

Gender, Cities and Climate Change

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List of acronyms

CDM	Clean Development Mechanism
CEDAW	UN Convention on the Elimination of All Forms of Discrimination Against Women
COP	Conference of Parties
CSD	Commission for Sustainable Development
DAW	United Nations Division for the Advancement of Women
ECOSOC	Economic and Social Council
FAO	Food and Agriculture Organization
GWA	Gender and Water Alliance
GHG	Greenhouse gas
ICLEI	Local Governments for Sustainability
IPCC	Intergovernmental Panel on Climate Change
ISDR	International Strategy for Disaster Reduction
LPG	Liquefied petroleum gas
MDGs	United Nations Millennium Development Goals
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
UNDAF	United Nations Development Assistance Framework
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNFCCC	United Nations Framework Convention on Climate Change
UN-Habitat	United Nations Human Settlements Programme
UNICEF	United Nations Children's Fund
UNIFEM	United Nations Development Fund for Women
US	United States of America
WHO	World Health Organization
WMO	World Meteorological Organization

1. Why is Gender Equality Important in Addressing Cities and Climate Change?

1.1. Introduction and rationale

1.1.1. Cities and gender

The gender dimension of human settlements as an issue of research, advocacy and urban policy has a long history.¹ The Habitat Agenda² includes various provisions on gender, and the gender dimensions of the main issues related to human settlements have been addressed,³ such as urban poverty and gender,⁴ housing, land and property rights of women,⁵ water and sanitation,⁶ gender mainstreaming and the involvement of women in local government.⁷ The response of city networks includes guidebooks and commitments to gender equality in the city.⁸

1.1.2. Cities and climate change

Cities have recognised their crucial role in climate change policy for the last 20 years or so, even before the UNFCCC was adopted by the international community. During the first half the 1990s, local governments started to take up the challenge, adopted commitments to cut greenhouse gas emissions, built networks, and started to implement climate policy at the local level. Except for a small number of publications,⁹ researchers took up the issue much later.¹⁰ Since then, substantial research on cities and climate change has been done, and their crucial role both for mitigation and adaptation is well acknowledged.¹¹ It should be noted that the pioneers in this field were mainly cities from developed countries who were working on mitigation, while in developing countries climate policy at the city level is still an emerging issue and is mainly focused on adaptation.

1.1.3. Gender and climate change

While the gender and environment nexus in general has been an issue for many years,¹² the climate change and gender nexus has only started to receive attention during the last decade. A number of publications have analysed the various connections, in particular the differentiated impacts of climate change, the absence of women in climate policy, but also the role women could play if fully involved.¹³ This emerging topic was pushed forward by

1. Moser and Peake, 1987.

2. UNCHS, 1997.

3. UN-Habitat, 2010.

4. Masika et al, 1997.

5. UN-Habitat, 2006d.

6. UN-Habitat, 2006a; UN-Habitat, 2006b.

7. UN-Habitat, 2004; UN-Habitat, 2008c, UN-Habitat, 2008a.

8. See, for instance, CEMR, 2005; and CEMR, 2006.

9. For example, Alber et al, 1996; Collier and Löfstedt, 1997.

10. For instance, Bulkeley and Betsill (2003), was the first publication on this topic that received wider attention.

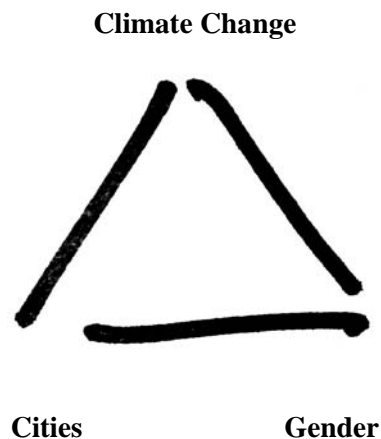
11. See, among others, Betsill and Bulkeley, 2007; Dhakal and Betsill, 2007; Gupta et al, 2007; Reid and Satterthwaite, 2007; IEA, 2008; OECD, 2009a; Alber and Kern, 2008; Bicknell et al, 2009.

12. See, for instance, UNEP (2004) which provides an overview on the history of UNEP's work linking women, gender and environment since the early eighties, and UNEP, Women's Environment and Development Organization and United Nations Foundation (2004).

13. See, for instance, Masika, 2002.

women's organisations and supported by development organisations that are familiar with the connection between gender and poverty, lack of access to energy and water, and other problems that are aggravated by the impacts of climate change.

As for vulnerability to the impacts of climate change, poverty plays a major role. Due to the living conditions of the poor, they are often more exposed to hazards, and have fewer options to avoid, or cope with, the impacts. As, according to UNDP, more than 70 per cent of the world's poor are female,¹⁴ the share of women among the most vulnerable is disproportionately high. Moreover, there are additional factors indicating that vulnerability involves heavy gender differentials that need to be taken into consideration. More details are provided in Chapter 4.



Thus, all three linkages between climate change, gender and cities are well established and substantiated by practice and research findings. However, it has not yet been discussed how these three inter-linkages work together, and how cities and other players need to respond to the complexity of the whole picture. This paper is an attempt to take stock of existing knowledge, identify gaps, and produce preliminary recommendations to policy-makers at urban, national and international levels.

At the local level, a range of inequalities and injustices are directly apparent and tangible. In most cities around the world, the divide between the privileged and underprivileged is as large as the global divide between developed and least developed countries.¹⁵ While a small proportion of citizens claim the major share of land for housing, mobility and recreation, the majority of others are crowded together in slums. The size of the carbon footprints of different citizens ranges from very large to virtually zero. The poorest groups, such as slum dwellers, usually have the smallest carbon footprint, and, moreover, they often live in areas most exposed to climate hazards, such as landslide or flood prone areas.¹⁶

These inequalities are related to income, class, age, race, ethnicity, health status, etc. Within all this inequalities, gender leads to a further differentiation, and in most cases, leads to different impacts of climate change on women and men. *'Within low-income populations, women often have particular vulnerabilities as a result of gender-related inequalities'*.¹⁷

Vulnerability depends on exposure to the negative effects of climate variability, and the capacity to avoid these effects or cope with them. This capacity depends on income, assets, education and knowledge, and here again, there is a gender bias. As demonstrated in Box 1,

14. UNDP, 1995.

15. For detailed information on urban inequalities, see UN-Habitat (2008b).

16. This inverse relationship between climate change risk and responsibility that can be observed at urban level is similar to the global divide that is, for instance, explained in detail in UNDP (2007).

17. Satterthwaite et al, 2007, p45.

all over the world, women have lower incomes,¹⁸ are in some countries facing constraints due to cultural patterns and norms, and are responsible for the bulk of unpaid care work. The latter often leads to an increase of the work burden of women after disasters and extreme weather events, for instance when the provision of fuel, food and water is more difficult and ill family members need to be taken care of. However, the gender division of labour is also an important factor for the crucial role of women in mitigation, since many relevant decisions influencing GHG emissions are taken at the household level. Due to their role in the community, their priorities and needs, knowledge, capacity and practical experience, women are also key actors for disaster risk reduction and enhancing the resilience of the community.

For two main reasons, gender issues need to be addressed in climate policy at all levels, and thus at the city level, as well:

- First, it is a matter of equality and equity. Existing standards and norms (see section 1.3 below) require gender issues to be addressed at all levels in order to work towards gender equality and eliminate discrimination of women. Firstly, both women and men need to be equally and meaningfully involved in planning and decision-making. Secondly, gender mainstreaming as a tool to assess the different implications for women and men of planned legislation, policies and programmes is required in all areas and at all levels, including climate policy, and including the city level. This is crucial, as climate change and climate policy might otherwise exacerbate existing inequalities. In other words, working towards gender equity as an issue in its own right needs to be taken into consideration in all policies, and thus also in climate policy.
- Secondly, it is a matter of effectiveness and efficacy of climate policy. Without taking gender issues into account, many climate change policies and measures are very likely to be less effective since they might reach and involve only a part of the citizens, or their outcome might even be harmful for certain social groups.¹⁹ The root cause of GHG emissions is not industry and power stations, but consumption. In order to address consumption, policies need to target all relevant consumers, and therefore, only inclusive and gender-sensitive climate policies will be able to reach a majority of citizens. This holds particularly true for local governments, who are, as the policy level closest to citizens, in an excellent position to influence their behaviour. As for the impacts of climate change, cities and citizens are directly and immediately affected. Targeting adaptation actions at the most vulnerable groups would save more lives, reduce the number of injuries and alleviate post-disaster problems. Improving resilience as a longer-term response to climate hazards must, first and foremost, look at the poorest and thus weakest segments of society which disproportionately include women. In other words, in order to be effective, climate policy and its implementation in the various sectors such as energy, transport, water management, and disaster risk reduction, must respond to the needs of citizens and their access to resources, services and infrastructure. This response can only be effective, if it takes into account differentials in the needs and opportunities of women and men due to their different roles and gender power relations.

18. See, for instance, ITUC, 2008; UNIFEM, 2008; and United Nations, 2000.

19. For instance, policies leading to higher energy prices for consumers will affect low-income households the most, if no accompanying measures are taken.

Box 1. Factors of gender inequality

Even for the same work, women are paid less, and this gap seems to be persisting. In Australia, for example, the female to male income ratio had started to level out during the 1980s, but during the 1990s, the ratio fell again until it reached 1980 levels.^a

Women, especially younger women, experience more unemployment than men and for a longer period of time than men.^b

Recent data, for example from the European Commission, show that women are working mainly in 'feminised' sectors and professions and remain in lower job categories with less access to senior positions.^c Young women still tend to choose these 'female' occupations, while their share in engineering, manufacturing and construction jobs is less than 25 per cent.^d

In all countries where time-use studies are available, men spend more time of their working day in market-oriented work, while women spend more time than men in care work. As an example, the ratio between unpaid care work, and paid labour for men and women in some countries is given below:^e

	Men	Women
Argentina	0.26	1.39
India	0.09	2.00
South Korea	0.14	1.13
South Africa	0.43	1.85
Sweden	0.56	1.15

In many developing countries, water and fuel collection make up a large part of the unpaid work done primarily by women. UNIFEM estimates that women and children in Africa spend 40 billion hours every year collecting water.^f

In South African cities, more than 40 per cent of households in informal areas and 5 per cent in formal areas have to obtain their water off-site, and in more than 50 per cent of the households, women and girls are solely responsible for water collection, while men are the main collectors only in a quarter of the households. Depending on the distance of the water source, water collection takes at least 40 minutes, and up to 70 minutes per day.^g

At least 60 per cent of women workers in developing countries are in informal employment which is generally a larger source of income for women than for men. For instance, In Sub-Saharan Africa, 84 per cent of women in non-agricultural sectors are informally employed, compared to 63 per cent of men.^h

Of the world's estimated 100 million home-based workers, a majority of these are women. For instance in South Asia, 80 per cent of home-based workers are women.ⁱ

In Pakistan in 2001, women owned less than 3 per cent of the plots, even though in most cases, legal regulations allowed them to own land.^j

Illiteracy is more common among women than men (and women thus have less access to information, including information on climate change and climate hazards), as two thirds of the world's 876 million illiterates are women. More women than men lack basic computer skills needed to use the Internet and other 'new media'.^k

Sources: a) Stilwell and Argyrous, 2003; b) United Nations, 2000; c) European Commission, 2009b; d) Statistisches Bundesamt, 2009; e) Budlender and UNRISD, 2008; Statistics Sweden, 2008; Razavi and Staab, 2008; f) UNIFEM, 2008; g) (Statistics South Africa, 2001); h) WIEGO and Realizing Rights: The Ethical Globalization Initiative, 2009; i) WIEGO, 2007; j) ICRW, 2005; k) United Nations, 2000

One of the main impacts of climate change for urban areas are disasters²⁰ caused by climate hazards such as cyclones, storms, flooding, landslides and droughts, destroying buildings and infrastructure, and particularly affecting poor and marginalised groups in

20. Dodman, 2009.

informal settlements. As for the short-term and long-term effects of disasters, the gender dimensions are widely acknowledged and a large body of work has already been produced which is directly applicable to climate change related disasters.

*'In a disaster, gender concerns might seem a luxury that can wait while more urgent matters are addressed. Yet the failure to address gender-based inequalities immediately after disaster and throughout the response can condemn women and girls to less aid, fewer life opportunities, ill-health, violence and even death. To reduce future suffering during disasters, aid organizations must ensure full respect for women's and girls' human rights – civil, cultural, economic, political and social, including the prevention and prosecution of gender-based violence.'*²¹

Thus, the response to disastrous climate hazards, such as disaster risk reduction, early-warning systems and post-disaster relief, recovery and reconstruction should be based on a gender analysis, and should build upon both women's and men's contributions to be effective.

1.2. Gains, gaps and challenges of addressing gender in climate change policy

In cities, the gender dimension of the impacts of climate change can be clearly observed. For instance, there is a gender bias in fatalities during disasters, because some social groups – most of them women – are not reached by early-warning information, cannot escape due to their responsibility for family care and constrained mobility, and shelters are not adequate to accommodate them.²²

On the other hand, the co-benefits of climate policies can have an immediate positive impact at the local level as well, when policies to enhance resilience imply improving infrastructure and services, and when energy-efficiency measures to cut GHG emissions lead to the reduction of air pollution and cost savings for the public and private sector. Such co-benefits have been demonstrated by a number of authors,²³ primarily for developed countries. However, these benefits will not accrue automatically; they will only take effect if mitigation and adaptation are geared towards sustainable development with a strong emphasis on social aspects and participation, including the gender dimension.²⁴

1.2.1. Gaps and challenges

Although hundreds of cities are already engaged in climate policy, working together in international city networks such as Climate Alliance of European Cities, ICLEI, and C40 and in various national networks,²⁵ a vast majority of cities do not yet have a comprehensive climate policy in place, let alone a gender sensitive response to climate change. Urban climate policy started in developed countries with a strong emphasis on mitigation actions, while climate change engagement of cities in developing countries is still rare. The reasons for this include a lack of awareness of the problem and in particular of the role of cities as part of the solution, lack of longer-term considerations and institutional and financial constraints.²⁶

As for the cities that are actually working on climate issues, the gender dimension is virtually absent in their plans, policies and programmes. Although there have been approaches to consider gender issues among other social concerns in cities' activities on environment and

21. Walter, 2006b, Summary Chapter 6.

22. See, for instance, Bartlett et al, 2009; and Walter, 2006a.

23. See, for instance, Morlot et al, 2004; and Bollen et al, 2009.

24. As for gender and infrastructure, see also OECD (2004); and on the discussion of cities in low- and middle-income countries, see, for instance, Bartlett et al (2009).

25. See, for instance, Kern and Bulkeley, 2009; and Alber and Kern, 2008.

26. See Alber (2009) for an analysis of obstacles towards urban action on mitigation.

sustainability, e.g. in Local Agenda 21 processes or in transport planning, these efforts have not been transferred and integrated into local climate policy as a whole.

The main reasons for this are the underrepresentation of women in decision-making, a lack of awareness of gender issues, and a lack of data, knowledge and skills on methodologies to address gender. The lack of sex disaggregated data on issues relevant to climate change often conceals gender differentials. Not even the International Disaster Data Base (EM-DAT)²⁷ provides sex-disaggregated figures on people killed and affected by disasters, although experts, for instance from the International Strategy for Disaster Reduction (ISDR) are well aware of the importance of the gender dimension.²⁸

Climate policy in general, also beyond the urban level, has only started to recognise the gender dimension, but mostly limited to impacts and vulnerability, and without identifying adequate responses.

The few examples on gender sensitive responses to climate change mainly refer to rural contexts, for instance adaptation in agriculture. However, these are not directly applicable for cities, due to the different character of the problems and the vast differences in scale. In a village, even a small private initiative, based on small funds and using local natural resources, can make a big difference, e.g. drilling a water well to assist villagers to cope with drought caused by climate change. In contrast, urban areas require much larger investments, more complex infrastructures and services, and in particular institutional settings able to handle them and ensure equitable access.

For urban areas, there is hardly any research that raises gender issues in relation to climate change. Existing findings on poverty and climate change do not directly relate to gender. Although the majority of the poor are women, the equation ‘women = poor’ is not true, as the situation is more complex. Men and women are not homogenous groups, and other dimensions of diversity – such as income, class, ethnicity, age, etc. – are interweaved with gender.

For mitigation at city level, there is a lack of awareness of gender issues. In order to understand the gender dimensions of mitigation, it is necessary to look more closely into the various sectors that need to be addressed by climate policy, such as energy, transport and consumption. An attempt to do this can be found in section 3.2.

In addition to the gender dimension of climate change in cities there are at least two other major challenges. They are both related to inertia, firstly of the material, secondly of the institutional preconditions:

- Built environments have an inherent inertia. They reflect the social and economic systems at the date of their construction, but remain for a long time, even after these systems change or need to be changed. This is both relevant for gender and climate issues: characteristics of male dominated and fossil fuel intensive urban structures and infrastructure include the segregation of housing from the workplace, and public transport geared towards the needs of commuters, rather than the complex and manifold trips of women who combine care work and employed work.
- Both, climate change and gender equality, are cross-cutting issues and require mainstreaming. As for gender, mainstreaming is an accepted and widespread tool to develop gender sensitive policies. As for climate change policy, in particular when both mitigation and adaptation are to be tackled, virtually every aspect of urban

27. www.emdat.be/

28. See, for instance, Walter, 2006a.

policies is affected: urban planning, housing, energy, infrastructure, water management, waste management, and so forth. Therefore, mainstreaming is needed to integrate climate considerations into all relevant sector policies and administrative procedures. This ongoing task poses a big challenge to existing public bodies and institutions.

In particular, ‘Cross-mainstreaming’ of climate change, while simultaneously integrating gender aspects at all stages, is definitely a difficult process requiring changes and learning processes in urban governance. Moreover, the transformation of existing cities into low-carbon, resilient and gender-just communities is a long-term task, requiring longer planning horizons than usually foreseen in politics.

Finally, urban policies take place in multi-level settings, often with a lack of competences of cities to be able to tackle local challenges related to climate change, inequality and poverty, or with vague arrangements for the division of labour between the various levels. A lack of coherence between vertical policy levels and of horizontal coordination can massively impede efforts of local governments, for instance in spatial planning and disaster risk reduction.²⁹ Moreover, in some cases, action at the urban level is constrained by adverse political, legal and financial framework conditions, for example a lack of legal provisions for women’s rights or harmful subsidies for fossil fuels.

