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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

**AD HOC WORKING GROUP ON LONG-TERM COOPERATIVE ACTION  
UNDER THE CONVENTION**

**Sixth session**

**Bonn, 1–12 June 2009**

**Item 3 (a–e) of the provisional agenda**

**Enabling the full, effective and sustained implementation of the Convention through long-term cooperative action now, up to and beyond 2012, by addressing, inter alia:**

**A shared vision for long-term cooperative action**

**Enhanced national/international action on mitigation of climate change**

**Enhanced action on adaptation**

**Enhanced action on technology development and transfer to support action on mitigation and adaptation**

**Enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation**

## **Ideas and proposals on the elements contained in paragraph 1 of the Bali Action Plan**

### **Submissions from intergovernmental organizations**

1. The Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA), at its first session, invited Parties and accredited observer organizations to provide additional information, views and proposals on paragraph 1 of the Bali Action Plan (decision 1/CP.13), as may be required for each session.<sup>1</sup> It requested the secretariat to post these submissions on the UNFCCC website.
2. The AWG-LCA, at its second session, further requested the secretariat to compile submissions from Parties and intergovernmental organizations into separate miscellaneous documents, and make them available one week prior to the respective sessions for consideration by the AWG-LCA.<sup>2</sup>
3. The secretariat received eight such submissions from five intergovernmental organizations between 24 April and 20 May 2009.<sup>3</sup> As requested by the AWG-LCA, they have been posted on the UNFCCC website.<sup>4</sup> In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced\* in the language in which they were received and without formal editing.

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<sup>1</sup> FCCC/AWGLCA/2008/3, paragraph 23.

<sup>2</sup> FCCC/AWGLCA/2008/8, paragraph 27.

<sup>3</sup> Submissions from intergovernmental organizations received before this date are included in document FCCC/AWGLCA/2009/MISC.2.

<sup>4</sup> <[http://unfccc.int/parties\\_and\\_observers/igo/items/3714.php](http://unfccc.int/parties_and_observers/igo/items/3714.php)>.

\* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

**FCCC/AWGLCA/2009/MISC.5**

GE.09-61296

4. The secretariat will continue to post on the UNFCCC website any submissions received after the issuance of the present document.
5. Submissions received from Parties are contained in document FCCC/AWGLCA/2009/MISC.4 (Parts I and II) and are posted on the UNFCCC website.<sup>5</sup> Submissions received from non-governmental organizations will, in line with established practice, be posted on the UNFCCC website.<sup>6</sup>

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<sup>5</sup> <[http://unfccc.int/meetings/ad\\_hoc\\_working\\_groups/lca/items/4578.php](http://unfccc.int/meetings/ad_hoc_working_groups/lca/items/4578.php)>.

<sup>6</sup> <[http://unfccc.int/parties\\_and\\_observers/ngo/items/3689.php](http://unfccc.int/parties_and_observers/ngo/items/3689.php)>.

CONTENTS

	<i>Page</i>
1. FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS	
Grasslands: enabling their potential to contribute to greenhouse gas mitigation.....	4
(Submission received 24 April 2009)	
2. INTERNATIONAL LABOUR ORGANIZATION, WORLD HEALTH ORGANIZATION, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, AND UNITED NATIONS DEVELOPMENT FUND FOR WOMEN	
Joint Submission for the Ad hoc Working Group on Long-term Cooperative Action.....	9
(Submission received 24 April 2009)	
3. OFFICE OF THE UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES	
A. Climate change and statelessness: an overview .....	11
(Submission received 15 May 2009)	
B. Forced displacement in the context of climate change: challenges for states under international law .....	15
(Submission received 20 May 2009)	
4. UNITED NATIONS ENVIRONMENT PROGRAMME	
A. Sustainable Building Initiative .....	24
B. Transport .....	29
(Submissions received 24 April 2009)	
5. WORLD HEALTH ORGANIZATION	
A. Submission for the Ad hoc Working Group on Long-term Cooperative Action .....	34
(Submission received 24 April 2009)	
B. Protecting the health of vulnerable people from the humanitarian consequences of climate change and climate related disasters.....	35
(Submission received 15 May 2009)	

PAPER NO. 1: FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
**GRASSLANDS: ENABLING THEIR POTENTIAL TO CONTRIBUTE TO GREENHOUSE GAS  
MITIGATION**

A submission by

The Food and Agriculture Organization of the United Nations<sup>1</sup>

### **Summary**

Grasslands occupy about half of the emerged ice free world, make up approximately 70 percent of the world's agricultural area (FAO, 2005) and represent a major terrestrial carbon (C) stock which can be increased by appropriate management. The global technical mitigation potential by 2030 for grazing land management estimated by IPCC (2007) is high. Low cost mitigation options based on enhancing carbon sequestration in grasslands are available. These practices generate additional important co-benefits in the form of food security, biodiversity and water conservation, and improved resilience and thus adaptation to climate change. There are important methodological issues to be addressed (carbon monitoring, permanence, leakage) but increasing experience with LULUCF carbon monitoring and projections will provide valuable insight for resolving these. There are compelling reasons to consider grasslands as part of a holistic approach (all gases, all sources and sinks) to land use and land use change in the context of deliberations at COP15 in Copenhagen and beyond.

### **Background**

Grasslands<sup>2</sup> and integrated grassland systems occupy about half of the emerged ice free world and approximately 70 percent of the world's agricultural area. Rangelands alone are the world largest land use type, and in 28 countries they represent more than 60 percent of total land area. In all farming systems of the world, critical links exist between semi-natural grasslands managed for multiple products, high potential agricultural zones, forests, calling for ecosystem and landscape approach. The livelihoods of almost one billion people depend on grasslands. Improved management of grasslands is key to food production and sustainable development in many countries. Poverty and economic marginalization often characterize the human populations managing grasslands; yet their interchange of goods and services with other agricultural and urban populations is substantial. If the future of agriculture is to build new understandings based on scientific and community-based knowledge systems, grasslands have much to offer as models of working with, not against, nature for human livelihoods.

This paper focuses on grasslands because this important land use system, and the considerable technical potential of its associated management practices to realize mitigation at relative low cost, should receive more consideration in the negotiations.

### **1. Grassland systems have a large mitigation potential**

Agriculture accounts for roughly 14% of global GHGs or about 6.8 Gt of CO<sub>2</sub> equivalent (e) per year (IPCC 2007). GHG emissions from land-use change, including deforestation in tropical areas, are around 17% of total GHG emissions. The forest sector accounts for 17.3 percent of total emissions, of which a substantial part is due to deforestation driven by agricultural conversion, including pasture and rangelands. Sustaining yields on the existing land base, whether under intensive pasture and agro-silvo pastoral systems production, or extensive grassland and rangeland management, is critical to mitigating greenhouse gas emissions from agriculture.

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<sup>1</sup> This document was prepared based on the outcome of a workshop held at FAO Rome 15-17 April 2009 which drew together 27 experts from around the world (see [www.fao.org/agriculture/crops](http://www.fao.org/agriculture/crops)) and input from members of the Grasslands Carbon Working Group.

<sup>2</sup> Grasslands are land cover with herbaceous plants with less than 10 percent tree and shrub cover (UNESCO). In this paper, grasslands is used in its wider sense associating rangelands, grazing land, agro-silvo pastoral systems, cultivated pastures.

According to the IPCC (2007), the global *technical* mitigation potential of agriculture (excluding fossil fuel offsets from biomass-fuels) could be as high as 5.5-6 Gt CO<sub>2</sub> eq per year by 2030 of which approximately 1.5Gt CO<sub>2</sub> eq is from grazing land management, over 0.6 Gt CO<sub>2</sub> eq is from restoration of degraded land (that is directly linked to grassland and rangeland management), and more than 1.5Gt CO<sub>2</sub> eq is from cropland management (of which pasture management has an important share). Approximately 30 percent of this potential can be achieved in developed countries and 70 percent in developing countries.

Tennigkeit and Wilkes (2008) have already estimated that improved rangeland management has the biophysical potential to sequester 1.3 - 2Gt CO<sub>2</sub> eq worldwide to 2030.

Therefore grasslands (including grazing land management, plus a share of restoration of degraded lands, plus a share of cropland management) have a high potential to promote build up of C if appropriate management practices will be adopted.

Associated technologies to realise mitigation across much grassland are cost effective thus suggesting an attractive economic mitigation potential.

#### *Grassland Management practices*

A range of integrated grassland management interventions that can reduce GHG emissions and enhance C sequestration (by increasing C inputs to soil and above ground woody vegetation and/or reducing losses) were described by Smith et al. (2008). These include the introduction of new species and varieties, fire management, restoration of organic soils and degraded lands, extending the use of perennial crops, increasing tree cover in silvopastoral systems, managing grazing intensity and duration/periodicity, and improving pasture quality. Reducing the frequency and/or intensity of grassland fires will reduce greenhouse gas emissions and increase above and below ground carbon stock, but could reduce the value of the land for food and livestock production. The authors divided the world into four 'climatic types' and provided mean estimates of per area annual mitigation potentials for grassland management in each zone (tCO<sub>2</sub>/ha/yr): cool-dry 0.11, cool-moist 0.81, warm-dry 0.11, warm-moist 0.81.

The IPCC (2000) suggested that with an international effort, it would have been possible to place 10 percent of the pasture land under improved pasture management by 2010. Existing barriers such as the lack of capital investment of pastoralists and small-farmers, the lack of adapted materials, and the lack of quantitative information on sequestration responses to management options in specific grazed ecosystems hamper such solutions. It should be considered that perhaps 5-10 percent of global grazing lands could be placed under C sequestration management by 2020. This could give between 2 and 8 percent of the above mentioned technical potential.

Most improved grassland management techniques also increase the resilience of the ecosystems and rural populations to climate change. Support and incentives for adaptation practices in grasslands should be given greater attention because one billion people depend on grasslands for their livelihood. The form and magnitude of the incentives for mitigation and adaptation measures in grasslands will be provided will greatly influence the level of adoption of improved management practices.

## **2. Potential to act now**

Although there are methodological issues that need to be addressed, there is the base to act now.

Soil C sequestration is real and, in principle, its effects with respect to mitigation are measurable and verifiable. There is clearly a significant anthropogenic component with respect to both current levels of sequestration (and emissions) and actions to enhance mitigation. Cost-effective methodologies for measuring C sequestration in integrated grassland systems at global, regional, and national level are required. However, these are tractable problems and a number of pilot studies are already addressing them. A range of approaches at different scales has been employed in recent years to address the question of the extent of C sequestration in grasslands and the level of variation and uncertainty associated with it. Such work needs to be augmented and co-ordinated to gain experience and allow dissemination of best

practices. There is a need to develop benchmark sites to check and compare to a baseline scenario the role of improved management on ecosystem C balance (including e.g. fire, grazing, and pasture cutting regimes).

Concerns with respect to the *permanence* of sequestration are real. These can best be addressed through a combination of long term (permanent) incentives to retain sequestered C in the ecosystem combined with capacity building towards management changes that in themselves have sustained benefits without long-term financial gains specifically linked to C sequestration.

Similarly, the question of *additionality* can be considered in the context of combining the development of simple and cost effective methodologies with modelling and mapping approaches.

The extent to which monitoring, reporting and verification (MRV) requirements are necessitated will depend in part on the funding mechanisms in place for enhancing mitigation.

Concerns about *leakage* point to the need to consider full GHG accounting from grasslands within a comprehensive framework of land use and land use change.

#### *Sequestration in the context of GHG inventory for grasslands*

The technical mitigation potential of grassland management is largely higher than methane emissions from ruminant animals or manure management emissions and can be implemented in all countries, both in heavily degraded areas and in areas which are only slightly degraded or well managed.

Nonetheless, benefits from enhanced C sequestration need to be addressed in the context of significant emissions of methane and nitrous oxide from ruminant livestock production and it is important that the effects of changing management practices is assessed in the context of reducing net GHG emissions. This requires whole managed ecosystem GHG inventories.

#### *Multiple benefits*

Grassland management practices that enhance soil C sequestration can also result in enhanced food production, greater biodiversity, improved water management both with respect to quantity (flood control) and quality (reduced pollution of waterway), restoration of degradation, and improved efficiency. However, evidence on this is limited and more studies and research are required in different agro-ecological zones to quantify such multiple benefits.

Amezquita et al (2008) reported that pasture improvement in selected tropical grassland ecosystems in addition to productivity and economic benefits, had a significant impact on soil C sequestration and C stock in established pastoral and silvopastoral systems. The recently concluded GEF-silvopastoral project in Nicaragua, Colombia and Costa Rica demonstrated that compensation of farmers for environmental services resulted in increased adoption of silvopastoral systems which enhanced carbon sequestration and biodiversity conservation in agricultural landscapes dominated with cattle. National institutions are currently implementing strategies for mainstreaming these experiences.

In addition to their mitigation potential, grasslands (including agro-silvo pastoral and rangeland systems) play a significant social and ecological role. If the issue is not correctly addressed, the consequences on food security, environmental degradation, and livelihoods could be dramatic.

### **3 Grasslands: What is the enabling policy and institutional environment?**

An enabling policy framework should be developed in the near term with the aim of tapping the full mitigation potential from grasslands. The exclusion of grasslands and their large mitigation potential, does not serve the purpose of the Convention, the purpose of sustaining efficient food production, nor sustainable development and livelihood.

Five key areas should be considered to realize the full potential of mitigation and adaptation measures in grasslands: i) full GHG accounting; ii) measurements and monitoring; iii) training and capacity building; iv) policy measures in the environmental and agricultural sectors; v) financing options.

At national level it will, furthermore be necessary to build on the existing aggregation structure of farmers and pastoralists while mainstreaming mitigation in agricultural policies and vice-versa. The improved adoption of win-win management practices, that will result in sustainable production intensification and climate change mitigation, could be promoted through Farmers Field Schools' adult education schemes and through pastoral associations. An underlying constraint, both to carbon sequestration and to more general sustainable rangelands management, is the insecurity of tenure that most rangeland managers face.

Increased consideration should be given to grasslands in order to adopt measures that take into consideration all aspects including mitigation, adaptation, production, livelihood co-benefits and trade-offs.

#### **4. Possible options for consideration by parties**

Despite the many uncertainties concerning the management of grasslands for more effective contribution to GHG mitigation, there are strong reasons why it is timely to consider them in the context of the negotiations during COP15. Recognition of grasslands as a mitigation option would not only lead to expansion of land-based sequestration, but would facilitate empowerment of the almost one billion people dependent upon grasslands to enhance their livelihoods.

