender equality and women empowerment. GRES rates results as gender negative, gender blind, gender targeted, gender responsive or gender transformative. Gender negative results have a negative outcome that aggravated or reinforced existing gender inequalities and norms. Gender blind result had no attention to gender, failed to acknowledge the different needs of men, women, girls and boys, or marginalized populations. Gender targeted result focused on the number or equity (50/50) of women, men or marginalized populations that were targeted. Gender responsive result addressed differential needs of men or women and addressed equitable distribution of benefits, resources, status, rights but did not address root causes of inequalities in their lives. Gender transformative result contribute to changes in norms, cultural values, power structures and the roots of gender inequalities and discriminations. The aim is to redefine systems and institutions where inequalities are created and maintained.

This framework has been adapted and adjusted several times. In most comprehensive form, it has been applied in the UNFPA (United Nations Population Fund) and UNICEF (United Nation Children´s Fund) evaluation reports. Gender integration continuum has been applied in UNFPA report on gender transformative approaches to achieve gender equality and sexual and reproductive health and rights (UNFPA 2023). Gender equity continuum was applied for gender analysis in UNFPA and UNICEF evaluation report on female genital mutilation (UNFPA-UNICEF 2021). The evaluation aims to inform the design of the joint programme in the framework of the 2030 Agenda for Sustainable Development. The thematic note introduces gender scale based on the UNICEF technical note on gender transformative

approaches for the elimination of female genital mutilation[2]. The Gender Gender Integration Continuum can be used to determine if and how well proposed interventions are currently identifying, examining and addressing gender considerations. From the policy perspective, it can be extended to the evaluation of gender concerns in policy evaluation. Figure 2 presents categories of gender equality scale which evaluates the policy outcomes regarding the gender sensitivity of a policy. Gender scale ranks policy, programme or intervention from gender discriminatory to gender transformative.

Following definitions are adapted from the thematic note on gender (UNFPA-UNICEF 2021). Gender discriminatory (sometimes called also gender exploitative) policy reinforces harmful and negative gender norms and actively harms women and girls. Gender blind policy ignores gender differences and differing needs of women, men, boys, and girls, and also ignores gender power dynamics and therefore by default tends towards doing harm to women and girls. Gender sensitive policy recognises different needs of women, men, boys and girls and acknowledges gender power dynamics but does not necessarily address these other than to try and integrate an understanding of these dynamics within programme design. Gender responsive policy includes specific action to try and reduce gender inequalities within communities. Finally, the gender transformative policy is designed around a fundamental aim of addressing root causes of gender inequality within society.

The need for gender transformative policies also resonates in environment and sustainability discourse. However, no coherent analysis is available. Most of the gender transformative thinking has been around climate change adaptation, particularly in agricultural and forestry. Resurrección et al. (2019) analyse gender equality in various climate adaptation actions in different sectors. They recommend multi-dimensional, multi-sectoral and holistic approach which addresses four spheres where institutional changes can potentially enable gender-transformative change in adaptation: the citizen sphere, the policy sphere, the organizational sphere, and the delivery sphere.

[2] UNICEF. Technical Note. Gender transformative approaches for the elimination of female genital mutilation. 2020.

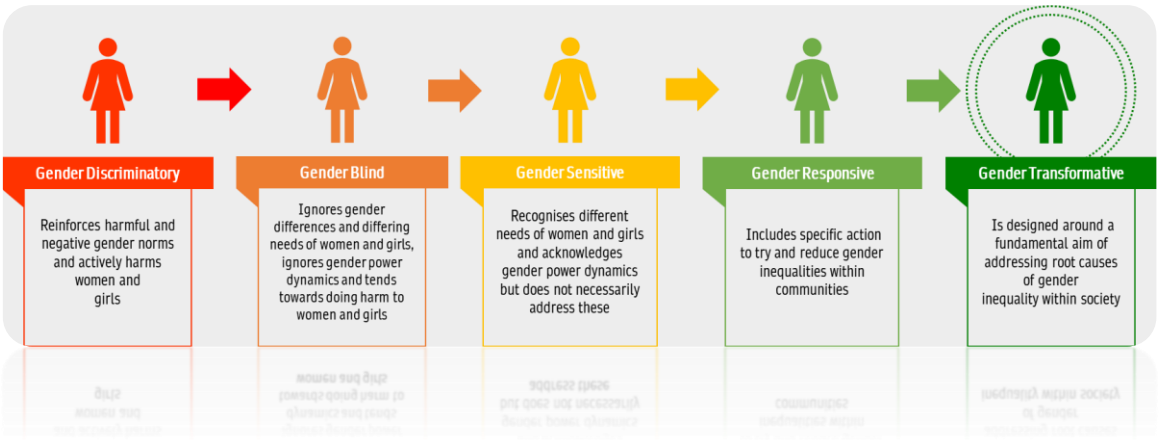

Figure 2. Gender equality continuum diagram for the evaluation of policies. Adapted from UNFPA-UNICEF 2021.

Gender discriminatory policies reinforce harmful and negative gender norms and actively harm women and girls. Gender blind policy ignore gender differences and differing needs of women, men, boys and girls, and also ignore gender power dynamics and therefore by default tends towards doing harm to women and girls. Gender sensitive policies recognise different needs of women, men, boys and girls and acknowledge gender power dynamics but does not necessarily address these other than to try and integrate an understanding of these dynamics. Gender responsive policies and interventions include specific action to try and reduce gender inequalities within societies. Finally, gender transformative policies are designed around a fundamental aim of addressing root causes of gender inequality within society. The ISE4GEMs and Gender Equality Continuum approach share the basis in systemic theory of change (ToC). This approach tries to understand or map the expected change processes of an intervention by making explicit the underpinning value assumptions (i.e. "theory") and risks, providing narrative detail on how the expected change processes will occur and the different factors or variables involved (Stephens et al. 2018a).

Applying frameworks introduced above, I analysed the major global policy documents in the area of global environmental change to assess a level of GEMs integration and a level of the gender integration into these policies. The overview of the evaluation framework is presented in Table 3 below. The analysis is based on the thorough review of those policy documents which could be described as a content analysis. I screened all policy documents for GEMs and

gender integration scale aspects. The reason for introducing both frameworks in details is my attempt to explain which approaches and frameworks guided this analysis. The results of this analysis are presented in next section.

Table 3. Overview of the evaluation framework to analyse environmental policies.

Framework components	
GEMs	
Gender	Gender equality
Environments	Focus on different environments
Marginalized voices	Inclusion of diverse perspectives of minor groups
Gender integration scale	
Gender discriminatory	Reinforce harmful and negative gender norms
Gender blind	Ignore gender power dynamics
Gender sensitive	Acknowledge gender power dynamics
Gender responsive	Reduce gender inequalities
Gender transformative	Address root causes of gender inequality

3. Results

Results are presented in two sections, which include critical frame analysis and gender evaluation of global environmental change policies. Critical frame analysis presents analysis of key concepts in global environmental change from the gender perspective. Gender evaluation of environmental policies presents gender analysis of multilateral environmental agreements and policies.

3.1. Feminist frame analysis of global environmental change

The aim of this critical frame analysis is to show, how gender is, or isn´t, reflected in main concepts of global environmental change and sustainability. The frame analysis is focusing on key concepts resonating in global environmental change debate, namely degrowth, Anthropocene, planetary and social boundaries, climate change adaptation and ecosystem services. These frames present dominating discourse in the feminist analysis of global environmental change.

3.1.1. Degrowth

Degrowth concept received considerable attention as an interpretative frame of the critique of traditional growth economic model (Hickel et al. 2022). Degrowth scholarship received high attention in the disciplines of ecological economics and feminist economics (Berik 2018). Both are concerned with the appropriation of the nature and of the care by neoliberal economic system as a “free” resources and services. Ecological economics agenda has been focusing, inter alia, on dematerialization and ecosystem services as sustainability frames to make visible limits of economic growth. However, despite long-term efforts in environmental protection and governance, global planetary system has been degrading (Gómez-Baggethun

and Naredo 2015). Feminist economics has been focusing, inter alia, on the role of unpaid care in current economic system. The question is how care can be reorganized with regard to transformation towards gender-just degrowth society (Dengler and Lang 2022).

Degrowth perspective has been also addressed in the context of decolonialism, Global North – Global South unequal exchange and feminism (Dengler and Seebacher 2019). As noted by Hanaček et al. (2020), there have been only limited number of studies incorporation feminist perspective into degrowth scholarship. While it is often acknowledged within degrowth studies, that current "imperial" way of living is rooted in patriarchal patterns and gender is one of the key components of some degrowth topics (Fitzpatrick et al. 2022), more in-depth feminist analysis are still missing. As observed by Dengler and Lang (2022), ecological concerns receive more attention than gender concerns in degrowth debate. Labour intensive practices such as management of ecosystems and care work have been, at least partially, substituted by technologies or cheap labour in Global South. Technology or labour substitutes create spillover effects with global teleconnections which lead to ecological and gender unequal exchange. Unequal exchange leads to global resource and care work flows which are driven by consumption centres and saturated from "peripheries". As observed by Hornborg (2016), environmental loads and work is displaced to other populations. Affluence of modern society is founded on the appropriation of human labour and the products of natural space elsewhere.

Degrowth concept has not been without controversy. The critique pertains especially to the individualized perspective of implementing the degrowth. Downscaling of economies based on voluntary basis can be relevant issues for global North, while global south often struggles with ensuring the good and sufficient quality of life. Therefore, degrowth has been suggested as a "transition discourse" rather than a universal strategy (Nirmal and Rocheleau 2019). At the same time, degrowth as well as other alternative economic conceptions, such as solidarity economy, don't directly incorporate gender concerns form the feminist economy and care perspective (Bauhardt 2014).

Degrowth frame is not incorporated into main sustainability and environmental policies yet. However, it appears in scientific assessments supporting the policies, such as IPCC (2022) or IPBES (2022). By incorporating degrowth as one of the leading frames, the importance of alternative visons to economic growth model is highlighted.

