DISPLACEMENT SOLUTIONS

The Critical Role of Land Use Planning in Preventing and Resolving Climate Displacement

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INTRODUCTION[1]

Climate displacement has been described as one of the greatest humanitarian challenges of the 21st century.[2] However, it is not only a humanitarian concern, it is also a human rights,[3] development,[4] security[5] and potentially existential crisis.[6]

Based on our extensive experience, DS believes that in order to effectively address climate displacement States must take a perspective beyond the emergency humanitarian needs of the displaced population. Measures and tools must be implemented now that both protect communities against displacement occurring as well as ensure that persons who are displaced can rebuild their lives with all of their human rights respected, protected and fulfilled.[7]

Although States are primarily responsible for preventing and resolving climate displacement in their territory,[8] global solidarity is required in order to effectively address climate displacement. This includes ensuring the contribution of all States as well as a broad and inclusive range of stakeholders, disciplines and perspectives in the design and implementation of measures and tools to address climate displacement.

To this end, this report addresses the critical - and as yet largely unexplored[9] - role that land use planning can and must play in preventing and resolving climate

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[1] This paper was prepared by Zeke Simperingham, and edited by Kirsten Young and Scott Leckie.
[2] The Nansen Initiative, *Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change*, 2015.
[3] "Climate change is the biggest human rights issue of the 21st century," Mary Robinson Foundation, *Position Paper: Human Rights and Climate Justice*, 27 June 2014. In June 2015, the Human Rights Council expressed "concern that climate change has contributed to the increase of sudden-onset natural disasters and slow-onset events, and that these events have adverse effects on the full enjoyment of all human rights", UN Doc. A/HRC/29/L.21, 30 June 2015. In August 2012, the Special Rapporteur on the Rights of Migrants highlighted that the effects of climate change have "adverse consequences for livelihoods, public health, food security and water availability [and] will have a major impact on human mobility..." UN Doc. A/67/299, 12 August 2012.
[4] "Disasters caused by natural hazards are now among the greatest threats to long-term development worldwide. Over the last 20 years, they have killed 1.3 million people, affected 4.4 billion, and caused over US$ 2 trillion in economic losses." IFRC and UNDP, *Effective law and regulation for disaster risk reduction: a multi-country report*, 2014.
[5] See, for example, NATO Parliamentary Assembly, Sciene and Technology Committee, *Climate Change, International Security and the Way to Paris, Draft Special Report*, 20 March 2015, para 25.
[6] "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…" UNHCR, IOM and NRC, *Climate Change and Statelessness: An Overview, Submission 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.
[7] Scott Leckie, *Finding Land Solutions to Climate Displacement: A Challenge Like Few Others*, Displacement Solutions, October 2013.
[8] "Under international law, States bear the primary responsibility to ensure that the human rights of those within their territory or jurisdiction are respected, protected, and fulfilled. This includes the obligation to take preventative as well as remedial action to uphold such rights and to assist and protect those whose rights have been violated" UNHCR, *Planned Relocation, Disasters and Climate Change: Consolidating Good Practices and Preparing for the Future*, p7.
[9] "Very few urban planning tools are being considered in the deployment of resources in a climate change era by national and local policymakers", Edward J. Blakely, *Urban Planning for Climate Change, Lincoln Institute of Land Policy*, 2007.

displacement.

i. Why Should Planners be Concerned About Climate Displacement?

Global concern about climate displacement centres on the projected scale of displacement, as well as the vulnerability of those displaced.

Natural disasters are already leading to the displacement of an average of 26.4 million people every year[10] (the vast majority related to weather and climate related hazards).[11] This number is expected to increase as climate change leads to increasingly intense and frequent weather events.[12] Already, the likelihood of being displaced by a disaster is 60 per cent higher than it was four decades ago.[13]

Displacement from natural disasters will be combined with displacement from slow onset events associated with climate change, including salinization, land degradation, desertification and, critically, sea level rise.[14] Sea level rise alone could displace tens or hundreds of millions of people from low-lying coastal areas, deltas and small island states.[15] The risk is clear - already more than 150 million people live within one meter of present sea level.[16]