It has been demonstrated that, if appropriate management practices are adopted, grasslands have a great potential to contribute to GHG mitigation.

Parties may wish to consider a need to engage in starting pilot projects on the potential for C sequestration in grassland systems, cost effective measurement and monitoring of changes in soil C levels, and adapted management practices. The pilot projects would adopt a process of learning and adjusting, and would be focussed on developing countries. They would build on community work, and management practices associated with rural development would also be promoted. A global complete GHG assessment should be initiated and take into account emissions and reductions from nutrient applications, livestock management and grassland management.

A phased approach (as has been suggested with regard to REDD) should be established for grasslands as a component of an overall agriculture initiative to test MRV methodologies, incentives, and payment schemes. A smallholder and pastoral agriculture climate change readiness fund, linked to public-private trust funds should be considered to buy emission reductions from early action grassland mitigation projects from small farmers.

Integrating grasslands into the scope of LULUCF accounting, as well as into existing and new funding mechanisms, including any eventual mechanism linked to NAMAs should be considered.

It will be necessary to address technological and scientific information together with social and educational barriers associated with the efficient use and management of grassland systems at a landscape scale, while taking into consideration agroecological processes that provide flexibility and resilience.

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PAPER NO. 2: INTERNATIONAL LABOUR ORGANIZATION, WORLD HEALTH ORGANIZATION, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, AND UNITED NATIONS DEVELOPMENT FUND FOR WOMEN

*Joint Submission for the Ad hoc Working Group on Long-term Cooperative Action  
(AWG-LCA)*

The International Labour Organization (ILO), the World Health Organization (WHO), the Food and Agriculture Organization (FAO), and the United Nations Development Fund for Women (UNIFEM) welcome the opportunity to express suggestions in the framework of the work of the Ad Hoc Working Group on Long Term Cooperative Action (AWG-LCA) related to development and social issues, in particular on employment and incomes, food and agriculture, gender equality, health and development. Collectively and individually our organizations are available to assist parties in their endeavour to make informed decisions.

#### Shared Vision

*Recognizing* that reducing emissions and enhancing communities' resilience to climate change, while improving social living standards is desirable and possible, provided coherent policies are adopted, Parties should be guided by the following principles.

- Comprehensive long-term cooperative action needs to be based on relevant scientific, technical, **social** and economic considerations and regularly re-evaluated in the light of new findings in these areas.
- **Climate strategies** related to mitigation, adaptation, finance and technology, should properly **address the social consequences of climate change**, particularly regarding employment, health, food security, gender equality, and sustainable development.
- Climate strategies should be **informed through dialogue with and the active participation of all social stakeholders** such as organizations of employers, health professionals, workers, rural producers (including farmers, fishers, pastoralists and forest users), women, and indigenous and local communities.
- Climate strategies should enhance social development and cohesion and avoid exacerbating social inequality among and within countries. Climate change policies should also **aim to optimize the large potential benefits that the reduction of GHG emissions have for society in terms of health, food security, employment and incomes, development, poverty reduction and gender equality**.
- A **just transition framework** to low-emission economies should be ensured. Under this framework, sectors, enterprises, workers and communities affected by climate change and related policies will be assisted to both adapt to climate change and adjust to a low-carbon economy.

#### Mitigation

- The **social impact—including benefits—of climate change mitigation policies and measures** on the regions, countries and populations where they are implemented **should be properly assessed and addressed**.
- **Ensure that all members of society—irrespective of their gender and social status—can contribute to and benefit from mitigation policies** that do not compromise but foster sustainable development at the local and global scales [*per Decision 1/CP.13, para 1, (b), i and ii*]. To this end, mitigation policies and programmes should be **designed to reduce emissions while at the same time enhancing employment opportunities, health, food security, equal access to positive incentives and resources by women and men, and enabling sustainable development** that respects long-term implications through short-term solutions.

### Adaptation

- Adaptation strategies should be **designed and implemented in coordination with poverty reduction and development strategies to address social vulnerabilities** (such as un- and under-employment, low incomes, subsistence agriculture, unsustainable livelihoods, gender inequalities, malnutrition and poor health) and thus strengthen paths towards resilience and sustainable development.
- Be responsive to the **differentiated needs of social groups**, recognizing that **women, indigenous people, children and the poor are disproportionately affected**.

### Finance & Technology

- **Allocation and disbursement of international funds for mitigation and adaptation programmes, technology transfer and capacity-building should prioritize the needs of vulnerable groups, including small and medium enterprises, women, indigenous peoples and poor rural producers through appropriate policies, guidelines and criteria** to ensure progress towards social targets and **enhance all of society's—women's and men's—innovative capacity**.
- **Data—disaggregated by sex, age, and urban-rural—should be used at all levels to identify and assess technology needs of women and men, in various economic sectors and socio-economic groups**, thus fostering an enabling environment for all of society to participate in mitigation and adaptation to climate change.

15 May 2009

**SUBMISSION**

**CLIMATE CHANGE AND STATELESSNESS: AN OVERVIEW<sup>1</sup>**

submitted by the

United Nations High Commissioner for Refugees (UNHCR)

supported by the International Organization for Migration (IOM) and the Norwegian Refugee Council  
(NRC)

to the 6th session of the Ad Hoc Working Group on Long-Term Cooperative Action  
(AWG-LCA 6) under the UN Framework Convention on Climate Change (UNFCCC)

1 to 12 June 2009, Bonn, Germany

*This note relates to the implementation of paragraph 1(c) of the Bali Action Plan and requests UNFCCC negotiators to ensure recognition in the follow-up Protocol of the need for early action to prevent statelessness as outlined below, and to permit funding for adaptation to be made available for such early actions.*

‘Sinking island states’ present one of the most dramatic scenarios of the impact of climate change. The entire populations of low-lying States such as the Maldives, Tuvalu, Kiribati and the Marshall Islands may in future be obliged to leave their own country as a result of climate change. Moreover, the existence of their State as such may be threatened. Entire populations of affected states could thus become stateless.

Article 1 of the *1954 Convention Relating to the Status of Stateless Persons* defines a stateless person as “a person who is not considered a national by any state under the operation of its law”. Should a state cease to exist, citizenship of that state would cease, as there would no longer be a state of which a person could be a national.<sup>i</sup> The question is then the extent to which climate change could affect statehood.

Although there is no internationally agreed definition of what constitutes a State, there is agreement in the existing doctrine that there must be territory inhabited by a permanent population under the control of an effective government. Additionally, independence has been cited by publicists as a central criterion of statehood. The criteria are not absolute and are, moreover, applied less strictly once a State is established. The temporary exile of a government even for an extended period would thus not necessarily lead to extinction of the State. There is no precedent for loss of the entire territory or the exile of the entire population; presumably statehood would similarly not cease if such loss or exile were temporary. The implication, however, is that where such a situation would be permanent, statehood could be questioned.<sup>ii</sup>

Should, the entire territory of a State be permanently submerged, inevitably there could be no permanent population attached to it or a government in control of it. The loss of all territory has been cited most frequently as a possible ground for loss of statehood. It appears, however, unlikely to occur before the end of the century, even with the upwardly revised rates in rising sea-levels announced by scientists recently.<sup>iii</sup>

A threat to statehood may nonetheless arise far earlier. It is projected that the number and severity of extreme events such as storms and flooding will increase considerably. Extensive loss of fresh water and

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<sup>1</sup> This note is a summary overview of a more extensive note on climate change and statelessness prepared by UNHCR pursuant to its mandate to prevent and reduce statelessness and to protect stateless persons. More detailed information may be obtained by contacting UNHCR through [park@unhcr.org](mailto:park@unhcr.org)

arable land due to contamination and seepage is expected. As well, destruction of the economic base is additionally expected due to erosion, as well as damage to corals and fishing grounds due to rising sea levels and global warming. The Intergovernmental Panel on Climate Change (IPCC) has thus indicated that “rapid sea-level rise that inundates islands and coastal settlements is likely to limit adaptation possibilities, with potential options being limited to migration”.<sup>iv</sup> It has also confirmed that rising sea-levels are unavoidable.<sup>v</sup>

Low-lying island States are thus very likely to be entirely uninhabitable long before their full submersion, causing entire populations and the governments to be externally displaced. Unless territory could be protected or territory was ceded by another State, the exile of the population and the government would presumably be permanent. The population and the government would be entirely dependent on the status the host State would be willing to grant it. The government's independence could thus also be questioned. The IPCC itself has noted the threat to the sovereignty of low-lying island States likely to be affected.<sup>vi</sup>

Should statehood cease, the population would be rendered stateless. Disappearance of a State due to loss of territory or the permanent exile of the population or the government is without precedent. The international community could agree that the affected States would continue to exist nonetheless. Even in such a case, however, governments of affected States would face many constraints in practice,<sup>vii</sup> and their populations would be likely to find themselves largely in a situation that would be similar to if not the same as if statehood had ceased. The population could thus be considered *de facto* stateless.<sup>viii</sup>

To the extent that statelessness is foreseeable, efforts should focus on preventing it from arising. The principle of prevention of statelessness is a general one recognized in international law as a corollary to the right to a nationality. Both have been iterated in numerous international and regional human rights instruments.<sup>ix</sup> As well, specific instruments address prevention and reduction of statelessness, including *inter alia* the *1961 Convention on the Reduction of Statelessness* (hereafter the 1961 Convention).<sup>x</sup> In addition, the General Assembly in 1996 entrusted UNHCR with a global mandate to engage in preventing and reducing statelessness as well as to protect stateless persons.<sup>xi</sup>

To prevent statelessness in the context of low-lying island States, one option would be that territory elsewhere would be ceded to the affected State to ensure its continued existence. If other States agreed that this was the same State, statelessness would not arise. Union with another State would be another option. In such a case, the *1961 Convention* and the *Draft Articles on the Nationality of Natural Persons in Relation to Succession of States* provide for specific safeguards to prevent statelessness.<sup>xii</sup> Otherwise, the acquisition of the nationality of another State would need to be foreseen. As existing instruments do not provide specific guidance for such a case, situation-specific arrangements would be required.

Ideally, multilateral comprehensive agreements would provide where, and on what legal basis such populations would be permitted to move elsewhere and their status. To prevent temporary statelessness, acquisition of an effective nationality should be foreseen prior to the dissolution of the affected State. Dual nationality may therefore need to be permitted at least for a transitional period. As well, a waiver may be required of formal requirements for renunciation or acquisition of nationality which might be difficult to fulfil for affected populations. Such arrangements would need to provide *inter alia* for the right of residence, military obligations, health care, pensions and other social security benefits. Citizens of affected States that might have been displaced earlier, possibly to third States not party to the agreement, may also need to be considered. Provision should also be made to ensure that any resettlement be environmentally, socially and economically viable and sustainable over the longer term. Further, the principle of family unity should be considered and due regard given to permitting the affected populations to protect their identity as a people, including their language, culture, history and traditions.

The early introduction of educational and other measures to prepare for such displacement, such as labour migration schemes, could serve not only to increase the resilience and ability to adapt in the host country, but also provide further resources and reinforce the resilience of the population remaining on the

islands. Although complete relocation of the entire population would be a measure of last resort, early preparedness could also help avert a humanitarian catastrophe by promoting orderly movements of affected populations and increasing the viability of the move.

Such arrangements would ideally be elaborated on the basis of participatory involvement of the population as well as the Government of affected island States. Other interested States, and relevant organizations and agencies could be involved as partners, with due account being taken of existing links with other States.

To this end, recognition would be required *inter alia* in the United Nations Framework Convention on Climate Change (UNFCCC) that external displacement will be inevitable and that statelessness may arise as a consequence of climate change, particularly in the case of low-lying island States. Funding should be made available at an early stage to prepare for prevention of statelessness and for displacement and/or migration as a possible adaptation measure.

In view of its mandate to engage in preventive actions related to statelessness, UNHCR would be pleased to support efforts by States to devise appropriate solutions for potentially affected populations, in partnership with other actors.

### Endnotes

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<sup>i</sup> This was also confirmed by the International Law Commission: “[w]hen a state disappears by dissolution, its nationality also disappears”, International Law Commission, *Draft Articles on Nationality of Natural Persons in Relation to the Succession of States (With Commentaries)*, 3 April 1999. Supplement No. 10 (A/54/10), UNHCR Refworld, Commentary (1) to Article 23, <http://www.unhcr.org/refworld/docid/4512b6dd4.html> (accessed 16 September 2008)

<sup>ii</sup> See *inter alia* Ian Brownlie, *Principles of public international law*, Sixth edition, Oxford: Oxford University Press, 2003, pp.64, 70-79, 86-88, 105-107, 117-118; James Crawford, *The Creation of States in International Law*, Second edition, Oxford: Oxford University Press, 2006, pp.3-74; Malcolm N. Shaw, *International Law*, Sixth edition, Cambridge: Cambridge University Press, 2008, pp.211-214; Peter Malanczuk, *Akehurst’s Modern Introduction to International Law*, Seventh revised edition, London, New York: Routledge, 1997, reprinted 1998, pp. 75-79, 88, 152-154. In the absence of an internationally agreed definition under treaty or customary law, resort is had here to the writings of publicists as a subsidiary source of international law is in accordance with Article 38 of the Statute of the International Court of Justice.

<sup>iii</sup> In the context of the International Scientific Congress on Climate Change held in March 2009 in Copenhagen, scientists highlighted that likely sea-level rise by 2100 could be up to one meter or more, and was unlikely to be less than 0.5m, see *inter alia* Climate Secretariat, University of Copenhagen, “Rising sea levels set to have major impacts around the world”, 10 March 2009, [http://climatecongress.ku.dk/newsroom/rising\\_sealevels/](http://climatecongress.ku.dk/newsroom/rising_sealevels/) (accessed 18 March 2009).

<sup>iv</sup> Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007*, Fourth Assessment Report, “Report of the International Working Group II Report “Impacts, Adaptation and Vulnerability”, p.733, <http://www.ipcc.ch/ipccreports/ar4-wg2.htm> (accessed 18 September 2008). The IPCC is a scientific inter-governmental body established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to provide decision-makers and others interested in climate change with an objective source of information about climate change.

<sup>v</sup> *Ibid*, p.317.

<sup>vi</sup> *Ibid*, p.736

<sup>vii</sup> See Brownlie, *supra*, pp.64, 86-88, Crawford, *supra*, pp.26-28, 93, Malanczuk, *supra*, p.84.