3.1.2. Anthropocene

Anthropocene has been introduced as a new geological epoch marked by an increasing human influence on the Earth´s ecosystems (Crutzen 2002). This era has been characterised by the widespread and accelerating impact of human activities on Earth´s ecosystems. Global changes need to be reflected in geological stratigraphic record to be formally recognized as a geological era (Lewis and Maslin 2015). Therefore, several markers ("golden spikes") have been proposed to denote a formal start of the Anthropocene. The proposed boundaries include megafaunal extinctions, origin of farming, biotic exchange following the colonization of Americas, industrialization and "great acceleration". Notably the "Orbis spike" and "Great Acceleration" spike have been proposed as candidates meeting the criteria for Anthropocene dating. Orbis spike located to 1610 captures the biotic homogenization and exchange following the colonization of Americas. Connected event is the extermination of majority of native population and associated forest increase accompanied by decline of atmospheric CO_2. Great acceleration spike is characterized by global radionuclide fall out from nuclear bomb tests. Tree rings, ice cores and sediments record radioactivity from atmospheric ^{14}C and other radionuclides, with a peak in 1964.

However, the identification of the Anthropocene boundary and naming of the period itself can be problematic form the feminist perspective. The common critique of the Anthropocene includes universality of humanity. As noted by Barra (2017, p. 3) as well as many feminist and queer ecology scholar, we need to move from normative figure of universal human, usually represented by white male colonizing modernist Man (Sandilands 2017), towards an expanded theorization of the body, sexuality, materiality, affect, and non-human life. The question is whether the Anthropocene is rather promoting existing gender-nature-culture binaries or rather helping to remove boundary between human and natural. The Anthropocene concept has been undoubtedly promoting the awareness of environmental problems and the role of humans in current environmental crisis. As observed by Walton (2020), Anthropocene recognizes the absolute entwining of human and natural history. On the other hand, Anthropocene has been criticized to promote existing gender, race, class and other social inequalities, even in the name of environmental conservation.

Anthropocene epoch name has also not been automatically accepted within feminist thinking. According to Donna Haraway, Anthropocene should be regarded more a boundary event than an epoch and we should make the Anthropocene as short/thin as possible (Haraway 2015, p. 160). She promotes alternative names for the current epoch, as "Anthropocene" reminds still man-dominated environmental exploitation. Even recent advances in environmental protection can to a large extent reproduce the oppression based on gender, race, class or species. Haraway as well as majority of feminist scholars see the Anthropocene as produced by masculinist capitalist economy, existing gender order and traditional family values. Several recent writings attempt to revisit human-nature relations, including Haraway´s thoughts on hormones and cyborgs (Haraway 2016) or Ana Tsing´s human-mushroom networks in blasted landscapes (Tsing 2014). These views aim to provide novel perspective about the human relationships with nonhuman as multispecies kinship in the light of Anthropocene transformations.

There is relatively abundant literature on relationship between current environmental crisis, heteronormativities and gender binaries, reproduction, environmental reproductive justice and environmental racism. Interrelations between feminist, queer and Anthropocene theorizing can be complex, not only because, as pointed by Walton (2020), personal autonomy of women may seem to be being sacrificed in the name of the planet. The concept of Anthropocene could potentially promote compulsory social-environmental order (Di Chiro 2010) where existing normativities (including sexual, reproductive or family values) support "status quo" of anthropogenic activity and continuing degradation of the ecosystems. These ecoheteronormativities in environmental policies (such as toxic pollution including endocrine disruptive chemicals) have been criticized by queer and trans ecology scholars and this critique can be extended towards the normative concept of good Anthropocene.

Based on the critique of the Anthropocene concept, feminist scholar attempted to put forward alternative visions of the current era. From the feminist perspective, Anthropocene as such can´t be in principle "good". The Anthropocene era is loaded with capitalist, postcolonialist and masculinist regimes, which triggered searching for alternative names of current epoch. The alternative naming of the Anthropocene reflects different perspectives on the development of human-nature relationship. Natasha Myers (2016) proposes the term Planthropocene, which reflects our connectedness to metabolic rhythms of plants. As Myers

argues, we should abandon the notion of human domination and capitalist exploitation and instead focus on the connectedness to plants rhythms and affective ecologies.

Planthropocene shouldn´t be associated with Plantationocene, a term proposed as a reflection of (post)colonialist, capitalist, neoliberal simplification and exploitation of the living ecosystems (Haraway 2015). Plantations are one of the dominant features of the Anthropocene, where ecosystems are transformed onto monocultures and appropriated for global markets, regardless of species loss or human well-being. Thus Anthropocene, Plantationocene, Capitalocene and (M)Anthropocene are just equivalents reflecting the continuing gender and species inequalities. In the Anthropocene (and Plantationocene), we appropriate biomass for economic system. In Planthropocene, we affectively and intra-actively engage with plants.

Restoration of multispecies relations is resonating in alternative visions of the Anthropocene. This include Chthulucene, a name proposed by Donna Haraway (2016). Among the key features of the Chthulucene is the reconstitution of refuges and mourning of losses (Haraway 2016, p. 101). Refuges are becoming scarce as the patchy and "blasted" landscapes support less species. But as illustrated by Anna Tsing, "blasted" or damaged landscapes provide unexpected connections between people and nonhuman species (illustrated by mushrooms matsutake picking) and opportunities for the living "in the ruins of capitalism". The challenge of Chtulucene as a new era is "making kin", that is making diverse multispecies relations (we share common flash). These relations are symbiotic and sympoetic (Haraway 2017).

Visions of the Anthropocene range from bleak futures of environmental degradation and social collapse to ecomodernist visions of "good" Anthropocene. A good Anthropocene has been proposed as a new strategy for creating a more just, prosperous, and ecologically diverse world (Bennet et al. 2016). These initiatives have been called "seeds" of a good Anthropocene. As Bennet et al. (2016) also declare, seeds are initiatives (social, technological, economic, or social–ecological ways of thinking or doing) that exist, at least in prototype form, and that represent a diversity of worldviews, values, and regions, but are not currently dominant or prominent in the world. Examples of seeds include projects presenting technological progress, agricultural innovation or urban transformation. In a couple of cases, the focus is on grassroots projects including ethnic minorities (Idle No More, movement which aims to facilitate the empowerment and activism of First Nations communities across

Canada and fight for traditional land and waters) or women (Makapads, sanitary pad made from waste paper combined with sustainably harvested papyrus which aims to help access to affordable hygiene in Uganda).

The idea of "Good Anthropocene" has its roots in ideas of ecomodernism, expressed in An Ecomodernist Manifesto (2015). Ecomodernist manifesto includes several proposals how to achieve good or even great Anthropocene. It relies largely on technological fixes and technological substitutes to decouple environmental impacts from economic outputs. Resource productivity and new generations of energy technologies are seen as a key achievements improving human well-being, including liberation of women and ethnic minorities from oppression. Ecomodernist view is frequently represented by distinguished ecologists such as Erle Ellis who has been focusing on anthropogenic transformation of the Earth. In his view The Planet of No Return (Ellis 2011), Ellis regards the Anthropocene just as a culmination of human adaptability and resilience, where human will prosper despite changes in biophysical conditions.

The ecomodernist story of continuing progress spurred by human ingenuity omits the environmental and social costs of the Anthropocene. The visions of "Good Anthropocene" occasionally reflect a gender dimension, but without deeper revision of gender roots of current environmental crisis. Therefore, ecomodernist view of "Good Anthropocene" potentially hides the pitfalls of transformation towards sustainability which would promote current ways of thinking about the human-environment and nature-society relations.

While the seeds of Good Anthropocene at least partially address gender aspects, the idea of good Anthropocene itself is based on an ecomodernist notion promoting some of the Western-dominated thinking, including ecoheteronormativity and purity. They are taking Anthropocene epoch as granted, without questioning the gender roots of current environmental crisis. Visions of Good Anthropocene reflect ecomodernist faith that view and demonstrate bright futures and human potential to thrive ecologically on this planet. Feminist visions provide deeper reflections of the roots of Anthropocene, including alternative naming of the epoch. Despite this divide, Anthropocene seems to provide stimulating topic for feminist analysis.

3.1.3. Planetary and social boundaries

Understanding of the human impact on nature, that is biodiversity, climate, biogeochemical cycles and land degradation was synthesized in integrated environmental assessments and has been manifested by transgressing planetary boundaries (Steffen et al. 2015). Planetary boundaries (PB) can be regarded as an indicator framework documenting, that we entered the era of Anthropocene, i.e. transgressed safe operating space typical for relatively stable Holocene conditions in which humanity prospered (Rockström et al. 2009). Planetary boundaries emerged as another powerful concept, together with the Anthropocene and Great Acceleration, providing narrative framework for the increasing human impact on the Earth system. Transgressing save operating space determined by critical planetary boundaries limits bears inherent uncertainties about future development trajectories and possible tipping points leading to different state of the Earth system. Four of the nice identified planetary boundaries are considered to be transgressed beyond save limits (Steffen et al. 2015). These include climate change, loss of biosphere integrity, land-system change, and altered biogeochemical cycles (phosphorus and nitrogen).

There is an increasing understanding that ecological sustainability cannot be divided from social and economic sustainability, or the quality of life and human wellbeing, better said. Kate Raworth proposed a “doughnut” model of economics by combining planetary boundaries and social boundaries. Between these two sets of boundaries lies an ecologically safe and socially just space (Raworth 2012, 2017). Gender equality presents one of the core components of social boundaries. Gender equality is represented by two indicators reflecting inequalities in women and men’s roles and status in political and economic life (Raworth 2017). These indicators are the representation gap between women and men in national parliaments and the worldwide earnings gap between women and men (gender pay gap). As noted by Raworth (2017), comparable indicators of inequalities based on other social differences, such as ethnicity, age, religion, disability, language, sexual orientation, and location, would also be desirable for inclusion.