The combination of displacement from sudden and slow events associated with climate change has led to widely reported predictions of hundreds of millions or even two billion people being displaced this century.[17] However, it is exceptionally – and perhaps distractingly - difficult to provide accurate estimates of the numbers of people who will be displaced by climate change. This is due at least in part to the difficulties in isolating environmental factors or climate change as the reason behind an individual's displacement.[18] It is also difficult to discern how effective states will be at mitigating

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[10] Norwegian Refugee Council/Internal Displacement Monitoring Centre (NRC/IDMC), *Global Estimates 2015: People displaced by disasters*, July 2015, p8.
[11] *Id.*
[12] Intergovernmental Panel on Climate Change (IPCC), *Summary for Policymakers: Climate Change 2014: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press: 2014, p20. Further, "Looking to the future, there is high agreement among scientists that climate change, in combination with other factors, is projected to increase displacement in the future", the Nansen Initiative, *Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change*, Final Draft, p1.
[13] Norwegian Refugee Council/Internal Displacement Monitoring Centre (NRC/IDMC), *Global Estimates 2015: People displaced by disasters*, July 2015.
[14] UNFCCC, *Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010, Addendum, Part Two: Action taken by the Conference of the Parties, Decisions adopted by the Conference of the Parties*, 15 March 2011, FCCC/CP/2010/7/Add.1, paragraph 25; see also: UNFCCC, *Technical Paper, Slow Onset Events*, 26 November 2012, FCCC/TP/2012/7, p3.
[15] "Globally, and without investment in adaptation measures, a rise of 0.5m in sea level implies a likely land loss of 0.877 million km2 by 2100, displacing as many as 72 million people. A more extreme 2.0m change in sea level would result in the loss of 1.789 million km2, displacing 187 million people, mostly in Asia", Intergovernmental Panel on Climate Change (IPCC), *Contribution of Working Group II to the Fifth Assessment Report*, Volume 1, Chapter 12 (2014).
[16] ABC, *World sea levels set to rise at least one meter over next 100-200 years*, NASA says, 26 August 2015, available at: http://www.abc.net.au/news/2015-08-27/sea-levels-set-to-rise-nasa-says/6728008.
[17] "At the far end of this spectrum, Research carried out by the Norwegian environmental organization Fremtiden i våre hender (The Future in our hands - FIOH) using the +2 scenario, shows that one to two billion people may have to leave their homes by 2050 as a consequences of climate change. This could be up to 25 per cent of the global population", see: Jan Egeland, *Millions Displaced by Disasters No Time to Lose*, Perspective, Humanitarian and International Affairs Magazine, 2015.
[18] This is because climate displacement does not occur from climate hazards alone, but in combination with the vulnerability and exposure of affected communities. It is difficult if not impossible to prove the

and adapting to climate change in the coming decades.[19]

Despite the lack of precise projections of the numbers of climate displaced persons, a consensus has now emerged that climate change is already and will continue to have a dramatic impact on human displacement;[20] that the majority of displacement will occur within countries – rather than across international borders,[21] and that the least developed and developing countries will be most affected. Already 97 percent of displacement due to natural disasters is occurring in developing countries.[22]

However, climate displacement is not just a challenge for the developing world, developed countries are also and will increasingly be affected. In 2014 alone around 1.8 million people were displaced by natural hazards in high-income countries.[23] Further, an October 2015 report found that based on unabated climate change, 20 million people in the United States alone would be at risk of displacement due to sea level rise.[24]

In all countries – both developed and developing – it is the poor and marginalized who suffer disproportionately from climate displacement. They are the most exposed to climate hazards – they are more likely to live in hazard prone areas and in weakly constructed houses – and have less capability to adapt to the effects of climate change, to protect themselves against displacement occurring and to respond to displacement when it does occur. Sick and wounded persons, children (particularly when orphaned or unaccompanied), female headed households,[25] people with disabilities, older persons,

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casual link between climate change and an individual's displacement. For example, where a person is displaced due to an extreme weather event such as a cyclone or flood, it is very difficult to prove that the cyclone or flood was a "climate change" related hazard, rather than a so-called "normally occurring" hazard that would have occurred irrespective of climate change. Further, where a person moves due to the slower onset effects of climate change the decision to move will often be determined by the individual's socio-economic and other circumstances just as much as by their ability to cope or adapt to the effects of climate change. In this way, climate change will often act as an amplifier of existing vulnerabilities, rather than the sole driver of displacement. This has been termed the "causation conundrum", see: Scott Leckie and Ezekiel Simperingham, *Focusing on climate-related internal displacement*, Forced Migration Review, Issue 49, May 2015.