<sup>viii</sup> There is no universally accepted definition of *de facto* statelessness. It has been referred to in different instruments as well as by publicists. The Final Act of the 1961 *Convention on Reduction of Statelessness* indicates that “persons who are stateless *de facto* should as far as possible be treated as stateless *de jure* to enable them to acquire an effective nationality”, thus indicating that lack of effective nationality would be considered as a form of *de facto* statelessness. See also Council of Europe *Convention on the Avoidance of Statelessness in Relation to State Succession*, Strasbourg, 19.V.2006, Council of Europe Treaty Series, No. 200, Explanatory Report, Article 3

Prevention of statelessness, para. 16. “State succession may well create situations of *de facto* statelessness where persons do have the nationality of one of the States concerned but are unable to benefit from the protection of that State”.

<sup>ix</sup> Article 15 of the *1948 Universal Declaration of Human Rights* provides that “[e]veryone has a right to a nationality. No one shall be arbitrarily deprived of his nationality nor denied the right to change his nationality”. The right to a nationality is iterated as well *inter alia* in the *1966 International Covenant on Civil and Political Rights*, and the *1989 Convention on the Rights of the Child*, as well as the *1990 International Convention on the Protection of the Rights of All Migrant Workers and Members of their Families*, although the formulation varies. The *1979 Convention on the Elimination of All Forms of Discrimination Against Women*, the *1965 International Convention on the Elimination of All Forms of Racial Discrimination* and the *1957 Convention on the Nationality of Married Women* also contain relevant provisions. At a regional level, see the *1990 African Charter on the Rights and Welfare of the Child*, the *2005 Covenant on the Rights of the Child in Islam*, the *1948 American Declaration on the Rights and Duties of Man*, the *1969 American Convention on Human Rights* and the *1997 European Convention on Nationality*. The principle of prevention of statelessness is iterated in many of the same instruments. Additionally, both principles have been iterated numerous times by the General Assembly, the Human Rights Council and the International Law Commission.

<sup>x</sup> Other instruments include *inter alia* the *Draft Articles on the Nationality of Natural Persons in Relation to Succession of States* and, at a regional level, the *2006 Council of Europe Convention on the avoidance of statelessness in relation to State succession*.

<sup>xi</sup> General Assembly Resolution GA/RES/50/152, 9 February 1996, paras.14-15. This mandate is additional to its earlier mandate to undertake the functions foreseen under Article 11 of the 1961 Convention first given in 1974 and then extended through Resolutions GA/RES/3274 (XXIX), 10 December 1974, and GA/RES/31/36, 30 November 1976.

<sup>xii</sup> The 1961 Convention in Article 10 provides that in the absence of any treaty ensuring that no persons are left stateless, any contracting State to which territory is transferred shall grant its nationality on persons who would otherwise be stateless. The *Draft Articles on Nationality of Natural Persons in Relation to the Succession of States* are also relevant. Article 21 prescribes that citizenship should be automatically extended to all citizens of the predecessor island State. As well, habitual residents who may have left owing to climatic change, should have right of option to obtain same status in successor state including acquired rights; see commentary (3) to above Article. The International Law Commission noted that Article 21 in its view embodied a rule of customary international law; see commentary (6) to above article.

**SUBMISSION**

**FORCED DISPLACEMENT IN THE CONTEXT OF CLIMATE CHANGE: CHALLENGES  
FOR STATES UNDER INTERNATIONAL LAW**

Paper submitted by the

Office of the United Nations High Commissioner for Refugees

in cooperation with the Norwegian Refugee Council, the Representative of the Secretary General on the  
Human Rights of Internally Displaced Persons and the United Nations University

to the 6<sup>th</sup> session of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention  
(AWG-LCA 6) from 1 until 12 June in Bonn

**I. Introduction**

The Intergovernmental Panel on Climate Change (IPCC) indicated already in 1990 that “the gravest effects of climate change may be those on human migration.” In its recent report of 2007, the Panel highlights the acceleration of climate change and its factual severe impacts on the environment and human lives. Urgent action is needed. The Bali Action Plan recognizes adaptation and risk management as important elements to be addressed in the climate change negotiations and agreement this year in order to alleviate the human impact of climate change (1 c (ii)). In the risk management workshop of COP 14 in Poznan, December 2008, the Parties expressed further their support and willingness to build on and coordinate with existing institutions and mechanisms in responding to the needs of persons affected by the effects of climate change.

This submission<sup>1</sup> is in response to the Bali Action Plan article 1 c and addresses the protection of internally displaced persons and persons displaced across international borders in the context of climate change and the corresponding obligations of States under existing international law. The purpose of this paper is to inform States Parties on some key challenges in this regard, and to provide them with some key messages to be taken into account in the negotiations towards a Copenhagen outcome.

**II. Key messages and recommendations to States Parties to the UNFCCC**

1. There is no monocausal relationship between climate change and displacement. States Parties should, however, acknowledge in the agreed outcome that there is a clear link between the effects of climate change and displacement. They should acknowledge their obligations to address displacement in the context of climate change for the following reasons:

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<sup>1</sup> This paper should be read in conjunction with previous submissions to the UNFCCC relating to the topic of climate change, migration and displacement:

- 1) “Change, Migration and Displacement: Who will be affected?” Working paper submitted by the informal group on Migration/Displacement and Climate Change of the IASC – 31 October 2008 to the UNFCCC Secretariat.
- 2) “Disaster Risk Reduction Strategies and Risk Management Practices: Critical Elements for Adaptation to Climate Change” Submission to the UNFCCC Adhoc Working Group on Long Term Cooperative Action by The Informal Taskforce on climate change of the Inter-Agency Standing Committee and The International Strategy for Disaster Reduction 11 November 2008.
- 3) “Climate change, migration and displacement: impacts, vulnerability and adaptation options” Submission by the IOM, UNHCR and UNU, in cooperation with NRC and the RSG on the Human Rights of IDPs, 6 February 2009.

- a) Addressing and mitigating climate change by reducing green-house gases in accordance with the UNFCCC, its Kyoto Protocol and envisaged new instruments contribute to preventing displacement;
  - b) The Hyogo Framework for Action calls for the reduction of disaster hazards and vulnerabilities and human rights law makes the reduction of disaster risks and vulnerabilities under certain circumstances a mandatory obligation of States. In this context, the UNFCCC's National Adaption Programmes for Actions (NAPAs) should systematically address the issues related to displacement;
  - c) The protection of internally displaced persons and their assistance is first and foremost the responsibility of States under human rights law and the Guiding Principles on Internal Displacement; and
  - d) Some persons displaced across international borders qualify for refugee status. Their protection is the responsibility of States under the 1951 Convention and other instruments of international and regional refugee law as well as human rights law.
2. States should consider establishing alternative forms of protection for those persons who do not qualify as refugees but whose return is not feasible or not reasonable due to circumstances in the place of origin and/or personal conditions, including particular vulnerabilities. They should ensure that migration management systems provide for the needs of such persons.
  3. States Parties should continue the policy dialogue on the displacement - climate change nexus and consider appropriate coordination structures for such dialogue in the post-Kyoto regime.
  4. States Parties should build on existing international response mechanisms and ensure policy coherence between mitigation, adaptation, humanitarian responses and development;
  5. States Parties should ensure that any adaptation and risk management regime of the agreed outcome covers, *inter alia*, forced displacement. In order to recognize this as an important issue linked to climate change, they should consider including references in the appropriate space in the negotiating text:
    - a) To "humanitarian responses as an essential part of adaptation measures" and "migration and displacement" as well as "the usefulness of coordinating with established institutions and mechanisms".
    - b) To the fact that enhancing States' ability to protect people on their territories falls squarely within the notion of adaptation. A guiding principle for adaptation should be that States give priority to the particular needs of the most vulnerable people and those most affected by climate change, including the displaced and those at risk of displacement or of exploitation, abuse or severe hardship during the migration process.
    - c) To the need to allocate some adaptation funding to disaster risk reduction and humanitarian response since none of the already established humanitarian funding mechanisms are currently sufficient to meet the coming challenge.
    - d) To the need to support and follow up research and action to identify and fill existing and foreseeable legal, operational and capacity gaps associated with climate change and displacement. Any follow-up to create law, policies and/or mechanisms on internal displacement, non-return, international protection, and/or durable solutions, should be informed by existing law, guiding principles, policy, good practice and competent institutions.



## BACKGROUND ANALYSIS

### 1. Climate Change and Forced Displacement

Global warming and the ensuing changes of climate as such do not trigger movement of persons; however, its effects, such as natural disasters, environmental degradation or sea-level rise, have the potential to do so. It is believed that between 50 and 200 million people may move by the middle of the century, either within their countries or across borders, on a permanent or temporary basis.

Some of this movement could be considered voluntary, e.g. triggered by the prospect of finding a better life in areas not affected by such phenomena, and thus be part of adaptation strategies. In other cases, however, a clearer element of coercion, including threats to life, or health, property and livelihoods, exists. Movements in this latter category are more easily classified as forced, and hereinafter they are referred to as 'displacement'. It is, however, important to emphasize the multi-causality of climate change-related displacement. In addition to a climate-related trigger of displacement, such as natural disasters or environmental degradation, there are other factors that are also at play. While there is no monocausal relationship between climate change and displacement, the existence of a clear link between the two phenomena should be acknowledged.

The majority of those displaced by the effects of climate change, whether due to sudden-onset hydro-meteorological disasters or environmental degradation, remain within the borders of their country of origin. In the foreseeable future, much of the climate change-related displacement is expected to remain internal. However, some displacement will also take place across internationally recognized State borders.

### 2. Climate Change and Internal Displacement

Displaced persons, who remain within their own country, qualify as "internally displaced persons". The 1998 UN Guiding Principles on Internal Displacement (Guiding Principles) identify them as "persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of [...] natural or human-made disasters, and who have not crossed an internationally recognized State border."

The many millions forcibly displaced by sudden and slow-onset disasters will require substantial protection and humanitarian assistance because displacement creates specific new, or exacerbates pre-existing, vulnerabilities. Particular challenges for the displaced as well as for the authorities concerned arise in the context of **evacuations** before and during disasters, **relocations** because return to the original place of residence is not possible or too dangerous and, more generally, the need to find **durable solutions** for those among the displaced who cannot return and resume their normal lives in the immediate aftermath of a disaster.

The Guiding Principles provide the normative framework for addressing protection challenges in situations of internal displacement. They are based upon and reflect international law and have been recognized by states as "an important international framework for the protection of internally displaced persons" at the World Summit in 2005 as well as in several UN General Assembly Resolutions. While it is not always easy to determine at which point the movement of persons becomes forced, there is no normative gap as such to address internal displacement related to the impact of climate change. Operational gaps and challenges must be better addressed, however.

#### *2.i Obligations for States under International Law to address internal displacement in the context of climate change*

States bear the primary duty and responsibility to provide assistance and protection in all phases of internal displacement (Guiding Principle 3) for all IDPs, including those who have been displaced by the effects of climate change. The subsidiary role of international actors comes into play if a State is unable or unwilling to provide adequate protection or assistance.

Under international law, States face challenges at three levels:

a. *Addressing the cause: Mitigating climate change.*

State parties to the UNFCCC and its Kyoto Protocol have committed themselves to reducing the emission of greenhouse gases. These mitigation measures aim at slowing down and eventually stopping the change of climate and its disastrous consequences. As such, they have an important preventive effect on displacement. This preventive character could be further strengthened in the successor agreement to the Kyoto Protocol. Considering that climate change does not halt at borders but concerns all States and is also a common heritage, such mitigation obligations should be enhanced in the agreed outcome.

b. *Addressing the effects: Reducing risks created by climate change and vulnerabilities caused by it.*

Climate change must be accepted to the degree it has developed so far: its environmental and human impacts are already felt today and will be felt in the future. This makes it necessary to take measures to reduce the adverse effects of climate change, e.g. by reducing the impact of natural hazards through reducing vulnerabilities or enhancing resilience capacities, or adaptation measures. The Hyogo Framework for Action: Building the Resilience of Nations and Communities to Disasters (HFA) is an important framework, which States should take into consideration.

The Hyogo Framework is complemented by human rights obligations directly relevant for addressing displacement. Reduction of disaster risks and vulnerabilities, e.g. by setting up alarm and evacuation systems, has been defined by the European Court of Human Rights as a human rights obligation. If a disaster is foreseeable and the State is able to prevent ensuing threats to the life and property of persons, it has to take appropriate action in conformity with its human rights obligations under the right to life and/or the protection of privacy and property (*Budayeva et al. v Russian Federation*, 2008).

c. *Addressing the consequences: Protecting individuals displaced by the effects of climate change:*

Mitigation and ex-ante adaptation measures are often insufficient to prevent individuals becoming displaced or otherwise being affected by the negative consequences of climate change. In a wider sense, adaptation measures must therefore also cover protection of and assistance for the displaced. States as primary duty bearers are bound by human rights law to protect the rights of those affected. The Guiding Principles on Internal Displacement play an important role in addressing the protection needs of those displaced by the effects of climate change. Another relevant instrument for such settings, the Operational Guidelines on Human Rights and Natural Disasters, has been adopted by the Inter-Agency Standing Committee in 2006. They apply to all disaster-affected persons, including internally displaced persons.

Addressing these three challenges contributes to the prevention of displacement, the duration of displacement and the adverse impact a displacement situation has on the individual and the State and is, therefore, relevant for the agreed outcome.

**2.ii *Protecting persons against the threats of natural hazards: Prevention of displacement, evacuations and relocation***

While States cannot be held responsible for disasters that occur, they have a duty to take all possible measures to protect the lives of their populations. As already mentioned, the right to life and other relevant human rights create positive obligations on States to take appropriate steps to safeguard the life, limb and property of those within their jurisdiction against the threats of disasters. These steps constitute primarily a duty on the State to put in place a legislative and administrative framework designed to provide effective protection against such threats. Taking measures to reduce the effects natural hazards can have on people is part of the States' obligations under international human rights law. This view is consistent with the Hyogo Framework for Action, which places an obligation on States to take measures

to mitigate and reduce the risks of disasters. Such measures include disaster risk mapping, early warning systems, predetermination of evacuation routes, prepositioning of humanitarian aid, building capacities of local communities to deal with disasters and their consequences, evacuations and in some cases even permanent relocations away from danger zones, etc.