Planetary boundaries framework has not been scrutinized in depth by feminist scholars. However, authors were ware of some limitations in societal context (Steffen et al. 2015):

> "The PB approach is embedded in this emerging social context, but it does not suggest how to maneuver within the safe operating space in the quest for global sustainability. For example, the PB framework does not as yet account for the regional distribution of the impact or its histor-ical patterns. Nor does the PB framework take into account the deeper issues of equity and causation. The current levels of the boundary pro-cesses, and the transgressions of boundaries that have already occurred, are unevenly caused by different human societies and different social groups. The wealth benefits that these transgressions have brought are also unevenly distributed socially and geographically" (p. 1259855-8).

The theorization on societal boundaries is further developed by Brand et al. (2021). They highlight some of the advantages and disadvantages of the planetary boundaries concept. The strengths are widening the debate beyond climate change, as the planetary boundaries framework incorporates other important aspects of global change, including land system change, biodiversity loss, eutrophication or water. The concept has been reflected in social sciences and humanities and received wide popularity. The weaknesses which authors discuss are the emphasis on technocratic solutions or the maintenance of the "status quo" in the current capitalist economic model or stable Holocene conditions, which did not benefit all people equally. The framing of PB has been partly in accord with some policies, namely climate change. Otherwise, it has not been directly incorporated into policy targets but its impact and communication reach has been significant.

3.1.4. Climate change adaptation

Climate change represents one of the major areas where relatively high attention has been devoted to developing scholarship on the interactions among climate change and gender (Lau et al. 2021). The main areas include impacts and vulnerability, knowledge (co)production, gender equality and gender transformative adaptation and mitigation to climate change.

Knowledge about climate change has been synthesized by the Intergovernmental Panel on Climate Change (IPCC) through Global Assessment Reports (GAR). The IPCC mission statement is formulated as follows: "Through its assessments, the IPCC determines the state

of knowledge on climate change. It identifies where there is agreement in the scientific community on topics related to climate change, and where further research is needed. The reports are drafted and reviewed in several stages, thus guaranteeing objectivity and transparency. The IPCC does not conduct its own research. IPCC reports are neutral, policy-relevant but not policy-prescriptive."

IPCC assessment reports undoubtedly increased broad awareness about the topic of climate change. However, efforts to reach global consensus and presenting "policy-neutral" information has been criticized from the perspective of situated knowledges and feminist epistemologies. This critique entails both the knowledge production process and outcomes. While representation of women in IPCC has grown from 8% in 1990 to 33% in 2021 (Liverman et al. 2022), women are still facing multiple barriers. Perceived gender bias include childcare obligations, not having confidence to challenge others, problems with accessing computers or research materials, inadequate financial support from their home country and limited writing skills. As the sufficient diversity is prerequisite for knowledge production (Nielsen et al. 2017), inclusive environment in climate assessments should be further promoted.

Miriam Gay-Antaki and Diana Liverman illustrate related barriers which women authors face in the process of IPCC report preparation (Gay-Antaki and Liverman 2018). Besides the relatively still low representation of women in author teams, there is a clear intersection with race, nationality, command in English or scientific discipline. The climate change science from feminist perspective thus clearly requires intersectional lens. The insufficient representation of diverse voices, inter alia, affects the generation of knowledge and has epistemological implications. Similar patterns persist in international negotiations under UN FCCC Conference of Parties (COP). Focus on gender balance doesn´t guarantee promotion of gender equality (Gay-Antaki 2020).

These biases pertain to climate science in general. Traditionally, climate assessments have been focusing on physical models and natural science (Turnhout and Lahsen 2022). Only recently, social sciences and humanities are increasingly represented in climate research and IPCC process, mainly regarding climate impacts, adaptation and vulnerability.

Sharolyn MacGregor (2014) is describing stereotypically hegemonist masculinist discourses in climate change which entail technical solutions to climate change. These can be represented by large-scale technologies such as geoengineering or carbon capture and storage. She illustrates the problem of climate change by ecological modernisation and environmental security discourses which both rise from the science-technology-military control of the environment. The above statement of the IPCC provides several important messages. First, it is the consensus of the "scientific community", the Eurocentric science system searching for independent objectivity. Indeed, "objectivity and transparency" is the second aspect of this knowledge. This is based on positivist science framework where there is general faith in the "objective" knowledge. The third aspect is "neutrality" – IPCC reports are regarded as neutral and not policy prescriptive, in other words, they are presented as value neutral and they don´t say what we should do with climate change with regard to ethical or justice issues.

> As noted by Hulme (2010): "Rather than seeking a consensual global knowledge which erases difference and allows the most powerful to determine what is 'known', we need to pay greater attention to the different ways knowledge comes to be made in different places and how different kinds of knowledge gain hold in people's minds, traction in different cultures and assent in global fora."

Important component of the framing of climate change discourse is the adaptation to climate change. Climate change adaptation framing presents an example of techno-scientific discourse and gender stereotypes. Adaptation has been framed as a set of rather straightforward technical fixes which can be implement as universal solutions regardless of inequalities in society. Tschakert and Machado (2012) observe that this technocratic notion of adaptation is intrinsically linked to the concept of global managerialism, representing reductionist perspective of climate change adaptation as a scientific and technological problem.

Climate change impacts, adaptive capacity as well as drivers behind the climate change proved to be highly gendered (Call and Sellers 2019, Rao et al. 2019, Roy et al. 2022). Environmental stress in the form of climate change impacts, including droughts, floods, rainfall variability, land erosion and landslides, glacial lake outburst floods, heatwaves, salinity ingress, coastal erosion and cyclones, among others, contributes to the reduction of women´s agency, together with other contextual factors such as material condition, work, social capital or state interventions (Rao et al. 2019). In addition to environmental stressors,

livelihood interventions aiming at climate change adaptation can further propagate existing vulnerabilities and inequalities (Call and Sellers 2019). The same concern is reflected across the literature on climate change adaptation, vulnerability, resilience and gender (Iniesta-Arandia et al. 2016, Ravera et al. 2016).

Feminist and gendered perspective on climate change adaptation shows, that ignoring gender can lead to maladaptation and increases vulnerabilities of those already burdened disproportionately and/or by creating new types of exclusions (Resurrección et al. 2019). As demonstrated by Rao et al. (2019) in their qualitative comparative analysis across climate change hotspots in Africa and Asia, environmental stress can limit women´s agency and adaptive capacity. Even when household structures and social norms are supportive, or legal entitlements are available, environmental stress contributes to intensifying exclusionary mechanisms, leading to household strategies that place increasing responsibilities and burdens on women, especially those who are young, less educated and belong to lower classes, or marginal castes and ethnicities (p. 969).

3.1.5. Ecosystem services

Ecosystem services form important part of discourse on global environmental change and human – nature relations. The concept entered the sustainability debate with the Millennium Ecosystem Assessment (2005), although we can track its origins back to 70´s and 90´s. The basic idea beyond the concept is that ecosystem change influences human well-being. Ecosystem services categorize various benefits people are receiving from ecosystems. These benefits can be directly or indirectly quantified, valued, priced. In other words, ecosystem services can be expressed in measurable biophysical, economic or social units and their contribution to human economies and other aspects of human well-being can be analysed. Majority of current assessments of ecosystem services presents benefits or nature´s contributions to people as an aggregate flow of supply.

Gender has been identified as one of the key characteristics in disaggregation of benefits to various user groups (Fortnam et al. 2019). While some studies on ecosystem benefit already consider gender, gender has been usually approached as a disaggregation by “sex” (women

and men differences in the use of ecosystem services, different attitudes to ecosystem services, different influence on ecosystem services). As reviewed by Fortnam et al. (2019), some studies document that women tend to value more regulating services while men value more provisioning services. However, these studies are dependent on research design and value classification used in questions.

The benefits people derive from the environment are influenced not only by intensity in ecosystem services supply, but to a large extent also by the structure and dynamic of their use by human population. Similarly to other areas, ecosystem service benefits are not distributed homogeneously and issues of power, access and justice determine who, where and how benefits from ecosystem contributions. Brück et al. (2022) call for a disaggregated analysis of ecosystem services from the perspective of inter- and intragenerational equity issues that remain hidden in aggregate ecosystem service assessments. These include intragenerational equity in relation to power dynamics, trade-offs between different values ascribed to ecosystem services, intragenerational equity across space, and intergenerational equity in relation to sustainable resource use. Therefore, equity issues are not visible in aggregate ecosystem service assessments.

Table 4. Examples of equity issues in the area of ecosystem services

Equity / justice	**Definition**	**Example**
Distributional	Distribution of costs and benefits, allocation and sharing of benefits among people and groups	Individual differences in perception among smallholder farmers (Tauro et al. 2018) Ecosystem services and disservices in rural Ethiopia (Dorresteijn et al. 2017) Importance of ecosystem services in coastal

		communities (Lau et al. 2019)
Recognitional	Recognition of and respect for identity, values and associated rights	Diverse views and values (Loos et al. 2023) Recognition of rights for nature (Chapron et al. 2019)
Procedural	Institutions, governance and participation	Gender quotas in payments for ecosystem services (Cook et al. 2019)

As illustrated in (Table 4), distributional, recognitional and procedural justice and equity issues received some attention in ecosystem service studies. Generally, the linkages between ecosystem services and human well-being, as well as disaggregation of well-being and equity impacts remain understudied (Cruz-Garcia et al. 2017). While gender has been identified as one of the major blind spots in ecosystem service studies (Brown and Fortnam 2018), gender has been approach mainly from the perspective of binary differences among women and men (Yang et al. 2018, Cook et al. 2019). While there exist studies trying to approach the ecosystem services from the multiple justice and value dimensions and from the intersectional approach (Chaudhary et al. 2018, Lau et al. 2019), gender dualism and binaries are still dominating the analysis of gender-related ecosystem services research.

Another critique of the concept of ecosystem services is that it strips nature of its agency. Ecosystems are viewed as passive contributions to human well-being. This resonates in the critique by Kathryn Yussof (2011), who points out:

> "… this new political scene of ecosystem service economies represents a new ontology of biotic subjects – be they plant, animal, microbe or fungi – in which their value as entities is inscribed into capitalist modes of production as the defining characteristic of their life's work." (p. 2)

This reflects concerns from the increasing "economization" of nature, especially in connection to the economic valuation of nature and development of various schemes and

"offsets" in the form of payment schemes for ecosystem services. This critique points to the potential pitfalls of commodification of nature (Muraca 2016) which reduces nature to its instrumental values and enables exchangeable unity measured in monetary equivalents to be traded on markets, thus turning ecosystems into commodities.

