

The gender perspective in climate change and global health

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Background: Population health is a primary goal of sustainable development. United Nations international conferences like the Beijing Platform for Action have highlighted the key role of women in ensuring sustainable development. In the context of climate change, women are affected the most while they display knowledge and skills to orient themselves toward climate adaptation activities within their societies.

Objective: To investigate how the gender perspective is addressed as an issue in research and policy-making concerning climate change and global health.

Methods: A broad literature search was undertaken using the databases Pubmed and Web of Science to explore the terms 'climate change,' 'health,' 'gender,' and 'policy.' Climate change and health-related policy documents of the World Health Organization (WHO) and National Communications and National Adaptation Programs of Action reports submitted to the United Nations Framework Convention on Climate Change of selected countries were studied. Assessment guidelines to review these reports were developed from this study's viewpoint.

Results: The database search results showed almost no articles when the four terms were searched together. The WHO documents lacked a gender perspective in their approach and future recommendations on climate policies. The reviewed UN reports were also neutral to gender perspective except one of the studied documents.

Conclusion: Despite recognizing the differential effects of climate change on health of women and men as a consequence of complex social contexts and adaptive capacities, the study finds gender to be an underrepresented or non-existing variable both in research and studied policy documents in the field of climate change and health.

Keywords: *climate change; health; gender; policy; global health*

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Climate change and its potentially devastating short-term and long-term consequences have received heightened attention at global, national, and regional levels during this decade. Climate change is described as the 'biggest global health threat of the 21st century' (1). The Intergovernmental Panel on Climate Change (IPCC) stated that 'Climate change currently contributes to the global burden of disease and is projected to increase threats to human health' (2). Evidence suggests that different mechanisms related to climate change like heat exposure, air pollution, chemical exposure, reduced food access, extreme weather, and climate-sensitive infectious diseases will have profound health impacts (2, 3). All populations are expected to be affected by a changing climate that will inevitably affect

the basic requirements for maintaining health: clean air, water, food, and shelter. The progress made by the global health community against climate-sensitive diseases like malaria, dengue fever, and other vector-borne infections can be altered and the resulting disease burden is likely to have a greater impact on particular groups that are most vulnerable (4).

Climate change is causing additional stress on the developing countries that are already facing extreme pressure due to urbanization and globalization. The IPCC states that social impacts will vary depending on age, socioeconomic class, occupation, and gender. The likely impacts of climate change will affect those most that have virtually the least responsibility for the problem – the poorest and, particularly, poor women (5). The poorest will

experience the worst consequences of climate change while at the same time having a reduced coping capacity (6).

Limited research on the impact of increased heat exposure on women in low and middle income countries reveals that it slows down women's daily activities and forces them to spend more time collecting water, food, or firewood. This can lead to the shortening of time available for other important household activities and, hence, potentially create or increase health risks for the entire family (3). The physical constraints due to reproductive demands and the socioeconomic inequalities affecting women limit their choices and enhance vulnerabilities. Such hardships are further pluralized not only by poor reproductive health care systems, especially in the rural areas, but also by the burden of diseases like malaria, tuberculosis, or HIV/AIDS. This has led to feminization of poverty and HIV/AIDS especially (6, 7).

The term 'gender' refers to the socially constructed norms and values, roles, and relations considered appropriate for men and women and boys and girls. It determines what is permitted to, valued in, and expected from a man and a woman in a given context, and these distinct roles and relations give rise to gender differences (8, 9). Gender mainstreaming is a global strategy aimed at promoting gender equality and is an element of good governance (9, 10). It is a continuing process and literally means taking the gender perspective seriously and integrating it in research, legislation, and policy development; in activities on the ground; and to ensure that women and men can equally influence, participate in, and benefit from the development efforts (9–11).

During the last 20 years, several international bodies and conferences have signed documents stating that the gender perspective should be integrated into policy and other documents concerning activities where humans are involved on an international, national, regional, as well as a local level. In 1987, the Brundtland Commission on Environment and Development in its report 'Our Common Future' coined the term 'Sustainable Development which stands for meeting the basic needs of all and extending to all the opportunity to fulfill their aspirations for better life' (12). Women's key role in ensuring sustainable development was highlighted in the same report (12). United Nations Conferences like the Beijing Declaration and Platform for Action, 1995 and the World Summit on Sustainable Development, 2002 acknowledged the role of women in sustainable development (13). Most recently, on July 2, 2010, a new entity called 'UN Women' was created after merging four UN organizations working on women and gender issues, operating separately earlier (14). An aim was to enhance the progress in meeting the needs of women and girls over the world. In 2007, the Member States of the World Health Organization (WHO) adopted a resolution (WHA

60.25) on the integration of gender analysis and action into the work of WHO at all levels (8).