In fulfilling their obligations under international law, States will encounter a particular dilemma in the context of evacuations or relocations away from danger zones:

On the one hand, each State has the duty to take life-saving measures to protect the right to life of its people. Such an obligation can also include the need to temporarily evacuate people in order to save their lives or to relocate them away from danger zones and prohibiting them from returning to their homes, if necessary on a permanent basis, as long as the safety and life of these people would be at risk there. According to international human rights law, a failure of the State to protect the lives of its citizens would amount to a human rights violation if competent authorities knew or should have known about the danger and had the capacity to take life-saving measures.

On the other hand, persons displaced by natural disasters or other effects of climate change have the right to freedom of movement, including the right to freely decide whether to remain in or to leave an endangered area and the right to opt freely to return to their homes, to relocate elsewhere in the country or to locally integrate. States have a duty to respect such decisions and abstain from exerting any pressure, whether direct or indirect, to influence their choice. Persons should be provided with true and accurate information enabling them to make a free and voluntary decision as regards their evacuation or relocation to safer areas.

Where affected populations agree to or even desire being evacuated or relocated, the two human rights obligations go hand in hand. Tensions arise where people oppose such measures even though authorities concerned deem them to be necessary to protect the lives of persons concerned. Under international law, forced evacuations and relocations are not absolutely prohibited. Rather the right to freedom of movement can be limited under certain conditions by the State in order to take life-saving measures. In doing so, the following generic requirements must be adhered to:

1. Ensuring that the law provides for the limitation of the freedom of movement through evacuation, relocation or prohibition of return. Such laws have to be accessible in particular in areas that will be affected by their implementation and need to be understandable. This enhances the transparency and understanding and allows the population to plan themselves for such events;
2. Ensuring that the actual evacuation, relocation, prohibition of return serve exclusively the goal of protecting the safety of the persons concerned; and
3. Ensuring that the evacuation, relocation or prohibition of return is necessary and proportional to this end and only resorted to if there are no other less intrusive measures. Thus, whenever possible, the free consent of persons concerned must be sought before ordering such measures. In the case of evacuation, temporary relocation must not last longer than absolutely necessary. Where forced relocation would be permanent, return can only be prohibited if the area of return is indeed an area with high and persistent risks for life or security, the remaining resources are inadequate for survival of returnees, the enjoyment of basic human rights cannot be guaranteed, all other available adaptation measures are exhausted, and the situation in the area of return can no longer be alleviated by protective measures.

If these conditions are not adhered to, the forced displacement of persons becomes arbitrary displacement prohibited under international law. Even if these principles are adhered to, the displacement is forced and can thus only serve as an adaptation measure of last resort.

### ***2.iii Protecting the rights of the internally displaced: Addressing the specific protection needs of affected persons during displacement***

Experience of the past years indicates that natural disasters not only displace an increasing number of persons but that all too often insufficient attention is paid to the multiple human rights challenges they

may face during displacement. More often than not, these situations also have human rights consequences as a result of inadequate or inefficient policies, due to a lack of awareness of States and of humanitarian and human rights actors, rather than deliberate actions by governments. It is likely that predictable effects of climate change will exacerbate these problems in the future.

The most vulnerable groups of society - including the poor, marginalized minorities, female- and child-headed households, chronically ill persons, persons with disabilities and older people without family support - suffer the most from the negative effects of natural hazards due to their weakened adaptation capacities. Moreover, during displacement in the aftermath of natural disasters, pre-existing patterns of discrimination are exacerbated, putting already marginalized groups at further risk of human rights abuses, such as unequal access to humanitarian assistance; discrimination in aid provision; sexual and gender-based violence, particularly in collective shelters or camps; infringements of the right to education, e.g. when schools are used as shelters for a prolonged period of time; non-replacement of lost documentation; or difficulties with restitution of or compensation for lost property.

#### **2.iv Restoring the rights of the internally displaced: The search for durable solutions**

It has been demonstrated that effects of climate change, such as natural disasters or environmental degradation, can have the potential to forcibly displace persons. Finding durable solutions to a displacement situation is crucial for the individual and an obligation for the State (Guiding Principle 28).

- If the free choice remains with the individual to either return, relocate elsewhere in the country or integrate locally, the above described human rights dilemma does not exist, since the freedom of movement and the right to life can be protected at the same time.
- If the free choice becomes limited because the State designates a return area as a high-risk zone too dangerous for human habitation, the human rights dilemma exists and the three outlined principles must be adhered to.

Lack of sustainability of durable solutions perpetuates the displacement situation, and States risk a violation of international law, if the displacement situation lasts longer than necessary for the protection of the individual. States must therefore act to make solutions sustainable.

Some elements of sustainability are:

- *Information on the process, consultation with and participation of the affected communities:* These measures help to make a free and voluntary decision on whether to return, integrate locally where they had been displaced or evacuated to or relocate and integrate elsewhere in the country. In the case where return does not remain an option, forced relocations should be avoided, which have a tendency not to be sustainable; rather, affected populations should be empowered with a sense of ownership of the process of finding a solution to their situation. It is to be ensured that information is true and accurate, consultation processes are truly representative and participation is inclusive and possible from the very beginning.
- *Safety:* Not only return areas but also relocation sites should be safe from effects of secondary hazards and recurrent disasters and thus be selected after a careful analysis and risk mapping have been undertaken jointly with the affected population.
- *Recovery of land and property upon return, including through settlement of property and land disputes:* All internally displaced persons should have access to mechanisms for property restitution or compensation, whether or not they opt for return or another durable solution. In the case of prohibition of return, compensation for lost or damaged property must be ensured.
- *Physical needs:* Provision of proper housing and services such as health care or education is essential. Durable solutions must, inter alia, be culturally acceptable. Access to public services must be ensured, inter alia through the provision of new documentation in case this gets lost or destroyed during displacement.

- *Livelihoods*: Continued access to livelihoods is critical. If access to former livelihoods is not possible, the creation of new livelihood opportunities is vital.
- *Participation*: Equal and full participation opportunities in public affairs, in particular in new settlements, is important to allow IDPs to integrate in the new area of settlement.

### **3. Climate change and cross-border displacement**

Both sudden and slow-onset disasters have the potential of displacing people and communities, not only within State territories, but also across international borders – a circumstance which raises specific issues of responsibility for both the State of origin and host States. The occurrence of disasters in countries of origin also raises important questions regarding the admissibility of forcible returns of foreigners to their country of origin. At the time of arrival in the country of refuge these persons may not have had a need for protection, but now find themselves in need of protection due to natural disasters as a result of climate change.

The legal standards and recommendations outlined in the preceding section with regard to the prevention of displacement (2.ii) and to the sustainability of solutions, in particular return and reintegration (2.iv) apply equally to situations of internal and cross-border displacement. This section will focus, therefore, on the protection of ‘externally’ displaced persons who seek to enter or stay in the territory of a State other than their State of origin.

#### **3.i *The International Protection Regime for Refugees***

According to the 1951 Convention relating to the Status of Refugees, as modified by the 1967 Protocol, a refugee is a person who “owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside his country of nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country”.

Climate-induced displacement was not considered by the drafters when formulating the above definition. Nonetheless, some cross-border environmentally displaced could qualify for refugee status and protection. The Convention as well as UNHCR’s mandate, would, for example, be applicable in situations where the victims of natural disasters flee because their government has consciously withheld or obstructed assistance in order to punish or marginalize them on one of the five grounds, although such cases are likely to be few.

Disasters can also contribute to social tensions, which in turn may degenerate into violent conflict, e.g. over scarce vital resources such as water or arable or grazing land. Experience shows that situations of armed conflict are prone to serious violations of human rights that amount to persecution as defined by refugee law. It is also possible that refugees are part of a mixed flow of persons leaving a country in the aftermath of disasters.

As noted, there are regional instruments with definitions which include the above criteria along with additional grounds for recognition. The 1969 OAU Convention Governing the Specific Aspects of Refugee Problems in Africa thus includes within the refugee category those persons that are compelled to flee due to “events seriously disturbing public order”. In Latin America, the 1984 Cartagena Declaration on Refugees, which has inspired the legislation of many States in the region, contains the same criterion, as well as “massive violation of human rights” and “internal conflicts”.

Because jurisprudence based on these regional definitions is scarce, there is a need to develop doctrine and guidance to States on the interpretation of the above mentioned criteria, in particular “events seriously disturbing public order”, not least within the context of cross-border displacement resulting from, or related to, disasters.

### **3.ii *Persons displaced across international borders but not qualifying as refugees***

The international refugee regime does find application in some scenarios of cross-border displacement in the context of climate change. Still, the large majority of persons leaving their countries in the context of disasters are unlikely to qualify as refugees under extant international law. Such persons would be protected by the non-refoulement principle as outlined below and additional human rights law provisions which are applicable to aliens. Still, they do not provide for a right to enter or stay. Such persons in principle could also rely on the protection of their own States. In extreme disaster scenarios, the State of origin may, however, be unable to advocate with other States on behalf of its citizens in distress. There are also cases in which displacement relates to a certain unwillingness to protect, or to prohibited discrimination. A normative gap could thus be considered to exist if both the country of origin and the host country obstruct or deny or are unable to ensure basic human rights. For this reason, some advocates for the protection of such persons have suggested amending the 1951 Convention. But any initiative to modify the refugee definition would risk a renegotiation of the Convention, which, in the current situation, may undermine the international refugee protection regime altogether.

Importantly, we should not assume, however, that people displaced by the effects of climate change will automatically lose the protection of their State of origin. Hopefully, these States will continue to exercise responsible sovereignty over their citizens, even in the midst of catastrophe, and even where such citizens had to seek temporary relief across an international border. The international community must support and strengthen States' abilities to protect their own citizens, both from displacement and during displacement. This commitment does not contradict, but indeed underpins, States' obligations to provide international protection to persons displaced across borders where the State of origin, in the context of a natural disaster, is unable to protect the fundamental rights of its citizens.

### **3.iii *The principle of non-refoulement and prohibitions on return***

The 1951 Convention contains in its Article 33(1) a prohibition to return or *refouler* a refugee "to the frontiers of territories where his life or freedom would be threatened". This prohibition is generally regarded as including rejection at the border and non-admission. This fundamental principle, known as *non-refoulement*, also finds expression in a large number of human rights instruments, both at the universal and regional levels. Thus, it is established that no person, regardless of status or conduct, may be returned in any manner whatsoever to a country where his or her life or integrity would be at risk. As well, involuntary return to a risk of cruel, inhuman or degrading treatment or punishment has been found by the European Court of Human Rights and the UN Human Rights Commission to be in violation of the *non-refoulement* principle.

The principle of non-refoulement thus provides crucial protection to the individual from return to persecution in the sense of the 1951 Convention or treatment considered abhorrent and protected under international human rights law (for example a threat to life or the threat of torture, inhuman or degrading treatment or the death penalty). It could implicitly ensure additional protection to persons displaced by the consequences of climate change who do not qualify as refugees. Arguably, where return is impossible or cannot reasonably be required from the individual, an obligation of the foreign State also exists to at least temporarily admit a person to remain. Still, given that existing human rights law, including the *non-refoulement* principle does not provide for a right of stay, where countries of origin are unable to provide protection, some form of protected status would be called for, be it of a temporary nature. States receiving displaced persons should put the individual in focus and provide protection based on human rights law, regardless of the relationship with the State of origin. State practice provides a number of relevant examples in this regard.

### **3.iv *Relevant State practice***

In this sub-section, we present a few examples of positive State practice in the provision of temporary relief to persons fleeing, or unable to return to, countries affected by disasters. These examples are not

exhaustive, but they may serve as possible models for addressing the protection needs of persons displaced across international borders in the context of disasters, who do not qualify as refugees.

#### *The U.S. model*

The responsibility of neighbouring and more distant States receiving the displaced, or hosting foreigners who cannot reasonably be returned, should come in support of, rather than in opposition to, that of the State of nationality. The U.S. Temporary Protected Status mechanism seems to reflect such thinking. In 1990, Temporary Protected Status (TPS) was enacted as the statutory embodiment of safe haven in the USA for those who do not meet the legal definition of refugee, but are nonetheless reluctant to return to potentially dangerous situations. According to the US Immigration and Nationality Act, the nationals of a foreign state can be designated for such status if three conditions are fulfilled:

- 1) there has been an environmental disaster in the foreign state resulting in a substantial, but temporary, disruption of living conditions;
- 2) the foreign state is unable, temporarily, to handle adequately the return of its own nationals; and
- 3) the foreign state officially has requested such designation.

TPS can be issued for periods of 6 to 18 months and be extended for these periods if conditions do not change in the designated country. Cut-off dates and registration deadlines are meant to reduce the potential of a magnet effect, whereby people would take advantage of TPS to gain entry into the United States. At the same time, the wide discretion in designating countries for activating the TPS-system raises concern. Finally, adjustment of TPS to a more permanent residence status may cause difficulties, as illustrated by the precarious situation of tens of thousands of Hondurans and Nicaraguans who were granted TPS in the aftermath of Hurricane Mitch in 1998.

#### *The Nordic Model*

Finland extends complementary protection to foreign nationals who cannot return safely to their home country because of an environmental disaster. The preparatory works to the Finnish Aliens Act emphasize that the preferred option in environmental disasters is internal relocation and international humanitarian aid, but acknowledge that protection in Finland may also be necessary.

Similarly, the Swedish Aliens Act [Chapter 4, Section 2] includes an individual who “is unable to return to the country of origin because of an environmental disaster” in the category “person otherwise in need of protection”. It is a prerequisite, however, that there be no alternative of relocation to a safe area within the home State. Furthermore, application of the law may be restricted if Sweden’s absorption capacity is overwhelmed. This restriction only applies, however, in “exceptional situations”, since one should first seek to solve the capacity problem through international, and in particular European cooperation.

On discretionary grounds, Denmark has granted humanitarian asylum to single women and families with young children from areas where living conditions are considered to be extremely difficult, for example due to famine or drought. In the proposal for a new Aliens Act in Norway, the Ministry of Immigration recognizes the need to be able to grant (possibly temporary) residence permits to applicants who come from an area affected by a humanitarian disaster, including a natural disaster.

Submitting agencies are available to assist States Parties in their endeavour to make informed decisions. States and other stakeholders interested in the issues raised in this paper may contact the Norwegian Refugee Council through [vikram.kolmannskog@nrc.no](mailto:vikram.kolmannskog@nrc.no), the office of the Representative of the Secretary General on the Human Rights of Internally Displaced persons through [pwinger@ohchr.org](mailto:pwinger@ohchr.org), and/or UNHCR through [durieux@unhcr.org](mailto:durieux@unhcr.org) for further information, including more substantial background articles on the issues of evacuation, relocation and cross-border displacement and good practices. UNHCR has also entered a submission to UNFCCC on the issue of statelessness in the context of climate change, and a more substantial paper on this issue can be obtained through [park@unhcr.org](mailto:park@unhcr.org).