The response to the instrumentality and potential commodification of ecosystem services concepts is the introduction of the concept of Natures´s Contributions to People (Diaz et al. 2018). NCP are all the contributions, both positive and negative, of living nature (diversity of organisms, ecosystems, and their associated ecological and evolutionary processes) to people's quality of life. Introduction of NCP aims to benefit from insights of social sciences and humanities and perspectives of indigenous communities. The framework for NCP endorsed by the IPBES recognizes multiple values of nature and presents more diverse and inclusive worldview of nature. Therefore, some scholars see NCP framework as more inclusive of diverse values, although the adoption of the NCP framework wasn´t without a critique. Some of the critique point that ecosystem services concept itself was always inclusive of diverse values and that NCP framework doesn´t go beyond ecosystem services agenda to make values of nature visible.

3.2. Gender analysis of environmental policies

This section contains analysis of global environmental change policies represented by key global strategies, conventions and agreements from gender and feminist perspective. The aim of this analysis is to identify existing gender gaps, to uncover the gender-responsiveness of these policies, and potential elements of gender-transformative potential. This section presents results of the analysis using the GEMs and gender integration scale methodological approach. Table 5 provides a summary of a sample of key policies analysed in this thesis.

Table 5. Global strategies and policies in the area of global environmental change

Topic	Policies	Acronym	Year
Sustainable development	The 2030 Agenda for Sustainable Development (Sustainable Development Goals)	SDGs	2015
Disaster Risk Reduction	The Sendai Framework for Disaster Risk Reduction	DRR	2015
Climate Change	United Nations Framework Convention on Climate Change	UNFCCC	1992
	Paris Agreement	PA	2015
Biodiversity	Convention on Biological Diversity	CBD	1992
	Kunming-Montreal Global Biodiversity Framework	GBF	2022

Gender-transformative approaches span across policies of global environmental change and intersect with gender-related policies, namely The Convention on the Elimination of All Forms of Discrimination against Women and The 1995 Beijing Declaration and Platform for Action. The Global Gender and Environment Outlook (UNEP 2016) concluded that almost no countries have policy frameworks or mechanisms in place that would enable a synergistic view (let alone implementation) of gender and environmental goals. The report looks at various aspects of gender, sustainability and environment, including food security, water and sanitation, energy, sustainable production and consumption, ecosystems, disasters and climate change. The report highlights connection between gender and environment and provides

multiple examples and some suggestions for transformative change but further work to move beyond existing environmental and gender commitments would be needed.

A recent report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment "Women, girls and the right to a clean, healthy and sustainable environment" (UN 2022) further promotes gender transformative action in connection to environmental sustainability. The report calls for gender-transformative action, especially dismantling systemic discrimination against women, girls and gender-diverse persons, empowering them as climate and environmental leaders, and implementing gender-transformative, rights-based climate and environmental action. These cross-cutting reports and initiatives build, among others, on the research and action in major multilateral environmental agreements. In following sections, current situation and possible trade-offs concerning gender mainstreaming, responsiveness and transformative potential is analysed.

3.2.1. Sustainable development

Sustainable development goals (SDGs) are major outcome of the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015. Sustainable development goals present goals in 17 sustainability areas and 169 specific targets. Document Transforming our world: the 2030 Agenda for Sustainable Development (UN 2015) provides plan of action for people, planet and prosperity. Sustainable development agenda and goals are the most complex policy for sustainability and are not strictly only environmental: they aim to balance all pillars of sustainable development, including environmental, social and economic. Therefore, the agenda´s programme includes vision to end poverty and hunger everywhere; to combat inequalities within and among countries; to build peaceful, just and inclusive societies; to protect human rights and promote gender equality and the empowerment of women and girls; and to ensure the lasting protection of the planet and its natural resources (UN 2015).

Gender, women´s and girls are addressed in 26 targets (Annex 1). In preamble, gender is one of the cross-cutting issues and one of the major goals of SDGs agenda. They seek to realize the human rights of all and to achieve gender equality and the empowerment of all women and girls (UN 2015). In majority of targets, gender or women are mentioned explicitly. However, in some sections, text and targets are more generally related to equality. For example, in the preamble SDGs refer to human rights generally, to respect, protect and promote human rights and fundamental freedoms for all, without distinction of any kind as to race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth, disability or other status (Paragraph 19, p. 6). Target 10.2 asserts empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status. Similar references could be interpreted as an intersectional approach to SDGs.

Sustainable development goals directly address gender inequality through Goal 5: Achieve gender equality and empower all women and girls. This goal aims to end discrimination and violence all women and girls, value unpaid care and domestic work, ensure equal participation of women and ensure reproductive rights. Generally, this goal aims to ensure equal rights and promote gender equality and the empowerment of all women and girls. Agenda 2030 seeks gender-sensitive principles and policies, with the recognition of the significant role of women and girls in sustainable development. Gender and women are mentioned frequently in the declaration, including education or agriculture and fisheries. SDGs are directly linked to Beijing Platform for Action, promoting several of the critical areas. One of the key areas of Beijing Platform for Action is women and environment, which promotes involvement of women in environmental decision-making at all levels, integrating their concerns in policies and programmes, and establishing ways to assess the impact of development, sustainability and environmental policies on women.

Other targets, where gender is addressed, include reducing poverty and hunger. As stated in Goal 1, poverty eradication strategies should be gender-sensitive. Women should have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance. Other relevant targets include universal access to sexual and reproductive health-care services, education, adequate and equitable sanitation

and hygiene, employment and labour rights. Related specifically to environment is Target 11.7, related to sustainable cities, which aims to provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities. In the area of climate change, Target 13.a promotes mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.

Sustainable development agenda presents an interesting lesson of feminist´s "mobilizing" to influence sustainable development discourse. As noted by Sen (2018) in her discussion paper, women´s organizations organized under the umbrella of Women's Major Group (WMG) for the negotiations of sustainability policy at Rio+20. The involvement of women´s groups was crucial for advocating several of SDGs goals and targets, including gender equality and human rights in general, but also a range of other issues from different areas. For example, Azcona and Bhatt (2020) see SDGs goals in the area of gender and women´s rights as further progress of Beijing Platform for Action and previous gender equality policies. Gender equality has been made a cross-cutting issues across more SDGs goals (not only Goal 5). Azcona and Bhatt (2020) see SDGs as an accountability framework that can be universally applied to monitor and measure progress, despite existing challenges and shortcomings.

Other analysis of SDGs from feminist perspective raises concerns about the transformational potential in the area of gender and women´s rights. Esquivel (2016) reminds that sustainable development agenda promotes traditional focus on economic growth and conflates this with the broader societal progress. Indeed, no of the sustainability policies considers alternative models of economies, including for example Degrowth (see section 3.1.1). SDGs aim at transformation and equality, but actually doesn't solve root causes of inequalities, power relations and gender relations. Esquivel (2016) recognizes the ambivalent nature of SGDs framework. It contains progressive goals on gender equality, but omits power relations within existing neoliberal economy system. Struckmann (2018) develops similar critique based on postcolonial feminist theory. She notes that agenda doesn´t always reflect lived realities of the poorest and most marginalised individuals living in the Global South and women´s and girl´s empowerment is essential to remove existing inequalities. Similar critique resonates in the

feminist analysis of SDGs. Koehler (2016) reinforces critique that SDGs don´t address deeper systemic issues, especially those related to the economic growth and development.

SDGs present relative landmark, as gender equality and empowerment of women and girls are among the basic and crosscutting goals and targets of the Agenda 2030. However, some of the targets are formulated rather vaguely and their implementation in current world – with existing power inequalities and backlash against gender from conservative and religious groups (Sen 2018) is rather uncertain. SDGs present overwhelming and complex set of policy targets which provide multiple synergies but also potential trade-offs. An example of trade-offs is not only the interaction between economic growth, gender equity and environmental action, as economic growth based on capitalist power distribution exacerbates gender inequalities and protection of the environment. The environmental targets itself, such as climate protection or biodiversity conservation can lead to gender discriminatory outcomes if the interventions are gender blind.

Regarding the evaluation of the SDGs within the framework applied in this thesis, Table 6 provides overview of the gender analysis. Gender equality is predominantly understood as a binary concept covering the equality among women and men, eventually girls and boys. There is no recognition of diverse gender identities, including the Agenda 2030 document.

The SDGs contain elements of an intersectional approach, for example in goal 10.2: By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status. Intersectional approach resonates also in Goal 11 (Make cities and human settlements inclusive, safe, resilient and sustainable). In Target 11.2, it aims to provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons. Similarly, Target 11.7 aims to provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities. Intersectional approach can be observed also in Goal 13 (Take urgent action to combat climate change and its impacts). The review process should be based on evaluations and data which is high-quality, accessible, timely, reliable and disaggregated by income, sex, age, race,

ethnicity, migration status, disability and geographic location and other characteristics relevant in national contexts.

Table 6. Summary of the gender evaluation of SDGs.

Sustainable Development Goals (SDGs)	
GEMs	
Gender	Gender equality is fully incorporated in multiple SDGs
	Goal 5: Achieve gender equality and empower all women and girls
	Gender binary approach, with elements of intersectional approach
Environments	Gender and environment interactions cover especially land-related access, farmers, herders and fishers
	Environmental sectors cover especially climate change and sustainable cities and settlements
Marginalized voices	SDGs explicitly address marginalized communities (Goal 13.b), including the poorest, most vulnerable and those furthest behind
	SDGs address indigenous people, but mainly in the context of food security and education
Gender integration scale	
Gender discriminatory	Reinforce gender binaries
Gender blind	Ignore gender power dynamics in the implementation of majority of SDGs
Gender sensitive	Acknowledge gender power dynamics in some targets, for example Goal 1, 8 and 13
Gender responsive	Reduce gender inequalities, especially Goal 5, 10 and 11
Gender transformative	Some of the targets support gender transformative action, for example 5.4 and 10.2

From the perspective of gender integration scale, SDGs cover multiple aspects across the gender integration continuum. From the perspective of this thesis, SDGs can be evaluated as partly gender discriminatory, propagating gender binaries. On the other hand, several SDGs can be regarded as gender transformative, addressing root causes of gender inequalities. These include for example target 5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.