1.3. Relevant standards and norms

Consideration of women’s rights and gender issues in any policy is required and supported by a number of legal documents, resolutions and commitments. The Millennium Development Goals include various goals to reduce poverty which are highly relevant for women, and one goal explicitly addresses women and gender: the promotion of gender equality and empowering women. During the last years, some more specific statements on gender related to climate change issues were made:

CEDAW, the ‘United Nations Convention on the Elimination of All Forms of Discrimination Against Women’ (1979) obligates, in a very broad approach, governments to end all types of discrimination. At its forty-fourth session in 2009, the Committee on the Elimination of Discrimination against Women adopted a statement on gender and climate change, expressing:

*‘its concern about the absence of a gender perspective in the United Nations Framework Convention on Climate Change (UNFCCC) and other global and national policies and initiatives on climate change’.*³⁰

and stating that:

*‘Gender equality is essential to the successful initiation, implementation, monitoring and evaluation of climate change policies.’*³¹

and demanding that:

*‘All stakeholders should ensure that climate change and disaster risk reduction measures are gender responsive, sensitive to indigenous knowledge systems and respect human rights. Women’s right to participate at all levels of decision-making must be guaranteed in climate change policies and programmes.’*³²

29. See, for example Kern and Alber, 2009.

30. Committee on the Elimination of Discrimination against Women, 2009, p1.

31. Committee on the Elimination of Discrimination against Women, 2009, p1.

32. Committee on the Elimination of Discrimination against Women, 2009, p1.

The Beijing Platform for Action (1995) introduced gender mainstreaming as a strategy to promote gender equality with the objective of ensuring equal rights and opportunities. Among the ‘Actions and initiatives to overcome obstacles and to achieve the full and accelerated implementation of the Beijing Platform for Action’, adopted at the twenty-third Special Session of the United Nations General Assembly, several actions were adopted that are closely related to climate change and climate change policy, in particular the need to recognize and integrate women’s knowledge and priorities in the conservation and management of environmental resources to ensure their sustainability. Moreover, the need for gender-sensitive programmes and infrastructures to respond effectively to disaster and emergency situations was emphasised,³³ and a call was made for a gender perspective in environmental policies and mechanisms.³⁴ At this session, the Ad Hoc Committee of the Whole stated:

‘46. The increase in casualties and damage caused by natural disasters has raised awareness of the inefficiencies and inadequacies of the existing approaches and intervention methods in responding to such emergency situations, in which women, more often than men, are burdened with the responsibility of meeting the immediate daily needs of their families. This situation has raised awareness that a gender perspective must be incorporated whenever disaster prevention, mitigation and recovery strategies are being developed and implemented.’³⁵

The Economic and Social Council adopted a number of conclusions and resolutions committing all United Nations bodies to apply gender mainstreaming to their activities, the most recent one being adopted at the 2006 substantive session of ECOSOC (Council resolution 2006/36).

The Commission on the Status of Women, at its forty-sixth session in 2002, was concerned with, inter alia, environmental management and the mitigation of natural disasters. The agreed conclusions include a number of provisions on the involvement and participation of women in environmental management and disaster risk reduction, response and recovery, the need for gender-sensitive laws, policies and programmes, women’s equal access to information on disaster reduction, including gender-sensitive early-warning systems. As for climate change in particular, the Commission calls for action to:

‘7 (e) Mainstream a gender perspective into ongoing research by, inter alia, the academic sector on the impact of climate change, natural hazards, disasters and related environmental vulnerability, including their root causes, and encourage the application of the results of this research in policies and programmes;’³⁶

United Nations documents on human settlements that are relevant to climate change and mention gender issues include, among others:

- The Istanbul Declaration and the Habitat Agenda, the main outcome of the Habitat II conference 1996, is an action plan on sustainable human settlements that includes gender equality as one of seven commitments.³⁷
- The Declaration on Cities and Other Human Settlements in the New Millennium, reaffirms the Istanbul Declaration and the Habitat Agenda. Its paragraph 44 commits Member States to *‘formulating and strengthening policies and practices to promote*

33. UN General Assembly. Twenty-third special session. Ad Hoc Committee of the Whole, 2000, p19.

34. UN General Assembly. Twenty-third special session. Ad Hoc Committee of the Whole, 2000, p24.

35. UN General Assembly. Twenty-third special session. Ad Hoc Committee of the Whole, 2000, p17.

36. United Nations Commission on the Status of Women, 2002, p14.

37. UNCHS, 1997.

*the full and equal participation of women in human settlements planning and decision-making.*³⁸

- UN-Habitat Governing Council Resolutions GC 19/16 on women's roles and rights in human settlements development; 20/7 on gender equality in human settlements development, 21/9 on women's land and property rights and access to finance. Furthermore, UN-Habitat's Gender Equality Action Plan strengthens gender mainstreaming in the implementation of UN-Habitat's medium-term planning.³⁹ Moreover, the resolution on Cities and Climate Change of the twenty-second session of the UN-Habitat Governing Council mentions women among the most vulnerable groups.⁴⁰
- UN-Habitat's Climate Change Strategy 2010–2013 refers to the special vulnerability of women to climate impacts, and their role for slum eradication, working with grass-roots organisations and improving city management. Moreover, gender is mentioned in the context of urban planning and pro-poor land and housing activities in terms of gender sensitive housing, land management and property administration. In the chapter on UN-Habitat's work related to Cities in Climate Change, one section is dedicated to gender. It highlights women as important actors for adaptation and mitigation strategies, natural resource management, conflict resolution and peace building at all levels. It calls for gender indicators to assess the impacts of climate change, in order to shape the response accordingly; and for supporting the response capability of vulnerable groups by strengthening their social, natural, physical, human, and financial assets. A paragraph on finance within this section calls for financing of affordable housing and infrastructure; however, without indicating ways how to ensure equitable spending in terms of gender⁴¹

38. UN General Assembly. Twenty-fifth special session, 2001.

39. UN-Habitat, 2009b.

40. UN Governing Council of the United Nations Human Settlements Programme (UN-Habitat) and Twenty-second Session of the Governing Council, 2009, p1.

41. UN-Habitat, 2009a, p22.

2. Conceptual Framework for Gender Analysis of Cities and Climate Change

2.1. Conceptual framework

For the gender analysis of cities and climate change, it appears to be useful to treat two issues separately:

- First, to analyse questions of power and participation, i.e. gender inequalities in terms of whom, and how, policies are planned and decided;
- Second, to scan through areas and sectors relevant to climate change and climate policy in order to analyse the need for gender sensitive policies.

2.1.1. Gender bias in power, participation and decision-making

- **Underrepresentation of women in decision-making:** Worldwide, only some 20 per cent of city councillors and less than 10 per cent of mayors are female.⁴² Thus, contrary to common opinion, the gender imbalance in decision-making bodies at the local level is no better than at the national level.
- **Power relations and androcentrism:** Power is constructed by social systems and, in most societies, unequally distributed between women and men, almost always to the detriment of women. Unequal power relations are evident at every level, in the political sphere, in the community, and within private households. Androcentrism means that the male perspective, based on male lifestyles and ways of thinking, is prevailing, while women's behaviour and way of thinking are seen as deviations from the norm or as exceptions to the rule.⁴³

It is because of these power relations, that the specific situation of women is receiving much attention in this paper, although it is dealing with gender. In order to reveal women's perspectives, interests and needs, the 'gender lens' needs to look at their situation particularly closely, as 'conventional wisdom' often has a male perspective.

The problems of gender-biased power and participation are generic and not specific to climate policy. However, they are more severe in climate policy and some related areas such as energy and transport. Moreover, it is often more difficult for women to reach managerial or executive positions, even if they hold a majority of the jobs, as they do in some other sectors.

The Climate Alliance of European Cities – in its European Union project 'Climate for Change' – has investigated the share of women in 10 local administrations in general, and in the local departments and units relevant to climate change. While the total percentage of women varied between 10 and more than 50 per cent, at managerial or executive levels, it was less than 30 per cent, and in some of the participating cities even zero.⁴⁴ As for the energy and transport sectors, for instance in Europe, there is evidence of a strong male dominance.⁴⁵

42. See the website of United Cities and Local Governments at www.cities-localgovernments.org (last accessed 1 September 2009).

43. For an in-depth discussion of power relations and androcentrism in the context of climate policy, see Roehr et al, 2008.

44. Climate Alliance of European Cities, 2005a.

45. See Carlsson-Kanyama and Rätty (2008) for energy and Oldrup and Romer Christensen (2007) for transport.

2.1.2. Dimensions of urban climate policy related to gender

The main dimensions that can guide the analysis of gender and climate change at the city level are:

- Firstly, the various factors of gender inequality that are causing gender differentials in most areas of human life. These factors need to be taken into consideration in a gender sensitive urban climate policy.
- Secondly, resources such as energy, land and water, that are relevant for urban areas and urban climate policy;
- Thirdly, human needs in terms of food, housing, safety etc., the gender differentials in these needs and in the opportunities to meet them. Urban climate policy should respond to these needs under the premise of climate variability and mitigation requirements, e.g. in terms of urban services and infrastructure.

Gender inequalities that influence the contribution of individuals to GHG emissions and their vulnerability include:

- **Gender division of labour:** In most societies, unpaid care work and paid labour is unequally divided between women and men, with men working primarily in paid labour. Thus, a disproportional share of unpaid work – for household maintenance, care for family and neighbours, provision of water and fuel, and preparing food – falls on women. Time-use studies show that, in all countries, women spend considerably more time on unpaid work than men, either in the form of care work, household or community work (see Box 1). Even if women have a full-time job, and even in forerunner countries regarding gender equality such as Sweden, women spend several hours more than men on unpaid domestic work every week.⁴⁶
- **Gender differentials in incomes and economic resources:** The economic situation of individuals has a great influence on their vulnerability and coping capacity. It is indisputable that the share of women among the poor is substantially higher than that of men. In general, women's level of wealth is dramatically lower than men's, due to the fact that they own smaller proportions of almost every type of asset – be it property or financial assets – and to the pay gap which persists all over the world in varying degrees. In addition, the gender segregation in occupations leads to lower incomes for women, who usually work in occupations that are less valued and salaried, for instance in the service and care sectors. One of the underlying reasons for the gap in assets is the insecurity over, or even denial of, land rights and inheritance rights, whether this is based on formal legal restrictions or customary rights and lack of enforcement of legal provisions for equality. Moreover, informal rights to resources could be denied in times of scarcer resources.
- **Cultural patterns and social roles:** Though there are some common patterns listed above, gender roles vary largely from country to country. In many countries, women face constraints of access to information and education, and restrictions of personal, social and economic activities outside the home.
- **Sex-related factors:** In addition to the gender-related factors, there are sex-related factors stemming from biological differences which can have an influence on vulnerability. Reproductive health issues include for instance, the need for sanitation during menstruation and after giving birth, constrained mobility during pregnancy and higher nutritional needs during lactation. During menstruation, women need adequate

46. Statistics Sweden, 2008.

sanitation in privacy and personal safety which is often not ensured during and after a disaster.⁴⁷

Gendered aspects of the responsibility for, and access to, resources that contribute to, or are affected by, climate change, are in particular:

- **Energy production and consumption**, including energy consumption for motorised transport, play a key role in mitigation. As for gender aspects of climate change in urban areas, energy consumption in the transport and residential sectors should be in the foreground. As for impacts and adaptation, the availability of traditional fuels is a key issue in the light of the gender division of labour.
- **Water scarcity and uncertain water supply** is an existing problem in many cities which is aggravated by climate change, for instance in times of disasters, floods, droughts, or due to salinity ingress in the case of coastal cities. Those who are responsible for care work, mainly women, are burdened with additional workloads to collect water.
- **Space and land** for settlements, infrastructure and economic activities is a scarce and extremely costly resource in cities, leading to a spatial marginalisation of the poor, thereby most severely affecting women due to their economically and often legally disadvantaged situation. Climate variability puts marginalised communities at particular risk, as they are often settled in vulnerable areas prone to flooding or landslides.
- **Time** is a scarce resource for women and men. Since, due to the gender division of labour, the care work falls mainly on women, they often work more hours than men,⁴⁸ though most of them in unpaid labour. In times of disaster, time is getting even scarcer due to additional care work.

Differentiated needs of women and men and their relation to climate change include the basic human needs in particular. Here, only a short list of the most important issues is provided, details on gender differentials are given in Section 4.1.

- **Safety and health**: Personal safety is not only at risk during disaster, but also in difficult post-disaster situations, mainly because of threats from other people. The health impacts of climate change are well-documented.
- **Housing and shelter** are massively impacted by disasters, in particular in settlements in areas prone to floods or landslides.
- **Mobility** can be constrained in post-disaster situations, adding to the risk for personal safety.
- **Nutrition, food security and water** are also heavily influenced by climate change, and constraints lead at least to an increased work burden for those who are responsible for their provision.
- **Sanitation services** can be out of reach or inadequate in post-disaster situations.

An in-depth systematic analysis would require assessing gender differentials in the use of resources and the resulting contributions to climate change, the direct impacts of climate change, indirect consequences, gender differentials in vulnerability, taking women's and men's needs into account, and differentials in coping strategies and options for response. Finally, the influence of urbanization on resource use, vulnerabilities, satisfaction of needs,

47. See 'Sanitation: A women's issue' in UN-Habitat, 2006c.

48. See the example of Sweden given above.

and responses would need to be analysed, taking into consideration the multi-level setting in which urban policies are placed.⁴⁹

Climate policy at international levels is concentrating on commitments (or ‘actions’ in the case of Non-Annex I countries,⁵⁰ according to the Bali Action Plan), mechanisms for flexibility, funding mechanisms and technology transfer, thus creating a framework for national and sub-national action.

Climate policy at national level needs to create an adequate framework and adopt specific policies and programmes in order to comply with international agreements and own additional commitments. GHG reduction commitments need to be broken down to sectors, in order to define policies and programmes, regulatory and fiscal instruments specific to these sectors.

Urban climate policy options largely depend on the climate policy at national level and the national legal and financial frameworks which vary considerably. Arrangements on the distribution of labour between the national and local levels, and sometimes also regional or provincial levels, are diverse, and sometimes not totally clearly defined.

In some cases, cities can only implement policies defined at a higher level. In many other cases, they can design and adopt their own commitments, policies and programmes, at least to a certain degree, applying various regulatory and fiscal instruments. Particularly important for mitigation and adaptation are the planning competencies of cities, and the services they are in charge of, e.g. local transport and energy supply, waste management, early-warning systems etc. These are often sectors where local governments have a unique role.

All these variations cannot be addressed to their full extent in this paper; neither can a systematic analysis along the above dimensions be carried out due to the large gaps on sex-disaggregated data and information.

Therefore, it appears to be effective to work along the sectors causing GHG emissions, such as consumption patterns, housing and energy, and mobility, and on sectors and issues most severely impacted by climate change, such as water and sanitation, fuel consumption, food security, and personal safety.

2.2. Key organisations and institutions

There are few organisations working specifically on gender and climate change, and at present their focus is mainly on international negotiations:

- The Global Gender and Climate Alliance (GGCA) is a partnership between various NGOs and United Nations agencies, advocating for gender equality in climate policy.
- GenderCC – Women for Climate Justice, is a global civil society network of women’s organisations and gender experts. At present, GenderCC is also mainly active in the international climate process, but the network and its focal points in all world regions are striving to engage at the local level.
- The Network of Women Ministers produced recommendations on gender and climate change in 2009 (see below).

Among national governments, some EU countries such as Finland and Sweden, and several African and Asian countries, for instance Lesotho, Ghana, the Philippines and Bangladesh,

49. See also Bulkeley and Kern, 2004; and Kern and Alber, 2009.

50. Countries that are not listed under Annex I of the UNFCCC, most of them developing countries. They do not have binding emissions reduction targets under the Kyoto Protocol. However, according to the Bali Action Plan adopted at COP13 in 2007, they are supposed to undertake ‘mitigation actions’ in the future (see UNFCCC, 2007).

took up women's proposals for text insertions at the UNFCCC negotiations. Moreover, the Finnish government promoted the participation of women delegates from Africa at the international climate negotiations.

Several development organisations and agencies, such as Oxfam, ActionAid, and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) in Germany, based on their experience with addressing the gender dimension in their development actions, have put gender and climate change on their agenda. International organisations, such as the OECD, have undertaken efforts to integrate climate change into development aid, and, at the same time, include the gender dimension.⁵¹

In addition to the organisations listed above, there are a number of organisations that could, potentially, be key actors for gender, cities and climate change. These are city networks such as ICLEI and Climate Alliance of European Cities who have an emphasis, or are working mainly on climate change. However, although they have taken some steps to include gender issues, it is not yet mainstreamed in their strategies, methodologies and recommendations to member cities. One city network which could play an important role is Metropolis, the World Association of Major Metropolises, since it has started to work on climate change, and has established a 'Metropolis Women International Network'. As for climate change, Metropolis is working, for instance, on disaster risk reduction within a coalition of city organisations and networks.⁵² Although the Metropolis Women International Network has not yet worked on climate policy, it provides a good entry point to deal with the linkage between gender and climate change. Furthermore, national, regional and international local government organisations should work with their members on both issues – gender and climate change – and on their interlinkage. For instance, the Council of European Municipalities and Regions is in a good position to do so, as they have already been working on gender issues, and on climate change and energy.

2.2.1. United Nations organisations

Though they have not yet taken up the combination of urban, gender, and climate change issues, United Nations organisations will be key to addressing the linkages between these issues.

In the case of **UNEP**, their Urban Environment Unit⁵³ is the main actor for climate change in urban areas, within the focal area 'Cities and Climate Change'. UNEP's 'Campaign on Cities and Climate Change' aims to engage cities in the climate debate and assist them in reducing greenhouse gas emissions. To this end, UNEP works with UN-Habitat and ICLEI. Some of the key programmes of UNEP's Urban Environmental Unit are dealing with issues that are relevant for climate policy. One such example is the 'Initiative on Road Design and Finance for Safety, Sustainability, and Accessibility' through which UNEP works with partners for a targeted campaign on environmentally sustainable modes of road transport and safer roads in developing and transitional countries '*to increase the safety, environmental performance, and accessibility of roads and mobility in general for all road users, including pedestrians and cyclists*',⁵⁴ another is UNEP and UN-Habitat's Eco-housing Project⁵⁵ which is about sustainability of housing projects and includes energy considerations.

51. See, for instance, OECD, 2009b.

52. Partnership for Urban Risk Reduction (PURR). See www.metropolis-server.com/metropolis/en/node/1724 for information on PURR. Members are United Cities and Local Governments (UCLG), Earthquakes and Megacities Initiative (EMI), Local Governments for Sustainability (ICLEI), Metropolis and CITYNET.

53. www.unep.org/urban_environment.

54. www.unep.org/urban_environment/key_programmes/index.asp.

55. www.rrcap.unep.org/ecohouse/index.htm.

‘Gender and the environment’⁵⁶ is a UNEP thematic area that would need to be involved in these campaigns and programmes in order to address gender within the work on cities and climate change. Work on women and environment, including climate change, has already been done at UNEP, for instance UNEP’s Global Women’s Assembly on Environment: Women as the Voice for the Environment (WAVE) has held its first meeting in 2004. A Manifesto was adopted that expressed participants’ concerns and comprises recommendations, including sections on global environmental change and gender, and urban challenges, environment and gender.⁵⁷

At the twenty-fifth Session of the Governing Council/Global Ministerial Environmental Forum in 2009, a Pre-session High-Level Event of the Network of Women Ministers and Leaders for the Environment put gender and climate change on the agenda. Recommendations were made for inclusion into the President’s summary of the GC/GMEF,⁵⁸ namely that governments should support efforts to integrate gender into the UNFCCC process and its outcomes.

Gender and Climate Change is one of the focus areas of **UNDP**.⁵⁹ A resource guide has been published⁶⁰ providing introductory information, justifying the inclusion of a gender dimension into climate policy at all levels, and giving a large number of recommendations, also referring to action in the urban context. However, it is noted:

‘The issue of gender and energy concerns more than firewood and coal. Have we paid enough attention to the urban context?’⁶¹

UN-Habitat is a key institution for city affairs. The Sustainable Urban Development Network (SUD-Net)⁶² – launched in 2008 as a network of global partners working with actors and networks – deals with a large number of topics relevant to climate change, including managing the built and natural environment, and governance issues. The Cities in Climate Change Initiative (CCCI)⁶³ is the initial component of SUD-Net, aiming at enhancing climate change mitigation and preparedness of cities in developing and least developed countries, in particular promoting pro-poor approaches. This initiative will need to include and address the gender dimension of poverty, vulnerability and also mitigation strategies.