The most important UN treaty that deals with the assessment and mitigation of climate change is the United Nations Framework Convention on Climate Change (UNFCCC). All Parties of the UNFCCC are required to submit National Communications (NCs) according to the principle of 'common but differentiated responsibilities' enshrined in the Convention. The NCs usually contain information on emissions and removal of greenhouse gases with details of activities a Party has undertaken to implement the convention. The NCs of Annex I Parties (industrialized countries and economies in transition) should additionally contain information on policies and measures not necessary for Non-Annex I Parties. Taking into account different and limited ability of least developed countries (LDCs) to address climate change, the National Adaptation Programs of Action (NAPAs) were developed. These NAPAs report pressing vulnerabilities and identify priority activities that respond to the urgent and immediate needs of these nations with regards to adaptation to climate change.

No review is, to our knowledge, carried out to assess to what extent health and gender is an issue in these policy documents. The aim of this study was to investigate how the gender perspective is integrated into research and policy making concerning climate change and global health.

Methodology

This descriptive research is based on literature review and the review of some selected policy documents. The aim was to see to what extent the gender perspective has been integrated into policy documents and also the number of publications where gender has been in focus.

Search of scientific literature

An extensive search in a predefined systematic way was undertaken using two different databases: Pubmed and Web of Science. Pubmed is a large medical database, while Web of Science is a science research database. Both databases were searched using the four key words 'climate change,' 'human health,' 'gender,' and 'policy.' The key-words were explored individually and in combinations and the number of hits generated each time from both databases was recorded. This was done systematically by combining one key word to the previous one searched. Climate change was the first search and the number of hits was recorded; the second search was made by entering climate change and human health; and the third by combining climate change, human health, and gender; and finally adding policy. The number shown with each key word alone or in combination is depictive of the availability of articles or publications including those terms. No restrictions were made for time or years of publications. The search was undertaken in

mid-August 2010. Other ways used to search the key words included hand searching of journals and a Google search. Articles and reports with at least two key words in the title were retrieved from all sources of search. The abstracts of obtained articles were read to identify the relevance for this study. A Google search was undertaken to know what kind of non-scientific literature is available, for example, in non-governmental organizations' reports and documents.

Search of official policy and planning documents

To study if the gender perspective is being discussed or implemented in policy or planning documents, the WHO online library (15) and UNFCCC Web site (16) were available. The UNFCCC Web site was specifically used to review adaptation reports submitted by participant nations and are categorized as: (a) NCs (Annex I parties): periodic submissions by developed countries covering all aspects of implementation; (b) NCs (Non-Annex I parties): periodic submission by parties not included in the Annex I to the Convention on all aspect of implementation; and (c) NAPAs (by LDCs): submission on specific needs and priorities for adaptation. Two reports were studied from each group. The Kyoto Protocol and Copenhagen Accord were also assessed. Finally, the chapter on Human Health in the IPCC Report, 2007, was included to be studied as a stand-alone document. The details of all the official documents reviewed are presented in Table 3.

Guideline for the assessment of official documents

To assess the application of the gender perspective some guidelines were developed to review all the documents mentioned above. These guidelines were developed following the gender mainstreaming principles but specific for this study's viewpoint: (a) gender-sensitivity (awareness), (b) gender-responsiveness, and (c) gender transformativeness (10, 11). Sets of questions closely relating to the principle were then formulated and agreed by all the authors. This provided a matrix to assess the documents and a consistency and objectivity among authors to comprehend the documents fully (see Table 1).

A document is considered gender-sensitive, if it is generally aware of gender issues and takes the specific needs of both sexes into account. It is gender-responsive, if it is based on sex-specific data and stresses the participation of men and women. Gender-transformativeness, finally, refers to gender-specific evaluation of programs and their implementation.