Another example is Target 10.2 Empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status. Follow-up and review principles should be gender-sensitive, respect human rights and have a particular focus on the poorest, most vulnerable and those furthest behind (74e). Therefore, we can observe the whole spectrum of gender continuum which reflects complexity of, as well as interactions among the SDGs targets.

3.2.2. Disaster risk reduction

The major global document on disaster risk reduction (DRR) is Sendai framework for Disaster Risk Reduction. The Sendai Framework 2015–2030 was adopted at the Third United Nations World Conference on Disaster Risk Reduction, held in March 2015 in Sendai, Japan. The international process is organized within United Nations International Strategy for Disaster Reduction (UNISDR). The Sendai framework aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries (UNISDR 2015). The overarching goal of Sendai framework seeks integrated and inclusive response to disaster risk reduction to strengthen resilience. The framework aims to prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure

and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience (UNISDR 2015, p. 12).

Sendai Framework for Disaster Risk Reduction 2015 – 2030 asserts that gender, age, disability and cultural perspective should be integrated in all policies and practices, and women and youth leadership should be promoted. Empowering women and persons with disabilities became the important component to promote gender equitable and universally accessible response, recovery, rehabilitation and reconstruction approaches to disaster risk management. Women and their participation are critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies, plans and programmes (UNISDR 2015). Priority action 4 aims at enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction. Women and persons with disabilities should publicly lead and promote gender-equitable and universally accessible approaches during the response and reconstruction phases.

The Sendai framework uses the "Build Back Better" principle, which means the use of the recovery, rehabilitation and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalization of livelihoods, economies and the environment (United Nations General Assembly 2016, p. 11). Sendai framework acknowledges that empowering women and persons with disabilities to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation and reconstruction approaches is a key to effective response to disasters (UNISDR, p. 21). A special attention is devoted to the development of early warning system and communication of disasters. As the experience shows, early warning systems are often not tailored to the specific needs reflecting needs of women or indigenous groups.

Gender has been recognized as one of the key guiding principles for the implementation of global strategy for disaster risk reduction (Kimber and Steele 2021, Zaidi and Fordham 2021). As stated in the preamble, disaster risk reduction requires an all-of-society engagement and partnership. It also requires empowerment and inclusive, accessible and non-discriminatory participation, paying special attention to people disproportionately affected by disasters, especially the poorest. A gender, age, disability and cultural perspective should be integrated

in all policies and practices, and women and youth leadership should be promoted (UNISDR, p. 12). Governments should promote people-centred and inclusive approach, with involvement of relevant stakeholders, including women, children and youth, persons with disabilities, poor people, migrants, indigenous peoples, volunteers, the community of practitioners and older persons in the design and implementation of policies, plans and standards.

Table 7. Summary for the gender evaluation of Sendai framework.

Sendai framework for disaster risk reduction	
GEMs	
Gender	Aims to enhance women´s empowerment and participation
	Includes intersectional approach, aims at inclusive and non-discriminatory decision-making
Environments	Focusing mainly on disaster risk reduction, including ecosystem-based approaches
Marginalized voices	Address indigenous people, informal and marginal human settlements
Gender integration scale	
Gender discriminatory	Reinforce gender binaries
Gender blind	Implementation of some actions could be gender blind
Gender sensitive	Women and their participation are critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies, plans and programmes
Gender responsive	Some elements of gender responsive approach, mainly through women empowerment
Gender transformative	Resonates in academic debate

The Sendai framework recognizes women as a stakeholder with specific roles and knowledge, who should provide pragmatic guidance for the development and implementation of normative frameworks, standards and plans for disaster risk reduction. Specifically, women and their participation are critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies, plans and programmes; and adequate capacity building measures need to be taken to empower women for preparedness as well as to build their capacity to secure alternate means of livelihood in post-disaster situations (UNISDR 2015, p. 23). This section presents a turn from women as mere victims of disasters to active agents of change in building resilience and recovery. However, there are still elements of seeing women as a homogeneous and vulnerable group (Yadav et al. 2021).

In this sense, Sendai framework presents an intersectional approach to disaster risk reduction, recognizing specific roles not only of women, but also children and youth, people with disabilities, older persons or indigenous people. Despite limited progress in including gender diversity and gender minorities, Sendai framework marks progress toward inclusion of women´s voices, shifting the discourse from vulnerability and victimization to leadership and empowerment, from homogeneity to cultural diversity. In general, Sendai framework could be evaluated as gender sensitive strategic framework, as it aims to implement gender-sensitive disaster risk reduction policies. Women are seen as critical in achieving effective disaster risk reduction. Women and their participation are critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies, plans and programmes (UNISDR 2015, p. 23). In priority action 4, it aims to empower women and persons with disabilities to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation and reconstruction approaches.

As concluded by Yadav et al. (2021), the current DRR policies and practices do not challenge existing unequal gender relations and power structures. Instead, they accommodate the gender status quo. While international policies remain silent concerning the gender and sexual minorities (LGBTQ+), there is evidence that disasters impact disproportionately gender and sexual minorities due to their marginalisation (Gaillard et al. 2017a, b). As one of the recent studies concluded, there is only minor number of studies focusing on gender-based violence against gender and sexual minorities (van Dallen et al. 2022). Extreme events might influence

particular risks for individuals with diverse sexual and gender identities (transgender, gender non-conforming, lesbian, and gay people). However, LGBTQ+ people face related forms of discrimination and social exclusion, including refusal of social and health services. In policies as well as disaster response and recovery prevail heteronormative assumptions which lead to calls to "queer disaster risk reduction" (Dominey-Howes et al. 2014). Concerning DRR, there is relatively high number of studies analysing and documenting impliucations of disasters for various gender and sexual minorities, LGBTQ+, as well as diverse transgender communities (Table 8).

Table 8. Overview of selected studies on disaster risk reduction and gender and sexual minorities and diverse people..

Disaster	**Region**	**Impacted group**	**Reference**
Tsunami 2004	India	LGBT aravani (hijras)	Pincha and Krishna 2008
Hurricane Katrina 2005	New Orleans, USA	LGBT	Haskell 2017
Haitian earthquake 2010	Haiti	LGBT	Dominey-Hawes et al. 2014
Mt Merapi eruption	Indonesia	LGBT (warias)	Balgos et al. 2012
Tohoku earthquake and tsunami 2011	Japan	LGBT	Yamashita et al. 2017
Queensland floods 2011	Australia	LGBT (trans)	Gorman-Murray et al. 2018
Cyclone Evan	Samoa	LGBT (fa'afafine)	Gaillard et al. 2017a
Typhoon Haiyan 2013	Philippines	LGBT (baklas)	McSherry et al. 2015
Nepal earthquake 2015	Nepal	LGBT	Bengts 2016

3.2.3. Climate change

United Nations framework Convention on Climate Change (UN FCCC) has been agreed in Rio de Janeiro in 1992 and entered into force on 21 March 1994. UN FCCC is one of the three major multilateral environmental agreements agreed in Rio Earth Summit, together with the Convention on Biological Diversity and United Nations Convention to Combat Desertification. Up today, 198 countries have ratified the Convention. In basic text of UN FCCC, there is no mention of gender or women. This reflects an initial state of multilateral environmental agreements which expected impacts of climate change on humanity as homogeneous, without considering marginalisation or stratified vulnerability based on social or gender status.

The UNFCCC has been complemented and updated by several protocols and agreements. The most legally binding is Paris Agreement, which was negotiated in 2015 and entered in force in 2016. Its overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels." Implementation of the Paris Agreement requires economic and social transformation, based on the best available science. This works is supported by Intergovernmental Panel on Climate Change (IPCC) through its Global Assessment Reports. Since countries have obliged to reduce greenhouse gas emissions, they are submitting national climate action plans, known as nationally determined contributions (NDCs). In their NDCs, countries communicate actions they will take to reduce their greenhouse gas emissions in order to reach the goals of the Paris Agreement. Countries also communicate in their NDCs actions they will take to build resilience to adapt to the impacts of climate change.

Paris Agreement addresses gender in the preamble together with the human rights, stating that that climate change is a common concern of humankind. When taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity (Table 9). This approach can be again characterised as an intersectional approach to climate change.

Table 9. Summary of gender evaluation of the Paris Agreement.

Paris Agreement	
GEMs	
Gender	Focuses on gender equality, empowerment of women and intergenerational equity
	Includes elements intersectional approach, climate justice principles
Environments	Primarily climate change, includes integrity of all ecosystems, including oceans, and the protection of biodiversity, recognized by some cultures as Mother Earth
Marginalized voices	Indigenous people and local communities, including traditional knowledge
Gender integration scale	
Gender discriminatory	Reinforce gender binaries
Gender blind	Implementation of some actions could be gender blind
Gender sensitive	Recent progress in gender sensitive climate change analysis and action
Gender responsive	Adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems
Gender transformative	IPCC Sixth Assessment Report and academic literature

In Article 7, the need for gender-responsive adaptation planning is highlighted, stating that that adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge

systems. Within the framework of GEMs, this in integrating gender, environment and marginalised groups, represented by vulnerable groups, local communities and indigenous people. The gender-responsive approach is mentioned in Article 11, concerning capacity-building which should be an effective, iterative process that is participatory, cross-cutting and gender-responsive.

Gender has been mainstreamed into the operation of the United Nations Framework Convention on climate Change (UN FCCC) through Lima Work Programme on Gender (LWPG). United Nations Framework Convention on Climate Change adopted the enhanced five-year Lima work programme on gender and its gender action plan 2019–2024 (UN FCCC 2020). This work programme aims to support gender-responsive implementation of climate policy as well as enhance gender equality. The Lima Work Programme on Gender was established in 2014 to advance gender balance and integrate gender consideration into the work of the Convention and the Paris Agreement. The aim of the Lima work programme is to achieve gender responsive climate policy and action. Enhanced Lima work programme on gender and its gender action plan was agreed at the 25th Conference of Parties (COP 25) in Madrid in 2019 (Decision 3/CP.25).