[19] IPCC, "*Summary for Policymakers: Climate Change 2014: Impacts, Adaptation and Vulnerability." Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*", Cambridge University Press: 2014, p. 20.

[20] See IPCC, *Fifth Assessment Report, Chapter 12 Human Security, Impacts of Climate Change on Displacement, Migration, and Mobility*, p. 766.

[21] "It has long been recognized that the effects of climate change will displace people and that most of this displacement will be within national borders", Brookings-LSE Project on Internal Displacement, *Climate Change and Internal Displacement*, October 2014; see also, Scott Leckie and Ezekiel Simperingham, *Focusing on climate-related internal displacement*, Forced Migration Review, Issue 49, May 2015.

[22] Developing countries are consistently the worst affected, with almost 175 million people displaced since 2008, accounting for 95 per cent of the global total, Internal Displacement Monitoring Centre (IDMC), *Global Estimates 2013: People Displaced by Disasters*, September 2014; For an interactive, online map of where these events are occurring globally, see Displacement Solutions: World Climate Displacement Map: http://displacementsolutions.org/world-displacement-map.

[23] IDMC and NRC, Global Estimates 2015: People displaced by disasters.

[24] See: Benjamin H. Strauss, Scott Kulpa and Anders Levermannb, *Carbon choices determine US cities committed to futures below sea level*, Proceedings of the National Academy of Sciences, October 2015, http://www.pnas.org/content/early/2015/10/07/1511186112.full.pdf. Also, for example, *Sea level rise will swallow Miami, New Orleans, study finds*, 12 October 2015, available at: http://phys.org/news/2015-10-sea-swallow-miami-orleans.html.

[25] "There are well-documented gender differences in displacement from extreme events, especially when women lose their social networks or their social capital, and women are often affected by adverse mental health outcomes in situations of displacement, IPCC, Fifth Assessment Report, *Chapter 12 Human Security, Impacts of Climate Change on Displacement, Migration, and Mobility*, p. 767.

migrants and indigenous peoples are often among the most seriously affected by climate hazards and displacement.

Once displaced, vulnerability often increases. Displaced persons are at greater risk of impoverishment and discrimination and face housing, land and property (HLP) losses; livelihood insecurity; economic, social and psychological marginalization; food and water insecurity and increased morbidity and mortality through trauma and poor mental health conditions. Critically, for resolving their displacement, they face disruption or destruction of social and economic support networks.[26]

ii. What role can land use planning play in addressing climate displacement?

The scenario of hundreds of millions of vulnerable persons being displaced by the effects of climate change - increasing their risk of socio-economic deprivation and denial of basic human rights - does not need to be a foregone conclusion. Critical and urgent efforts need to be implemented now to both mitigate and adapt to climate change.[27]

As part of efforts to adapt to the effects of climate change – the prevention and resolution of climate displacement must become a more central concern.

It is important to emphasize that climate displacement rarely occurs from the impact of climate hazards alone. More often it is the exposure to climate hazards combined with other factors that weaken the resilience of the individual or community, such as poor infrastructure and weak governance, that leads to displacement.[28]

Therefore, in designing measures to prevent climate displacement from occurring, efforts must be addressed both at reducing the exposure of communities to climate hazards as well as enhancing the resilience (and decreasing the vulnerability) of communities against climate hazards. This will necessarily include a broad range of measures and tools - including in the economic, legal, social, health, cultural, educational, environmental, technological, political and institutional sectors.

The focus of this report is on the critical role that land use planning should play as part of climate change adaptation measures aimed at preventing and resolving climate displacement.