Results

In Table 2 the results of the search undertaken with two databases are presented. As the terms of interest were clustered, the number of hits started to decrease, as should be expected. The results reached 'zero' or close to

Table 1. Gender perspective – assessment guidelines

Assessment dimension	Assessment criteria of document
Overall view of the document	<ul style="list-style-type: none"> ● Contains the word gender (and women/men) ● Does not perceive that women will automatically benefit from proposed projects or actions
Gender-sensitivity	<ul style="list-style-type: none"> ● Uses gender sensitive language ● Is explicit about different needs and experiences of women and men ● Has clear and specific objectives, actions, and indicators that will lead to reductions in gender disparities
Gender-responsiveness	<ul style="list-style-type: none"> ● Conveys collection of sex-disaggregated data and tracking indicators that measure the different impact of interventions on women and men ● Advises women's and men's equal participation in the decision making process
Gender-transformativeness	<ul style="list-style-type: none"> ● The evaluation design is gender responsive ● The process involves some re thinking of social values, organizational practices, and policy and program goals

zero every time the word 'gender' was added (as seen in Table 2). This methodology is not just representative of what is available as published articles in databases, but also reflects how entry of the word 'gender' makes thousands of published articles to finally generate a zero result.

A considerable amount of literature on gender and disasters, gender and environment, and gender and water can be found (2, 8). But little is found on gender

Table 2. Database search results showing number of hits recorded

Search terms	Pubmed	Web of Science
Climate change	5,254	47,267
Climate change and human health	879	504
Climate change and human health and gender	0	4
Climate change and human health and gender and policy	0	0

and climate change, which reduces further with gender, climate change, and health (3, 8) as shown in this study too. Some articles found on population dynamics, climate change and gender, and women's role in adaptation (5, 17, 18) were exclusive of the health aspect. Two suitable documents from the WHO Web site on climate change and health were retrieved. A WHO draft discussion paper titled 'Gender, climate change and health' 2009 was the only article retrieved with three of the main keywords of this study (8). No scientific articles seem to exist that deal with climate change, human health, and gender.

The official documents reviewed are listed in Table 3, which presents how they contained or lacked the criteria developed for assessing a gender perspective. The two WHO documents, 'Protecting Health from Climate Change' (2009) and 'Protecting Health in Europe from Climate Change' (2009), discuss the impacts of climate change on health comprehensively and the threat it poses to global health and in Europe more specifically due to the nature of the latter document. The gender differentiated impacts and health-related impacts are mentioned in the

first and are negligible in the second. There is a failure to acknowledge that women are powerful agents of change with special skills who understand their environment. The WHO Resolution agreed by its member states in 2007 on integration of gender analysis at all its levels is non-existent in any priority actions or recommendations made by both the documents (4, 19).

A detailed account of how human beings are exposed and impacted by climate change through changing weather patterns like hurricanes, floods, and heat waves and indirectly through changes in air, water, food quality and quantity, ecosystems, agriculture, livelihoods, and infrastructure constitutes the human health chapter, which is the contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change of the IPCC Report 2007. No gender-differentiated impacts or sufferings are reported. A text box on gender and natural disasters is the only brief mention (2).

In the Kyoto Protocol (1998), as in the Copenhagen Accord (2009), possible environmental, economic, and social effects of climate change are mentioned only

Table 3. Official policy and planning documents included in the assessment

Document title	Type of document	Overall	Gender-sensitivity	Gender-responsiveness	Gender-transformativeness
Protecting Health from Climate Change – Connecting, Science, Policy, and People	WHO Policy and Planning (2009)	+ -	+ - -	--	--
Protecting Health in Europe from Climate Change	WHO Regional Office for Europe Policy and Planning (2009)	--	---	--	--
Human Health Chapter in IPCC Report 2007	Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change	+ -	---	--	--
Kyoto Protocol	International Agreement related to UNFCCC (1998)	--	---	--	--
Copenhagen Accord	Agreement of 114 parties during COP-15 in Copenhagen (2009)	--	---	--	--
Sweden's Fifth National Communication on Climate Change	Annex I Country, NC-5 (2010)	--	---	--	--
Fifth National Communication of USA	Annex I Country, NC-5 (2010)	--	---	--	--
India's Initial National Communication	Non-Annex I country, Initial NC (2004)	+ +	+ + -	--	- +
Initial National Communication of South Africa	Non-Annex I country, Initial NC (2000)	--	---	--	--
NAPA of Rwanda	Least Developed Country, NAPA (2006)	--	---	--	--
NAPA of Bangladesh	Least Developed Country, NAPA (2005)	+ +	+ + -	--	+ +

NC, National Communication; NAPA, National Adaptation Programs of Action; COP, Conference of the Parties.