Furthermore, the **United Nations Division for the Advancement of Women** may start to address climate change, emphasising climate-related gender and women’s issues. At the fifty-third session of the Commission on the Status of Women, in March 2009, a parallel event titled ‘The climate change negotiations – An action agenda’⁶⁴ was organised by UNDP and several partners.

All these initiatives may be well co-ordinated among the various UN organisations. However, for an observer, it is difficult to understand how they are linked and how they differ.

56. www.unep.org/gender_env.

57. See UNEP, 2004.

58. See UN Governing Council of the United Nations Environment Programme and Twenty-fifth session of the Governing Council/Global Ministerial Environment Forum, 2009.

59. www.undp.org/climatechange/gender.shtml.

60. UNDP, 2009.

61. UNDP, 2009, p30.

62. www.unhabitat.org/categories.asp?catid=570.

63. www.unhabitat.org/content.asp?cid=6003&catid=570&typeid=19&subMenuId=0.

64. http://esango.un.org/event/csw_mission.html?page=viewEvent&nr=1645.

2.3. Mainstreaming gender perspectives into climate change

Gender issues were completely absent from the international climate negotiations⁶⁵ until COP 7 in Marrakesh in 2001, when an accord calling to improve the gender balance in formal bodies of the UNFCCC was adopted by the Parties.⁶⁶ At that time, women's groups started to advocate for the consideration of gender in international negotiations. Subsequently, several governments took up the issue and proposed text on gender to be included in the UNFCCC negotiation documents on 'long-term cooperative action'. However, gender is only mentioned in the context of vulnerability and, to a certain degree, in the context of adaptation, whereas the issue is still absent in the text on mitigation, financing, and technology transfer. In the meantime, women's NGOs and NGOs working on gender issues were acknowledged as a separate constituency in the UNFCCC process,⁶⁷ thus giving the issue greater prominence.

2.3.1. Process and participation

The participation of women on deliberations and decisions on climate-related issues, including energy, transport, resilience and disaster risk reduction, needs to be enhanced, to achieve a gender balance, at decision-making levels as well as in public participation, stakeholder and community involvement processes.

Balanced participation is also important for research on climate change. Women need to be equally involved at all stages, including at the initial stage when research questions are defined. Otherwise, certain topics and questions might be completely overlooked.

Moreover, the very complex specialist approach in climate science often leads to a discourse that excludes people who do not have such skills. A response to mitigate the dominance of scientific and technological approaches may be enhanced participation, and in particular meaningful participation. In other words, a quantitative balance or, for example, the involvement of women's organisations might not be sufficient. In addition, capacity-building and training is needed to enable all participants to join in the debate. This does not only refer to those who lack the scientific skills. Experts on scientific and technological fields also need training, for instance in communication skills, and a better understanding of and respect for ways of thinking other than their own scientifically rigorous approach.

These questions of interaction between expert and so-called lay-people are even more important in participation processes at community level. After all, climate experts are primarily skilled on climate issues, and less on the concrete situation and coping strategies of those who are at risk from climate hazards. Therefore, when it comes to implementing climate policy at the community level, it is incontestable that the enhanced involvement of women helps to better take their specific vulnerabilities and needs – and thus that of their entire family – into consideration.⁶⁸

65. For a more comprehensive analysis, see Röhr and Hemmati (2008).

66. UNFCCC, 2002.

67. The UNFCCC process, in contrast to the CSD process, is not based on the Major Groups concept. Observer organisations to the UNFCCC process are clustered into groups with similar interests. So far, these were ENGOs (environmental NGOs), BINGOs (business NGOs), LGMA (local government and municipal authorities), indigenous peoples organizations (IPO), research and independent non-governmental organizations (RINGO), and trade unions (TUNGOs). Just recently Women, Farmers and Youth were provisionally acknowledged by the UNFCCC secretariat as separate constituencies.

68. See, for instance, Chattopadhyay and Duflo (2004) who present evidence for the different priorities of local female policymakers compared to mainstream male-dominated policies.

2.3.2. Contents and substance

Steps to be taken to mainstream gender perspectives into climate change efforts at all levels include the following:⁶⁹

- The first step to mainstream gender into climate change needs to be outreach, awareness-raising and capacity-building on the causes and expected impacts of climate change, including their social and gender dimensions, and on mitigation and adaptation options. Target groups should be policy- and decision-makers and the broader public.
- As a preparatory step to mainstream gender into climate change policies and measures, clear commitments are required to recognise and fully address the gender dimensions at all political levels. For instance, at the international level, women and gender advocates recently proposed the inclusion of an article on gender into the ‘Shared Vision’, the preamble part of the negotiating document for future commitments under the UNFCCC:

‘The full integration of gender perspectives is essential to effective action on all aspects of climate change; adaptation, mitigation, technology sharing, financing, and capacity building. UNFCCC processes must ensure compliance with existing women’s rights standards and best practice as enshrined in CEDAW, MDGs and Security Council Resolution 1325. The advancement and women’s leadership and participation as stakeholders in all climate related processes and implementation must be guaranteed.’⁷⁰

- In order to fill the data gap, gender-sensitive data need to be collected on vulnerabilities, income and poverty, housing and shelter, public transport and car use, etc. to guide climate change mitigation and adaptation strategies and measures.
- Gender mainstreaming must be embedded in all policies, at all levels and in all modes of climate governance. This includes the application of existing methods and tools for gender analysis, gender budgeting, and gender impact assessment and their incorporation in climate policy tools and methodologies.
- Equitable access to resources and distribution of benefits must be guaranteed, including financial and natural resources, technologies, space, built structures and infrastructure.
- Preferences of women must be taken into account when defining priorities and designing policies, for instance their rejection of risk technologies and confidence in changing behaviour and consumption patterns.
- Beyond gender mainstreaming, a broader, human-rights based approach needs to be pursued wherever possible, questioning, and seeking to transform, societal structures and patterns that perpetuate injustices. These pattern and injustices include gender stereotypes, power relations, undervaluation and neglect of care work, and feminisation of poverty.

The above requirements and steps are valid at all governance levels, hence also for cities. However, little work has been done so far to develop recommendations and guidance on how to take gender aspects in climate policy at city level into consideration. In 2002, a paper was prepared for the city network ICLEI on the integration of gender issues into their ‘Milestones’

69. See, for instance, GenderCC – Women for Climate Justice, 2009; UNDP, 2009; UN Governing Council of the United Nations Environment Programme and Twenty-fifth session of the Governing Council/Global Ministerial Environment Forum, 2009; UN-Habitat, 2008c.

70. GenderCC – Women for Climate Justice and Women and Gender Constituency, 2009.

methodology for local governments.⁷¹ However, apparently, a follow-up to actually integrate gender into their approach has not taken place: ICLEI's 'Milestones' lack of the gender dimensions, and its guidelines for GHG emissions inventories at city level do not include gender-disaggregation of data.⁷² Even in obviously gender-sensitive areas, such as urban transportation, and adaptation regarding the heat island effect, ICLEI does not address gender issues.⁷³ The Climate Alliance of European Cities has worked out recommendations on how to increase the participation of women in urban climate change policy and has addressed women's issues in certain thematic areas such as transport.⁷⁴ However, it has not established a broader gendered approach, nor has it integrated gender into methodologies such as the Climate Compass.⁷⁵

Apart from these gaps, much of the work on gender and climate change has looked at rural areas,⁷⁶ whereas research and case studies on gendered impacts, coping strategies, and adaptation needs are still rare for urban areas. There is evidence that urban areas urgently need to be considered, in particular regarding the situation of urban poor women.⁷⁷ Research findings highlight the particular vulnerability of women within low-income groups, due to their discrimination in terms of access to jobs, resources and services. For example, women earning income from activities at home might lose their income when their house or their equipment is destroyed during a disaster. In some areas, social norms constrain their access to emergency or post-disaster services. Moreover, women's care for their children will be more demanding due to climate change impacts on children's health, learning and psychosocial well-being.⁷⁸ One author describes the hardships in the lives of refugees, particularly women, living in an informal settlement in Durban, South Africa, how women struggle to provide care for their households, while they are lacking basic services such as water, sanitation, and energy.⁷⁹ Cities will be confronted with more refugees, in particular from rural to urban areas, either because their land cannot provide them with sufficient food due to drought, or because storms destroyed their houses and they cannot afford to rebuild them.

However, systematic research on the nexus between gender, poverty, climate change and cities and the required policy responses, is still lacking.

2.4. Explanation of key terms and concepts related to gender

Cities are, in this report, understood both as urban agglomerations, and local governments or authorities governing and managing these.

Sex indicates the physical differences between women and men, based on their sexual and reproductive functions. The sex of a person is usually unchangeable except through operation or hormones.

Gender indicates the differences between women and men that are socially constructed. It involves gender identities and attributes, roles and relationships, including power relations. Gender roles vary substantially across different cultures and societies and can be changed over time. Like the concepts of class, race and ethnicity, gender can be used as an analytical tool to analyse social processes. The term gender is often misunderstood or misused, for instance in the context with data, 'gender-disaggregated' instead of 'sex-disaggregated'.

71. Budhu, 2002.

72. ICLEI, no date; ICLEI, 2009.

73. ICLEI, 2001; Cities for Climate Protection Australia Adaptation Initiative, 2008.

74. Climate Alliance of European Cities, 2005c; and Energie-Cites and Climate Alliance of European Cities, 2004.

75. Climate Alliance of European Cities, 2006.

76. For instance Cannon, 2002; Nelson et al, 2002; Demetriades and Esplen, 2008.

77. See, for instance, Satterthwaite et al, 2007; and Winchester and Szalachman, 2009.

78. Bartlett, 2008.

79. Annecke, 2002.

Gender mainstreaming⁸⁰ *‘is the process of assessing the implications for women and men of any planned action, including legislation, policies and programmes, in all areas and at all levels, and as a strategy for making women’s as well as men’s concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and social spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality’.*⁸¹

Gender equality *‘means that women and men enjoy the same status. Gender equality means that women and men have equal conditions for realizing their full human rights and potential to contribute to national, political, economic, social and cultural development, and to benefit from the results. Gender equality is therefore the equal valuing by society of both the similarities and differences between women and men, and the varying roles that they play as for example the different roles of women and men in water resources management’.*⁸²

Gender equity *‘is the process of being fair to women and men. To ensure fairness, measures must often be available to compensate for historical and social disadvantages that prevent women and men from otherwise operating on a level playing field. Equity leads to equality. In the water sectors gender equity often requires specific policies that focus on the technical capacity development of women and the hiring and promotion of women in water resources management to address their historical disadvantage in decision making in these sectors’.*⁸³

Climate justice is about the ethical dimensions of climate change which, according to the proponents of climate justice, have been neglected in climate policy debates. The justice concept emphasises the antagonism between polluters and victims both on a global and sub-national scale, and seeks to tackle the underlying power relations in order to work towards equity.

Gender justice, within the climate justice debate, highlights the gender aspect of climate justice.

Care work can be paid or unpaid work and involves direct care of persons, including intense care for young children, ill and frail persons, and also for able-bodied adults. **Unpaid work** includes unpaid care work (excluded from the system of national accounts and gross domestic product) and a broader range of activities, e. g. work in the family business (which should be included in the system of national accounts), and collection of water and fuel for own household consumption in the household (should be included in the system of national accounts, too, but is often omitted). **Unpaid care work** is mainly done within households or families, but involves also work for friends, neighbours, community members or within any kind of organisations.⁸⁴

*The term ‘unpaid care work’ is used to refer to the provision of services within households for other household and community members. ... Each word in the term ‘unpaid care work’ is important: ‘unpaid’ meaning that the person doing the activity does not receive a wage for it; ‘care’ meaning that the activity serves people and their well-being; and ‘work’ meaning that the activity has a cost in terms of time and energy and arises out of a social or contractual obligation, such as marriage or less formal social relationships’.*⁸⁵

80. ‘Gender mainstreaming’ was formally introduced at the Fourth World Conference on Women in Beijing 1995. It has been defined and reaffirmed by ECOSOC resolutions, see ‘Resolution 1997/2’ and ‘Resolution 1998/34’.

81. UNECOSOC, ‘Resolution 1997/2’.

82. GWA, 2006.

83. GWA, 2006.

84. Adapted from Razavi, 2007.

85. UNIFEM, 2005.

3. Assessing the Contribution of Urban Areas to Climate Change from a Gender Perspective

3.1. Quantification of women's and men's contributions to GHG emissions

Usually, analysis and debate on GHG emissions revolve around the North-South divide, based on national average per capita emissions, without looking at the intra-country distribution of emissions, and differentials in per capita emissions within countries. Some authors also discuss the contribution of cities to countries' GHG emissions.⁸⁶

Another common debate seeks to compare urban and rural per capita emissions. However, there is no generally valid pattern, as for most developed countries, urban per capita energy consumption – and thus carbon emissions – tends to be lower than rural, as opposed to most developing countries.⁸⁷ This trend in developed countries might be mainly caused by differences in transport modes, with better availability, and higher share, of public transport in urban areas, and stronger dependence on motorised individual transportation in rural areas. In most developing countries, income and living standards are, on average, higher in cities, leading to higher energy consumption and emissions.

In order to discuss gender in cities, such considerations are a secondary issue, since gender puts the emphasis on intra-city differences, i.e. on the variations of per capita emissions within a city or even within a household. However, GHG emissions are usually provided as an average per capita value at national or city levels, without distinguishing between the emissions of women, men and children.

Anyway, if these data are calculated from national values, it is questionable whether they are the best option to provide a basis of investigating gender and other differentials between individuals. From a methodological point of view, looking at consumption appears to be a better way to approach GHG emissions of individuals and families, in contrast to the IPCC methodology used under the UNFCCC to determine the GHG emissions of nations. The latter, with its territorial approach, neglects 'imported' emissions associated with the consumption of goods and services, while the carbon footprint can better reflect the responsibilities of nations and individuals.⁸⁸

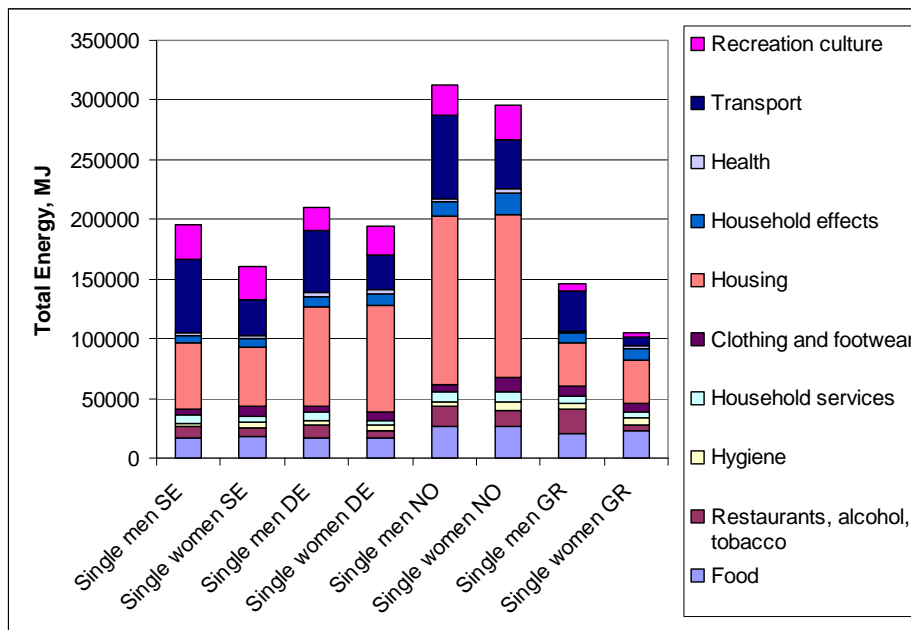
A number of consumption data are directly available for the household level, for instance energy consumption or often waste generation, or they can be estimated from expenditures. Household consumer expenditures are available in many countries, disaggregated by purposes and services such as energy, transport, housing, durables, food, clothing, etc. However, it is still difficult to allocate some of the expenditures and the consumption to the individual members of the household, regardless of whether it is a family, a couple, or a flat-sharing community. Moreover, if, for instance, energy and fuel consumption data could be broken down to the individuals in a household, the question would remain unresolved whether this consumption could be attributed to care work for the other household members, to commuting trips to employed work to earn income for the family, to informal work in the house to earn income for the family, to transport of family members, or to personal consumption.

86. IEA, 2008, Satterthwaite, 2008.

87. See, for instance, Druckman and Jackson, 2009; Alfredsson, 2002, as cited in Rätty and Carlsson-Kanyama, 2009a; and IEA, 2008.

88. See, for instance, Hertwich and Peters, 2009.

Figure 1. Annual energy consumption per capita by product categories of men and women in Sweden, Germany, Norway and Greece



Source: Rätty and Carlsson-Kanyama, 2009b

For some other consumption groups like alcohol, cigarettes, clothing and cosmetics, etc., there might be feasible ways of assigning them to individuals, in particular if these data can be complemented by surveys on consumer preferences. Some indications derived from surveys are used further below in section 3.2 in an attempt to assess gender differentials relevant to climate and climate change policy. Again, it should be noted that in order to be able to reveal the gendered contributions to climate change, more information on individual consumption is needed, including expenditures and preferences in terms of the character of the goods or services.

To gain insights on men's and women's differential GHG emissions, though, one-person households can be investigated. In this way, it is possible to detect differentials in women's and men's average per capita emissions.

A possible way to analyse differentials in per capita GHG emissions is to calculate them from expenditures, since emissions eventually are caused by consumption. This is the approach pursued by a recent European study on the gendered per capita carbon footprints of single-person households in Germany, Norway, Greece and Sweden. With the energy intensity and emissions of the products and services consumed for different purposes (transport, energy consumption in the house, food and beverages, etc.), they calculated total energy consumption and GHG emissions.⁸⁹ In all investigated countries, on average, men consumed more energy than women per year, between 6 per cent in Norway and 39 per cent in Greece (see Figure 1). A large part of the difference stemmed from car use, for instance in Sweden. This is not completely attributable to commuting, since 60 per cent of Swedish women are employed workers, compared to 69 per cent of men. There must be other factors such as size/fuel consumption of cars, personal driving habits, and additional trips than commuting such as leisure trips.

89. Rätty and Carlsson-Kanyama, 2009a.

According to the study, these gender differences holds true independently of income and age. In other words, the gap does not disappear for younger people, and it is not attributable to men's higher incomes.

3.2. Key issues for mitigation

3.2.1. Consumption, behaviour and attitudes

Since a quantitative approach is subject to certain limitations, a qualitative approach seems to be promising: There is evidence from a large number of surveys in different countries that women and men feel different about the severity of climate change. Furthermore their behaviour is different, they have different expectations on policies, and they have different needs in terms of information on climate change causes and the impacts.

As for their general behaviour relevant to energy consumption, women spend more time in the home and less time at external workplaces than men. Women spend more time on household activities such as cooking, cleaning and washing, while men spend more time on information and entertainment, such as watching TV, and on outdoor leisure activities. These gender patterns are constructed early in life and can already be observed at the age of 10–15 years.⁹⁰

Women tend to be more concerned about climate change than men, while men are more sceptical whether climate change is really happening. Women are more likely to consider climate change to be a very serious problem, while more men than women believe that the seriousness of climate change has been exaggerated.⁹¹

Women, compared to men, are more likely to take personal action to mitigate climate change, for instance by reducing energy and water consumption at home. However, no data are available whether they actually consume less water, and various factors may play a role, for example different needs and preferences for hygiene. In any case, due to their household and family care responsibilities, women might be in a better position to save home energy and water, reduce and recycle waste and so forth, i.e. to change behaviour. On the other hand, women, more than men, might lack the capital required to invest in energy-efficiency or renewable energy installations in their house, or they might lack the opportunity to upgrade their house because they live in a rented flat.