Section I of this report examines the role of land use planning in preventing climate displacement through reducing the exposure of at risk communities as well as enhancing their resilience against climate hazards. This section highlights the utility of the following measures and tools to prevent climate displacement: hazard and vulnerability risk analysis; land use zoning and controls; protective infrastructure and

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[26] See for example, Ezekiel Simperingham, *The Urgent Need for Rights-Based Solutions to Climate Displacement in Bangladesh*, Dhaka Tribune, 10 October 2015.

[27] The best scientific knowledge available makes clear the urgency of action to both mitigate global warming and adapt to its human impacts, including displacement, IPCC, Climate Change 2014: *Synthesis Report, 2015*. Note, the role of land-use planning in mitigating the effects of climate change is beyond the scope of this report.

[28] See for example, "Disaster displacement is multi-causal…Population growth, underdevelopment, weak governance, armed conflict, violence, as well as poor urban planning in rapidly expanding cities, are important factors in disaster displacement as they further weaken resilience and exacerbate the impacts of natural hazards, environmental degradation and climate change", the Nansen Initiative, *Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change*, Final Draft, p1.

ecosystem based measures; building codes and controls; measures to improve food and water security and planned relocations.

To give just two examples, appropriate planning measures might mean that land which is particularly vulnerable to sea level rise or coastal erosion would not be zoned as residential under land use zoning provisions, or housing built in areas which are vulnerable to threats of severe storms would be required to be hazard proof under building codes.

Section II of the report addresses the important role that land use planning can and should play in facilitating the resolution of climate displacement and the achievement of truly durable solutions for climate displaced persons. This section highlights the importance of the following measures and tools to resolve climate displacement: ensuring lifeline infrastructure, evacuation routes and emergency shelter; planned relocations; strengthening host communities and urban areas and strengthening housing, land and property (HLP) rights.

The report concludes with a number of remarks about the opportunity and importance of land use planning playing a more vital role in preventing and resolving climate displacement. The report notes that land use planning has much to offer, but that there are also a number of specific challenges to implementing land use planning measures and tools in the context of climate change and displacement. The report concludes with a series of recommendations for how to best implement land use planning measures, including: ensuring that rights-based laws and policies are in place; ensuring that an effective institutional structure is in place; ensuring genuine consultation and cooperation with all stakeholders; ensuring adequate support from the regional and international communities and addressing the challenges of informal settlements.

It is hoped that this report and its recommendations are considered and adopted by those individuals, communities and States across the globe that are facing and experiencing climate displacement. However this report should also be of value to those persons and States who, in the spirit of global solidarity, are considering how best to support those affected by climate displacement.

It is hoped that the recommendations in this report will be utilised by planners and other officials involved in land use policy in countries that are affected by current or future climate displacement.

SECTION I: THE ROLE OF LAND USE PLANNING IN PREVENTING CLIMATE DISPLACEMENT

This section highlights the specific land use planning measures and tools that can and should be utilized to reduce the exposure and vulnerability of communities to both sudden onset as well as slow onset events associated with climate change.

These measures and tools should not be seen in isolation, but should be seen in partnership with the tools and measures described in *Section II: The Role of Land Use Planning in Resolving Climate Displacement.*

Equally, these measures should be viewed as part of a broader and coordinated climate change adaptation (CCA) strategy. As mentioned, a variety of measures and tools will be required to effectively address climate displacement – including legal, economic, social, health, cultural, educational, environmental, technological, political and institutional measures. Any land use planning measures should be adopted in coordination with these other tools.

Further, these land use planning measures to prevent climate displacement should be implemented in partnership with disaster risk reduction (DRR) measures. This allows for land use planning measures to avoid duplication or unnecessary overlap with existing DRR measures. It also allows for the experience and lessons learned from DRR in reducing exposure to natural hazards to be shared and incorporated into any land use planning strategies. A coordinated strategy also allows DRR to learn from land-use planning strategies and principles. The coordination of land use planning with climate change adaptation and disaster risk reduction may also have the added benefit of bringing these commonly disparate areas – CCA and DRR – into closer partnership.[29]

1. Hazard and Vulnerability Risk Analysis

Land use planning measures and tools to reduce exposure and vulnerability to climate hazards should be based on a comprehensive hazard and vulnerability risk analysis. The right information and knowledge is crucial to designing and implementing effective land use planning (and other CCA and DRR) measures designed to protect against displacement. Those making policies and plans must know how exposed areas are to climate hazards, as well as how vulnerable persons living in those areas are to the effects of climate hazards.