The gender action plan sets out 5 priority areas, which include a Capacity-building, knowledge management and communication, b) Gender balance, participation and women's leadership, c) Coherence, d) Gender-responsive implementation and means of implementation, e) Monitoring and reporting. Each priority area contains a set of activities, responsibilities and timeline for their implementation. Within the UN FCCC, there are regular meetings, reviews and synthesis reports reporting on the progress in gender action plan. The activities within gender plan are focusing on the improvement of gender equality in the operation of the convention. From the perspective of the ISE4GMES framework, the gender action plan can be characterised as gender responsive. It focuses mainly on gender mainstreaming from the perspective of gender binarities. Women are taken as a homogeneous group which can support equality by sex but is not sufficient for gender-transformative actions. For example, activity A.4 calls for strengthening the evidence base and understanding of the differentiated impacts of climate change on men and women and the role of women as agents of change and on opportunities for women.

From the perspective of marginalized voices, it includes local and indigenous communities. Activity B.3 aims to invite Local Communities and Indigenous Peoples Platform Facilitative Working Group to collaborate and co-host a dialogue to discuss advancing the leadership and highlighting the solutions of local communities and indigenous women and ways of enhancing their effective participation in climate policy and action. Several other activities aim to enhance the participation of women in negotiations, including those representing grass-roots local and indigenous peoples' communities from developing countries, the least developed countries and small island developing States.

The Paris Agreement itself is relatively short on gender equality. It contains elements of intersectional approach, calling to respect and promote human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity. The Paris Agreement supported by the enhanced Lima gender action plan can be regarded as gender responsive from the perspective of gender equality and mainstreaming of women into the operation of the convention and activities of parties. Adaptation action should follow a gender-responsive approach, but no specific actions are related to climate change mitigation.

The IPCC Sixth Assessment Report on Impacts, Adaptation and Vulnerability goes far beyond the Paris Agreement in recognizing a need for gender transformative action in adaptation to climate change. As stated in the Summary for Policymakers, "vulnerability at different spatial levels is exacerbated by inequity and marginalization linked to gender, ethnicity, low income or combinations thereof, especially for many Indigenous Peoples and local communities. Present development challenges causing high vulnerability are influenced by historical and ongoing patterns of inequity such as colonialism, especially for many Indigenous Peoples and local communities" (section B2.4, IPCC 2022). While evidence for transformative action on climate change is sparse, there are some elements of gender responsive actions and policies. As noted in the IPCC report, rather than merely emphasising the inclusion of women in patriarchal systems, transforming systems that perpetuate inequality can help to address broader structural inequalities not only in relation to gender, but also other dimensions such as race and ethnicity (IPCC 2022).

3.2.4. Biodiversity conservation

The major policy document is Kunming-Montreal Global Biodiversity Framework, which was adopted at the 15th Conference of Parties to the Convention on Biological Diversity (COP 15) in Montreal in December 2022. Global Biodiversity Frameworks sets post-2020 agenda for biodiversity conservation. The vision of the Kunming-Montreal global biodiversity framework is a world of living in harmony with nature where: “By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people” (CBD 2022).

The Convention on Biological Diversity (CBD), in its preamble, recognizes “the vital role that women play in the conservation and sustainable use of biological diversity and affirms the need for the full participation of women at all levels of policy-making and implementation for biological diversity conservation”. Previous Strategic Plan for Biodiversity 2011-2020 (so called Aichi targets) already incorporated elements for gender mainstreaming. This includes following strategic goals (CBD 2011): Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services, Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, considering the needs of women, indigenous and local communities, and the poor and vulnerable.

The CBD has been devoting special attention to the rights and inclusion of indigenous people and local communities. The framework acknowledges the important roles and contributions of indigenous peoples and local communities as custodians of biodiversity and partners in its conservation, restoration and sustainable use. The framework’s implementation must ensure that the rights, knowledge, including traditional knowledge associated with biodiversity, innovations, worldviews, values and practices of indigenous peoples and local communities are respected, documented, and preserved with their free, prior and informed consent, including through their full and effective participation in decision-making, in accordance with relevant national legislation, international instruments, including the United Nations Declaration on the Rights of Indigenous Peoples, and human rights law (Section C.8).

Within the Convention on Biological Diversity, global biodiversity framework represents post-2020 strategic goals for biodiversity and was finally negotiated in Montreal. The main

motto of the strategic vision to 2050 is “living in harmony with nature”. Living in harmony with nature makes an implicit presumption of incorporating gender perspective into the operation and implementation of the Convention on Biological Diversity (CBD 2019). The strategic vision states as the purpose of conservation and valuation of biodiversity the aim “maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people”. However, fair distribution of all benefits requires that women as well as other groups have equal access, ownership and control over biological resources and benefits. As stated by the submission by the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women 2018) as an input to the development of the post-2020 global biodiversity framework, women can also be disproportionately and negatively affected by conservation initiatives, which can in turn influence their attitudes and incentives to prioritize conservation efforts.

Global biodiversity framework incorporates gender responsive approach in targets 22 and 23 (Table 10). Target 22 aims at full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making, and access to justice and information related to biodiversity by indigenous peoples and local communities, respecting their cultures and their rights over lands, territories, resources, and traditional knowledge, as well as by women and girls, children and youth, and persons with disabilities and ensure the full protection of environmental human rights defenders. Target 23 wants to ensure gender equality in the implementation of the framework through a gender-responsive approach where all women and girls have equal opportunity and capacity to contribute to the three objectives of the Convention, including by recognizing their equal rights and access to land and natural resources and their full, equitable, meaningful and informed participation and leadership at all levels of action, engagement, policy and decision-making related to biodiversity.

The process of the post-2020 global biodiversity framework aims to be gender-responsive, by systematically integrating a gender perspective and ensuring appropriate representation, particularly of women and girls. The Convention on Biological Diversity launched programme on gender as a cross-cutting issue on gender and biodiversity. Parties to the CBD agreed that the process for the preparation of the post-2020 global biodiversity framework will be gender responsive by systematically integrating a gender perspective and ensuring appropriate representation, particularly of women and girls, in the process (CBD 2018). As

stated in the decision, efforts should be made to advance the collection, analysis and use of gender-sensitive data, including data disaggregated by sex. Previously, CBD developed 2015-2020 Gender Plan of Action under the Convention on Biological Diversity.

Table 10. Summary of gender evaluation of the global biodiversity framework.

Global Biodiversity Framework	
GEMs	
Gender	Gender equality and empowerment of women and girls and reducing inequalities
	Partly intersectional, recognising the role of women and girls, children and youth, and persons with disabilities
Environments	Biodiversity, all ecosystems and ecosystem services
Marginalized voices	Indigenous people and local communities, including traditional and local knowledge
	Diverse values of nature through IPBES assessment
Gender integration scale	
Gender discriminatory	Reinforce gender binaries
Gender blind	Implementation of some actions could be gender blind
Gender sensitive	Recent progress in gender sensitive biodiversity conservation
Gender responsive	Gender-responsive approach where all women and girls have equal opportunity and capacity to contribute to the three objectives of the Convention, including by recognizing their equal rights and access to land and natural resources and their full, equitable, meaningful and informed participation and leadership at all levels of action, engagement, policy and decision-making related to biodiversity.
Gender transformative	Potential synergies with transformative action

While GBF does not explicitly address intersectional approach, it substantially promotes diverse views and values of nature. The framework recognizes and considers these diverse value systems and concepts, including, rights of nature and rights of Mother Earth, as being an integral part of its successful implementation. The recognition of diverse values of nature is one of the important contributions of the CBD policy to the global environmental change discourse. Current IPBES (Intergovernmental Platform on Biodiversity and Ecosystem Services) Assessment on Diverse Values of Nature supports the implementation of the global biodiversity framework through the recognition of potentially marginalized values (for example, instrumental values versus values held by local communities).

The post-2020 process highlight the importance of a gender perspective to the implementation of the Convention, and the need for biodiversity conservation, policies, frameworks and processes to reflect women's contributions and strengthen their capacity as agents of change (CBD 2019). The COP 15 adopted a Gender Action Plan. The purpose of the gender plan of action is to support and promote the gender responsive implementation of the post-2020 global biodiversity framework. The plan will also support a gender responsive approach to applying the implementation mechanisms associated with the framework (CBD 2022).

The gender plan of action aims at maximizing synergies between gender equality and the conservation, sustainable use and the fair and equitable sharing of benefits arising out of the utilization of genetic resources considering also the consequences of climate change and land and sea use change as drivers of biodiversity loss (CBD 2022). Gender plan of action promotes intersectional approach, recognizing that women and men and boys and girls around the world experience marginalization in different, multiple and intersecting ways depending on their ethnicity, social status, caste, age, and environment, among other factors (CBD 2022). This reflects structural barriers and power imbalances that hamper inclusiveness of the whole of society and prioritize the needs and interests of all women and girls, with particular attention to those facing all forms of discrimination. Another strong aspect is the meaningful and effective engagement and empowerment of women and girls from indigenous peoples and local communities. Indigenous women and girls and those from local communities are integrally involved in the conservation and sustainable use of biodiversity, and yet continue to face discrimination and remain marginalized in decision-making processes, access and ownership over resources including land (CBD 2022).

From the perspective of GEMs framework, GBF incorporates marginalized voices through the representation of indigenous peoples and local communities groups. There are elements of an intersectional approach, including women and girls, children and youth, and persons with disabilities. Traditionally, the CBD agenda addresses equal rights to benefit sharing, traditional and local knowledge and access to land and rights over biodiversity use and natural resources. However, gender transformative potential has not been fulfilled. For example, original proposal of GBF incorporated persons of diverse gender identities but this wasn´t incorporated in final text as national delegations felt they don´t have mandate to go beyond traditional binary and heteronormative policy. GBF presents gender responsive approach, gender transformative potential can´t be directly and explicitly recognized in GBF.