The most significant gender differences have been observed in consumption, e.g. women do more often buy seasonal and local products and organic food. Moreover, according to a number of studies,⁹² women and men have different preferences in terms of food: men tend to eat more meat, while women eat more vegetables, fruits and dairy products. The food intake of men is higher, and, in many cultural environments, disproportionately high, as women usually get less food than men and give priority to feeding their children, in particular in times of food scarcity. Therefore, energy requirements for producing food are estimated to be higher for men than for women. In developed countries, a number of studies⁹³ show gendered food preferences: As an overall pattern men tend to eat more meat and to consume more beverages than women, while women consume more fruit, vegetables and cereals than men. According to a study in Sweden, the difference in energy requirements caused by these food preferences can be up to 20 per cent.⁹⁴

90. Nordell, 2003.

91. See European Commission and European Parliament, 2009; European Commission, 2009a; Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik, 2008.

92. E.g. Carlsson-Kanyama et al, 2003; and Reinders et al, 2003.

93. Cited in Rätty and Carlsson-Kanyama, 2009a.

94. Carlsson-Kanyama et al, 2003.

Whereas, in many households, men are in charge of carrying the waste bin, women are usually responsible for shopping, thus having a choice in terms of packaging and the resulting amount of waste, and for waste separation. Women tend to avoid package waste, recycle and separate waste more often and pay more attention to environmental labels than men.⁹⁵

All in all, more women can be assigned to the group of consistent environmental protectionists, for instance in Germany.⁹⁶ In the UK, a majority of women feels that they are already environmentally friendly in what they do, while a majority of men think they should do more to change their lifestyle.⁹⁷

Very significant differences are related to the motivation for personal action: If women make investments in climate-friendly technologies, for instance to install solar collectors, they do it more for environmental reasons while for men the cost savings tend to be more relevant. However, when it comes to additional expenditures – for instance for purchasing green electricity – less women than men would be willing to pay these,⁹⁸ probably because of their lower incomes.

Women feel less well informed than men about the causes and consequences of climate change, and about what can be done to fight it. In general, they assess their knowledge on climate and energy issues to be less than men, whether this is really a fact or due to lower self-esteem. In particular housewives or ‘househusbands’ feel less informed than any other group.⁹⁹ Moreover, they know less than men about their energy costs.¹⁰⁰

More women than men would accept policies and measures to limit and restrict car use,¹⁰¹ one of the most contentious issues in the climate policy of many cities.

3.2.2. Decision-making at household level

Given the different attitudes and preferences of women and men, their respective influence in decision-making at the household level is crucial for energy consumption and thus the GHG emissions of an entire household. In other words, who is responsible for major investments such as heating systems or solar collectors, for purchasing electric equipment, and for everyday consumption such as buying food and other consumables?

In developed countries, there is a trend of increasing decision-making power of women in the household. This refers to household appliances, but increasingly also to major investments, for instance to renovate the house or purchase houses. Whereas there is little research available on this subject, marketing experts already address the rapidly increasing role women play in purchasing decisions, taking into account known preferences of women. For North America, one author found that women are responsible for 80 per cent of consumer purchasing decisions, whereas men spend about 80 per cent of household income,¹⁰² although this proportion is changing as women’s income increases. Other authors claim that women are already responsible for 83 per cent of all consumer purchases, 60 per cent of decisions on the purchase of cars and 91 per cent of houses.¹⁰³

95. Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik, 2008; European Commission, 2009a; Defra & Energy Saving Trust, 2009.

96. Kuckartz et al, 2007.

97. Defra and Energy Saving Trust, 2009.

98. European Commission, 2009a.

99. European Commission and European Parliament, 2009.

100. Focus online, 2009.

101. Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik, 2008

102. Thomas Yaccato and Jaeger, 2003.

103. See, for instance, Barletta (2003) in general; and no author (2006) for buildings and renovation.

As for many developing countries, evidence suggests limited decision-making power of women. For instance in South Africa, men tend to control finances and make most decisions, leaving less power for women to decide on fuel use,¹⁰⁴ and, moreover, since houses are, in most cases, formally owned by the men,¹⁰⁵ women might have little say on renovation such as upgrading. However, although women, within their cultural context, might not be recognized as decision-makers, they can have considerable influence in domestic decision-making and thus play an important role in managing everyday life and ensuring survival.¹⁰⁶

3.2.3. Housing, shelter and household energy

As a general rule, the higher the income, the higher will be energy consumption. This has been observed both at macro and local levels in many countries.¹⁰⁷

In northern countries, the bulk of energy consumption is for heating purposes, thereby largely depending on the size of living space. Men, with higher average incomes than women, can afford larger apartments. However, the study on gendered carbon footprints mentioned in section 3.1 shows that women use slightly more energy in the household. This might be due to the observation that many women prefer higher indoor temperatures,¹⁰⁸ and partly due to men's higher income: They are more likely to own their houses or apartments, while women are more likely to be tenants, thus lacking possibilities to improve the thermal efficiency of their apartments. In European countries, up to half of households are tenants. For them, increasing fuel prices – be it due to market development or mitigation policies – can be a severe problem, since they are 'captured customers' without being able to escape the cost increase.

Thus, energy poverty is a phenomenon that also occurs in developed countries and will presumably increase with higher energy prices. Up to 30 per cent of the population, at least in some European countries, suffer from energy poverty, which means that they cannot afford sufficient heating fuel to maintain an adequate indoor temperature.¹⁰⁹

In developing countries, the problem of fuel poverty is much more common and severe.¹¹⁰ Moreover, also in cities, the poor lack modern energy services. Up to 80 per cent of the urban population use solid fuels, mainly charcoal and fuel wood.¹¹¹ For instance in Sri Lanka, electrified households use mainly LPG for cooking, whereas more than 80 per cent of suburban households rely at least partly on biomass, and in particular non-electrified households, which are likely to be among the poor, largely use biomass.¹¹² In urban areas in Botswana, fuel wood is still used for cooking with a share of 17 per cent, and for water heating with a share of 32 per cent.¹¹³ Although most countries seek to make kerosene or LPG available, poor households often cannot afford these, and in particular in times of scarcity, for instance after disaster, they return to fuel wood. Electricity is even less available than modern cooking fuels. In Senegal, for instance, only 56 per cent of households have access to electricity.¹¹⁴ These examples demonstrate that access to modern energy services is not only a problem in rural areas, but also in cities.

104. Rukato, 2001.

105. Madebwe and Madebwe, no date.

106. See, for instance, Lubbock, no date.

107. See, for instance, Hertwich and Peters, 2009.

108. See, for instance, Karjalainen, 2007; Lan et al, 2008.

109. WHO, 2004.

110. For gender aspects See, for instance, Clancy et al, 2003.

111. WHO, 2006.

112. Wijayatunga and Attalage, 2002.

113. Karlsson, 2007.

114. Karlsson, 2007.

3.2.4. Mobility

The gender division of labour leads to specific needs of men and women in terms of mobility. With regards to the number and character of trips, employed men's mobility follows a typical commuter pattern, i.e. from home to work and back. Women, on the other hand, in many cases, have more complex mobility patterns. In particular if they are involved both in family care and paid labour, they may have multiple destinations and stops. This involves other kinds of trips, e.g. not necessarily radial trips from peripheral areas to the city centre and back, but also tangential trips from one peripheral area to the other, and, above all, trip-chaining.¹¹⁵ Moreover, family care requires them to travel with buggies and heavy loads.

Men usually use more private motorised transport than women,¹¹⁶ with larger, more fuel-consuming vehicles. In some countries the number of trips is more or less the same (for instance in the US), but men's trips, on average, are some 20 per cent longer than those of women.¹¹⁷ Furthermore, men make more trips by airplane, while, for land transport, women, on average, use more public transport or walk. Their disposition to switch to less carbon intensive transport modes is higher.¹¹⁸ Even if they have a car at their disposition, they are more likely to leave it at home and use other transport modes, do car-pooling or seek to drive in a less fuel-consuming way.¹¹⁹ However, it should be noted that many women do not have a choice, since they cannot afford a car, and poor women in developing countries can't even afford public transport. They have no other option than walking, while their husbands might use public transport.¹²⁰

Moreover, women's and men's preferences are different when purchasing a vehicle. In Germany for instance, men pay more attention to comfort, design, technical innovations, and branding, while women pay more attention to costs, fuel consumption and environmental acceptability.¹²¹

Safety issues and cultural constraints often keep women from using bikes which would otherwise be a both low-cost and zero-carbon means of transport, in particular for the distances that have to be covered in urban areas. As pedestrians, too, they are increasingly likely to suffer violent attack and even sexual assault. Consequently, they face constraints in their mobility, particularly for their access to education and employment. For example, the lack of safe transport during off-peak hours can cause girls from poor families to drop out of night schools.

All in all, the transport related carbon footprint is very likely to be systematically, and often substantially, higher for men than for women, while women often face inadequate transport options. Underlying reasons are mainly different preferences in terms of mobility and transport modes, and the gender division of labour that leads to different mobility patterns. In many cities, a male bias in decision-making leads to an investment policy that puts a higher priority on infrastructure for motorised transport than for public transport. As a consequence, the gendered patterns remain, and are even aggravated, as case studies show.¹²²

115. Trip-chaining: A series of succeeding trips covering various locations, e.g. from home to the day care centre, then to the work place, followed by the grocery store and again the day care centre, and back home.

116. Nordell, 2003.

117. US Department of Transportation, 2004.

118. European Commission, 2009a; Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik, 2006; Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik, 2008.

119. LeasePlan, 2008.

120. Williams, 2005.

121. LeasePlan, 2008.

122. See, for instance, Rainero and Falú (2002) where the bottlenecks of urban transport from the women's perspective are given for a case study.

This is a key area for gender sensitive urban policy, which is, however, not yet adequately addressed by most cities.

Box 2: Key data on gender and urban transport

The projected annual growth of CO₂ emissions from transport is 2.5 per cent globally, and 4 per cent in developing countries.^a The transport sector is therefore one of the key sectors for mitigation, and particularly important in terms of a gender sensitive approach at the urban level, as its development is directly dependant on urban structure and infrastructure, and consumer choices.

Although very few sex disaggregated data on mobility are available in developing countries, some general conclusions can be drawn from various studies in cities: More women than men have no other transport options than walking, and more women than men depend on public transport. More men than women have access to motorised means of transport, and more men than women use bicycles.^b

In the city of Vienna, for 72 per cent of their trips, women use low carbon modes of transport such as walking, cycling and public transport, while men use these modes for only 59 per cent of their trips. On average, men travel 30 km per day by car, compared to only 12 km for women.^c

Urban transport represents over 20 per cent of total World Bank lending. Although roughly 50 per cent of the client base is female, only 4 per cent of World Bank projects have an explicit gender approach.^d

Sources: a) GTZ, 2002; b) Peters, 2001; c) Verkehrsclub Österreich (VCÖ), 2009; d) Williams, 2005

4. The Impacts of Climate Change on Women and Men in Urban Areas

The 2009 World Survey on Women stated:

*'Climate change and the food and energy crises pose serious and growing threats to sustainable development. Given their important productive roles, women are particularly vulnerable to the effects of drought and erratic rainfall, which can further exacerbate inequalities in access to and control over resources.... Women's responsibilities in the management of natural resources at the household and community levels has, however, positioned them well for adapting livelihood strategies to changing environmental realities. Their knowledge and skills in water management, forest management and biodiversity can contribute to adaptation and mitigation strategies.'*¹²³

4.1. Differential impacts of climate change in urban areas by gender

Most of the literature on gender and climate change is about the greater vulnerability of women,¹²⁴ but there is still a lack of data and comprehensive research on gender differences in vulnerability. Evidence relies mainly on case studies, for instance from disasters, and on the factors that inevitably lead to higher vulnerability such as discrimination, constraint in mobility and lower economic resources.

Each of the factors explained in chapter 2.1 contribute to the differential vulnerabilities of women and men, with women as the most vulnerable group, because:

- Often more women than men may be affected, due to poverty;
- The vulnerability of the individual women is greater than that of men, due to gender roles; and
- Women often have less options and capacities to cope with climate variability, due to gender roles.

However, some cases have been reported where men have been subject to more fatalities, supposedly since they overestimated their physical strength. Moreover, it has been reported, that after disasters, destructive forms of coping, trauma and stress-related symptoms of men have been overlooked and not treated.¹²⁵

Except for disasters, research findings on gender differentials in vulnerabilities mainly refer to rural areas. While most of the considerations on gendered vulnerabilities are valid both for rural and urban areas, there are some specific issues in urban areas that have to be taken into account: Dense human settlements, in particular informal or deficient settlements such as slums are particularly vulnerable. Moreover, urban populations tend to be more dependent on infrastructure and services for their livelihood, and thus have fewer options for coping strategies.

123. United Nations Division for the Advancement of Women, 2009, p40.

124. See, among others, Ahmed et al 2007; Bartlett et al, 2009; Cannon, 2002; Duncan, 2007; Denton, 2002; Masika, 2002; Nelson et al, 2002; Osei-Agyemang, 2007; Patt et al, 2009; UNDP, 2009; UNDP and Australian Agency for International Development, 2009.

125. Walter, 2006a.

4.1.1. Disasters

Direct impacts of climate change on cities are mainly climate-related disasters, such as flooding, cyclones or other extreme weather events.

Case studies suggest that the differences in fatalities of women and men can be substantial, whether for climatologic or other natural disasters. During the cyclone in Bangladesh in the year 1991, death rates were 71/1000 for women and 15/1000 for men. In the 2004 Tsunami, in Amapara, Sri Lanka, fatalities among women were 3972 and 2124 among men.¹²⁶

Some further evidence can be provided from the meta-analysis of case studies. Gender has been identified as one of several determinants of vulnerability to climate change impacts for individuals, together with age, health status, ethnicity, and (new) migrants. Individual assets (in particular income, and also housing and employment), collective assets (location, services, and infrastructure) and institutional factors (in particular knowledge, governance practices and urban planning) have been found to be important determinants, as well. Moreover, all studies point out linkages between poverty and vulnerability,¹²⁷ due to poverty as a direct cause of vulnerability, or due to the underlying reasons of poverty. Thus, for women, several factors are interwoven, and are likely to add up to exacerbate their vulnerability: Women's exposure to climate hazards may be greater due to their lower income, for instance because of the location of low-income settlements in risk areas; and their options for coping may be limited, for example because of the lack of assets and women's duties related to family care. However, the observed gender differentials vary across countries and cities,¹²⁸ with smaller differentials in developed countries.¹²⁹

A large statistical analysis of the effects of natural disasters on the life expectancy of men and women provides evidence that more women die than men as a direct and indirect result of natural disasters. More than 4600 disasters between 1991 and 2002 in 141 countries were examined, estimating their effect by using data on life expectancies. In particular in countries where women have low social status and access to resources, the difference was larger, whereas in countries with more or less equal rights for women and men, the difference was negligible.¹³⁰

4.1.2. Coastal cities

Coastal cities are, in general, more vulnerable to climate change impacts compared to other cities, since they are exposed to sea level rise and more frequent flash floods, and also salinisation of water in addition to other hazards such as heavy rain falls, storms, and droughts.¹³¹ Yet in these cities, population growth is usually high,¹³² while they are facing many severe climatologic disasters, namely regular floods causing serious damage and many fatalities. Sea level rise could submerge large areas of the city, and tourism could be negatively affected.¹³³

In particular in Asia, many cities are therefore extremely vulnerable, including megacities such as Bangkok, Chennai, Mumbai, and Tokyo. In Europe, one of the most well-

126. Walter, 2006a.

127. Romero Lankao and Tribbia, 2009.

128. Bell et al, 2008.

129. See, for instance, Neill et al, 2003.

130. Neumayer and Pluemper, 2007.

131. See, for instance, Balk et al, 2009.

132. McGranahan et al, 2007.

133. See, for instance, for Mombasa, Awuor et al (2008).

known coastal cities is Venice whose population and cultural heritage is regularly affected by ‘*acqua alta*’.

Gender aspects of vulnerability in coastal cities are, again, the greater vulnerability of women due to their family and care roles, the fact that they spend more time in the home and their constrained mobility.¹³⁴ For instance, it has been repeatedly reported that early warnings – for example, flood warnings in Bangladesh – have not reached women or have not been understood by them.

4.1.3. Direct and indirect impacts of climate change on women and men

In addition to gender differentials due to the direct impacts of climate change, secondary and tertiary impacts can cause additional severe and often long-term effects with remarkable gender differentials, even if direct impacts can be the same for women and men.

Indirect gendered impacts of disaster include:¹³⁵

- Higher work burden for women due to care for sick family and community members;
- Malnutrition of women because of food insecurity and women prioritising feeding of children and other family members;
- Mental health problems of women and men due to trauma and stress, with different stress factors and reactions of women and men;¹³⁶
- Sexual harassment in post-disaster relief shelters;
- Loss of income from informal work at home;
- Loss of traditional land tenure, e.g. where women can only access land through male relatives, women might lose access to land;
- Inadequate support for female-headed households during recovery due lack of access to funds because men are often prioritised;
- Lack of family planning and reproductive health care in disaster zones;
- Potential increase in maternal and infant mortality rates due to lack of health care services;
- Expansion of informal urban settlements stemming from rural-urban migration due to climate change impacts and other problems in rural regions. These often informal settlements are often located on disaster prone land and lack basic services such as water and sanitation;
- Temporary or permanent migration with specific gendered patterns, e. g. male migration, leaving families behind in a difficult situation, and leading to an increase of female-headed households; and
- Conflict and violence due to increasing scarcity of natural resources, resulting in gendered patterns of violence can increase of gender inequalities.¹³⁷

4.1.4. Tertiary or longer term impacts

Eventually, the factors explained above result in a larger number of women being severely affected by the impacts of climate change, in a greater vulnerability for individual women and less options and capacities to cope with climate variability.

134. Nitivattananon et al, 2009.

135. See United Nations Population Fund and WEDO, 2009.

136. See Bartlett et al (2009) for women; and Walter (2006a) for men.

137. See, for instance, Osei-Agyemang, 2007; and Welzer, 2008.

In the long run, women and girls may have even less time for involvement and participation in community affairs, due to the increased work burden of family care and livelihoods. Girls' school enrolment may decrease, leading to decreased literacy rates, deprivation of education opportunities, and also effects such as early marriage because of a lack of alternative options.

Thus, gendered roles may be reinforced, consolidating and aggravating the discrimination of women.

*'The trade-offs forced upon people by climate shocks reinforce and perpetuate wider inequalities based on income, gender and other disparities.'*¹³⁸

4.2. Key issues for vulnerability and adaptation

There is an increasing body of research available on gender in adaptation.¹³⁹ A precondition to detect the gendered vulnerabilities and channel funds to address these is to not only identify the most vulnerable communities, but, in addition, to identify the most vulnerable members of these communities. In the following, some further key issues are highlighted which should guide urban responses.

4.2.1. Housing and shelter

Slums, due to their disadvantaged location, high densities, weak structures and lack of infrastructure and services, are one of the most vulnerable parts of cities, and their inhabitants have, due to their poverty, few coping options in face of disaster. Amongst these, women tend to be the most vulnerable because of the underlying reasons given above and the proportion of women slum-dwellers is usually substantial. In the Tondo district of Manila, the Philippines – which comprises the largest slum in South East Asia – for instance, 80 per cent of adult slum dwellers are women.¹⁴⁰ This area is prone to typhoons and flooding. According to Oxfam¹⁴¹ 60 per cent of the population of Nairobi live in slums, with women in these slums being five times more likely to be unemployed than men.