PAPER NO. 4A: UNITED NATIONS ENVIRONMENT PROGRAMME

**Submission of the United Nations Environment Programme (UNEP) Sustainable Building Initiative (SBCI) to the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention**

24 April 2009

**UNEP SBCI proposes that emission reduction in buildings is recognized as an appropriate area for NAMA and that the development of frameworks required to monitor, report and verify such actions are included in a post-2012 Agreement.**

*A registry of nationally appropriate mitigation action by all developing countries should be established, supported and enabled by developed countries through the provision of the means of implementation (technology, financing and capacity-building) to developing countries in a measurable, reportable and verifiable manner in order to develop policy packages that promote emission reductions in buildings under NAMAs. These policy packages will require the development of indicators and metrics to report on emissions from buildings and to establish national baselines to enable reporting of achieved emission reductions.*

This input is submitted by the Sustainable Building and Construction Initiative (SBCI)<sup>1</sup>, a UNEP led partnership between the UN and public and private stakeholders in the building and construction sector which promotes sustainable building practices globally. **This submission expresses the views of UNEP-SBCI on how the potential for emission reduction through energy efficiency improvements in buildings may be realized as part of Nationally Appropriate Mitigation Action (NAMA).**

The Bali Action Plan, paragraph 1, calls for Nationally Appropriate Mitigation Action (NAMA) that is measurable, reportable and verifiable. Greenhouse gas emission reduction in buildings offers an obvious opportunity for developed and developing countries to cooperate in achieving common but differentiated action to realize significant energy efficiency improvements. It should be noted that all emission scenarios and models used in IPCC's fourth assessment report for how to stabilize the concentration of greenhouse gases in the atmosphere at 450 ppm CO<sub>2</sub> eqv, assumes a high level of energy efficiency implementation. This is also an area that is particularly appropriate for NAMA, because:

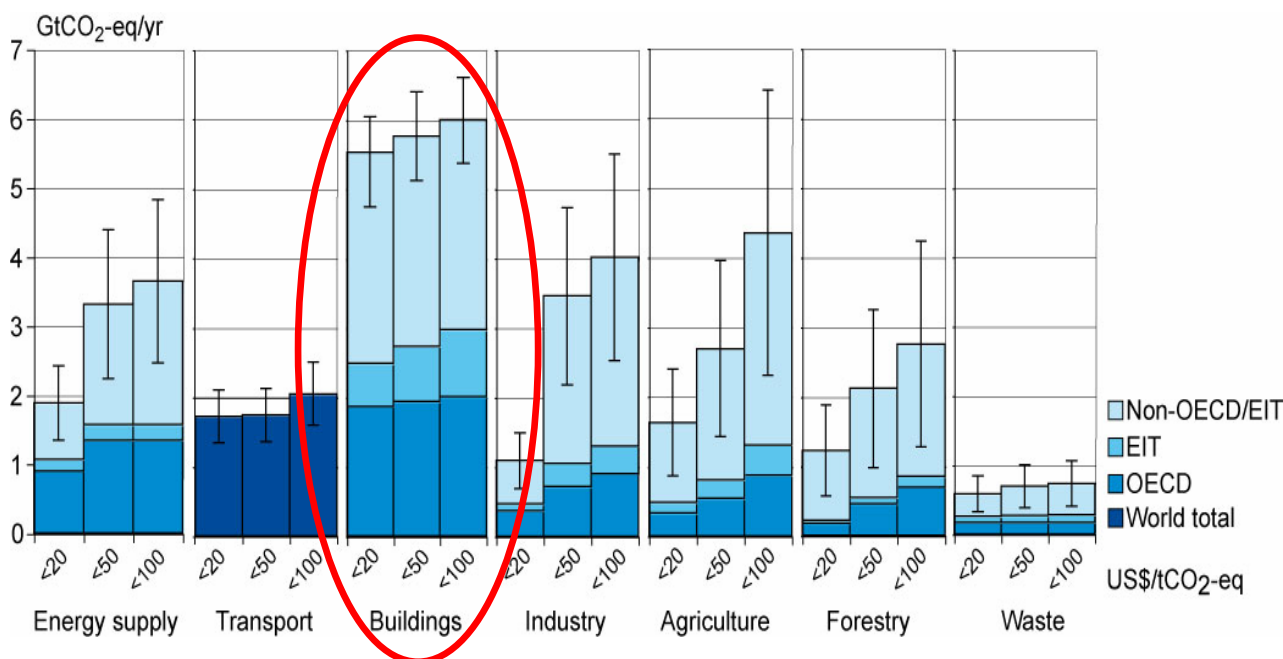
1. **The potential for large emission reductions in buildings exists in all countries**
2. **There are widespread opportunities for country-to-country technology sharing agreements and international capacity building support** as the level of level of implementation of energy efficiency measures in buildings is at different stages in different countries.
3. **Emission reduction from buildings can be relatively easily monitored**, through energy consumption in individual buildings or groups of buildings, converted to greenhouse gas emissions through emission factors. If the metrics used for energy efficiency and emission reduction in buildings can be internationally agreed, the actions undertaken by countries will also be internationally measurable, reportable and verifiable.
4. **The financing need for energy efficiency improvements in buildings can to a large part be offset by reduced energy costs during the life time of buildings** through financial mechanisms as exemplified below. In addition a concerted approach to investments in energy efficient buildings would also support a wider shift towards a low carbon society.
5. **A targeted energy efficiency in buildings effort under NAMA would not only reduce greenhouse gas emissions but would also contribute towards other national sustainable development priorities** including employment generation and upgrading of skills in the existing workforce, provision of more sustainable, affordable and healthy buildings, and improved energy security through reduced overall energy demand. **International technology transfer**



**agreements and support to national capacity building would thereby provide an additional incentive for developing countries to undertake NAMA in this area**

**BACKGROUND**

**The building sector is responsible for more than one third of total energy use and, in most countries, is the largest greenhouse gas emissions source.** Energy is mainly consumed during the use stage of buildings, for heating, cooling, ventilation, lighting, appliances, etc. A smaller percentage, normally 10-20%, of the energy consumed is for materials manufacturing, construction and demolition. According to the fourth assessment report (AR-4) of the Intergovernmental Panel on Climate Change (IPCC)<sup>1</sup>, building-related GHG emissions was estimated at 8.6 billion metric tons CO<sub>2</sub> eqv. in 2004, and could almost double by 2030 to reach 15.6 billion metric tons CO<sub>2</sub> eqv. under the high-growth scenario. IPCC’s fourth assessment report further concluded that **the building sector not only has the largest potential for significantly reducing greenhouse gas emissions, but also that this potential is relatively independent of the cost per ton of CO<sub>2</sub> eqv. achieved.** With proven and commercially available technologies, the energy consumption in both new and old buildings can be cut by an estimated 30-50 percent without significantly increasing investment costs. Energy savings can be achieved through a range of measures including smart design, improved insulation, low-energy appliances, high efficiency ventilation and heating/cooling systems, and conservation behaviour of building users.



**IPCC AR-4:** Estimated economic mitigation potential by sector and region using technologies and practices expected to be available in 2030. The potentials do not include non-technical options such as lifestyle changes. {WGIII Figure SPM.6}

<sup>1</sup> One of UNEP-SBCI’s key objectives is to ensure that Parties to UNFCCC have the information needed to use energy efficiency improvements in buildings as an option for meeting the objectives of the Convention. To further this objective, SBCI, in cooperation with the Finnish research institute VTT, the Central European University in Hungary and the UNEP Risø Centre on Energy, Climate and Sustainable Development in Denmark has conducted research and investigated effects of policies and approaches tested in countries in both the developed and developing world, to reduce greenhouse gas emissions from buildings. The results of this research have been published in three reports; *Buildings and Climate Change- Status, Challenges and Opportunities* (UNEP 2007), *Assessment of Policy Instruments for Reducing Greenhouse Gas Emissions from Buildings* (UNEP 2008), and *The Kyoto protocol, the Clean development Mechanism and the Building and Construction Sector* (UNEP 2008). The main findings and recommendations of these reports are further summarized for this submission. UNEP-SBCI is well placed to facilitate and support the implementation of a number of these recommendations.

The above diagram from IPCC AR-4 indicates that the significant potential for energy efficiency improvements and greenhouse gas emission reduction from buildings is common among developed and developing countries, as well as in economies in transition.

In spite of the large potential to reduce energy consumption and greenhouse gas emissions from buildings this potential remains largely untapped. The underlying causes for the poor realization of the emission reduction potential include:

- Fragmentation of the building sector. Buildings normally have a long life cycle with only limited interaction between stakeholders involved in different phases of the buildings lifetime. Furthermore, different aspects of the buildings, each of which contributes to the energy performance of the building, such as architecture, engineering, building management, building function, and occupant behaviour are often poorly or not at all coordinated. There is therefore no natural incentive for stakeholders to cooperate to maximize the overall long-term energy efficiency of the building.
- Split economic interests. The parties typically making decisions about the building design (designers and investors) are seldom the ones who would benefit from energy efficiency improvement and its reduced associated costs (owners and users).
- Lack of information and understanding (at all levels) of the importance of the building sector in relation to climate change. Lack of know-how about how to reduce energy use in buildings and about what indicators to use for comparing the relative performance of a building.
- Perceived high business risk and under-estimation of the life-cycle cost benefits from energy efficiency investments in buildings. Lack of track record from real projects, including risk-benefit analyses.
- Energy costs are often a comparatively small part of the overall costs for a building. The economic incentive provided by reduced energy costs is therefore often weak.

#### **EXAMPLES OF SUCCESSFUL POLICY TOOLS FOR EMISSION REDUCTION**

A number of countries have however applied different policy tools with the explicit objective to reduce energy consumption and greenhouse gas emissions in buildings. The above referred report *Assessment of Policy Instruments for Reducing Greenhouse Gas Emissions from Buildings* (UNEP 2008), reviewed 80 case studies from 52 countries, comparing 20 types of policy instruments, including regulatory, fiscal, economic, and capacity building measures. **The many policy instruments evaluated in this study can achieve high savings at low or even negative costs (i.e economic savings) for society<sup>2</sup>.** Among the policy tools evaluated, regulatory instruments such as building codes were revealed as the most effective and cost-effective category of instruments in this study if enforcement can be secured. A number of regulatory instruments achieved savings in the triple negative digit range of costs. A summary of the findings regarding the emission reduction effectiveness, the cost effectiveness and conditions for use for different policy instruments is provided in table 2.

#### **FINANCING POLICY TOOLS FOR EMISSION REDUCTION**

The emission reduction potential in buildings is typically realized through different energy saving measures. This means that **emission reductions in buildings also result in reduced energy use, reduced energy costs and improved energy security.** The payback time for investments in energy saving measures in buildings varies depending on the type and location of the building, as well as on the specific measure applied and local energy costs. However available case studies indicate that the pay-back time for investments in energy efficient buildings resulting in at least 20% reduced energy consumption typically range from 10 to 15 years in new buildings and from 15 to 25 years in existing

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<sup>2</sup> if the benefits of saved energy and the associated avoided expenses are taken into account in the cost-effectiveness calculations

**Table 2. Summary of policy instruments**

Policy instruments	Emission Reduction Effectiveness	Cost-effectiveness (a)	Special conditions for success, major strengths and limitations, co-benefits
Appliance standards	High	High	Factors for success: periodical update of standards, independent control, information, communication, education
Building codes	High	Medium	No incentive to improve beyond target. Only effective if enforced
Public leadership programs, incl. procurement regulations	Medium/High	High/Medium	Can be effectively used to demonstrate new technologies and practices. Mandatory programs have higher potential than voluntary ones. Factors for success: ambitious energy efficiency labeling and testing.
Energy efficiency obligations and quotas	High	High	Continuous improvements necessary: new energy efficiency measures, short term incentives to transform markets
Mandatory audit requirement	High, but variable	Medium	Most effective if combined with other measures such as financial incentives
Energy savings performance contracting (EPC)/ESCO support (b)	High	Medium	Strength: no need for public spending or market intervention, co-benefit of improved competitiveness.
Demand-side management programs (DSM)	High	High	Tend to be more cost-effective for the commercial sector than for residences.
Cooperative procurement	High	Medium/High	Combination with standards and labeling, choice of products with technical and market potential
Energy efficiency certificate schemes/white certificates	Medium	High/Medium	No long-term experience. Transaction costs can be high. Institutional structures needed. Profound interactions with existing policies. Benefits for employment.
Kyoto Protocol flexible mechanisms (c)	Low	Low	So far limited number of CDM &JI projects in buildings
Taxation (on CO <sub>2</sub> or fuels)	Low	Low	Effect depends on price elasticity. Revenues can be earmarked for further efficiency. More effective when combined with other tools.
Tax exemptions/ reductions	High	High	If properly structured, stimulate introduction of highly efficient equipment and new buildings.
Public benefit charges	Medium	High	Success factors: independent administration of funds, regular monitoring & feedback, simple & clear design.
Capital subsidies, grants, subsidized loans	High	Low	Positive for low-income households, risk of free-riders, may induce pioneering investments.
Labeling and certification programs	Medium/High	High	Mandatory programs more effective than voluntary ones. Effectiveness can be boosted by combination with other instrument and regular updates.
Voluntary and negotiated agreements	Medium / High	Medium	Can be effective when regulations are difficult to enforce, combined with financial incentives, and threat of regulation
Education and information programs	Low / Medium	Medium/High	More applicable in residential sector than commercial. Success condition: best applied in combination with other measures.
Detailed billing and disclosure programs	Medium	Medium	Success conditions: combination with other measures and periodic evaluation.

(a) Cost-effectiveness is related to specific societal cost per carbon emissions avoided.

(b) Energy service companies (c) Joint Implementation, Clean Development Mechanism, International Emissions Trading (includes the Green Investment Scheme)

buildings. From a societal perspective, where the avoided energy production and transmission costs are factored in, the costs for energy efficient buildings may result in negative costs, i.e. net savings per ton of avoided CO<sub>2</sub> eqv.

Construction, renovation, and maintenance of buildings constitute significant economic activities contributing 10 to 40% of countries Gross Domestic Product (GDP) and representing on a global average 10% of country-level employment, 74% of which are in developing countries and 90% of which are with firms of fewer than ten people. The UNEP-ILO report *Green Jobs: Towards decent work in a sustainable low-carbon world* (2008) reports that measures to improve the energy efficiency in buildings lead to direct, indirect, and induced jobs created directly in the real estate and construction sectors.