3.3. Summary of results

This section presents results of the feminist frame analysis of key concepts resonating in the global environmental change discourse and the gender evaluation of key policies of global environmental change and sustainability. There is a clearly identified need to move from gender blind to gender transformative action towards sustainable life on the planet within planetary boundaries. However, these calls are framed by concepts rooted in Western science dominated, postcolonial setting which promote gender binaries and dualistic view of the society and nature. Gender equality is predominantly framed as an equality between women and men, without deeper examination of structures, processes and relationships of power between and among groups of men and women and how gender, particularly in its non-binary form, intersects with other social categories such as race, class, socioeconomic status, nationality or education to create multi-dimensional inequalities (IPCC 2022).

Marginalised groups are predominantly represented by indigenous people and local communities but the real representation of all stakeholder groups in decision-making would require deeper analysis. Marginalized groups still experience epistemic injustice regarding the influence on the design, negotiation, and implementation of policies. As evident from the article by Byskov and Myams (2022), which analyse epistemic injustice related to indigenous

people, indigenous peoples have been explicitly recognized within international environmental policies but the national, regional or local implementation of these policies is epistemically unjust towards them. Therefore, they face epistemic injustice as a result of their epistemic oppression which can further promote existing inequalities at multiple levels. This form of epistemic injustice probably extents towards the other marginalized communities influenced by global environmental change or policies implemented to mitigate it.

Undoubtedly, there was a progress in gender mainstreaming, especially regarding the gender equality. All the analysed policies aim to be gender responsive. However, the current discourse on global environmental change has been reflected in major policies only to a limited extent and there are still gaps in gender mainstreaming. One of the most progressive signs has been the reflection of an intersectional approach to global environmental change, vulnerability, and sustainability. This is to some extent reflected in all policies analysed. The literature on feminist critique and analysis of global environmental change provide inspiring collection of gender transformative visions. Hopefully, they will be incorporated continually into the implementation of the conventions, strategies and policies. Currently, there can be identified some seeds of this transformation.

4. Discussion

Policies on global environmental change have made a progress in incorporating gender in their work program. Gender Action Plans and gender mainstreaming became a component of operation of major multilateral environmental agreements such as United Nations Framework Convention on Climate Change and Paris Agreement, Convention on Biological Diversity or Sendai Framework for Disaster Risk Reduction. Gender balance and participation of women has been slowly increasing (Liverman et al. 2022). However, sufficient representation of women and other relevant groups (such as indigenous people) automatically doesn´t translate into gender equity.

As documented in this thesis, major international policies made some progress in incorporating gender equality and eventually, intersectionality into operation of multilateral environmental agreements. Major policies on global environmental change and sustainability can be regarded as gender responsive, although the thorough evaluation of the implementation remains incomplete and partial. This progress has been enabled, inter alia, by the activities of various women´s groups and resonance of gender and feminist topics in environmental arena. However, international policies aiming to tackle problems of global environmental change still possess features of binary, heteronormative and essentialist assumptions. Despite increasingly incorporating gender lens and shifting towards gender responsiveness (e.g. by adoption of Gender Action Plans), global environmental policies still inherently substantiate existing gender order, i.e. heteronormative and binary perspective on gender equality and action. Moreover, they remain rooted in neoliberal discourse of economic growth and don´t sufficiently address existing inequalities and injustices.

Critical policy frame analysis was applied to analyse to what extent feminist and gender concerns has been addressed in existing global policies to tackle global environmental change. Originally used in the social movement theory, frame analysis presents useful framework to analyse ideological roots of current concepts used to solve global environmental and sustainability problems. While all of the analysed topics mobilized social movements at different levels, the analysis of collective action and the success of social movements has not been the subject of this thesis.

The frames selected for the analysis are neither exhaustive list of all frames nor mutually independent. They are often interlinked in various analysis and various interactions. For example, the recent publication on Earth System Boundaries (Rockström et al. 2023) builds upon and expands planetary boundaries concept. Within ESB, Anthropocene is used as the main rationale for the introduction of the concept of Earth System Boundaries, that humanity is moving rapidly away from the stable Holocene state of the past 12,000 years. Nature contributions to people are representing the major functional parameter of biosphere planetary boundary, i.e. the area of largely intact natural ecosystems and the functional integrity of all ecosystems, including urban and agricultural ecosystems. Climate change planetary boundary defines safe limit for warming and triggering the climate tipping points. Here, an ESB climate frame is linked to policy frame, as stabilizing at or below a safe ESB of 1.5 °C warming avoids the most severe climate impacts on humans and other species, reinforcing the 1.5 °C target set in the Paris Agreement on Climate Change.

4.1. Towards gender transformative policy and practice

Gender transformative approaches aim to transform the power dynamics and structures that serve to reinforce social and gendered inequalities. Specifically, it intends to change discriminatory political, social and economic practices and the patriarchal norms that obstruct positive change (Resurrección et al. 2019). Established evidence shows that both global environmental change impacts and potential distributive impacts of the environmental policies are highly gendered and can promote existing gender and other intersecting inequalities. Resurrección et al. 2019 provide multiple examples how gender transformative approaches can be promoted in various sectors related to climate change adaptation. These can be considered at the level of organizations, policies, citizens and delivery. While global policies already launched gender-responsive gender action plans, there are still persisting multiple gaps in gender mainstreaming.

MacArthur et al. (2022) provide five unifying principles for gender transformative approaches. Their analysis provides observation that implementing environmental and development policies within the existing gender norms doesn´t provide required gender transformative change. This is a situation we can observe across analysed global environmental change policies (sustainability, climate change, biodiversity, disaster risk reduction. Gender responsive actions and plans are not leading to broader societal transformations, including gender transformation. In principle 4, they call for recognising and valuing diverse identities, which is in accordance with the recognition of intersecting marginalized voices (Stephens et al. 2018). Even gender transformative approaches are often stuck within the women – men binaries and they are not considering intersectionality or trans* or other gender non-conforming identities. This includes integration of diverse individuals into research and practice to foster gender-transformative approaches.

Another important aspect – which is however not directly addressed in this thesis – is how existing global policies and processes translate into decision-making at the regional, national, and local levels. European Green Deal can be considered as a key European framework to implement global policies, including Sustainable Development Goals and Paris agreement, specifically to ensure climate neutrality by 2050. In their feminist analysis of European Green Deal, Heffernan et al. (2022) found that EGD (including policies on energy, transport, and agriculture, nature and food security) is gender blind and achieving ambitious and transformative climate and gender policies requires a fundamental shift in the concepts underlying EGD policies, including a strong intersectional approach. They call for what they describe as feminist wellbeing economy that centres around care and wellbeing for human beings and nature instead of GDP growth.

The same pertains to national policies. According to the recent OECD report (OECD 2023), the gender-environment nexus, that is the level of integration between gender and environmental policies varies widely. Only 5 out of 28 responding countries always consider gender aspects when building environmental policies. The Czech Republic belongs to countries that apply gender mainstreaming approaches or tools related to environmental policies only in selected areas. The Czech Republic has a national strategy on gender equality and gender equality (equality of women and men) is incorporated in the national strategy on sustainable development. However, the Czech Republic belongs to countries which never

consider gender aspects in environmental policy-making. Therefore, the gender-environment nexus is underdeveloped in decision-making in the Czech Republic. This is reflected also by the gender-blindness of existing main national environmental policies, including the Strategy on Adaptation to Climate Change in the Czech Republic, National Biodiversity Strategy, and National Strategy on Disaster Risk Reduction. There are also evident gaps in environmental leadership and women are underrepresented in environmental decision-making.

4.2. Beyond binaries, stereotypes and normativities

Research on gender in global environmental change (e.g. behaviour, attitudes, etc.) usually treats gender as a binary category. The same applies to framing of gender equality in global environmental policies. Gender has been used equivalently to "sex", differentiating women and men "typical" attitudes and behaviour. Majority of empirical studies still presents gender as a binary category representing only two "sexes" – men and women. While the analysis disaggregated by sex can provide in some cases useful information and starting point for addressing gender inequalities, it doesn´t represent gender analysis itself. Gender serves as an analytical framework for deeper insights into the existing inequalities and power relations. Therefore, gender can´t be approached through binary and dichotomy concepts based on biological sex (Lau et al. 2021). The complexity of gender in global environmental change and sustainability research has been increasingly addressed by using the intersectional approach.

Another barrier is inclusion of marginalized voices, LGBTQ+ people and creation of sufficient participation in research and policy. Recently, there is expanding literature on the inclusion of LGBTQ+ in research, specifically ecology. For example, LGBTQ+ ecologists can face discrimination, sexual assault and harassment, discriminatory housing arrangements, hostile attitudes and oppression during the field work, often in remote areas (Coon et al. 2023). Specific situations face transgender and other gender non-conforming people, who can be exposed to transphobia, accessibility of healthcare or medication, travel and accommodation and related issues (Matsuda 2023). There are calls to diversify ecology (in the

context of STEM diversification), as historically excluded groups face disproportionate obstacles not only in fieldwork, but discriminatory stereotypes and the pervasive gendered and racialized social hierarchies in scientific institutions (Primack et al. 2023). Various disciplines and institutions still must learn how to promote, practise and advance diversity, equity, and inclusion.

Despite a progress in scholarship on gender and global environmental change, prevailing gender narratives still incorporate women´s victimization and vulnerability, as well as "virtue" and more positive attitudes towards environmental protection and care (Arora-Jonsson 2011). While in many parts of the world and in many settings, women are highly vulnerable to impacts of climate change and environmental disasters, this inequality is a result of socio-cultural context, norms and marginalisation. The "essentialization" argument has been largely rejected in recent literature (Gaard 2011, Kaijser and Kronsell 2014, Djoudi et al. 2016, Fletcher 2018, Lau et al. 2021). Women can´t be considered as a homogeneous group with some essential characteristics which would determine universally vulnerability, environmental attitudes or agency. Gender and sex intersects with other categories of position within the society, such as ethnicity, race, age, class, disability, sexual orientation, religion, and others.