Moreover, 40 per cent of the poorest households in urban areas are headed by women.¹⁴² They are likely to be among the most vulnerable due to inadequate housing in poor urban neighbourhoods where a large number of women-headed households – more than 50 per cent in some countries such as Haiti and Ghana – live in houses with various shelter deprivations.¹⁴³

*'Women-headed households suffer disproportionately from inadequate housing. They are particularly vulnerable to exclusion from secure tenure often as a consequence of cultural norms and unequal legal rights. A 160 city survey suggests that approximately 20 per cent of households are headed by women. Life is precarious with ill-health and a lack of employment and income generating opportunities, a constant for many. Climate change will exacerbate their plight unless conscious efforts are undertaken to redress their situation.'*¹⁴⁴

138. UNDP, 2007, p86.

139. See, for instance, OECD (2009b) where efforts have been made to include the gender dimension, and publications specifically on gender and adaptation such as Rodenberg (2009); and Lane and McNaught (2009).

140. Brot für die Welt, 2009.

141. Oxfam GB, 2009.

142. UNDP, 2009.

143. Shelter deprivations are defined as a lack of durable housing, sufficient living area, access to improved water, access to sanitation, and secure tenure (UN-Habitat, 2006c).

144. UN-Habitat, 2009a, p22.

Much more efforts and costs will be necessary for slum areas and their dwellers to adapt to the impacts of climate change.¹⁴⁵

4.2.2. Water and food security

In cities in developing countries, a considerable part of the unpaid work done by women revolves around natural resources, collection of fuel and water. In various critical situations arising from climate change, in particular during extreme weather events such as flooding and drought, and also due to longer term developments such as saline intrusion, the availability of drinking water will be at risk. As a consequence, women's work burden is likely to increase. In developing countries, longer walking distances to collect water and fuel wood severely increase the time women and girls have to spend for these activities.¹⁴⁶ This may have secondary impacts including food insecurity, since women depend on access to sufficient water resources to prepare food.¹⁴⁷

Women are also likely to undertake additional care work for family members due to the health impacts of climate change. While men can respond to the effects of climate change by migrating, women often cannot avoid the impacts because of their family responsibilities.

Moreover, although agriculture is primarily a rural activity, in some cities in developing countries, urban agriculture contributes to food security. In Cuba, for instance, more than 50 per cent of vegetables are grown in cities.¹⁴⁸ If the yield of urban agriculture is reduced or destroyed due to climate change, food security in cities will be further endangered. Reducing vulnerability therefore implies improving water supply and food security, in particular for the poor.

4.2.3. Power relations

Unequal power relation can contribute to increased fatalities amongst women, for instance if women cannot evacuate without their husband's permission. Building of shelters for post-disaster periods that are inadequate for women, because of constrained accessibility for women with children, a lack of decent sanitation facilities and a separate room for women, are the result of androcentrism – the planners just did not take women's needs into consideration. This calls for the equal participation and involvement of women in disaster risk reduction, both at decision-making, and at community levels.

4.2.4. Economic resources

Due to their paucity of resources, women have fewer options to cope with, or avoid the impacts of climate change. Again, this holds true for women in both developing and developed countries, however, for women in developing countries, situations threatening survival are more common.

Women's dependence on the informal sector to earn income for themselves and their families increases their vulnerability. In Sub-Saharan Africa, for example, on average 84 per cent of women's non-agricultural employment is informal, and in large cities still more than 50 per cent, except in South Africa and Namibia.¹⁴⁹ Due to discrimination in the labour market, poor women in developing countries often don't have alternatives for income

145. Satterthwaite et al, 2007.

146. See, for instance, Denton, 2002.

147. See, for instance, Choudhury et al, 2005; and Ahmed et al, 2007.

148. Killoran-McKibbin, 2006.

149. UN-Habitat, 2008b.

generation, and in particular in disaster situations, even informal income generating activities are at risk. Therefore, improving the economic situation of the poorest is a priority for building resilience.

4.2.5. Responses to disaster

As for disaster risk management policies and plans and related decision-making processes, it is widely acknowledged that a gender perspective is to be integrated.¹⁵⁰ This includes risk assessment, early-warning systems, information, education and training, including, for instance, gender training as an integral component of education and training for disaster risk reduction.¹⁵¹

At the International Conference on Gender and Disaster Risk Reduction in 2009, the ‘Beijing Agenda for Global Action on Gender-Sensitive Disaster Risk Reduction’ was adopted which recommends actions to be implemented by 2015. These included:¹⁵²

‘Foster the linkage between disaster risk reduction and climate change adaptation from a gender perspective through policy and administrative measures;

Collect gender-specific data and statistics on impact of disasters, carry out gender-sensitive vulnerability, risk and capacity assessments and develop gender sensitive-indicators to monitor and measure progress;

Increase awareness of the public and media on the gender-sensitive vulnerabilities and capacities in disasters and gender-specific needs and concerns in disaster risk reduction and management;

Support research institutions to study the cost-benefit and efficiency of gender-sensitive policies and programmes in disaster risk reduction, climate change adaptation and poverty reduction;

Secure the actual application of disaster risk assessments as part of development policy-making and programme formulation to prevent disasters from making the poor even poorer;

Improve and mainstream a gender perspective and equal participation between men and women in the coordination of disaster preparedness, humanitarian response, and recovery through capacity building and training;

Build and enhance the capacities of professional organizations, communities and pertinent national and local institutions to enable gender mainstreaming into all development sectors.’

These recommendations were primarily targeted at governments. However, they are also valid for local governments and metro regions, since these are the authorities to actually implement actions on disaster risk reduction, early-warning systems, and response measures.

The Hyogo framework to build resilience of nations and communities to disasters¹⁵³ and the Sphere project that developed, in an extensive and broad-based consultation process, minimum standards in disaster response,¹⁵⁴ both include gender aspects.

150. As confirmed by UN General Assembly. Twenty-third special session. Ad Hoc Committee of the Whole (2000).

151. As stipulated by the Hyogo Framework (Inter-Agency Secretariat of the ISDR, 2007) that was endorsed by 168 governments at the World Conference on Disaster Reduction in 2005.

152. International Conference on Gender and Disaster Risk Reduction, 2009.

153. Inter-Agency Secretariat of the ISDR, 2007.

154. <http://www.sphereproject.org>.

The Gender and Disaster Network¹⁵⁵ has been working since 1997 to document and analyse gendered experiences before, during, and after disaster, to generate knowledge, share information on gender and disaster, and provide recommendations for a comprehensive gender-sensitive approach, including through a ‘Gender and Disaster Sourcebook’.¹⁵⁶

Guidelines and a collection of case studies for gender sensitive disaster risk reduction are provided by the International Strategy for Disaster Reduction (ISDR).¹⁵⁷

155. <http://www.gdnonline.org>.

156. GDN, 2008.

157. See ISDR et al (2009) for policy and guidelines; and ISDR and United Nations (2008) for case studies.

5. Climate Change Mitigation and Adaptation Responses in Urban Areas

5.1. Key issues

Power and participation: Cities need to address the unequal power relations and the lack of representation and participation of women. There are some indications that the outcome of policies would be different, and often more ambitious, if more women would be involved. It is incontestable that improved involvement of women would help to better take their specific vulnerabilities, and that of the entire family, into consideration. Women as resource managers of households and communities hold experiences and knowledge that would benefit the city's strategies on resources, infrastructures and services. In light of the evidence on gender differentials in risk perception,¹⁵⁸ women's participation would very likely result in low risk options to be favoured. Women tend to favour renewable energies and reject risky technologies such as nuclear power more than men.¹⁵⁹ In Germany, for instance, more women than men support a massive increase in the use renewable energy sources.¹⁶⁰ A significant higher proportion of women than men believe that effective policies to combat climate change are very important and expect determined measures from policy-makers.¹⁶¹ Given the differentials in attitudes explained above, stronger action to protect the environment and mitigate climate change could be expected if more women would have a say in urban politics.

Justice issues: In all cities in the world, there are large differentials in carbon footprints. They range from zero to very large, both for developed and developing countries. However, in developing countries, the proportion of the population with a very large carbon footprint is small, while in the developed countries, the proportion of the population with a carbon footprint close to zero is very small. These are, in particular, homeless people. In major US cities, for example, between 0.15 and 1.74 per cent of the population is homeless, with a share of women of less than 20 per cent.¹⁶²

Since land is usually an extremely scarce resource in cities, there are also justice issues involved in the use of land and space. Often, there are multiple impacts, for example those who can afford to use a large land area for their dwellings are commuting to work with cars, producing GHG emissions, air pollution and using additional space for parking. These affluent groups claim a disproportionate share of resources such as space, water, clean air; and often, their behaviour is encouraged and their privileges are supported by urban planning. In contrast to the global divide between developed and developing countries, at urban level, affluent polluters are living in the vicinity of the victims of pollution and often both share the same space. Therefore, injustice and divide is directly tangible.

Addressing poverty and affluence: Cities need to address both poverty and marginalisation, as well as affluence and overconsumption. Poverty is not only about material deprivation; it also includes a lack of voice or power, vulnerability to crises and other adverse situations and limited capacity to cope with such vulnerabilities, while affluence is often

158. See, for instance, Bord and O'Connor, 1997; Finucane et al, 2000; Kiljunen, 2008; European Commission, 2007; Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik, 2008.

159. Kiljunen, 2008; Kuckartz et al, 2007; Jones, 2009; tns-opinion, 2008.

160. Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik, 2008.

161. See, for instance, Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik, 2008; Caiazza and Barrett, 2003.

162. The United States Conference of Mayors, 2008.

connected with privileged positions. Therefore, ensuring equitable participation of women and men, both poor and rich, is a key feature for successful policies to improve resilience and cut GHG emissions. A rights-based approach is not only essential for participation in policy-making, but also for access to resources and services.

Closing the data gap: Cities can substantially contribute to collecting sex-disaggregated data. This does not necessarily lead to great additional efforts if integrated in usual data collection procedures. Not only the authorities can contribute to data collection, but also community initiatives. For example, the international slum dweller network strongly recommends its members to collect data themselves.

It should be noted that sex-aggregated data often do exist, but are not evaluated, in particular, if differentials appear to be small. However, it would be also useful to know these issues where no or only small gender differentials can be observed.

Cross mainstreaming: Gender and climate change are both cross-cutting issues affecting most aspects of urban life. It remains a challenge to adequately respond to this in planning and decision-making procedures and at an institutional level. For instance, the climate change unit and the gender equality unit would need to closely collaborate to consider gender in climate change policy and consider climate change in gender equality policy. A close collaboration might be considered as even more challenging from both sides. Moreover, their approaches and language tend to be very different, and misunderstandings might be difficult to avoid.

5.2. Climate policy of local governments

In its ‘Local Government Declaration on women’s participation in local government’ the International Union of Local Authorities (today: United Cities and Local Governments) demanded:

‘12. In order to create sustainable, equal and democratic local governments, where women and men have equal access to decision-making, equal access to services and equal treatment in these services, the gender perspective must be mainstreamed into all areas of policy making and management in local government. ...

14. Women have the equal right to sound environmental living conditions, housing, water distribution and sanitation facilities, as well as to affordable public transportation. Women’s needs and living conditions must be made visible and taken into account at all times in planning.’¹⁶³

The Council of European Municipalities and Regions presented a ‘A Charter for Europe’s local and regional governments to commit themselves to use their powers and partnerships to achieve greater equality for their people’ in 2006.¹⁶⁴

These documents have been endorsed by many local governments world-wide. However, to date, many of them still lack a comprehensive gender policy, and in particular, the commitment to mainstream gender in all policies has not been implemented for climate policy.

Local governments should therefore be made aware of gender-sensitive approaches for mitigation and adaptation, and their co-benefits in terms of sustainable development, for example through gender-aware transport planning, energy-retrofitting programmes targeting

163. IULA, 1998.

164. CEMR, 2006.

low-income households, upgrading of water supply and drainage systems, ensuring early-warning systems that are suited to reach both women and men, and striving for equal representation of women and men in decision-making.

5.2.1. Mitigation

In principle, cities can play a major role for most mitigation sectors. They can contribute to low-carbon development, in particular through the conversion of energy supply to a more low-carbon system and use of renewable energy options. Cities can also, with various policies and measures, encourage their citizens and businesses to save energy and to improve energy efficiency, to avoid waste, reuse and recycle, to change their consumption patterns, and in particular they can, by urban planning, create urban structures suited for low-carbon mobility, reduce motorised individual transportation in combination with offering good public transport services.

However, cities need to pursue a broader approach than only cutting GHG emissions. At the local level, the linkages to sustainable development – including gender and other issues – poverty alleviation, clean air issues, regional economic development, liveable cities, are evident and therefore need to be addressed, not least in order to achieve acceptance by citizens and enforceability.

For several of these topics, in particular transport and energy, there is a close linkage to mitigation in general. However, in terms of gender and women's issues, the link is not that directly evident, since often it is a lack of commercial energy or transport options that affects women. If local policy addresses this problem and implements remedies, it won't necessarily lead to GHG emissions reductions, since it is not about replacing the fossil fuel option with efficiency or renewables, but rather replacing the zero option women have with some kind of more or less carbon intensive technology. In particular in cities, improved access to modern energy services includes LPG or electricity, at least for a certain time, which will inevitably lead to higher GHG emissions.

Long-term considerations need to be taken into account. For instance, if more women will eventually be able to afford cars, they will prefer this transport mode if other options do not sufficiently meet their needs. In the US, for example, gender differentials in car ownership and use are not that large, particularly for younger people, since urban sprawl, lack of public transport and safety issues leave women, in practical terms, no other choice. Therefore, improvements in urban planning for better accessibility and in public transport meeting the specific needs and constraints of women might not yield benefits in terms of GHG emissions cuts today, but in the future, they will provide crucial preconditions for low-carbon mobility.

Furthermore, the significance of the household economy needs to be acknowledged and addressed. Time, for instance, is also a gendered poverty issue. Investing in the household economy reduces poverty; consequently, the highest priority needs to be given to poverty reduction strategies.

For urban mitigation policies, it is useful to avoid constricting the perspective only at the energy consumption and GHG emissions released in the municipal or metropolitan area, but also rely on carbon footprint methods. In particular, if deeper cuts of GHG emissions are to be achieved, the level of consumption and consumption patterns of citizens need to be addressed. As the level of government closest to citizens, cities are in a good position to do this.

5.2.2. Adaptation

As for adaptation at city level, coping strategies and mere reactive or defensive policies such as raising dam heights will not be sufficient, as the ultimate goal is improving resilience. Cities need to address the underlying causes for vulnerability, and seek to combine adaptation measures with poverty alleviation and creation of income generation options for women, and massive improvements in housing and infrastructure.

A first step is to reduce vulnerability of the most vulnerable groups, of which a majority are women, and enhancing the resilience of communities. To this end, urban planning, community resources and the provision for infrastructure and services are essential. In particular for disaster risk reduction, cities can, and must, play a major role at all stages, improving preparedness and information systems, disaster management, and post-disaster emergency measures.

Key areas of action to reduce vulnerability include improving food security, overcoming the structural causes of famine, improving education and health systems, better urban planning, provision of services and infrastructure to the most vulnerable groups, and gender equality.¹⁶⁵

Most methodologies to identify vulnerable groups are blind for gendered vulnerabilities, since they do not distinguish between different vulnerabilities at the micro level within local communities and within households. In India, a ‘Vulnerability Capacity Index’ has been developed for disaster risk assessment, which could fill this gap. It takes a number of ‘drivers of vulnerability’ into consideration, to assess material, institutional and attitudinal vulnerability, supported by shared learning dialogues at different levels between government, communities, NGOs and financial institutions.¹⁶⁶

5.3. Methodologies and tools

5.3.1. Guidance and tools and for equal participation and gender mainstreaming at the local level

Cities can rely on existing methods and tools to involve both women and men at the community level, assess planned projects and programmes for their impact on women and men and the gender relations (gender impact assessment) and ensure equitable spending of funds (gender budgeting).

Some of these existing tools can be applied at the city level directly; others might need to be modified for climate policy. In climate policy, achieving balanced participation in planning and decision-making might require more efforts because of the disproportionately low representation of women in a number of fields relevant to climate change as indicated above. Moreover, it should be ensured that current and expected future climate variability is taken into account. Since citizens are likely to lack this knowledge, information and capacity-building on climate change and its expected impacts need to be a first step prior to the application of participatory planning tools.

The following sections provide a brief overview on existing approaches and methodologies on equitable participation of women and men, and ways to work towards gender sensitive policies in cities.

165. Satterthwaite et al, 2007.

166. Ahmed and Fajber, 2009.

5.3.2. General resources on equal participation and gender mainstreaming in cities

While a resource kit such as ‘Increasing women’s participation in municipal decision-making processes strategies for more inclusive Canadian communities’¹⁶⁷ might be more suited for cities in developed countries, the trainers’ sourcebook ‘Gender in Local Government’ provides, among others, guidance for participation and has been prepared with a global perspective.¹⁶⁸

Further guidebooks, for instance ‘Women taking their rightful place’¹⁶⁹ and ‘A methodology and good practices for equal opportunities between women and men’¹⁷⁰ are not climate specific, but most of what it said can be applied to climate policy. The first includes an overview on methods and tools for gender mainstreaming in local management, and the latter provides a detailed methodology for an ‘equal town’.

UN-Habitat has prepared a sourcebook for trainers in order to assist them to acquire an in-depth understanding of gender concepts and their manifestation in local policies, covering several policy fields that are relevant to climate change, such as urban planning, service provision, gender budgets and local economic development, complemented by case studies.¹⁷¹

UN-Habitat also provides best practices of gender mainstreaming in local authorities that can be replicated and adapted, though most of the examples are not directly related to climate change.¹⁷² The British Council and One World Action provide examples for gender-sensitive local policies.¹⁷³ A handbook published by UN-Habitat and the European Commission¹⁷⁴ includes training materials and action tools targeted to Somalia, but might be helpful for other countries, as well.

Useful tools in the context of impacts and adaptation could be participatory assessments. These are used as an instrument for including poor women’s and men’s views in the analysis of poverty and the formulation of strategies to reduce it through public policy interventions,¹⁷⁵ for instance for water.¹⁷⁶

5.3.3. Resources on climate policy and relevant sector policies

A study on ICLEI’s Cities for Climate Protection Campaign in Latin America¹⁷⁷ is specific on local climate policy. It does not go into the substance of mitigation and adaptation policies and measures, but rather focuses on principles how to gender methods and approaches and involve stakeholders in local mitigation policies.

A specific tool to assist cities in improving the gender balance in decision-making positions in climate policy is the ‘Climate for Change’ toolkit.¹⁷⁸ Since equal participation is a generic issue, other tools that are not specific for climate change policy can also be useful.

167. Federation of Canadian Municipalities, 2004.

168. UN-Habitat, 2008c.

169. Federation of Canadian Municipalities and Femmes et Ville, 2004.

170. CEMR, 2005.

171. UN-Habitat, 2008c.

172. UN-Habitat, 2008a.

173. British Council and One World Action, 2000.

174. UN-Habitat, 2004.

175. Norton et al, 2001.

176. See Gross et al, 2001.

177. Budhu, 2002.

178. See Climate Alliance of European Cities, 2005a; Climate Alliance of European Cities, 2005b; Climate Alliance of European Cities, 2005c.