The difficulty in harnessing these economic benefits lies largely in the same barriers as were mentioned above. In particular three specific barriers are prominent from the economic perspective:

1. Disaggregation of the sector has two direct effects: The economic savings generated through reduced energy use are today not reflected in the property value, which is why investors lack incentives to make additional investments in energy saving features. The building users, who are paying the energy bills, are often not owning the building and are thus unwilling to make investments in energy saving features. The building owners, on the other hand, also lack incentives to make energy saving investments as they do not pay the energy bills.
2. In many countries there are no agreed methodologies or benchmarks to compare the energy efficiency in buildings against. This is not only presenting a problem for investors, but also for national and international policy makers who wish to establish energy efficiency policies for buildings. In the international context, the lack of agreed performance definitions also undermines technology transfer and monitoring/reporting on the performance of building stock.
3. Market forces alone will not be able to bring about emission reductions from buildings, but this requires policy interventions as outlined above. In most countries such policies are still weak or absent.

These factors also contribute to the very low number of CDM projects targeting emission reductions from buildings: Out of 4500 projects in the CDM pipeline only 14 are targeting energy efficiency improvements in buildings (April 2009). UNEP submitted on 6 February 2009 to AWG-KP a proposal for how CDM may be strengthened with regard to projects targeting emission reduction from buildings.

The lessons learned from policies applied to reduce greenhouse gas emissions from buildings, shows that policies, properly adopted to the local context, are not only offering means to achieve significant emission reductions, but also to do this at low costs, and sometimes even at net savings to society. **The challenge is therefore to design mechanisms that will redirect the economic savings associated with emission reduction in buildings so as to offset the increased investment costs for energy emission reduction measures.** This may take the form of two basic models:

1. Establish an investment fund for energy efficiency in buildings. This fund would be used to fund additional initial investment costs for energy efficiency in buildings. Such a fund can be financed through taxations of energy use above the national average or benchmark for that particular building type in the country. In this way the fund would itself also provide additional incentives among high energy users to reduce their energy use. This fund can also be funded by redirecting investments in increased energy production that will be avoided by reduced energy demand in buildings.
2. Establish national regulation that makes energy efficiency investments mandatory in new buildings and in renovation of existing buildings. The additional investment costs will therefore not be optional any longer and will be carried forward from the investment stage to the user stage, in the form of increased building costs. In the user stage, these would in principle be offset by the reduced energy use costs for the building.

The above action requires active intervention of policy makers, as well as defined standards or definitions for energy efficiency in buildings to base the policies on. UNEP SBCI is developing the building blocks for such standards or definitions.

PAPER NO. 4B: UNITED NATIONS ENVIRONMENT PROGRAMME

**Submission on Transport by the United Nations Environment Programme (UNEP) to the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention (AWG-LCA)**

24 April 2009

**Recommendations**

- Give preferential support for transport projects and policies that reduce GHG emissions and have co-benefits or other sustainable development objectives, such as reductions in air pollution, noise, and congestion.
- Allow to be included in NAMA registries model transport elements, such as fuel efficiency standards, congestion charging and public transport improvements.
- Consider creating a new transport-specific mechanism, such as a Clean Transport Mechanism (CTM), through which countries are financially compensated (for example, through carbon credits) for transport emission reductions below a pre-defined baseline.
- Tailor CDM methodologies to the specific needs of the transport sector, for example through the approval of “first-of-its-kind” projects/programmes, whereby a new project or approach is considered additional if it is not commonly used.
- Move toward an upscale, wholesale approach, for example via a policy-oriented CDM for transport projects that is guided by sectoral targets at the national or even local level.
- Support capacity building efforts on both the national and local scales, including reform of institutional frameworks.
- Consider using the multiple sources of funding, including the Adaptation Fund, to provide adequate coverage of transport in both scale and scope.

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This submission<sup>1</sup> provides suggestions on elements contained in paragraph 1 of decision 1/CP13, the Bali Action Plan, for promoting and implementing low carbon mobility in developing countries, and recommendations on how to integrate land transport, both passenger and freight, into the work of the AWG-LCA. It was jointly developed with support from a wide range of international organisations<sup>2</sup>. The aim is to contribute to an agreement at COP15 that fully recognises the role of transport and that promotes the development of workable policies and measures that reduce CO<sub>2</sub> emissions in this important and rapidly growing sector. Investments in low carbon mobility should focus on bringing about structural changes to transport approaches, with positive, long-term benefits.

**Background**

The transport sector accounts for around one quarter of global carbon dioxide (CO<sub>2</sub>) emissions<sup>3</sup> and global transport energy-related CO<sub>2</sub> emissions are predicted to increase by 1.7% a year from 2004 to 2030<sup>4</sup>. The predicted road transport growth to 2030 is driven largely by increased demand for mobility in

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<sup>1</sup> The details of this submission will be developed into a strategy paper that will become available around June 2009 at [www.sutp.org/bridging\\_the\\_gap](http://www.sutp.org/bridging_the_gap). The initiative “Bridging the Gap” has been initiated based on joint efforts by a number of international organizations promoting sustainable transport since COP13 in Bali and, has provided substantial inputs to the debate on transport and climate change in particular to strengthen the importance and accountability of transport in the climate negotiation process. The “Bridging the Gap” process is ongoing and will provide support to the climate negotiation debate throughout the remaining year

<sup>2</sup> This includes the Transport Research Foundation (TRF), the Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ), the International Association of Public Transport (UITP), ICLEI-Local Governments for Sustainability, Energy Research Centre of the Netherlands (ECN), and the Institute for Global Environmental Strategies (IGES).

<sup>3</sup> EA (2005) CO<sub>2</sub> Emissions from Combustion 1971-2003. OECD/IEA

<sup>4</sup> EA (2006) World Energy Outlook 2006, International Energy Agency. Accessed from <http://www.worldenergyoutlook.org/2006.asp>

developing countries, where growth rates are predicted to average 2.8% a year<sup>2</sup>. Coupled with rapid urbanisation, transport related emissions from urban areas are set to rise significantly.

Under the present international climate change agreement, the incentives to create sustainable transport networks as a part of national commitments to climate change are weak. Sustainable transport is one of the most urgent challenges in tackling climate change, and yet transport currently only plays a minor role in the negotiations. There are signs that this is beginning to change with a sizeable group of transport related organisations supporting a set of recommendations to improve the position of land transport within the climate change discussions. The recommendations contained within this submission aim to support an agreement at COP15 that would better incorporate transport in agreed actions taken by governments.

### **The Road to COP15 Copenhagen**

An effective response to the findings of the Intergovernmental Panel on Climate Change (IPCC) and the necessary reduction in global GHG emissions to avert severe climate change will need to include a focus on transport. The recommendations in this submission link actions needed in the transport sector with the four building blocks in paragraph 1 of decision 1/CP13, the Bali Action Plan:

- national/international action on mitigation of climate change, including Nationally Appropriate Mitigation Actions (NAMAs)
- action on the provision of financial resources and investment , including financing mechanisms beyond 2012
- action on technology development and transfer, including capacity building, and
- action on adaptation.

Actions taken on these four building blocks should be closely coordinated and mutually enforcing, with an understanding of the importance of capacity building and measurable criteria within mitigation, adaptation, technology and finance.

### **Mitigation**

Mitigation actions in the transport area generally follow one or more of three fundamental strategies: avoiding the need to travel, shifting travel to more sustainable modes, or improving the sustainability of modes. The IPCC<sup>5</sup> has suggested key mitigation options for the transport sector and explored both those that are commercially available and those that are yet to be commercialised (but that are expected to be before 2030). These include more fuel-efficient vehicles, modal shift, land-use and transport planning, and second generation biofuels and advanced hybrid vehicles.

Mechanisms could be devised to grant preferential support for transport projects and policies that realise co-benefits or other sustainable development objectives, such as reductions in air pollution, noise, and congestion. Such mechanisms should be accompanied by an institutional arrangement that allows for a simple and standardised measurement and rewarding/crediting process.

Mitigation efforts by developing countries that are supported by financing, technology transfer and capacity building could have significant potential to bring about sustainable transport. For example, NAMAs could provide a framework for (no-lose) sectoral targets, both in developed and developing countries, which given large uncertainties and market fluctuations would provide a better incentive for the transport sector to reduce emissions.

As suggested by a number of countries, NAMAs could comprise elements that were pledged voluntarily, including those for which some sort of international support was needed<sup>6</sup>. These could be measured, reported and verified under common rules set by the UNFCCC and rewarded through a crediting

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<sup>5</sup> IPCC (2007) Climate Change 2007 Synthesis Report. Accessed from <http://www.ipcc.ch/ipccreports/ar4-syr.htm>

<sup>6</sup> Relevant country proposals include those provided by the Republic of Korea, India, and South Africa.

mechanism. NAMA registries could include model transport elements, such as fuel efficiency standards, congestion charging and public transport improvements.

These ideas should be piloted in targeted policy areas and countries, and developed further based on the results obtained. They should also be coupled with the development of transport specific data sources and measurement methodologies that fully acknowledge the wide range of transport emission sources. There is a need as well for research to be conducted to this end.

### **Financing Mechanisms**

The currently available flexible mechanisms of CDM, JI and ETS provided within the Kyoto Protocol have not succeeded in promoting sustainable transport. Their application to transport has so far been extremely limited. As of 1st March 2009, out of 4,541 CDM projects sent for validation/determination, only 9 (0.2%) were in the transport sector,<sup>7</sup> and prior to this date only two had been approved.

Transport projects under the current CDM face particular difficulties *inter alia*:

- (1) Methodologies (setting baselines and proving additionality)
- (2) High transaction costs, and
- (3) CERs are often (or usually) only a small part of sustainable transport benefits.

To overcome these difficulties under the existing arrangements, methodologies can be tailored to the specific needs of the transport sector, for example through the approval of “first-of-its-kind” projects/programmes, whereby a new project or approach can be considered “additional” if it is not commonly used already. Standard methodologies that could be applied to Programmes of Activities (PoAs) could also be developed and shared amongst developing cities.

Under a post-2012 framework, financing should move towards an upscale, wholesale approach, for example via a policy-oriented CDM, guided by sectoral targets at national or even local level for the transport sector. Scaling up financing for sustainable transport must be complimented with sound pricing practices. Efforts must be taken to promote full cost pricing that reflects all environmental externalities including the cost of carbon. Efforts must be taken to remove subsidies on fossil fuels. This could be part of a crediting mechanism for Nationally Appropriate Mitigation Actions (NAMAs). A prerequisite to the upscaling of CDM is for industrialised countries to be committed to substantial greenhouse gas reduction targets. Discounting credits to incorporate the large uncertainties involved in quantifying NAMAs could also be discussed.

Furthermore, a new transport-specific mechanism could be devised, such as a Clean Transport Mechanism (CTM) in which countries can be financially compensated (e.g. through carbon credits) for transport emission reductions below a pre-defined baseline. Further assessment and piloting is needed to develop these ideas further.

In addition to crediting mechanisms, the role of climate funds such as the Global Environment Facility, the Climate Investment Fund, bilateral funds and any future mitigation-related funds under the UNFCCC in supporting sustainable transport can be acknowledged. Such funds can be instrumental in providing support for technology/knowledge transfer, capacity building and policy development to set transport on a sustainable path. They can also be used to leverage funding and investments by the private sector.

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<sup>7</sup> UNEP Risoe Centre (2009) CDM pipeline overview. Accessed from <http://www.cdmpipeline.org/cdm-projects-type.htm>

## **Technology Transfer**

Significant increases in the reduction of emissions from transport in developing countries could be achieved from adopting a leapfrogging approach to the development of transport technology. Developing countries could embrace low carbon mobility with energy efficient transportation options, through accelerated deployment, diffusion and transfer of technologies, and learn from the technology progress within developed countries.

Technology transfer and development should include a range of support, including financial and capacity building. Technologies in this regard should range from existing affordable environmentally sound technologies such as non-motorised transport vehicles, to new and upcoming technologies in demand management such as Intelligent Transport Systems (ITS) and smart cards for use on public transport.

Transfer could also take place in the form of knowledge, for example through the dissemination of good practices, standards and scientific evidence. The development of soft measures, skills and behaviour are critical to the successful implementation of sustainable transport policies and projects, and need to be supported by knowledge transfer. The highest potential for addressing reductions at an affordable cost comes from a combination of land use policies and technology. International guidelines and examples of best practise with accompanying methodologies for managing emissions from transport over a significant time period could be part of this action. Efforts by the Expert Group on Technology Transfer (EGTT) should ensure holistic coverage of transport technologies, not only transport fuels and vehicle engines, but those for infrastructure, demand management and public transport systems.

The barriers to the effective transfer of technology and knowledge need to be addressed by capacity building in different transport sectors, particularly within developing countries. There is a need to build capacity on both the national and local scales, and the key component of any strategy to do so will require a reform of institutional frameworks. It will also be essential for adequate knowledge mechanisms to be put in place, and for all actors to be appropriately trained. In the short-term, capacity building to support the integration of land-use and transport planning, enhancement of public participation and the integration of environmental effects (for example using tools such as Strategic Environmental Assessment) should be focused upon in the transport sector.

## **Adaptation**

With 45% of the world's population living on or near coastal regions and river beds, transport is particularly vulnerable to water related climate extremes. A fully integrated transport strategy is required that ensures support for both adaptation and mitigation actions, and which ensures climate resilient development in the most vulnerable areas. Transport infrastructure and services, both existing and planned, need to be evaluated against their vulnerability to climate change. These risks need to be incorporated into transport decision making processes as with any other risks that are reasonably foreseeable.

Assessment of climate risks need to include the impacting event (climate hazard), the likelihood of an impact occurring (its probability), the consequences of an impact if it does occur (the likely degree of impact), and the resilience of the planned or present infrastructure. The assessment can take place within existing needs assessments, for example National Adaptation Programmes of Action (NAPAs).

To facilitate this process, the overall framework should be set at the UNFCCC level, with levels of support suited to the respective adaptive capabilities of Parties provided through financial assistance, technology transfer and capacity building. Guidelines, assessment tools and studies on adapting transport infrastructure could be developed at the UNFCCC level. Consider using the multiple sources of funding, including the Adaptation Fund, to provide adequate coverage of transport in both scale and scope.



## **Conclusions**

An upscale targeted strategy is needed in all building blocks of the Bali Action Plan to have an impact on future sustainable transport development in developing countries. This will need to be coupled with substantial emission reduction targets for Annex I countries alongside appropriate actions by developing countries.