+ Indicates that an assessment criterion of the respective dimension has been mentioned in the document.

- Indicates that a criterion was not found or was missing.

marginally, as they predominantly deal with formal and more general aspects of measures against climate change. Neither threats to health by the environment nor gender differences of these threats are dealt with (20, 21).

In the fifth NCs on climate change from Sweden and the United States (2010) there are special paragraphs on human health/public health addressing different direct and indirect threats from a changing climate. They mainly deal with effects as flooding, storms, high temperatures, heat waves, heat exacerbated air quality, and impacts from climate sensitive infectious diseases. In neither of the two NCs a gender perspective is applied (22, 23).

India's Initial National Communication (2004) reflects a gender aware approach acknowledging women's empowerment and education as important tools for sustainable development of the country. No such awareness to gender perspective is found in South Africa's Initial National Communication (2000). Both countries briefly account for impact of climate change on human health presenting malaria as an example. However, India demonstrates malaria to be an extensively studied disease since the 1960s and plans to use it as an in-depth study for developing the relationship between climate parameters and disease incidence and its future spread in the climate change context (24, 25).

The two NAPAs of Rwanda (2007) and Bangladesh (2005) vary widely in their approach in regards to gender perspective. Following the elements like country-drivenness, simplicity, and flexibility in procedures laid in the guidelines of planning a NAPA, the plan of Bangladesh uses gender equality as a cross-cutting criterion in all its proposed programs and projects. Poverty reduction and security of livelihoods with a gender perspective has been ranked as the most important set of criteria for prioritization of adaptation needs and activities in the plan of Bangladesh. The NAPA of Rwanda completely lacks this perspective. These plans are programs of actions for adaptation measures to address impacts of climate change and threats to human health are only briefly addressed (26, 27).

Discussion

Climate change is not a new issue but the discussion of its impacts on human health and development, especially pro-poor planning, is relatively new. It was the theme for the World Health Assembly, arranged by WHO in 2008. The integration of a gender-sensitive perspective in such planning is even more current. Over the past 50 years global public health has made tremendous progress and development, people are living longer, they are healthier, and have more choices in their private lives and in the societies they are part of (28). But, it seems it is a long way forward before these successes are equally shared. We found in our study few indications of integration of the

gender perspective neither in scientific nor in policy papers.

Climate change is predicted to worsen the health inequities within and among countries adding more stress on already poorer and vulnerable groups of any population (20). A publication of the UNFCCC on the impact of climate change in developing countries (2007) stresses the particular vulnerability of women to environmental factors related to climate change such as natural disasters and droughts (29). In such times they are not just directly affected by a disease but also by the increased workload in taking care of sick family members (30).

Collecting sex-disaggregated data and carrying out gender analyses is not simply to understand the situation from a gender perspective, but to facilitate changing the way we think and how we view and relate to men and women. Sex-disaggregated data and gender-sensitive policies are tools needed to tackle the different impacts of climate change on people's lives. It requires intensified efforts as different contexts and their specific cultures and traditions can bring conflict. However, the advance of a process that involves rethinking social values, the policies, and programs to reach the whole population is necessary for the integration of the gender perspective both in science and in policy making.

It can be argued that including a gender perspective was never a criterion for the documents reviewed in this study; hence, the lack of it is an important revelation to ponder. It suggests that there is a bidirectional relation between policy and research. On the one hand there is a need for an enhanced process where the global policy level in guidelines and criteria includes gender mainstreaming. This is today almost non-existent in the field of climate change and health. If done, it will not only be a perspective covered in NAPAs and NCs but also send signals to the research community. On the other hand researchers studying climate change and health should more often 'put on the gender glasses' to be able to feed in gender sensitive results and analyses into policy and practice. There is a bidirectional relationship and interlinkages between research and policy where the gender perspective can be a central feeding criterion. For sustained efforts to address climate policies, a gender perspective should be integral.

A WHO article (31) on health considerations within NAPAs (41/44 reviewed) concludes that 93% of NAPAs recognize the negative impacts of climate change on health; however, the understanding of impacts and health interventions proposed are inadequate. The WHO proposes that as all these NAPAs were developed more than 3 years ago, they need to be revised and this provides an opportunity for the WHO to strengthen their health components (31). We see this as a double opportunity for the WHO to systematically include gender perspective in

its assessment and consultative process for strengthening public health interventions in NAPAs.