For local public transport, the World Bank Gender and Transport Resource Guide¹⁷⁹ gives an introduction and offers links to a large number of methods, tools, and case studies. The German association of cities has produced a guidebook on transport planning and women which is in most parts still valid.¹⁸⁰ Others have explained the gender impact assessment based on a case study in Jakarta, Indonesia.¹⁸¹

As for energy, UNDP published a toolkit¹⁸² based on the work of the international network on gender and sustainable energy ENERGIA and others. However, it is mainly suited for rural areas, whereas for urban areas, as yet, no methods and tools on energy are available.

On inclusive urban planning and renewal, a report written for India, might be a useful resource on gender mainstreaming in urban development for any country.¹⁸³

The 'Water for African Cities' project carried out by UN-Habitat in partnership with GWA generated and applied a Rapid Gender Assessment (RGA) methodology in 17 cities in 14 countries.¹⁸⁴

As for disaster risk reduction, the Gender and Disaster Network's guide provides numerous resources that are useful and applicable to local governments.¹⁸⁵

5.3.4. Proposed approach

Cities that are just starting to address climate change should integrate gender issues from the start, following the steps explained in section 6.3 which can guide cross-mainstreaming of gender and climate policy in cities, based on the generic step-by-step approach given in section 2.3 and adapted for the urban level.

For cities that already have climate policies and programmes in place, it might be more difficult to introduce the gender dimension into ongoing activities. They should seek a window of opportunity, such as an evaluation and update of the programme. They can then apply tools such as gender impact assessments to identify weaknesses and 're-gender' the most urgent issues. During the implementation of programmes, they should identify entry points for gender sensitive projects; for ongoing programmes, they can at least start to collect sex-disaggregated data, for instance of the respondents to subsidy programmes.

Policies which, in any case, need to take the gender dimension into consideration are for adaptation: Disaster risk reduction, shelters, land use, access to resources and services. For mitigation, rapid gender checks for 're-gendering' should look at financial instruments such as subsidies; on information, training and advice on climate change and options to mitigate and adapt. Information and materials should be gender sensitive in terms of content, language, design and communication channels, but reproducing gender stereotypes should be avoided.

As for new programmes, priority in terms of gender should be put on specific measures to combine social and gender issues with climate issues, addressing poverty and marginalisation and creating an enabling environment. This could be, for instance, poverty alleviation measures that increase resilience, energetic retrofitting programmes targeting the poor, and transport policies that favour non-motorised transport modes.

179. World Bank, 2006.

180. Deutscher Städtetag. Kommission 'Frauen in der Stadt', 1995.

181. Spitzner et al, 2007.

182. UNDP, 2004.

183. Khosla, 2009.

184. See GWA and UNDP, 2006.

185. GDN, 2008.

Box 3: Examples of gender sensitive urban adaptation

The project ‘Girls in Risk Reduction Leadership’ in Ikageng, a township of **Potchefstroom**, South Africa, aims to reduce the social vulnerability of marginalized adolescent girls using practical capacity-building initiatives to increase individual and community resilience to disasters. Girls were trained by experts in areas such as personal and public health, fire safety, counselling and disaster planning. This is to complement traditional but important roles of women in the community. Later on, they will work with the disaster risk reduction team to help design a plan for the community to improve resilience.^a

The women’s group ‘Guardianas de la Ladera’ (Guardians of the Hillside) in **Manizales**, Colombia, has done traditionally male work in order to preserve their houses and their environment on the unstable city hillsides. They worked together with 90 women heads of households.^b

In the slum settlement Kalandar in **Delhi**, India, a commercially viable water kiosk is managed by a women’s committee and provides safe water at affordable costs. Each household receives a user identity card, a membership number and a set of coupons for a fixed daily quota of water per family. NGOs and a research institute had raised the women’s awareness on the poor water quality and organised a community mobilisation process to engage women in the planning, management and operation of the water kiosk as a community enterprise.^c

In several slums in the **Tiruchirapalli district**, India, women’s groups, with guidance and funding from NGOs, installed drinking water facilities and individual toilets, in order to address the poor sanitary conditions. The state government initiated the programme and provided the land, electricity, water supply and loans to community members. A gender-sensitive community mobilisation programme with a focus on gender mainstreaming carried out by the women was part of the project.^d

Sources: a) ISDR and United Nations, 2008; b) UNDP, 2009; c) Khosla, 2009; d) GWA and UNDP, 2006

Box 4: Examples of gender sensitive mitigation

The Kuyasa Fund in **Cape Town**, South Africa provides microfinance lending for housing, targeting the most vulnerable groups, in particular women. 16 per cent of the funds went into thermal efficiency of houses.^a This fund could, in the future, be redesigned to even more encourage energetic retrofitting, ideally combined with advice on energy saving measures.

A number of examples are dealing with the safety and accessibility of public transport systems as a low-carbon means of transportation. Though not directly greenhouse gas reduction, the following examples seek to increase the acceptance of public transport by women and to encourage them to use public transport instead of private vehicles.

In order to address women’s safety issues in public transport, the city of **Montreal** in Canada introduced the ‘Between Two Stops’ service, enabling women to get off the bus between two stops at night, on request, so that they can descend closer to their destination. The initiative came from women’s groups and was implemented in partnership. Moreover, the entrances to metro stations were made safer.^b The safety programme was intended to increase the mobility, autonomy, and empowerment of women, but it contributes to GHG reduction, as well, since women can avoid going by car.

The local transport plan of the **Hanover metro region** in Germany in 2008 was based on a detailed analysis of the users’ needs, taking gender aspects into consideration, resulting in recommendations for the enhancement of the public transport network, schedules, tariffs and safety issues.^c

London, United Kingdom, also has an initiative for ‘Safer Travel at Night’, raising awareness of the dangers of using unlicensed minicabs alongside the provision of better transport services, the provision of better transport information and against illegal minicab activity. This has led to a drop in the number of rapes and sexual assaults in unlicensed minicabs by a third.^d

In **Helsinki**, Finland, persons travelling with young children in baby buggies can ride in the public transport system of the Metropolitan Region of Helsinki for free. This policy helps to encourage mothers to use public transport, and fathers benefit too.^e

The city of **Vienna** in Austria has a comprehensive strategy for gender-sensitive transport planning. A special 'Unit for Planning and Building Suitable for Women and Everyday Life' (Leitstelle Alltags- und Frauengerechtes Planen und Bauen) in the Authority for Urbanism is in charge of preparing recommendations for urban planning, representing the interests of pedestrians, initiation of projects and participatory processes. Already since 1995 they have been examining plans for the expansion of public transport in great detail as to their user friendliness and safety. One of the districts in the city centre is a pilot for gender mainstreaming with a focus on urban planning and local transportation.

In order to break gender stereotypes, pictograms in buses and trams that visualise social groups for whom special seats are reserved, include not only a woman with a baby, but also a man with a baby on his lap. 'Under construction' signposts show also female building workers. A small measure, but very good to raise awareness of gender issues. Moreover, the city of Vienna provides sex-disaggregated data on transport modes.^f

The city of **Utrecht** in the Netherlands is striving to raise awareness on environmental and energy issues. As part of their programme, a local NGO recruited 70 migrant women and trained them to be eco-coaches. In a pyramid system, each of these coaches trained a group of eight friends and neighbours on environmental topics such as energy saving.^g The interesting feature of this project, in terms of gender, is that it relies on the way women prefer to receive advice: mouth-to-mouth, preferably from friends.

Sources: a) UN-Habitat, 2008a; b) UN-Habitat, 2008a; CEMR, 2005; c) Knoll and Szalai, 2005, pp51–53 ; d) CEMR, 2005; e) CEMR, 2005; f) Leitstelle für Alltags- und Frauengerechtes Planen und Bauen der Stadt Wien; g) Eurocities, 2009

5.4. Critical issues in relation to technology and finance mechanisms

Access to, and attitudes towards, technologies differ by gender. In particular, gender differentials in risk perception have been observed in numerous studies.¹⁸⁶ According to surveys in different countries, women are less willing than men to accept risky technologies such as nuclear power, carbon capture and storage, and geo-engineering, while they are more strongly supporting small-scale renewable energies and non-technical solutions such as down-sizing and reduction of over-consumption.¹⁸⁷ Consequently, if the participation of women in decision-making would be improved, it is likely that priorities and preferences would be different. Another consequence is the need for more appropriate technologies to meet women's demands.

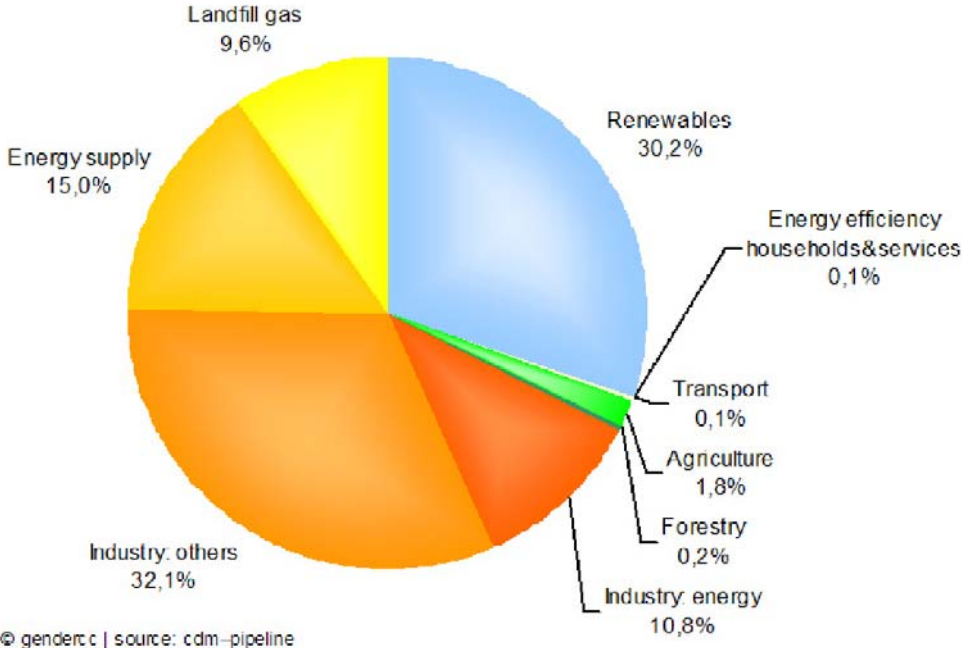
Likewise, the carbon market, and in particular the Clean Development Mechanism (CDM), might be evaluated differently if assessed from a gender equity perspective. The analysis of registered projects by sector illustrated in Figure 2 shows that a vast majority of projects are about energy supply, landfill gas, and industrial processes. As for renewable energy projects, many of them are relatively large, e.g. wind parks or large biomass plants.

Women in their role as consumers and household managers would primarily benefit from energy-efficiency projects in households, investments in public transport, and from small-scale household or community renewable projects. However, such projects, with less than 1 per cent of expected certificates, play only a marginal role.

186. See, for instance, Weisenfeld et al, 2009; Henwood et al, 2008.

187. See, for instance, Finucane et al, 2000; Kiljunen, 2008; European Commission, 2007; Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik, 2008.

Figure 2. Certificates from CDM projects by sector



Source: <http://www.gendercc.net/policy/topics/flexible-mechanisms.html>, data source cdm-pipeline)

The main reason for the extremely small share of transport and demand-side energy-efficiency projects is that market forces are not sufficient as a driving force for their implementation, since their economic viability is not given, for example in the case of most public transport projects, or the transaction costs are too high, for instance in the case of small-scale energy-efficiency projects.

It is a well-known fact that many energy-efficiency measures would be economically viable even without benefiting from carbon credits, e.g. replacing conventional light bulbs by efficient ones, or using more efficient stoves and electric devices. However, certain obstacles such as a lack of information and of capital to afford higher investment costs are impeding their deployment. Overcoming these obstacles requires intensive work, for instance in the form of providing advice or offering micro finance schemes, which makes these projects unprofitable from a mere market perspective.

Therefore, other ways need to be pursued to exhaust the large untapped energy-efficiency potential. Cities, due to their close relation to consumers and their powers and responsibilities in terms of urban planning and infrastructure, are well-positioned to play a major role in fostering climate projects and programmes whose realisation is not guaranteed by market forces.

There is gender bias on the side of investors, given the male dominance in decision-making for institutional investors, and the gender gap in assets for private investors. Women’s access to markets and investment capital is hampered, and the upfront costs for registration of CDM projects are substantial and favour large-scale projects. Consequently, women are less likely than men to benefit from market based climate financing instruments such as CDM.¹⁸⁸

188. See also the analysis and recommendations given in GenderCC – Women for Climate Justice (2007), and Schalatek (2009).

It should be noted that cities, in principle, can benefit from CDM projects, e.g. from investments in retrofitting of district heating networks and decentralised low-carbon energy supply options. However, for a number of crucial policies and measures at the city level beyond technical projects, e.g. urban planning towards compact cities, it is virtually impossible to measure and verify their quantitative benefits in terms of GHG reduction. Moreover, for the reasons explained above, it is more appropriate for cities to go for sustainable solutions which may have co-benefits in terms of GHG emissions cuts, rather than streamlining their activities to solely optimise carbon intensity.

6. Conclusion: Linkages between Gender, Climate Change Responses and Policy Directions

6.1. Gender and climate change in urban areas

Gender is about socially and culturally constructed roles and power relations. It is therefore not about women, but about women and men, their different concerns, needs, involvement, contributions, attitudes, and behaviour. However, due to the power relations and the male bias in decision-making, attention needs to be drawn to the specific situation of women which is otherwise neglected. Factors of gender inequality and their relevance for climate change in urban areas include:

- **Gender bias in power and decision-making:** Women are underrepresented in decision-making, in particular in executive positions in urban climate policy, and related fields such as energy, transport, and construction. Consequences include a male bias in planning and decision-making which may lead to neglect women's needs.
- **Gender division of labour:** In cities all over the world, women spend more time for care work and unpaid work, and work more often in the informal sector than men. Consequences include an increase of the work burden of women due to climate related shortages of water, fuel, food, and due to health problems, insecurity of informal jobs during and after disasters, and, moreover, long-term impacts on health and education.
- **Gender differentials in income and assets:** In all countries, whether they are developing or developed, there is a gender gap in incomes as well as in assets. Consequences include a higher vulnerability, for instance due to inadequate housing and limited options for coping. Differentials in income may also lead to different impacts of policies.
- **Gender roles and cultural patterns:** Gender roles affect, for instance, mobility, education, attitudes, and means of communication. Consequences include gendered vulnerabilities, for instance more fatalities of women during disasters due to mobility restrictions, and different needs in terms of urban transport.
- **Sex-related factors, physical differences of women and men:** A major factor is the reproductive functions of women and specific personal safety issues which add to women's vulnerability.

Gender differentials are interwoven with other differences such as race/ethnicity, class, age, health status, etc., and vice versa, for each of these factors that influence power dynamics, the gender dimension adds to existing inequalities.

The range of such inequalities can be very large in urban areas, ranging from virtually zero to very large in terms of carbon footprints, and ranging from extremely high to relatively low in terms of vulnerability to the impacts of climate change, with women, in most cases, having a smaller carbon footprint and being more vulnerable. Thus, the equity and justice issues between developed and developing countries at global level are also relevant for cities, but here, the extremes share the same urban space. Hence, cities are facing enormous justice issues, in terms of polluters and impacted people, and in terms of the use of scarce resources such as urban space, water and air.

These issues need to be addressed, including the underrepresentation of women in climate policy. Specific action is needed to equally involve women in planning and decision-making at city, community and neighbourhood level. Moreover, cities should make use of the potential of women as their allies for local climate policy, due to women's disposition to change behaviour, role in decision-making at household level, and contribution to community work.

Many cities might have doubts whether it is feasible for them to integrate gender equality and justice into their climate policy approaches, since planning and implementing comprehensive mitigation and adaptation policies are already a challenge for cities. However, involving women and men, and properly addressing the gender dimension, is very likely to enhance and improve the effectiveness of their policies. Moreover, once gender impact assessments are well-established and a natural part of procedures and routines (such as economic appraisals), they will no longer be considered an 'add-on' and additional work burden. Therefore, cities that have not yet developed a comprehensive climate policy should integrate gender from the start. Cities with a climate policy in place should either 're-gender' their climate policy plan, e.g. during an evaluation and update of the plan, or they should at least identify entry points for gender sensitive projects and programmes.

Core sectors that are relevant to mitigation and/or adaptation and have an obvious gender dimension can be categorised according to needs (health, housing, mobility, food, etc.), and according to resources (energy/fuel, food, water, land). For instance, in the transport sector, gendered trip patterns and transport modes, safety requirements and customary and cultural constraints for women require gender-sensitive policies. For housing and energy, gender differentials in the responsibilities for household energy, house ownership and in energy poverty need to be taken into consideration.

Urban structures which reflect the present carbon economy, power relations between women and men, and the marginalisation of the poor, need to be remodelled. This task requires a long planning horizon due to the inertia of built structures and infrastructure. Urban transport systems, for example, need to be adapted to women's needs, resulting in better systems for both women and men.

To reduce the vulnerability of the poor, many of them women, cities need to upgrade slums, offer sites less prone to climate hazards, and improve services in terms of clean and affordable energy, water supply, sewage and waste management.

Special emphasis needs to be put on inclusive policies for disaster risk reduction, including awareness-raising, information, adequate emergency shelters and health services, and measures to improve food security in order to enhance the resilience of communities.

6.2. Principles

With inequalities regarding the access to energy, transport and other services becoming apparent at city level, mitigation policies and measures should not only aim at achieving short-term GHG emissions reductions. In other words, in particular for cities, a narrow perspective focusing on carbon only is not useful. Instead, a sustainable development approach should be pursued towards a low-carbon, resilient, equitable, gender-just and inclusive city. This multi-dimensional approach includes:

- The recognition and consideration of the care economy and the informal economy;
- Changing and improving structures, infrastructure and services;

- Addressing both poverty and affluence in terms of housing, energy, mobility and consumption; and
- Combining clean air policy, noise reduction, and reallocation of public space geared towards creating a liveable city.

Since both climate change and gender are cross-cutting issues, they need to be mainstreamed. In particular many cities in developing countries will not be able to set up ambitious climate policy programmes in the near future. However, in day-to-day decision-making and management, they should pursue a gender-just and climate-proof development strategy.

Ensuring equitable access to resources and services for women and men, and to address poverty and marginalisation, creating and enabling an empowering environment, and prioritising poverty alleviation measures, is of utmost importance within all climate-related programmes.

Cross mainstreaming of climate and gender policies must start from both sides: From climate and gender equality policy. Thus, policies on equal opportunities and gender also need to take climate change into consideration, for instance taking the impacts of climate change into account and anticipating future climate variability. However, a gender-just local climate policy should not only address women as victims of the impacts of climate change, but rather should target women as potential contributors to the solutions. Gender roles need to be recognised and policies shaped accordingly to be gender sensitive, but, as an ultimate goal, policies should also contribute to breaking gender stereotypes.

6.3. Steps for gender mainstreaming into climate policy

In the following, an approach is offered for cities to develop a gender sensitive climate policy. Depending whether they are already involved in climate policy or just starting to prepare a strategy, they can use these steps either to enhance and gender existing policies, or start from scratch developing a gender sensitive approach.

Commitment: As a first step, cities should enter a commitment to climate policy, and to gender equity, and link both, i.e. a commitment to a low-carbon, resilient, inclusive and gender-just city. If a city has already entered commitments to climate policy and gender equity separately, efforts should be made to link these.