The present flexible mechanisms are playing only a minor role in supporting low carbon mobility in developing countries. A post-2012 agreement must therefore include a combination of instruments that, together with local, regional and national applications of transport policies, work for all sectors including transport.

Mitigation efforts could be guided by NAMAs, part of which could be credited through an upscaled crediting scheme, e.g. a sectoral/policy CDM, and supported by technology/knowledge transfer, capacity building and robust measurement methodologies. Financing and capacity building for adaptation needs to increase in size and scope, to adequately address the vulnerability of existing and new transport infrastructure and services.

The transport sector does not operate in a vacuum and impacts on many other sectors and the efficient use of resources. Its role as an enabler of economic growth cannot be neglected in the developing world, and developing countries should pursue a 'leapfrogging' approach to low carbon mobility, learning from the experience of the developed world. The transport sector therefore represents an opportunity to make significant reductions to global emissions, stabilise the impacts of climate change and introduce mechanisms that provide paths to social and economic development as well as to environmental protection.

PAPER NO. 5A: WORLD HEALTH ORGANIZATION

*Submission for the Ad hoc Working Group on Long-term Cooperative Action*

The World Health Organization (WHO) welcomes the opportunity to express suggestions in the framework of the work of the Ad Hoc Working Group on Long Term Cooperative Action (AWG-LCA) related to health issues.

Climate-sensitive risk factors and illnesses are currently among the most important contributors to the global burden of disease; these include undernutrition (estimated to kill 3.5 million people per year), diarrhoea (2.2 million) and malaria (0.9 million). These and other health outcomes will be increasingly affected by accelerating climate change, through its adverse effects on food production and food security, water availability and the population dynamics of vectors and pathogens.

**Shared Vision**

As specified in the 1992 UNFCCC text, action on climate change is necessary to avoid adverse impacts on human health and wellbeing, alongside damage to the environment and economic development. A greater appreciation of the human health dimensions of climate change is necessary for both the development of effective policy and the mobilization of public engagement.

Climate change, and climate policies, will profoundly affect some of the most fundamental determinants of health (i.e food, air and water). Comprehensive long-term cooperative actions are needed to formulate clear responses in order to protect and enhance human health and well-being.

Climate strategies, including mitigation, adaptation, finance and technology, should therefore properly address the health consequences of climate change.

**Mitigation**

As defined in the UNFCCC, climate mitigation efforts should also aim to achieve social benefits. The main benefits identified by the IPCC are for health, and they conclude that these could repay much of the cost of many mitigation interventions. Health co-benefits are also usually immediate, and local.

For example, improving household energy access for poor populations could significantly reduce the large warming contribution of black carbon, and avoid 1.5 million premature deaths each year from indoor air pollution. Other important sectors are power generation (reduced local air pollution), and transport (reduced ambient air pollution, traffic-related injury and death, and obesity rates).

Parties are encouraged to prioritize and support mitigation strategies that also improve health.

**Adaptation**

Strengthening of public health services needs to be a central component of adaptation. Increased investment in health systems is already necessary in order to meet the health-related Millennium Development Goals, whose achievement will be further compromised by the impact of climate change.

Additional adaptation policies and forward planning will be required to strengthen public health systems to cope with the threats posed by climate change and enhance capacity to deal with public health emergencies.

This approach will need to encompass interventions within the formal health sector, such as control of neglected tropical diseases and provision of primary health care, and actions to improve the environmental and social determinants of health, from provision of clean water and sanitation, to enhancing the welfare of women.

A common theme must be ensuring health equity and giving priority to protecting the health security of particularly vulnerable groups.

**Finance & Technology**

Financial Mechanisms to support climate change action should be accessible by the health sector, both to support actions that provide opportunities for improving health while reducing emissions of greenhouse gases, and to support programmes that help protect public health from climate change.

PAPER NO. 5B: WORLD HEALTH ORGANIZATION

Submission by the World Health Organization

in collaboration with

the International Organization for Migration (IOM), World Vision (WV), the United Nations High Commissioner for Refugees (UNHCR) and the International Federation of Red Cross and Red Crescent Societies (IFRC)

**Protecting the health of vulnerable people from the humanitarian consequences of climate change and climate related disasters**

6th session of the Ad Hoc Working Group on Long-Term Cooperative Action

under the Convention (AWG-LCA 6). Bonn, June 1-12, 2009

**EXECUTIVE SUMMARY**

The health and humanitarian dimensions of climate change are among the ultimate justifications for taking action on climate change and these are closely interlinked. Humanitarian assistance provides a strong health imperative to save lives and alleviate the suffering of crisis affected populations. Climate change mitigation and adaptation, in particular, are important for the protection of health of vulnerable populations from both sudden and slow onset climate-related emergencies.

The aim of the paper is twofold: first, it documents the range of risks that climate change poses to human health associated with humanitarian emergencies, and secondly, it proposes policy directions to manage the health humanitarian impact of climate change for consideration by the 15th Conference of the Parties (COP) to the UNFCCC, the health sector and by the humanitarian community.

Comprehensive long-term cooperative actions are needed to formulate clear responses in order to protect and enhance human health and well-being from the risks of climate change, including humanitarian emergencies. Relevant actions are specified under the headings of climate strategies outlined in the Bali Action Plan, including shared vision, mitigation, adaptation, finance and technology. The most immediate actions for minimizing health humanitarian impacts from climate change are in the field of adaptation, and include 1) strengthening of public health systems, 2) enhancing capacity to address public health emergencies, 3) strengthening surveillance and control of infectious disease, 4) improving the use of early warning systems by the health sector, and 5) enhancing local public health interventions to enhance community resilience to climate-change and climate-related disasters.

This paper has been developed within the framework of the Inter-Agency Standing Committee (IASC)<sup>a</sup> Task Force on Climate Change by the World Health Organization (WHO), in collaboration with IOM/WV/UNHCR/IFRC<sup>b</sup> and in consultation with the United Nations International Strategy for Disaster Reduction system.

**1. Introduction to Climate Change, Disasters and Health**

The health of millions of people is impacted each year by the acute and long-term effects of climate, including humanitarian emergencies. Climate change is happening now and it inevitably affects the basic requirements for health: clean air and water, sufficient food and adequate shelter. Each year, about 800 000 people die from causes attributable to urban air pollution, 2.2 million from diarrhoea, (largely resulting from lack of access to clean water supply sanitation and poor hygiene), 3.5 million from malnutrition and approximately 60 000 in climate-related disasters<sup>1-4</sup>, mostly in low resource settings and highly prevalent in humanitarian settings. Climate change will lead to higher levels of some air

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<sup>a</sup> The Inter-Agency Standing Committee (IASC) is the primary mechanism for inter-agency coordination of humanitarian assistance. It is a unique forum involving the key UN and non-UN humanitarian partners

<sup>b</sup> IOM: International Organization for Migration; WV: World Vision; UNHCR: United Nations High Commissioner for Refugees; IFRC: International Federation of Red Cross and Red Crescent Societies.

pollutants, increased outbreaks and transmission of diseases through unclean water and through contaminated food, threaten agricultural production in some of the poorest countries, and an increasing number of extreme weather events.

Climate change also brings new challenges to the control of infectious diseases. Many of the major killers are highly climate-sensitive to temperature and rainfall, including cholera and the diarrhoeal diseases, as well as vector borne diseases including malaria, dengue and schistosomiasis.

Diminished resources, such as food and water, also has the potential to increase competition leading to conflict and ultimately to humanitarian crises. Such stresses may also lead to forced migration, increasing risks of transmission of communicable diseases and burdens on health systems, and further aggravating tensions between communities<sup>5</sup>. In sum, climate change threatens to reverse the progress that the global public health community has been making against many diseases, and increase the challenges for the humanitarian community to respond to natural, biological and social emergencies. It also presents an opportunity to health and humanitarian sectors to galvanize a common understanding and approach for countermeasures which reduce the impact of emergencies on the health of affected communities.

## **2. Health impact of climate-related disasters**

Globally, the number of reported weather-related natural disasters is increasing. Reports of natural catastrophes have more than tripled since the 1960s. In 2007, 14 out of 15 appeals for emergency humanitarian assistance were for floods, droughts and storms – five times higher than in any previous year.<sup>6</sup>

### **2.1 Acute stresses**

More numerous reports of climate disasters are partly due to population growth in high-risk areas, but it is likely that climate change is also a contributing factor. The last few decades have seen rapid growth in populations living in flood plains and coastal areas, particularly in developing country cities, placing more people in the path of weather-related disasters. At the same time, climate change has driven extreme high temperatures and has probably contributed to more frequent and extreme precipitation events and more intense tropical cyclone activity.<sup>7</sup> Together, these trends will increase weather-related hazards to human health.

**Extreme heat.** Studies have shown that daily temperatures above a locally specific threshold result in higher mortality rates. The hot summer of 2003 in Europe produced sustained record high temperatures which resulted in markedly higher death rates, particularly among the elderly population. In total, it has been estimated that 70 000 more deaths occurred in western Europe during that extreme summer than expected.<sup>8</sup> Continuing global warming and possible increases in temperature variability<sup>9</sup> will make such events more frequent and more severe. It is projected that European summer temperatures as high as those experienced in 2003 may be the norm by the middle of the century.<sup>10</sup>

**Floods and droughts.** Even small changes in average precipitation can have a very large effect on the extremes of rainfall events that cause either flooding or drought, already the most frequent and deadly forms of disasters. For example, studies have shown that human influence on the global climate is likely to make what would currently be considered a “very wet winter” in the United Kingdom, or a “very wet summer” in the South Asian monsoon region, about five times more frequent by the second half of this century.<sup>11</sup> Floods cause drowning and physical injuries; heighten the risk of diseases transmitted through water, insect vectors and rodents; damage homes; and disrupt the supply of essential medical and health services. The number of floods reported globally is rising rapidly – much more rapidly than disasters unrelated to climate.

Globally, climate change is likely to widen the area affected by drought, with particularly severe impacts in areas that are already water-stressed. These trends will impact on lives and on health. Droughts increase the risk of water and food shortages and malnutrition, and diminished health among vulnerable population. They also increase the risk of diseases spread by contaminated food and water. The

combination of extreme heat and drought are also important risk factors for causing wildfires, resulting in direct health and economic losses, and increased risk of respiratory illness due to smoke pollution.

**Tropical storms.** Extreme winds, particularly in the tropical regions, bring death, illness, injury, psychosocial impacts, and destruction of health facilities and health services. There is evidence of a marked increase in the numbers of the most extreme cyclones in recent decades, and this trend is likely to continue. Studies suggest that a doubling of the level of carbon dioxide in the atmosphere would result in an increase of only about 6% in average cyclone windspeed but of 300% in the frequency of the largest (category 5) storms.<sup>12</sup>

**Changing patterns of infection.** Infections caused by pathogens that are transmitted by insect vectors are strongly affected by climatic conditions such as temperature, rainfall and humidity. These diseases include some of the most important current killers: malaria, dengue and other infections carried by insect vectors, and diarrhoea, transmitted mainly through contaminated water. Populations in crisis situations, in particular, face heightened risk of these illnesses.

*Malaria* transmission is strongly affected by climate. Transmitted by *Anopheles* mosquitoes, malaria is the most important vector-borne cause of mortality globally. It kills almost 1 million people each year, mainly poor children in Africa.<sup>13</sup> Malaria is strongly influenced by climatic conditions; it is not transmitted in the cooler temperatures associated with high altitudes and latitudes, and the number of mosquito vectors depends on the availability of freshwater breeding sites. Warmer temperatures, higher humidity and more places where water can collect generally favour malaria transmission. There is evidence that in some sites in the highlands of East Africa, a warming trend over the last 30 years has improved conditions for mosquitoes, increasing the probability of malaria transmission and highland epidemics.<sup>14</sup>

*Dengue* prevalence is increasing rapidly. Transmitted by *Aedes* mosquitoes, dengue is a fast growing challenge, particularly in tropical cities in developing countries. Cases have risen dramatically in the last 40 years, as unplanned urbanization with standing water in waste and other receptacles have created mosquito breeding sites, and movement of people and goods has spread both mosquito vectors and infections. Climate trends may also have played a role, since the distribution of dengue is also highly dependent on climate.<sup>2</sup>

*Diarrhoea* remains one of the biggest killers of children. Viruses and bacteria transmitted through water and contaminated food can cause severe diarrhoea in children, often locking them into a vicious cycle of undernourishment, susceptibility to other infectious diseases, and eventually death. Higher temperatures and too much or too little water can each facilitate transmission of this disease. In countries with inadequate water and sanitation services, diarrhoea is much more common when temperatures are high. For example, rates of diarrhoeal disease in Lima, Peru, are 3–4 times higher in the summer than in the winter, increasing by 8% for every 1 °C increase in temperature.<sup>15</sup> Both flooding and unusually low levels of water can also lead to water contamination and bring higher rates of illness and death from diarrhoea.<sup>16</sup> Warming and greater variability in precipitation threaten to increase the burden of this disease.

Many other diseases will also be affected. Any disease caused, transmitted or harboured by insects, snails and other cold-blooded animals can be affected by a changing climate. New and unfamiliar infections strain health services and economies. When infectious diseases appear in new locations, where people do not have immunity and health services may not have experience in controlling or treating infections, the effects can be dramatic. In severe or unusual outbreaks, the cooperation of community, national and international epidemic and emergency response systems will be required to control the spread of disease, provide emergency health services to the affected population and help manage the widespread societal and economic aspects through coordinated multi-sectoral action..

## ***2.2 Chronic stresses: water shortages, malnutrition, psychosocial stress, displacement, migration and conflict***

In the long run, the greatest health impacts may not be from acute shocks such as disasters or epidemics, but from the gradual increases in pressure on the natural, economic and social systems that sustain health which are already under stress. These gradual stresses include reductions and seasonal changes in the availability of fresh water, regional drops in food production, and rising sea levels. The effects of climate change on ongoing conflicts (such as the Darfur crises) is also a critical concern of the health humanitarian community.

Each of these changes has the potential to cause, prolong and exacerbate chronic emergencies, including major population displacement, and increase the risks of civil conflict.