A number of traditional methods can be used to gather information to inform a hazard and vulnerability risk analysis, including national assessments, surveys and climate models. However, newer approaches and methods should also be utilized, especially given that climate change may lead to challenges for which there is no existing experience, for example sea level rise or climate extremes that go beyond historical

[29] See for example, Michael Burger, *Towards an Integrated Approach to Disaster Risk Management and Climate Change Adaptation*, Sabin Center for Climate Change Law, 7 August 2015. Note also, "In the past, climate change and DRR specialists have operated largely in isolation from one another", John Twig, *Disaster Risk Reduction: Good Pratice Review*, 2015, p. 13.

levels.[30] For example, In Jakarta, agencies are trying to understand flood patterns by gathering information from tweets sent by those living in areas affected by floods.[31]

Up to date scientific understanding and tools are important to understand the physical processes behind hazards and how they will interact with community infrastructure and activities.[32] For example, an extensive network of monitoring technology may be required for meteorologists and hydrologists to gather data on climate hazards and to build a picture of climate change trends.[33]

Environmental impact assessments (EIAs) could also be required to take account of hazards and vulnerability, with the information gathered being utilized to inform and update the hazard and vulnerability risk analysis for a particular region or community.

It is also crucial that any hazard and vulnerability risk analysis includes local and community knowledge on climate hazards and their impacts. To achieve this a hazard and vulnerability risk analysis could, for example, utilize a participatory assessment with local communities.

Regardless of the exact procedure, a strong foundation for any hazard and vulnerability risk analysis can be built on the following three steps:

1. *Hazard Mapping*

Hazard mapping may be completed to cover all hazards or by a specific government agency focusing on specific hazards, for example, the meteorology office for flooding or the geosciences office for landslides. Hazard maps are essential for understanding what locations are subject to hazards and the risk posed by those hazards.

These maps should also contain information on the frequency of hazards. For example, in the Philippines, hazard maps define the susceptibility levels as high susceptible area (HSA), moderate susceptible area (MSA) and low susceptible area (LSA).[34]

In the absence of or complementary to hazard maps, community-based hazard mapping may also be undertaken.

2. *Vulnerability and Consequence Analysis*

A vulnerability and consequence analysis involves assessing the exposure of people and property to such hazards and their vulnerability for loss and damage.

Vulnerable communities are limited by their ability to manage or adapt to climate impacts. This may be due to their socio-economic situation, including access to education, health care, basic infrastructure, water and food security, sanitation,

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[30] Inter-Agency Task Force on Climate Change and Disaster Risk Reduction, Disaster Risk Reduction Tools and Methods for Climate Change Adaptation, 2004.
[31] Dr Aditya V Bahadur, *Seven practical steps to protect our cities from the effects of climate change*, The Guardian, 6 October 2015.
[32] UNISDR, *IATF Working Group on Climate Change and Disaster Risk Reduction, Disaster Risk Reduction Tools and Methods for Climate Change Adaptation.*
[33] *Id.*
[34] Asian Disaster Preparedness Center (ADPC) & Regional Consultative Committee on Disaster Management (RCC), RCC *Guideline 3.2: promoting use of disaster risk information in land-use planning*, 2011.

drainage and sustainable energy, or financial capacity constraints, including unemployment, poverty or extensive debt.[35]

This information can give an indication of who and what may be potentially affected by a hazard, including the risk of displacement.

3. Risk Estimation and Evaluation

The estimation of risk (based on hazards and vulnerability for a particular region) involves determining acceptable levels of risk. Conceptually, the "As Low as Reasonably Practicable Principle" is often used as a guide; high risks are generally not acceptable while negligible risks are generally acceptable.[36] But there is a certain level of risk between these two extremes that is tolerated on the basis that risks are kept as low as reasonable practicable, using a benefit and cost analysis.[37]

The possibility of the land use planning measures outlined below from the creation of evacuation routes to enforcing building codes and retrofitting, to the relocation of entire communities, should form part of this risk estimation analysis.