4.3. Reconciling human-nature relations through gender lens

The analysis of key frames and concepts currently resonating in global environmental change discourse and environmental policy reveals deeper incongruity. It is related to the terms "environment" and "environmental policy" itself. Current texts of major environmental and sustainability policy documents (analysed in this thesis) fall short of incorporating directly shifting discursive frames such as "degrowth" or "Anthropocene". The reason is that these frames are questioning established "frames" or paradigms of sustainable development and nature conservation. Questioning such deeply rooted concepts like economic growth and

nature requires novel framing of human-nature relations. Here, feminist approaches offer a plethora of concepts and theorization which can be useful in widening this perspective.

Biermann (2021) argues that the terms "environment", "nature" and "environmental policy" are no longer tenable. The main reason for this argument is the interconnectedness of human, non-human and ecological systems (Biermann 2021, p. 64):

> "This constructed dichotomy of humans and their environment, however, no longer aligns with advances in integrated system analysis and discussions of the 'Anthropocene'. The more recent perspectives emphasize instead the complete integration of human and non-human agency in complex socio-ecological systems, from local scales – such as forests or water bodies – up to regional scales, such as the Alpine region, and the entire earth system. A socio-ecological system perspective breaks down conceptual barriers between humans and their 'surroundings' and integrates them in a complex understanding where agency is diffuse, interactions are dynamic, and boundaries become blurred."

Therefore, we should not see humans as surrounded by their natural environment, but rather as a component of complex social-ecological systems which are gendered (Lawless et al. 2022). The thesis aimed to link gender and environment, feminist frames with environmental change frames. Here, I would like to provide some examples of either convergent concepts or parallelly similar framings which can assist reconciliation of global environmental change narratives. First is the frame of social-ecological systems (Liu et al. 2007, Ostrom 2009) and the frame of naturecultures (Haraway 2016, Merrick 2017). Both frames aim to overcome the dualistic split of "nature" and "culture". While they share some similarities, they also have distinct features. Social-ecological systems emphasizes the interconnectedness of social and ecological elements. It considers human societies and their environments as integrated systems, examining how changes in one component can affect the entire system. SES often focuses on understanding feedback loops, resilience, and adaptive capacity. Naturecultures, on the other hand, is a term rooted in cultural studies and posthumanism. It challenges the traditional separation of nature and culture, viewing them as intertwined and co-constitutive. Naturecultures explore how cultural practices shape and are shaped by the environment, blurring the boundaries between the natural and the cultural.

Social-ecological systems typically see human societies as embedded within and interacting with ecological systems. It recognizes the dependence of human well-being on the health of ecosystems and strives to find sustainable ways for the two to coexist. Naturecultures goes beyond the human-environment dichotomy by emphasizing the mutual construction of nature and culture. It questions the idea of a separate, untouched nature and highlights the dynamic, co-evolutionary relationship between human and non-human entities. Both framings aim to overcome the split between society, nature and culture. However, the framing and discourse use different language and methodological apparatus, which in some studies can be convergent.

Another example which I would like to use is the frame of Human appropriation of net primary production and the Plathropocene, a framing proposed by Natasha Myers (2016). Both frames are related to the essential ecological process on the Planet – photosynthesis. Human appropriation of net primary production (HANPP) quantifies the degree to which human activities alter natural ecosystems by appropriating a significant portion of the Earth's primary production. It highlights the human impact on the flow of energy through ecosystems and the potential consequences for biodiversity and ecosystem functioning. HANPP has been recently incorporated into the planetary boundaries concept (Rockström et al. 2023). HANPP is often used to analyse specific regions or ecosystems, providing insights into how human activities affect local and global patterns of primary production. It is a quantitative measure that allows for the assessment of changes over time. HANPP is rooted in ecological and environmental sciences, particularly in the study of human impacts on ecosystems and the quantification of ecological footprints, and it enables quantification of displacement and inequalities in global demand for photosynthetic products.

The Planthropocene framing challenges anthropocentrism by foregrounding the agency of plants (Myers 2016). It invites a re-evaluation of human-nature relationships, recognizing plants not just as resources for human use but as active participants in shaping ecological dynamics and human cultures. HANPP and the Planthropocene offer different lenses through which to understand the human-environment relationship. HANPP provides a quantitative measure of human impact on primary production, while the Planthropocene challenges traditional narratives by highlighting the agency of plants in shaping human societies and ecosystems. The Planthropocene emerges from a more interdisciplinary approach, drawing on

anthropology, cultural studies, and posthumanism. It encourages a rethinking of human-centred narratives through a lens that includes the agency of non-human entities. While not directly prescribing policy measures, prompts a reconsideration of human interactions with plants and nature in a way that might influence conservation practices, sustainable agriculture, and cultural attitudes towards the environment.

Feminist lens and analysis contribute to the revision of human-environment interactions. The feminist critique of established terms and concepts, such as Anthropocene, planetary boundaries, ecosystem services or degrowth can expand our understanding of current limits of technologically-led transitions towards sustainability. Environmental (post)humanities, Anthropocene feminism, feminist and queer ecologies can help navigate towards these transitions at the level of paradigms and values. As already outlined above, some of the "frames" and concepts used in global environmental change discourse are convergent or mutually intertwined. For some other, feminist critique provide an opportunity for revision and rethinking in the context of these framings.

5. Conclusions

In this thesis, I tried to show that existing environmental policies fail to incorporate current feminist thinking and thus still miss their gender-transformative potential. Additionally, they don't sufficiently reflect developments in sustainability and planetary science, which are in some cases convergent to feminist analysis, mainly through better integration of social science and humanities.

Main conclusions of this thesis can be summarized in following points:

First, global environmental change problems have been framed mainly as a scientific, technical and technological issues. Later, economic implications have been stressed as an important framing of the costs of global environmental change. Current calls to include

knowledge perspectives from social sciences and humanities should be promoted. Feminist critique of established concepts can provide required reflection and revision of existing frames and paradigms.

Second, current global policies of global environmental change moved from gender blind stage and incorporated gender equality concerns which are declared as gender sensitive. However, despite increasing recognition of the unequal and gendered impacts of global and planetary change, the implementation and practice of major global environmental policies is still far from gender transformative action.

Third, all major global environmental and sustainability policies present women and men as a binary concept, not considering diversity of identities, including LGBTQ+. However, positive message is that we can observe elements of an intersectional approach in the formulation of these policies, including concerns for marginalised groups, indigenous people and other marginalized voices and diverse values. Intersectional approach covers also concerns for all people, irrespective of sex, age, race or ethnicity, specifically including people with disabilities, poor people, children and youth, indigenous people, local communities and other groups.

Fourth, inclusion of marginalized voices, including LGBTQ+ people, is receiving increasing attention in scientific discourse, However, it doesn't translate to sustainability and environmental policies yet, which are therefore missing their gender transformative potential. Current emerging work tries to develop guidelines and principles for the inclusion of LGBTQ+ persons, thus increasing diversity in research and practice and creating inclusive and safe workplaces.

Fifth, global sustainability and environmental change are closely interlinked with existing gender, power, social and economic inequalities, creating multiple synergies and trade-offs. Therefore, global policies need to consider these interactions, not providing solutions in "silos", but carefully inspecting all possible implications within the context of planetary and social boundaries, shifting towards the gender transformative environmental and sustainability policies.

A feminist lens and analysis contribute to the revision of human-environment interactions. The feminist critique of established terms and concepts, such as Anthropocene, planetary boundaries, ecosystem services or degrowth can expand our understanding of current limits of transitions towards sustainability.

6. Technical note on positionality and content of the thesis

The aim of the thesis is to summarize feminist perspective on pressing environmental topics and provide a literature review to guide my future interdisciplinary research.

I was trained as environmental scientist, with background in predominantly in natural science apparatus. I completed PhD in applied and landscape ecology / environmental and ecosystem ecology at the Charles University, Faculty of Science. My dissertation was focusing on the human appropriation of net primary production and its relation to biodiversity. Later, my research has been focusing on sustainability indicators, environmental footprints, including the impacts of increasing consumption and international trade on natural environment and ecosystem services as nature´s contribution to people. Significant part of my work was also devoted to climate change adaptation, including urban adaptation in cities using ecosystem-based approaches. I am writing this thesis as a scientists working and teaching at the Charles University and Czech Academy of Science.

From the very beginning, I´ve been also engaged with the policy issues, through my initial work at the government agency for nature conservation and further closely working with Ministry of Environment. I´ve been directly participating at the Conference of Parties to the Convention on Biological Diversity and involved in IPBES report on modelling and scenarios of biodiversity and ecosystem services. Inseparable part of my activities was building a science-policy interface through participation in the preparation of Czech strategic documents

in the area of biodiversity, climate change adaptation and disaster risk reduction. Important part of my work was on climate change adaptation, especially in cities, including also participatory approaches for research and policy.

During my scientific carrier, I engaged with interdisciplinary research, working inter alia with sociologists, geographers, psychologists, economists and policy analysis. My motivation to plunge more into gender studies was twofold. First, there are increasing calls to more integrate natural sciences and humanities to provide better solutions to planetary crises. This has been reiterated in integrated assessments across climate change or biodiversity community. Second, as a transgender woman, I became personally interested to find out what is a gender, why it is important and how it influences the society and our lives. Because gender has been often described either as a “riddle” or as a “natural order”. Therefore, I thought it could be beneficial to absolve more formal education in gender studies. Consequently, I found interesting to combine gender and environment and found (thanks to Dagmar, but also others) a wide scholarship on nature, cultures, queer ecologies etc. And I am grateful for this because this was really enriching.

This thesis is a results of wide literature screening on feminist analyses of sustainability, environment, climate change and other aspects. It´s incomplete and imperfect but going through all the sources was an exciting journey. In policy part, I tried to organize my unorganized thoughts on gender mainstreaming in environmental policies. Overall, the thesis provides an account of gender and environmental change debate (or at least partly), and I believe that it partly fills a gap in Czech scholarship on this diverse, rich and exciting topic. Still, it contains rather fragments of current scholarship on gender and environmental change.

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