Mounting water stress fosters a range of long-term public health challenges. Lack of access to clean water supply and sanitation, along with poor hygiene, is already the main contributor to the burden of diarrhoeal disease.<sup>17</sup> Climate change is projected to bring changing rainfall patterns, increased temperatures and evaporation, and salinization of water sources through rising sea levels. In addition, over the course of the century, water supplies stored in glaciers and snow covers are projected to decline. This will reduce water availability to populations supplied by melt-water from major mountain ranges, more than one sixth of the global population. The Himalayas glaciers, whose melt waters serve 1.3 billion people, are showing a rate of recession greater than anywhere else in the world. In many regions, the effects of climate change come on top of pre-existing water stress and mounting pressures of population growth, as well as extraction for irrigation and contamination from agriculture and industry.<sup>18</sup>

Pressures on agriculture threaten to increase the burden of malnutrition. Undernutrition and related disease is currently the greatest contributor to the global burden of disease, killing over 3.5 million people per year, mostly children in developing countries.<sup>4</sup> It is projected that climate change will boost agricultural production in the high latitudes of developed countries, but cause decreases in many tropical developing regions. There is particular concern for sub-Saharan Africa, where people are most reliant on subsistence and rain-fed agriculture and have least money to buy imported food. Some studies agree that higher temperatures and longer growing seasons could result in increased pest populations in temperate regions of Asia<sup>19</sup>. Increased frequency of El Niño events and future changes to the ocean ecology have the potential to substantially alter fish breeding habitats and food supply for fish, and ultimately the abundance of fish populations. Tens of millions more people are projected to become at risk of food insecurity and the health consequences of malnutrition.<sup>18</sup>

Population displacement compromises health and damages lives. By destroying ecological and agricultural systems and by flooding communities, climate change can eventually force people to abandon where they live in order to seek new homes and livelihoods. Forced displacement is associated with a range of health issues, including social isolation and mental disorders and, in many cases, reduced socioeconomic status and associated health problems. When migration crosses ethnic and/or national boundaries, such as forced migration from low-lying, small island states, the social transition is more difficult and the associated health effects are likely to be more severe. Refugee or displaced persons camps are often sited on marginal lands which may provide breeding sites for disease vectors (Malaria, Dengue). Population movement may take refugees and displaced through or to areas of higher malaria endemicity than their place of origin.

Environmental pressures exacerbate pre-existing problems and accentuate underlying social fault lines. Economically and socially marginalized groups within society will be worst affected. Migrants can also experience increased vulnerability post-disaster due to compromised access to services in the affected areas as well as potential language and cultural barriers. For irregular migrants and migrants who have lost their documents as a result of the disaster access to assistance might be particularly difficult.<sup>20,21</sup>

Competition over dwindling or degraded natural resources can increase the risks of conflict and war. Although most conflicts are not directly related to natural resources, stresses on natural ecosystem

services can lead to competition between population groups over, for example, freshwater supplies or fertile agricultural land. Combined with factors such as poor governance and ethnic rivalries, such competition can inflame tensions into conflict.<sup>22</sup>

### ***3.2 Vulnerable regions: exposed populations***

All regions of the world will be affected by a changing climate, but the resulting health risks to human populations vary greatly, depending on where and how people live. People living in small island developing states and other coastal regions, megacities and mountainous and polar regions are all particularly vulnerable in different ways.<sup>18</sup>

Small island developing states and other low-lying regions are in the front line. Populations in these countries are vulnerable to death and injury and destruction of their public health infrastructure from increasingly severe tropical storms, as well as salinization of water resources and agricultural land from sea level rise.<sup>23</sup> Many of these nations struggle to supply adequate fresh water for basic sanitation and hygiene, particularly to outlying islands and other isolated areas where populations suffer elevated rates of diarrhoea and nutritional deficiencies during droughts, floods and high temperatures<sup>16</sup>. Displacement of populations from small island development states is expected to increase due to these climate-related impacts on basic resources.

Urban populations, particularly those of tropical megacities, are exposed to a combination of health risks such as heatwaves, floods, infectious diseases and air pollution. Rising global temperatures combine with the urban heat island effect, and can raise temperatures by 5–12° C, heightening hazards from heatwaves.<sup>24,25</sup> Extensive coverage with impervious surfaces, along with inadequate drainage and precarious housing, increase the risks and the health impacts of flash floods. High population densities, inadequate coverage of clean water, sanitation and waste disposal services raise vulnerability to climate-sensitive infectious diseases such as diarrhoea and dengue. Many cities also have high levels of air pollution, almost all of which results from burning of fossil fuels.<sup>26</sup> These factors accentuate the risk of emergencies requiring local and national response, and increased prospect of international assistance.

Mountain populations are vulnerable, due to high exposure to hazards, remoteness, poor infrastructure and marginalization. at increased risk of water insecurity, floods and landslides, and infectious disease. Climate change at high altitudes can cause a range of health challenges.<sup>27</sup> The widespread retreat of glaciers threatens to deprive mountain and downstream populations of reliable summer fresh water for household use and for agriculture, from China to Peru. Swelling of the lakes that form at the bottom of glaciers increases the risks of glacier lake outburst floods, which occur suddenly and can cause injury, death and destruction in downstream communities. Furthermore, higher temperatures are intensifying the risks of transmission of vector-borne diseases, such as malaria, among high-altitude populations that lack immunity against such diseases.<sup>14</sup> While trying to cope, nomad populations may need to become sedentary - already occurring with some groups in the Northern Himalayas - and traditional ethnic groups may thus face social tensions and eventual loss of their identity. The psychosocial stress may result in depression, leading to misuse of alcohol, domestic violence and other dramatic and negative behavioural changes.

The health of indigenous people in polar regions may be particularly affected by changes in temperature, food sources and livelihoods. Rising winter temperatures in Arctic regions are expected to reduce excess winter mortality and cold-related injuries.<sup>28</sup> However, the traditional diet of circumpolar residents is likely to be impacted by melting snow and ice, affecting animal distributions and accessibility for hunting. Wildlife and waterborne and vector-borne diseases are expected to have a wider seasonal and geographical distribution.<sup>29</sup> Perhaps most importantly, changes in the physical environment will make traditional ways of life impossible, forcing changes of behaviour and means of supporting livelihoods, with associated effects on mental health and community cohesion, and displacement of populations.

Women and children in developing countries are particularly vulnerable to death and illness following disasters. In the 1991 cyclone disasters that killed 140 000 people in Bangladesh, death rates among

women were almost four times greater than those among men: rates among children under 10 years of age were more than six times greater than those of adult men.<sup>30</sup> Disasters can also result in increased suffering from domestic violence and post-traumatic stress disorders in women,<sup>20,21</sup> who are also often called upon to play a leading role in disaster recovery and in rebuilding shattered communities.

### **3. Solutions: health governance, humanitarian assistance and the climate change agenda**

Climate change will affect the health and well-being of all populations, with impacts escalating into the foreseeable future in many different ways. Human health and wellbeing are central to humanitarian, environment and development policy.

We have outlined the range of risks that climate change poses to human health, with a focus on those risks that can cause emergencies and displacement. The extent to which these risks translate into increased numbers of deaths and burdens of injury and disease will depend on the effectiveness of mitigation and adaptation policies. Strengthening public health systems and health emergency management systems is necessary, particularly to safeguard the health of the most vulnerable population groups and respond effectively to emergencies when they arise. This principle has been outlined in frameworks for action developed by individual countries and in regions during the past two years, for example in the Asia Pacific Region where over 3 billion people live<sup>31</sup>.

#### *3.1 Actions to improve our health and protect our climate*

The global public health community has a wealth of experience in protecting people from climate-sensitive hazards. Many of the necessary preventive actions to deal with the additional risks of climate change are already clear. Widening the coverage of proven, effective health interventions will be critical to the global effort to adapt to climate change.

Strengthening of public health systems is necessary with or without climate change; climate change makes this need even more critical and urgent. Today's shortfalls in providing basic public health services leave much of the global population exposed to climate-related health risks. There is a need for additional investment to strengthen key health functions and for forward planning to address the new challenges posed by climate change. This should include increase capacity of the health system to extend services and continuity of care to mobile, hard-to-reach populations and newly established communities after displacement, bridging emergency relief and long-term sustainability. To this effect, coherent partnership needs to be strengthened between humanitarian actors, NGOs, private sector, and national health systems through emergency preparedness measures in advance of any emergency, and be maintained from the very on-set of the emergency and throughout the community recovery and stabilization phase<sup>32</sup>.

Enhanced capacity to address public health emergencies saves lives and protects communities. Acute shocks such as extreme weather events and disease epidemics can overload the capacities of health systems in even the most developed nations. Complex emergencies, resulting in humanitarian crises, result in enormous health burdens for the affected population, and often require wide-scale international assistance. As far as natural hazards are concerned, the number of disasters reported and the numbers of people affected have risen in recent decades, thus creating additional demands on health systems. Conversely, the number of people killed has fallen, as societies and individuals have become more able to protect themselves. Further reinforcing health vulnerability and risk assessment, multi-sectoral disaster risk reduction, health emergency preparedness, early warning, and health action in emergencies can help to ensure that people are better protected from the increasing hazards of extreme weather and help communities recover faster following a disaster<sup>33</sup>.

Strengthened surveillance and control of infectious disease can protect health from local to global scales. Effective disease surveillance and control become even more important under conditions of rapid environmental change and movement of people, disease vectors and infections. Rapid and accurate disease notification, in compliance with the International Health Regulations,<sup>33</sup> is the essential basis for planning disease control. Approaches such as Integrated Vector Management, which make the best use of



proven interventions, such as bed nets, insecticide spraying and environmental management, to control malaria, dengue and other vector-borne tropical diseases, are relevant to humanitarian situations and protect against the effects of climate change.<sup>34</sup> Improving access to primary health care in humanitarian settings ensures faster treatment for patients, alleviating suffering and containing the risks of disease spread.

Extreme weather forecast and early warning. There is great potential for using meteorological information to enhance early warning and effective response over a range of time scales, from hours or days (for example for flood or heatwave warnings), to weeks (for seasonal epidemics of vector-borne disease), to months (seasonal forecasts of precipitation anomalies allowing planning for flooding or drought) or years (for drought and associated food insecurity). While not useful for operational decision making, climate change projections on a decadal time-scale can give indications of how hazards may change and enable longer term planning for changing risks, such as the selection of safe sites for the development of health infrastructure. However, there is a need for improved institutional arrangements to ensure that the roles of meteorological, humanitarian, health and other agencies are well-defined, that climate information products are demand driven, user friendly and relevant for operational decision making in health and other sectors, and that there is sufficient capacity for operational response. Efficiency can be improved by sharing of data sources, protocols and information across warning systems for different hazards.

Local public health interventions to build community resilience. Action on environmental and social determinants of health is critical to protecting populations from climate change in both emergency and non-emergency situations. For example, scaling up water and sanitation services and disinfection at the household level would immediately reduce diarrhoea and, at the same time, lessen the health impacts of decreasing and more variable water supplies before and during emergencies. Implementing participatory approaches such as the FAO's<sup>c</sup> concept of Farmer Field Schools to empower local communities to manage disease vectors in an integrated manner and thus increase their capacity to protect their health will increase climate resilience.<sup>35</sup> The benefits of such interventions are already several times greater than the costs, and the threat of climate change makes these preventive health measures as part of the humanitarian response an even wiser investment. Improving social welfare in emergency situations, particularly educating and empowering women in developing countries, is a fundamental requirement for improving health. It is also essential to strengthening community resilience to disasters and to climate change. Such strategies need to be flexible enough to take into account the diverse composition of modern communities, and include migrants and people from different ethnic and cultural groups, and with different health-seeking behaviour.

#### **4. Protecting the health of vulnerable people from the humanitarian consequences of climate change and climate related disasters: proposals to COP 15 negotiators for the roadmap of action**

Action on climate change is necessary to avoid adverse impacts on human health and wellbeing, alongside damage to the environment and economic development. A greater appreciation of the human and humanitarian dimensions of climate change is necessary for both the development of effective policy and the mobilization of public engagement regarding the impacts of climate change. Mainstreaming of climate change is essential to development of health systems and planning for humanitarian emergencies.

##### Shared Vision

Climate change, and climate policies, will profoundly affect some of the most fundamental determinants of health (especially food and water security) which increase the risks of humanitarian emergencies and decrease the effectiveness of humanitarian response. Comprehensive long-term cooperative actions are needed to formulate clear responses in order to protect and enhance human health and well-being from the effects of climate change, including those giving rise to humanitarian emergencies. Climate strategies, including, adaptation, mitigation, finance and technology, should therefore properly address

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<sup>c</sup> Food and Agriculture Organization

the health consequences of climate change, including death, injury, disease, disability, mental illness and displacement arising from extreme weather events, sea-level rise and conflict arising from diminished food and water security. These disaster risk reduction strategies should be combined with good governance and institutional strengthening, health risk identification, knowledge management and education, and preparedness for effective response and recovery – the five priority actions of the Hyogo Framework for Action of the UN International Strategy for Disaster Reduction (UN ISDR)<sup>36</sup>.

#### Adaptation

Adaptation policies and forward planning will be required to assess and cope with the threats posed by climate change and enhance capacity to deal with public health emergencies. This approach will need to strengthen the health coordination with the humanitarian sector, health emergency management systems, early warning systems related to the health consequences of climate change, and interventions to control neglected tropical diseases. The investment in hospitals, health facilities and other infrastructure should be protected from the long-term effects of climate change. Renewed emphasis should be placed on primary health care, and improving the environmental and social determinants of health, from provision of clean water and sanitation, to enhancing the welfare of women, especially in emergency situations. All adaptation measures are designed to build the resilience of nations and communities to disasters and negative health impacts attributable to climate change through awareness raising, capacity building on interventions and relevant research.

Adaptation and mitigation policies outside the health sector will also have major health implications. A common theme must be ensuring health equity and giving priority to protecting the health security of particularly vulnerable groups. Increased investment in health systems is already necessary in order to meet the health-related Millennium Development Goals, whose achievement will be further compromised by the impact of climate-related events.

#### Mitigation

Mitigation is essential to prevent continuing rises in the frequency and severity of extreme weather events. Parties are encouraged to continue to specify the avoidance of health and humanitarian disasters as a primary motivation for mitigating climate change.

#### Finance & Technology

Financial mechanisms and technological innovation to support action to strengthen health systems and health emergency management systems to reduce the impact of climate change should be accessible by the health and humanitarian sectors, both to support actions that provide opportunities for improving health and support programmes that help protect public health from the humanitarian consequences of climate change. The effects of climate change on health, the long-term risks stemming from drought and sea-level rise that could affect water and food security and safety, competition for resources, and displacement of populations with humanitarian needs, should all be integrated into early warning systems with appropriate evaluation schemes.

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