Awareness-raising and capacity-building: Both climate issues and gender issues require raising awareness and providing information, namely on the gendered impacts of climate change that are to be expected, and on the contributions citizens can make to combat climate change. Information materials should be gender sensitive. Moreover, the staff in those departments that are in charge of climate change issues and those that are in charge of gender issues need to receive cross-cutting capacity-building and training,

Participation: To ensure equal participation of women and men in planning, decision-making and implementation – both in the political sphere as well as at community and neighbourhood levels – rules and mechanisms for balanced participation of women and men must be established. Furthermore, equitable participation in deliberations and decision-making must be ensured –in the political sphere, as well as at community and neighbourhood level. To this end, rules and mechanisms need to be established, and tools for balanced participation of women and men need to be applied.

Data collection: Sex-disaggregated data – for instance on transport, energy, and consumption – need to be collected wherever possible and analysed (for example from surveys,

utilities, programme evaluation). Such data can, and should be collected in all stages of climate programmes: Prior to planning, and also during implementation, wherever possible.¹⁸⁹

Rapid assessment: Quick scans of existing climate change projects, policies and programmes are required with respect to their relevance for adaptation, mitigation, and their gender dimension. If necessary, existing climate policies need to be redesigned and modified.

Identification of key areas of action: Cities should identify key areas and critical issues in their climate policy that have a strong gender dimension and thus require urgent action. Adaptation actions with a significant gender dimension include, for instance, using emergency communication means that are suited to reach women, and upgrading emergency shelters to respond to the needs of women. Key mitigation actions include energy advice, energy-efficiency and retrofitting programmes for the poor, transport policies that favour non-motorised transport modes, and improving safety of the public space.

Climate policy plan: During the preparation of a systematic climate policy plan, after a quick scan of planned policies for their gender relevance, available gender tools should be applied. This includes gender impact assessment, addressing criteria such as recognition of care and informal economy, benefits for women and men, gender composition and gender balance, androcentrism and symbolic order, and threats, constraints and sanctions affecting women. Both for planning and evaluation of policies and measures, participatory gender budgeting should be applied.

Moreover, adequate institutional settings should be created, and climate change units should receive gender training, whereas gender units should receive information and training on climate issues.

6.4. Recommendations to city networks and to national governments

City networks can, and should play a key role in sensitising cities on both climate and gender issues. For each of these fields, city networks have a lot to offer. However, they have not yet established and addressed the linkages between gender and climate change, and do not offer appropriate guidance in terms of approaches, methodologies, recommendations and case studies.

Since many cities start their climate policy based on commitments and declarations of city networks, networks should therefore integrate gender issues in such documents, and include climate issues into their documents on gender equality.

Moreover, they should upgrade their methodologies and tools in order to properly include and address gender aspects. To this end, they should collaborate with governments and international agencies, in order to draw from their experiences and case studies.

As the majority of cities have not yet developed a comprehensive climate strategy including mitigation and adaptation, governments, international agencies and city networks should raise awareness on the urgency of urban action and on the co-benefits of climate policy regarding poverty alleviation, urban environment, regional economic development and liveability. Gender guidelines should be an integral part from the outset.

Hence, governments should provide guidance on urban strategies, policies and measures and offer incentives to stimulate action, recommending methodologies that integrate gender

189. For instance from data from surveys and energy companies, data on car ownership, data gained through internet calculators for the personal carbon footprint, data on claims of subsidies and responses to other programmes.

considerations, and applying criteria for incentives that involve gender balanced participation and gender-sensitive priorities and approaches.

Tools providing practical guidance¹⁹⁰ should be revised in order to fully include gender aspects and corresponding good practice examples. Moreover, these tools could be extended to include generic gender-sensitive adaptation actions. They can be used by cities to assess their existing policies, and to plan for new policies and programmes, choosing priorities according to the specific situation of the city. Furthermore, funding schemes for local climate action can be connected to certain criteria based on such a menu.

Further research is needed to better establish the linkages between gender and climate change at city level. As yet, much of the research has been focusing on rural areas, in particular for adaptation and access to clean energy. More efforts are required to better understand the contributions of women and men in cities to the problem of climate change and to the solutions, including providing sex-disaggregated data on energy, housing, transport, and consumption.

Finally, national governments who are in charge of shaping the legal and policy framework for climate and gender equality policies, can ease the challenges cities are facing, for instance through improving the legal situation of women in terms of land and inheritance rights, enhancing building standards to push landlords to energetically refurbish rented apartments, and removing harmful subsidies. Moreover, they should seek to make arrangements to achieve a well-defined and effective division of labour between national and local policy levels, so as to clarify the role and responsibilities of local governments for mitigation and adaptation.

190. For example, the Dutch 'Climate Menu' and the 'Catalogue of Measures' of the Climate Alliance that is based on the Dutch 'Climate Menu', offer a wide range of tasks and policies to address the various sectors for urban mitigation, ordered by ambition levels.

References

- Ahmed, A.U., S. Neelormi and N. Adri (2007) 'Climate Change in Bangladesh: Concerns Regarding Women and Special Vulnerable Groups', Centre for Global Change (CGC), Dhaka
- Ahmed, S. and E. Fajber (2009) 'Engendering adaptation to climate variability in Gujarat, India', *Gender & Development* **17**, 33–50
- Alber, G. (2009) 'Reality and Perspectives of Climate Policy in Cities', in *Climate Change and the Cities of the Future: Art, Technology and Economics in the face of Climate Change* (eds) K. Hasselmann, A.R.d. Elvira and M. Welp, European Climate Forum, Potsdam
- Alber, G. and K. Kern (2008) 'Governing Climate Change in Cities: Modes of Urban Climate Governance in Multi-level Systems', in *Competitive Cities and Climate Change*, OECD, Milan
- Alber, G., P. Attanasio, S. Geißler, H. Glauber, H. Haberl, U. Janssen, H. Pöernbacher (eds) (with contributions of M. Kroese, J. Leuchtner, K.-L. Schibel) (1996) *Municipal climate protection strategies and their national framework conditions: analysis and recommendations*, Klima-Bündnis, Ökoinstitut Südtirol, and Österreichisches Ökologie-Institut
- Alfredsson, E. (2002) 'Green consumption energy use and carbon dioxide emission', Dept. of Social and Economic Geography, Spatial Modelling Centre, Umeå University, Umeå
- Annecke, W. (2002) 'The Apartheid of Basic Facility Provision in the City of Durban with a Focus on Energy', in *(D)urban Vortex – South African City in Transition*. University of Natal Press, Pietermaritzburg, South Africa (eds) B. Freund and V. Padayachee, University of Natal Press, Pietermaritzburg
- Awuor, C. B., V. A. Orindi and O. A. Andrew (2008) 'Climate change and coastal cities: the case of Mombasa, Kenya', *Environment and Urbanization* **20**(1): 231–242
- Balk, D., M. R. Montgomery, G. McGranahan, D. Kim, V. Mara, M. Todd, T. Buettner and A. Dorélien (2009) 'Mapping Urban Settlements and the Risks of Climate Change in Africa, Asia and South America', in *Population Dynamics and Climate Change* (eds) J. M. Guzmán, G. Martine, G. McGranahan, D. Schensul and C. Tacoli, UNFPA, IIED, New York, London
- Barletta, M. (2003) *Marketing to Women: How to Understand, Reach, and Increase Your Share of the World's Largest Market Segment*, Dearborn Trade Publishing, Chicago
- Bartlett, S. (2008) 'Climate change and urban children: impacts and implications for adaptation in low- and middle-income countries', *Environment and Urbanization* **20**:(2) 501–519
- Bartlett, S., D. Dodman, J. Hardoy, D. Satterthwaite and C. Tacoli (2009) 'Social aspects of climate change in urban areas in low- and middle-income nations', paper presented at the World Bank Fifth Urban Research Symposium on 'Cities and Climate Change: Responding to an Urgent Agenda', Marseille, 28–30 June 2009
- Beall, J. (1996) *Urban Governance: Why Gender Matters*, Gender in Development Monograph Series No. 1, UNDP, New York
- Bell, M.L., M.S. Neill, N. Ranjit, V.H. Borja-Aburto, L.A. Cifuentes and N.C. Gouveia (2008) 'Vulnerability to heat-related mortality in Latin America: a case-cross-over study in São Paulo, Brazil, Santiago, Chile and Mexico City, Mexico', *International Journal of Epidemiology* **37**:(4) 796–804

- Betsill, M. and H. Bulkeley (2007) 'Looking Back and Thinking Ahead: A Decade of Cities and Climate Change Research', *Local Environment: The International Journal of Justice and Sustainability* **12**(5): 447–456
- Bicknell, J., D. Dodman and D. Satterthwaite (2009) *Adapting cities to climate change: understanding and addressing the development challenges*, Earthscan, London and Sterling, VA
- Bollen, J.C., C.J. Brink, H.C. Eerens and A.J.G. Manders (2009) 'Co-benefits of climate policy', in *PBL Report*, Netherlands Environmental Assessment Agency, Bilthoven
- Bord, R. J. and R.E. O'Connor (1997) 'The Gender Gap in Environmental Attitudes: The Case of Perceived Vulnerability to Risk', *Social Science Quarterly* **78**(4): 830–840
- British Council and One World Action (2000) *Developing gender-sensitive local services, London 28–29 June 2000*, British Council, London
- Brot für die Welt (2009) 'Gender Mainstreaming konkret. Neun Beispiele guter Praxis aus vier Kontinenten', in *Dialog*, Stuttgart
- Budhu, C. (2002) 'ICLEI's Cities for Climate Protection Campaign in Latin America: Integrating Gender Perspectives'
- Budlender, D. and UNRISD (United Nations Research Institute for Social Development) (2008) *The statistical evidence on care and non-care work across six countries*, UNRISD, Geneva
- Bulkeley, H. and K. Kern (2004) *Local climate change policy in the United Kingdom and Germany*, Wissenschaftszentrum Berlin für Sozialforschung, Berlin
- Bulkeley, H. and M.M. Betsill (2003) *Cities and Climate Change: Urban Sustainability and Global Environmental Governance*, Routledge, London and New York
- Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik (2006) *Umweltbewusstsein in Deutschland 2006. Ergebnisse einer repräsentativen Bevölkerungsumfrage*, Berlin
- Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik (2008) *Umweltbewusstsein in Deutschland 2008. Ergebnisse einer repräsentativen Bevölkerungsumfrage*, Berlin
- Caiazza, A. and A. Barrett (2003) 'Engaging Women in Environmental Activism: Recommendations for Rachel's Network', in *IWPR Publication* (ed), IWPR, Institute for Women's Policy Research, Washington, DC
- Cannon, T. (2002) 'Gender and climate hazards in Bangladesh', *Gender & Development* **10**(2):45–50
- Carlsson-Kanyama, A. and R. Råty (2008) 'Kvinnor, män och energi; makt produktion och användning', FOI, Stockholm
- Carlsson-Kanyama, A., M. P. Ekstrom and H. Shanahan (2003) 'Food and life cycle energy inputs: consequences of diet and ways to increase efficiency', *Ecological Economics: the Journal of the International Society for Ecological Economics* **44**: 293
- Committee on the Elimination of Discrimination against Women Committee (2009) 'Statement of the CEDAW Committee on Gender and Climate Change', New York
- CEMR (Council of European Municipalities and Regions) (2005) *The Town for Equality. A methodology and good practices for equal opportunities between women and men*, European Commission – DG Employment and Social Affairs, Brussels
- CEMR (2006) 'The European Charter for Equality of Women and Men in Local Life', CEMR, Brussels

- Chattopadhyay, R. and E. Duflo (2004) 'Women as Policy Makers: Evidence from a Randomized Policy Experiment in India', *Econometrica* **72**(5): 1409
- Choudhury, A.M., S. Neelormi, D.A. Quadir, S. Mallick and A.U. Ahmed (2005) 'Socio-Economic and Physical Perspectives of Water Related Vulnerability to Climate Change: Results of Field Study in Bangladesh', *Science & Culture* **71**: 225–238
- Cities for Climate Protection Australia Adaptation Initiative (2008) *Local Government Climate Change Adaptation Toolkit*, ICLEI Oceania, Melbourne
- Clancy, J.S., M. Skutsch and S. Batchelor (2003) 'The Gender – Energy – Poverty Nexus, Finding the energy to address gender concerns in development', Twente
- Climate Alliance of European Cities (2005a) *Climate for Change, Data – Facts – Arguments*, Climate Alliance of European Cities, Frankfurt am Main
- Climate Alliance of European Cities (2005b) *Climate for Change, Gender Checklist*, Climate Alliance of European Cities, Frankfurt am Main
- Climate Alliance of European Cities (2005c) *Climate for Change, Tools for Promoting Women in Executive and Management Positions*, Climate Alliance of European Cities, Frankfurt am Main
- Climate Alliance of European Cities (2006) 'Climate Compass – the roadmap for local climate protection', <http://www.climate-compass.net/climate-compass.html>
- Collier, U. and R. Löfstedt (1997) 'Think globally, act locally', *Global Environmental Change* **7**(1): 25–40
- Defra and Energy Saving Trust (2009) 'Environmental Attitudes and Behaviours, Data table', London
- Demetriades, J. and E. Esplen (2008) 'The Gender Dimensions of Poverty and Climate Change Adaptation', *IDS Bulletin* **39**(4): 24–31
- Denton, F. (2002) 'Climate change vulnerability, impacts, and adaptation: why does gender matter?', *Gender & Development* **10**(2): 10–20
- Deutscher Städtetag, Kommission 'Frauen in der Stadt' (1995) 'Frauen verändern ihre Stadt – Arbeitshilfe 2. Verkehrsplanung', in *DST-Beiträge zur Frauenpolitik*, Deutscher Städtetag, Köln
- Dhakai, S. and M.M. Betsill (2007) 'Challenges of Urban and Regional Carbon Management and the Scientific Response', *Local Environment: The International Journal of Justice and Sustainability* **12**(5): 549–555
- Dodman, D. (2009) 'Urban Form, Greenhouse Gas Emissions and Climate Vulnerability', in *Population Dynamics and Climate Change* (eds) J.M. Guzmán, G. Martine, G. McGranahan, D. Schensul and C. Tacoli, UNFPA, IIED, New York and London
- Druckman, A. and T. Jackson (2009) 'The carbon footprint of UK households 1990–2004: A socio-economically disaggregated, quasi-multi-regional input-output model', *Ecological Economics* **68**(7): 2066–2077
- Duncan, K. (2007) 'Global Climate Change and Women's Health', *Women & Environments International Magazine* **74/75**: 10–11
- Energie-Cites and Climate Alliance of European Cities (2004) 'Towards Sustainable Urban Transport Policies: Recommendations for Local Authorities', ADEME, IDAE, ACCESS, EA.UE, E.V.A. and ENEA, Madrid
- Eurocities (2009) 'Eurocities Declaration on Climate Change, City Examples', Brussels
- European Commission (2007) *Europeans and Nuclear Safety, Special Eurobarometer 271*, Brussels

- European Commission (2009a) *Europeans' attitudes towards climate change. Special Eurobarometer 322*, Brussels
- European Commission (2009b) 'Report on Equality between Women and Men 2009', European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities, Unit G.1, Luxembourg
- European Commission and European Parliament (2009) *Europeans' attitudes towards climate change. Special Eurobarometer 313*, Brussels
- Federation of Canadian Municipalities (2004) *Increasing women's participation in municipal decision-making processes strategies for more inclusive Canadian communities*, Federation of Canadian Municipalities, International Centre for Municipal Development, Ottawa, <http://www.fcm.ca/CMFiles/toolkit1UCU-3262008-8944.pdf> (last accessed 20 April 2010)
- Federation of Canadian Municipalities and Femmes et Ville (2004) *A city tailored to women: the role of municipal governments in achieving gender equality*, Federation of Canadian Municipalities and Femmes et Ville, Ottawa and Montreal, http://www.-cities-localgovernments.org/uclg/upload/docs/CTTW_ENG.pdf (last accessed 20 April 2010)
- Finucane, M.L., P. Slovic, C.K. Mertz, J. Flynn and T.A. Satterfield (2000) 'Gender, race, and perceived risk: the 'white male' effect', *Health, Risk & Society* 2(2): 159–172
- Focus online (2009) 'Energiesparen. Deutsche schalten ab', http://www.focus.de/immobilien/energiesparen/energiesparen-deutsche-schalten-ab_aid_367031.html
- GDN (Gender and Disaster Network) (2008) 'Gender and Disaster Sourcebook', Gender and Disaster Network, Newcastle upon Tyne, <http://www.gdonline.org/sourcebook/>
- GenderCC – Women for Climate Justice (2007) 'Gender: Missing Links in Financing Climate Change Adaptation and Mitigation. Position Paper'
- GenderCC – Women for Climate Justice (2009) 'Gender Mainstreaming and Beyond – 5 Steps Towards Gender-sensitive Long-term Cooperation', Submission to the negotiating text for consideration at the 6th session of the AWG-LCA, <http://unfccc.int/resource/docs/2009/smsn/ngo/140.pdf> (last accessed 3 May 2010)
- GenderCC – Women for Climate Justice and Women and Gender Constituency (2009) 'Call for a gender/women paragraph in the Shared Vision document', Bangkok
- Gross, B., C. van Wijk and N. Mukherjee (2001) *Linking Sustainability with Demand, Gender and Poverty: A study in community managed water supply projects in 15 countries*. UNDP-World Bank Water and Sanitation Program, Washington, DC and IRC International Water and Sanitation Centre, NL, http://www.wsp.org/publications/global_plareport.pdf
- GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit) (2002) *Sourcebook overview, and cross-cutting issues of urban transport*, GTZ, Eschborn
- Gupta, J., K. van der Leeuw and H. de Moel (2007) 'Climate change: a 'glocal' problem requiring 'glocal' action', *Journal of Integrative Environmental Sciences* 4(3): 139–148
- GWA (Gender and Water Alliance) (2006) 'Complete Glossary of the Gender and IWRM Resource Guide', <http://www.genderandwater.org/page/5407>
- GWA and UNDP (United Nations Development Programme) (2006) *Resource Guide, Mainstreaming Gender in Water Management*, Nairobi
- Henwood, K.L., K.A. Parkhill and N.F. Pidgeon (2008) 'Science, technology and risk perception: From gender differences to the effects made by gender', *Equal Opportunities International* 27(8): 662–676