The Commission on the Status of Women (CSW) at its 46th session in 2002 and 52nd session in 2008 raised the need for differentiating gender impacts of climate change as an issue requiring special attention. It called for action to mainstream gender perspective into ongoing research and policy making on the impact of climate change (13, 30). However, in 2009, The Committee on the Elimination of Discrimination against Women (CEDAW) during its 42nd session expressed its concern about the absence of a gender perspective in UNFCCC and other global and national policies and initiatives on climate change. The CEDAW claims that gender equality should be an overarching guiding principle in UNFCCC and related agreements dealing with the impact of climate change on humans as well as adaptation measures (32).

Our study revealed gender to be an underrepresented or non-existing variable both in research and studied policy documents in the field of climate change and health. Putting health at the heart of climate change is essential (4), with the gender dimensions being an important aspect. To assume that women will benefit automatically from a policy, a project, or a program might become a biased or even blind approach to sustainable development. Many of the opportunities for basic social and health improvements are lost because of limited attention to gender biases in power, resources, entitlements, norms, and values, thereby reducing the potential for women worldwide to achieve the best possible level of health. There are 'political, social, economic, cultural and scientific factors that we can take in account for advancing the cause of good health' (33).

Conclusion

The overall aspiration of this study is to generate awareness that, despite the recognition of the differential effects of climate change on health of women and men gender, is still an underrepresented variable in strategic planning and policy making on climate change and health. If health is a human right and is largely influenced by the jeopardy of gender, then there is a need to include a gender perspective in the still developing and evolving area of research and policy of impacts of climate change on global health. Efforts to introduce a gender perspective in the climate and global health field must be evidence based and policy driven. The solutions lie in addressing the social beliefs and practices that are harmful for women physically, emotionally, or mentally. The need is to narrow the gaps by bridging the technological, social, and gender divides by creating pro-women orientation in strategic planning and policy making on climate change and health. Researchers and policy makers should be able to address the gender issues

and create means for equal participation among women and men.

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References

1. Costello A, Abbas M, Allen A, Ball S, Bell S, Bellamy R, et al. Managing the health effects of climate change. *Lancet* 2009; 373: 1693–1733.
2. Confalonieri U, Menne B, Akhtar R, Ebi KL, Hauengue M, Kovats RS, et al. Human health. In: Parry ML, Canziani OF, Palutikof JP, van der Linden PJ, Hanson CE, eds. *Climate change 2007: impacts, adaptation and vulnerability, contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press; 2007 pp. 391–431.
3. Kjellström T. Global Climate change and health – a new theme for research in environmental medicine. *Inst Environ Med* 2009. Available from: <http://www.imm.ki.se/klimatrapport091020.pdf> [cited 30 July 2010].
4. World Health Organization. Protecting health from climate change – connecting science, policy and people; 2009. Available from: http://whqlibdoc.who.int/publications/2009/9789241598880_eng.pdf [cited 30 July 2010].
5. Stott R. Population and climate change: moving toward gender equality is the key. *J Public Health* 2010; 32: 159–60.
6. Kesavan PC, Swaminathan MS. Managing extreme natural disasters in coastal areas. *Phil Trans R Soc A* 2006; 64: 91–2216.
7. United Nations AIDS. AIDS epidemic update; 2009. Available from: http://data.unaids.org/pub/Report/2009/JC1700_Epi_Update_2009_en.pdf [cited 5 September 2010].
8. World Health Organization. Gender, climate change and health; 2009. Available from: http://www.who.int/globalchange/publications/reports/gender_climate_change/en/index.html [cited 2 August 2010].
9. Office of the Special Advisor on Gender Issues and Advancement of Women. Gender mainstreaming: strategy for promoting gender equality; 2001. Available from: <http://www.un.org/womenwatch/osagi/conceptsanddefinitions.htm> [cited 5 August 2010].
10. National Committee for the Advancement of Women in Viet Nam. Gender mainstreaming guidelines in national policy formulation and implementation – towards gender equality in Vietnam through gender responsive national policy and planning. Project: gender in public policy. Hanoi; 2004. Available from: <http://vietnam.unfpa.org/webdav/site/vietnam/shared/GenderMainstreamingGuidelinesInNationalPolicyFormulationAndImplementation.pdf> [cited 10 August 2010].
11. Department for International Development. Gender manual, a practical guide for development policy makers and practitioners. UK; 2002. Available from: <http://www.allindiary.org/pool/resources/dfid-gender-manual.pdf> [cited 15 November 2010].
12. United Nations Documents. Report of the world commission on environment and development: our common future; 1987. Available from: <http://www.un-documents.net/wced-ocf.htm> [cited 30 June 2010].
13. Division for Advancement of Women. Women, gender equality and climate change. Special feature; 2009. Available from: http://www.un.org/womenwatch/feature/climate_change/ [cited 5 July 2010].