The knowledge gained from a hazard and vulnerability risk analysis should inform land use planning (and other CCA and DRR) decisions to protect at risk communities against displacement, as well as against the other negative effects of climate change, including water and food insecurity, livelihood insecurity and destruction of housing, land and property. This information should inform the design and creation of measures and tools that both reduce exposure to risk as well as enhance the resilience of communities. This information should also be used to assist in prioritizing vulnerable regions and communities for protection.

2. Land Use Zoning

Based on comprehensive hazard and vulnerability risk analysis, land use plans should be updated and enforced to completely or partially restrict development and human habitation in areas deemed to be at certain degrees of risk from climate hazards. Land use planning should be used to define the location of residential areas, industries, critical public facilities and services – the location of which define the exposure and vulnerability of communities to climate hazards.

Complete restrictions should only be implemented in areas of extreme risk, and after comprehensive hazard and vulnerability risk analysis and genuine consultation with affected communities. For example, in the Philippines after Typhoon Haiyan, a 40 metre "no build zone" was implemented along the entre coastline of the affected region. A serious concern was that the exclusion zone was implemented without a hazard and vulnerability analysis being undertaken and without genuine consultation with affected communities. However, even with such analysis and consultation, the creation of a blanket exclusion zone, restricting persons from returning to their former homes, lands and livelihoods, should be considered a measure of last resort.

[35] Asian Development Bank, *Urban Climate Change Resilience: A Synopsis*, 2014.
[36] *Id.*
[37] *Id.*

More often, it will be appropriate and feasible to implement partial land use zoning restrictions, in other words, keeping inappropriate land use and development out of hazard areas and allowing appropriate land use. This is especially the case for urban areas, or areas where there is a compelling need to have human habitation, or for States that have limited area feasible for human habitation, such as small island states. Partial restrictions could be implemented by, for example, creating limits on human occupation in a certain area through the creation of occupancy and density ceilings. Or through allowing certain types of land use and restricting others, for example, allowing agricultural use but not human habitation in flood zones.

In order to implement the complete or partial restriction of human habitation in certain at risk areas, a series of further measures may be required. The State may need to purchase or acquire land in hazardous regions and ensure that persons dwelling there have an alternative location to move to (see *Planned Relocations* below). Or the State may require a buy out of existing critical facilities within high risk zones, as well as ensuring their continued function in suitable alternative locations. This may also require risk sharing through tax incentives, for example, tax holidays to owners who do not develop their lands within hazard zones. Or requiring disclosure, such that owners are compelled to reveal information related to hazard on their lands, and requiring property owners and developers who are selling land in hazard prone areas to disclose the risk of hazard to the property in question.

3. Protective Infrastructure and Ecosystem Based Measures

The exposure of communities to climate hazards may also be reduced through creating and ensuring infrastructure and ecosystem-based protective measures as part of land use plans for a particular region or community.

Infrastructure requirements under land use plans could include major projects such as the construction of sea walls or river embankments to protect against storm surges, sea level rise and river and coastal erosion.

However, the protection of communities or regions could also be achieved through ecosystem-based measures. There are numerous benefits to ecosystem measures,[38] including that they provide cost-effective risk reduction, contribute to the conservation of biodiversity and can generate significant social, economic and cultural benefits. They can also build upon the traditional knowledge and practices of indigenous peoples and local communities. For example, mangrove restoration in Viet Nam at a cost of 1.1 million USD led to a saving of 7.3 million USD per year in dike maintenance costs and has provided employment for over 7,000 people.[39]

Ecosystem-based measures could include the conservation of wetlands, to absorb peak flows from floods, or the planting of protective mangroves or setback areas, to reduce the intensity of storm surges. These can and should be identified in land use plans to protect against displacement, as well as achieve other disaster risk reduction and climate change adaptation aims.