- Hertwich, E. G. and G. P. Peters (2009) 'Carbon Footprint of Nations: A Global, Trade-Linked Analysis', *Environmental Science and Technology* **43**(16): 6414–6420
- ICLEI (2001) *Sustainable Transport Options for Protecting the Climate*, Berkeley, CA
- ICLEI (2004) 'Hot Cities', Berkeley
- ICLEI (2009) 'International Local Government GHG Emissions Analysis Protocol (IEAP) Version 1.0', ICLEI, Toronto
- ICLEI (no date) 'Five Milestones', <http://www.iclei.org/index.php?id=810>
- ICRW (International Center for Research on Women) (2005) 'Property ownership for women enriches, empowers and protects', in *ICRW Millennium Development Goals Series*, Washington, DC
- IEA (International Energy Agency) (2008) *World Energy Outlook 2008*, IEA and Turpin Distribution, Paris and New Milford, Conn.
- Inter-Agency Secretariat of the ISDR (2007) *Hyogo Framework for Action 2005–2015: building the resilience of nations and communities to disasters*, International Strategy for Disaster Reduction (ISDR), Geneva
- International Conference on Gender and Disaster Risk Reduction (2009) 'Beijing Agenda for Global Action on Gender-Sensitive Disaster Risk Reduction',
- ISDR (International Strategy for Disaster Reduction) and United Nations (2008) *Gender Perspectives: Integrating Disaster Risk Reduction into Climate Change Adaptation; Good Practices and Lessons Learned*, United Nations, New York
- ISDR, UNDP (United Nations Development Programme) and IUCN (International Union for Conservation of Nature) (2009) *Making Disaster Risk Reduction Gender-Sensitive, Policy and Practical Guidelines*, UNISDR, UNDP and IUCN, Geneva
- ITUC (International Trade Union Confederation) (2008) *The Global Gender Pay Gap*, Brussels
- IULA (International Union of Local Authorities) (1998) 'IULA Local Government Declaration on women's participation in local government', Harare
- Jones, J.M. (2009) 'Support for Nuclear Energy Inches Up to New High', <http://www.gallup.com/poll/117025/support-nuclear-energy-inches-new-high.aspx> (last accessed 20 April 2010)
- Karjalainen, S. (2007) 'Gender differences in thermal comfort and use of thermostats in everyday thermal environments', *Building and Environment* **42**(4): 1594–1603
- Karlsson, G. (2007) 'Where energy is women's business, National and regional reports from Africa, Asia, Latin America and the Pacific', ENERGIA, Leusden
- Kern, K. and G. Alber (2009) 'Governing Climate Change in Cities: Modes of Urban Climate Governance in Multi-level Systems', in *Competitive Cities and Climate Change. OECD Conference Proceedings, Milan, Italy, 9–10 October 2008*, OECD, Paris
- Kern, K. and H. Bulkeley (2009) 'Cities, Europeanization and Multi-level Governance: Governing Climate Change through Transnational Municipal Networks', *Journal of Common Market Studies* **47**(2): 309–332
- Khosla, R. (2009) *Addressing Gender Concerns in India's Urban Renewal Mission*, UNDP, New Delhi
- Kiljunen, P. (2008) 'Finnish Energy Attitudes 2008', in *Research Report, No. 15*, Finnish Energy Industries, Helsinki
- Killoran-McKibbin, S. (2006) 'In The Field – Cuba's Urban Agriculture – Food Security and Urban Sustainability', *Women & Environments International Magazine* **70/71**: 56–57

- Knoll, B. and E. Szalai (2005) *Gender Mainstreaming und Mobilität in Niederösterreich*, Amt der NÖ Landesregierung, Abteilung Gesamtverkehrsangelegenheiten, St. Pölten
- Kuckartz, P.D.U., D.A. Rheingans-Heintze and S. Rädiker (2007) *Tendenzen der Umwelt- und Risikowahrnehmung in einer Zeit des Wertpluralismus*, Umweltbundesamt (UBA), Dessau
- Lan, L., Z. Lian, W. Liu and Y. Liu (2008) 'Investigation of gender difference in thermal comfort for Chinese people', *European Journal of Applied Physiology* **102**(4): 471–480
- Lane, R. and R. McNaught (2009) 'Building gendered approaches to adaptation in the Pacific', *Gender & Development* **17**(1): 67–80
- LeasePlan (2008) 'Auto & Umwelt', LeasePlan Deutschland, Neuss
- Leitstelle für Alltags- und Frauengerechtes Planen und Bauen der Stadt Wien 'Geschlechtersensible Verkehrsplanung', <http://www.wien.gv.at/stadtentwicklung/alltagundfrauen/verkehr.html>
- Lubbock, A. (no date) 'Survival, Change and Decision-Making in Rural Households: Three Village Case Studies from Eastern Morocco', http://www.ifad.org/gender/thematic/morocco/mo_toc.htm
- Madebwe, C. and V. Madebwe (no date) 'Gender, House Ownership and Security of Tenure among Urban Married Women in Gweru, Zimbabwe', *OSSREA Bulletin* **1**:(3) 48–54
- Masika, R. (2002) *Gender, Development and Climate Change*, Oxfam GB, Oxford
- Masika, R., with A. de Haan and S. Baden (1997) 'Urbanisation and Urban Poverty: A Gender Analysis', BRIDGE Report No 54, BRIDGE, University of Sussex, Brighton, <http://www.bridge.ids.ac.uk/bridge/reports/re54.pdf> (last accessed 20 April 2010)
- McGranahan, G., D. Balk and B. Anderson (2007) 'The rising tide: assessing the risks of climate change and human settlements in low elevation coastal zones', *Environment and Urbanization* **19**(1): 17–37
- Morlot, J.C., S. Agrawala and OECD (Organisation for Economic Co-operation and Development) (2004) 'The benefits of climate change policies analytical and framework issues', OECD, Paris
- Moser, C.O.N. and L. Peake (1987) *Women, Human Settlements and Housing*, Tavistock Publications, London and New York
- Neill, M.S., A. Zanobetti and J. Schwartz (2003) 'Modifiers of the Temperature and Mortality Association in Seven US Cities', *American Journal of Epidemiology* **157**(12): 1074–1082
- Nelson, V., K. Meadows, T. Cannon, J. Morton and A. Martin (2002) 'Uncertain predictions, invisible impacts, and the need to mainstream gender in climate change adaptations', *Gender & Development* **10**(2): 51–59
- Neumayer, E. and T. Pluempfer (2007) *The gendered nature of natural disasters: the impact of catastrophic events on the gender gap in life expectancy, 1981–2002 – final version*, London School of Economics and Political Science, London, England
- Nitivattananon, V., T.T. Tu, A. Rattanapan and J. Asavanant (2009) 'Vulnerability and resilience of urban communities under coastal hazard conditions in Southeast Asia', paper presented at the World Bank Fifth Urban Research Symposium on 'Cities and Climate Change: Responding to an Urgent Agenda', Marseille, 28–30 June 2009
- no author (2006) 'Investitionsentscheidungen – Frauen gewinnen an Einfluss', in *IKZ-Haustechnik*, Strobel Verlag, Arnsberg
- Nordell, K. (2003) 'Kvinnors och mäns energianvändning (Women's and men's energy consumption)', Energimyndigheten, Eskilstuna

- Norton, A., B. Bird and ODI (Overseas Development Institute) (2001) *A rough guide to PPAs: participatory poverty assessment: an introduction to theory and practice*, ODI, London
- OECD (Organisation for Economic Co-operation and Development) (2004) ‘Why Gender Matters in Infrastructure’, Development Assistance Committee’s Network on Gender Equality, Paris
- OECD (2009a) *Competitive Cities and Climate Change, OECD Conference Proceedings Milan, Italy, 9–10 October 2008*, OECD, Paris
- OECD (2009b) *Integrating climate change adaptation into development co-operation: policy guidance*, OECD, Paris
- Oldrup, H. and H. Romer Christensen (2007) ‘TRANSGEN: gender mainstreaming European transport research and policies building the knowledge base and mapping good practices’, Co-ordination for Gender Studies. University of Copenhagen, Copenhagen
- Osei-Agyemang, M. (2007) ‘Temperatures Rising – Understanding the Relationship between Climate Change, Conflict and Women’, *Women & Environments International Magazine* **74/75**: 25–27
- Oxfam GB (2009) ‘Urban Poverty and Vulnerability In Kenya. Background analysis for the preparation of an Oxfam GB Urban Programme focused on Nairobi’, London
- Patt, A.G., A. Dazé and P. Suarez (2009) ‘Gender and climate change vulnerability: what’s the problem, what’s the solution?’ in *Distributional Impacts Of Climate Change And Disasters. Concepts and Cases*, Edward Elger, Cheltenham, UK
- Peters, D. (2001) ‘Gender and Transport in Less Developed Countries: A Background Paper in Preparation for CSD-9’, in *Expert Workshop ‘Gender Perspectives for Earth Summit 2002: Energy, Transport, Information for Decision-Making’*, Berlin
- Rainero, L. and A. Falú (2002) ‘Women’s Right to the City’, *Habitat Debate* **8**(4): 6–7
- Räty, R. and A. Carlsson-Kanyama (2009a) ‘Comparing energy use by gender, age and income in some European countries’, FOI, Swedish Defence Research Agency, Stockholm
- Räty, R. and A. Carlsson-Kanyama (2009b) ‘Energy consumption by gender in some European countries’, *Energy Policy*
- Razavi, S. (2007) *The political and social economy of care in a development context: conceptual issues, research questions and policy options*, United Nations Research Institute for Social Development (UNRISD), Geneva
- Razavi, S. and S. Staab (2008) ‘The Social and Political Economy of Care: Contesting Gender and Class Inequalities’, paper presented at Expert Group Meeting on ‘Equal sharing of responsibilities between women and men, including care-giving in the context of HIV/AIDS’, United Nations Division for the Advancement of Women, Department of Economic and Social Affairs, United Nations Office at Geneva, 6–9 October, 2008
- Reid, H. and D. Satterthwaite (2007) ‘Climate change and cities: why urban agendas are central to adaptation and mitigation’, in *Sustainable Development Opinion*, IIED, London
- Reinders, A.H.M.E., K. Vringer and K. Blok (2003) ‘The direct and indirect energy requirement of households in the European Union’, *Energy Policy* **31**(2): 139–153
- Rodenberg, B. (2009) ‘Climate Change Adaptation from a Gender Perspective: A cross-cutting analysis of development-policy instruments’, Discussion Paper 24/2009, Deutsches Institut für Entwicklungspolitik and German Development Institute, Bonn
- Roehr, U., M. Spitzner, E. Stiefel and U. v. Winterfeld (2008) ‘Gender justice as the basis for sustainable climate policies; A feminist background paper’, Bonn, Berlin

- Röhr, U. and M. Hemmati (2008) 'Solidarity in the Greenhouse: Gender Equality and Climate Change', in V. Grover (ed) *Global Warming and Climate Change. Ten Years After Kyoto and Still Counting*, Science Publishers, Enfield, NH, pp779–804 and pp1079–1083
- Romero Lankao, P. and J.L. Tribbia (2009) 'Assessing patterns of vulnerability, adaptive capacity and resilience across urban centers', paper presented at the World Bank Fifth Urban Research Symposium on 'Cities and Climate Change: Responding to an Urgent Agenda', Marseille, 28–30 June 2009
- Rukato, H. (2001) 'Gender and Energy in the South: A Perspective from Southern Africa', in *Expert Workshop 'Gender Perspectives for Earth Summit 2002: Energy, Transport, Information for Decision-Making'*, Paper commissioned by UNED Forum as input for the workshop, Berlin, Germany
- Satterthwaite, D. (2008) 'Cities' contribution to global warming: notes on the allocation of greenhouse gas emissions', *Environment and Urbanization* **20**(2): 539–549
- Satterthwaite, D., S. Huq, M. Pelling, H. Reid, P. Romero Lankao and IIED (International Institute for Environment and Development) (2007) *Adapting to climate change in urban areas: the possibilities and constraints in low- and middle-income nations*, IIED, London
- Schalatek, L. (2009) 'Gender and Climate Finance: Double Mainstreaming for Sustainable Development', Heinrich Böll Foundation North America, Washington, http://win.amarc.org/documents/DoubleMainstreaming_Final.pdf (last accessed 3 May 2010).
- Spitzner, M., F. Weiler, A. Rahmah and J. Turner (2007) *Städtische Mobilität und Gender, Förderung des öffentlichen Regionalverkehrs im Großraum Jakarta*, KfW-Entwicklungsbank, Frankfurt am Main
- Statistics South Africa (2001) 'A Survey of Time Use. How South African women and men spend their time', Statistics South Africa, Pretoria
- Statistics Sweden (2008) *Women and Men in Sweden, Facts and figures 2008*, Statistics Sweden, Stockholm
- Statistisches Bundesamt (2009) *Jugend und Familie in Europa*, Statistisches Bundesamt, Wiesbaden
- Stilwell, F.J.B. and G. Argyrous (2003) *Economics as a Social Science: Readings in Political Economy*, Pluto Press Australia, Sydney
- The United States Conference of Mayors (2008) *Hunger and Homelessness Report: A Status Report on Hunger and Homelessness in America's Cities*, The United States Conference of Mayors, Washington, DC
- Thomas Yaccato, J. and J. Jaeger (2003) *The 80% minority: reaching the real world of women consumers*, Viking Canada, Toronto
- tns-opinion (2008) 'Attitudes towards radioactive waste in Switzerland', Federal Department of the Environment, Transport, Energy and Communications DETEC, Swiss Federal Office of Energy SFOE, Disposal of Radioactive Waste Section, Bern
- UN General Assembly, Twenty-fifth special session (2001) 'Resolution S-25/2, Declaration of Cities and Other Human Settlements in the New Millennium', United Nations, New York
- UN General Assembly, Twenty-third special session, Ad Hoc Committee of the Whole (2000) 'Resolution adopted by the General Assembly (on the report of the Ad Hoc Committee of the Whole of the Twenty-third Special Session of the General Assembly (A/S-23/10/Rev. 1): S-23/3, Further actions and initiatives to implement the Beijing Declaration and Platform for Action', United Nations, New York

- UN Governing Council of the United Nations Environment Programme and Twenty-fifth session of the Governing Council/Global Ministerial Environment Forum (2009) 'Report of the Network of Women Ministers and Leaders for the Environment and United Nations Environment Programme high-level gender forum', UNEP, Nairobi
- UN Governing Council of the United Nations Human Settlements Programme (UN-Habitat) and Twenty-second Session of the Governing Council (2009) 'Resolution 22/3: Cities and climate change', Nairobi
- UNCHS (United Nations Centre for Human Settlements) (1997) *Habitat Agenda and Istanbul Declaration*, United Nations Dept. of Public Information, New York
- UNDP (United Nations Development Programme) (1995) *Human Development Report 1995*, Oxford University Press for UNDP, New York
- UNDP (2004) *Gender and energy for sustainable development: a toolkit and resource guide*, UNDP, New York
- UNDP (2007) *Human Development Report 2007/2008: fighting climate change: human solidarity in a divided world*, UNDP and Palgrave Macmillan, New York
- UNDP (2009) *Resource guide on gender and climate change*, UNDP, New York, http://www.un.org/womenwatch/downloads/Resource_Guide_English_FINAL.pdf
- UNDP and Australian Agency for International Development (2009) *Stories from the pacific: the gendered dimensions of disaster risk management and adaptation to climate change*, UNDP Pacific Centre, Suva, Fiji
- UNEP (United Nations Environment Programme) (2004) 'Report of the Global Women's Assembly on Environment on the work of its first meeting', UNEP, Nairobi
- UNEP, Women's Environment and Development Organization and United Nations Foundation (2004) *Women and the Environment*, UNEP, Nairobi, Kenya
- UNFCCC (United Nations Framework Convention on Climate Change) (2002) 'Improving the participation of women in the representation of Parties in bodies established under the United Nations Framework Convention on Climate Change and the Kyoto Protocol', Bonn
- UNFCCC (2007) 'Bali Action Plan, in: Report of the Conference of the Parties on its thirteenth session, held in Bali from 3 to 15 December 2007, Addendum, Part Two: Action taken by the Conference of the Parties at its thirteenth session', Bonn
- UN-Habitat (United Nations Human Settlements Programme) (2004) *Gender and the Involvement of Women in Local Governance: A Handbook of Concepts Training and Action Tools*' UN-Habitat, Nairobi
- UN-Habitat (2006a) 'Framework for Gender Mainstreaming: Water and Sanitation for Cities', UN-Habitat, Nairobi
- UN-Habitat (2006b) 'Navigating gender in development of water and sanitation in urban areas: A rapid gender assessment of the cities of Bhopal, Gwalior, Indore and Jabalpur', UN-Habitat, Nairobi
- UN-Habitat (2006c) *The State of the World's Cities 2006/2007: The Millennium Development Goals and urban sustainability: 30 years of shaping the Habitat Agenda*, Earthscan, London
- UN-Habitat (2006d) *Women's equal right to housing, land and property in international law*, UN-Habitat, Nairobi
- UN-Habitat (2008a) *Gender Mainstreaming in Local Authorities, Best Practices*, UN-Habitat, Nairobi
- UN-Habitat (2008b) *State of the World's Cities 2008/2009: Harmonious cities*, UN-Habitat and Earthscan, Nairobi and London

- UN-Habitat (2008c) *Gender in Local Government, A Sourcebook for Trainers*, UN-Habitat, Nairobi, http://www.unhabitat.org/pmss/pmss/electronic_books/2495_alt.pdf
- UN-Habitat (2009a) 'Climate Change Strategy 2010–2013', UN-Habitat, Nairobi
- UN-Habitat (2009b) *Gender equality action plan*, UN-Habitat, Nairobi
- UN-Habitat (2010) *Gender Equality for Smarter Cities, Challenges and Progress*, UN-Habitat, Nairobi
- UNIFEM (United Nations Development Fund for Women) (2005) *Progress of the world's women 2005: Women, work, and poverty*, UNIFEM, New York
- UNIFEM (2008) *Who answers to women? Gender and Accountability*, UNIFEM, New York
- United Nations (2000) *The World's Women, 2000: trends and statistics*, United Nations, New York
- United Nations Commission on the Status of Women (2002) *Commission on the Status of Women: Report on the forty-sixth session, 4–15 and 25 March 2002*, Commission on the Status of Women, United Nations, New York
- United Nations Division for the Advancement of Women (2009) 'World survey on the role of women in development 2009', in, Division for the Advancement of Women, United Nations, New York, <http://www.un.org/womenwatch/daw/ws2009/>
- United Nations Population Fund and WEDO (2009) 'Climate Change Connections', United Nations Population Fund, WEDO, New York
- US Department of Transportation (2004) 'Transportation Statistics Annual Report', US Department of Transportation, Bureau of Transport Statistics, Washington, DC
- Verkehrsklub Österreich (VCÖ) (2009) *Gender Gap im Verkehrs- und Mobilitätsbereich*, VCÖ, Wien
- Walter, J. (2006a) 'World disasters report 2006 – Focus on neglected crises', International Federation of Red Cross and Red Crescent Societies (IFRC), Geneva
- Walter, J. (2006b) 'World disasters report 2006 – Focus on neglected crises. Summary', <http://www.ifrc.org/publicat/wdr2006/summaries.asp>
- Weisenfeld, U., I. Ott & Universität Kiel. Institut für Weltwirtschaft (2009) 'Self-selection, socialization, and risk perception an empirical study', Institute for the World Economy, Kiel
- Welzer, H. (2008) *Klimakriege: wofür im 21. Jahrhundert getötet wird*, S. Fischer, Frankfurt am Main
- WHO (World Health Organization) (2004) 'Energy, sustainable development and health, Background document', in *Fourth Ministerial Conference on Environment and Health. Budapest, Hungary, 23–25 June 2004*, WHO, Budapest
- WHO (2006) *Fuel for life: household energy and health*, WHO, Geneva
- WIEGO (Women in Informal Employment: Globalizing and Organizing) (2007) 'Informal Workers in Focus: Home-based Workers. Fact Sheet', Cambridge, USA
- WIEGO and Realizing Rights: The Ethical Globalization Initiative (2009) 'Women and Men in Informal Employment: Key Facts and new MDG3 Indicator', Cambridge, USA
- Wijayatunga, P. D. & R. A. Attalage (2002) 'Analysis of household cooking energy demand and its environmental impact in Sri Lanka', *Energy Conversion and Management* **43**(16): 2213–2223
- Williams, B. (2005) 'Gender and urban transport', *Habitat Debate* **11**(1): 10
- Winchester, L. and R. Szalachman (2009) 'The urban poor's vulnerability to the impacts of climate change in Latin America and the Caribbean. A policy agenda', paper presented

at the World Bank Fifth Urban Research Symposium on ‘Cities and Climate Change:
Responding to an Urgent Agenda’, Marseille, 28–30 June 2009
World Bank (2006) ‘Gender and Transport Resource Guide’, World Bank, Washington, DC