14. United Nations. Statement by the UN Secretary General on the creation of new UN Women; 2010. Available from: <http://www.unwomen.org/2010/07/statement-by-the-un-secretary-general-on-the-creation-of-un-women> [cited 10 July 2010].
15. World Health Organization. Climate change and human health; 2010. Available from: <http://www.who.int/globalchange/publications/reports/en/index.html> [cited 10 July 2010].
16. United Nations Framework Convention on Climate Change. National reports; 2010. Available from: http://unfccc.int/national_reports/items/1408.php [cited 15 August 2010].
17. Stephenson J, Newman K, Mayhew S. Population dynamics and climate change: what are the links? *J Public Health* 2010; 32: 150–6.
18. Carvajahl-Escobar Y, Quintero-Angel M, García-Vargas M. Women's role in adapting to climate change and variability. *Adv Geosci* 2008; 14: 277–80.
19. Menne B, Apfel F, Kovats S, Racioppi F. Protecting health in Europe from climate change. Geneva: WHO Regional Office for Europe; 2008.
20. United Nations Framework Convention on Climate Change. Kyoto protocol to the United Nations framework convention on climate change; 1997. Available from: http://unfccc.int/kyoto_protocol/items/2830.php [cited 30 July 2010].
21. United Nations Framework Convention on Climate Change. Decision 2/CP.15 Copenhagen Accord; 2009. Available from: <http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf> [cited 30 July 2010].
22. Fifth National Communication on Climate Change under the United Nations Framework on Climate Change. Sweden's fifth national communication on climate change. Sweden: Ministry of Environment; 2010. Available from: http://unfccc.int/resource/docs/natc/swe_nc5.pdf [cited 6 September 2010].
23. Fifth National Communication of United States of America under the United Nations Framework on Climate Change. U.S. climate action report 2010. United States Department of State. Washington, DC: Global Publishing Services; 2010 Available from: http://unfccc.int/resource/docs/natc/usa_nc5.pdf [cited 6 September 2010].
24. Initial National Communication under the United Nations Framework Convention on Climate Change. India's initial national communication. Government of India: Ministry of Forests and Environment; 2000. Available from: <http://unfccc.int/resource/docs/natc/indnc1.pdf> [cited 5 September 2010].
25. Initial National Communication to the United Nations Framework Convention on Climate Change. South Africa; 2000. Available from: <http://unfccc.int/resource/docs/natc/zafnc01.pdf> [cited 5 September 2010].
26. National Adaptation Programme of Action to Climate Change. NAPA-Rwanda. Ministry of Lands, Environment, Forestry and Mines; 2006. Available from: <http://unfccc.int/resource/docs/napa/rwa01e.pdf> [cited 5 September 2010].
27. National Adaption Programme of Action. Final report. Government of Environment and Forest. Government of People's Republic of Bangladesh; 2005. Available from: <http://unfccc.int/resource/docs/napa/ban01.pdf> [cited 5 September 2010].
28. Beaglehole R, Bonita R. Global public health: a scorecard. *The Lancet* 2008; 372: 1988–96.
29. United Nations Framework Convention on Climate Change: climate change: impacts, vulnerabilities and adaptation in developing countries; 2007. Available from: <http://unfccc.int/resource/docs/publications/impacts.pdf> [cited 25 August 2010].
30. Division for Advancement of Women. 52nd Session of the commission on status of women. Gender perspectives on climate change. Interactive expert panel on emerging issues, trends and new approaches to issues affecting the situation of women or equality between women and men. NY: United Nations; 2008.
31. Manga L, Bagayoko M, Meredith T, Neira M. Overview of health considerations within National Adaptation Programmes of Action for climate change in least developed countries and small island states. Geneva: World Health Organization; 2010.
32. Committee on the elimination of discrimination against women: statement of the CEDAW on gender and climate change; 2009. Available from: http://www2.ohchr.org/english/bodies/cedaw/docs/Gender_and_climate_change.pdf [cited 20 August 2010].
33. Sen A. Why and how is health a human right? *The Lancet* 2008; 372: 2010.

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