[38] See for example, UNEP, *Governments should consider the use of biodiversity and ecosystem services as strategy for climate change adaptation and disaster risk reduction*, Press Release, 21 October 2015.
[39] UNFCCC, *Technical Paper, Slow Onset Events*, 26 November 2012, FCCC/TP/2012/7.

Land use plans could also require a combination of protective infrastructure and ecosystem based measures, for example, stabilising slopes at risk of landslide, or coastal or river erosion through the creation of protective structures in combination with natural means, including covering the slope with vegetation or maintaining riparian vegetation.

4. Building Codes and Controls

The development and application of building codes and controls may also be an effective way to protect communities at risk of climate hazards. The importance and value of building codes for disaster risk reduction is highlighted in the *Sendai Framework for Disaster Risk Reduction 2015-2030.*[40]

The use of building codes and controls will necessarily depend on the context and level of risk from various hazards. However, in general, building codes can be utilised to ensure hazard proof housing and shelters, through the specification of construction materials or design standards. More specific building codes and controls could require houses to be built on stilts, or other minimum standards of elevation in flood plain or coastal areas, , eg, the lowest floor of a residential structure must be above the 100-year flood level; require flood-proofing of all houses in medium to high-risk flood areas; require minimum standards of building foundations or minimum standards of drainage around structures.

In order to implement these building code and design requirements, land use planning could be forward looking, or it could designate the retro-fitting of buildings and structures in at risk areas. In the aftermath of a natural disaster, an opportunity is often created to "build back better" or "build back safer". The post-disaster environment also often provides the political and financial context to encourage safe building codes and implement retrofitting.

The use of building codes has the added benefit of allowing development in areas at risk to hazards. This is particularly relevant in locations where demand for land is intense, for example, in urban centres, where modifying the building code is more realistic than preventing all habitation and development. In the US, UK, Japan and Australia, good building regulations that have defined design loads, that have specified construction details, combined with hazard zoning, have been shown to minimize damage and save lives.[41]

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[40] The *Sendai Framework for Disaster Risk Reduction 2015-2030: Priority 2: Strengthening disaster risk governance to manage disaster risk*, Para 27(d): To encourage the establishment of necessary mechanisms and incentives to ensure high levels of compliance with the existing safety-enhancing provisions of sectoral laws and regulations, including those addressing land use and urban planning, building codes, environmental and resource management and health and safety standards, and update them, where needed, to ensure an adequate focus on disaster risk management; and *Priority 3: Investing in disaster risk reduction for resilience*, para 30(h): To encourage the revision of existing or the development of new building codes and standards and rehabilitation and reconstruction practices at the national or local levels, as appropriate, with the aim of making them more applicable within the local context, particularly in informal and marginal human settlements, and reinforce the capacity to implement, survey and enforce such codes through an appropriate approach, with a view to fostering disaster-resistant structures.

[41] Cassidy Johnson, *Creating an enabling environment for reducing disaster risk: Recent experience of regulatory frameworks for land, planning and building in low and middle-income countries*, 2011.

However, the benefits of building code regulations are less clear in low and middle income countries or countries that are less able to apply them rigorously. Building supervision and site inspections of the building process can be marred by lack of capacity to do checks or sometimes corruption, leading to disastrous results.[42] Also, applying building codes can be extremely problematic and may increase the costs of building beyond what the poor can afford. In informal settlements, people often prefer upgrading rather than construction on a new piece of land partly because they are then less constrained by building codes and planning regulations. Building codes should be flexible enough to recognise that in some instances people are able to adapt their building methods in informal settlements to reduce the risk of climate hazards, for example, communities that have protected themselves against the high risk of annual flooding in Dhaka, Bangladesh.[43]

5. Improving Food and Water Security

Climate change is considered the greatest threat to food and water security in the 21st century,[44] potentially pushing another 600 million people into malnutrition and increase the number of people facing water scarcity by 1.8 billion.[45] Food and water insecurity are important elements of vulnerability for communities, increasing their risk of displacement in the wake of climate hazards.

In meeting their primary duty to protect populations against climate hazards, States must take a range of measures to increase food and water security. These measures should include land use planning measures and tools.

Land use planning tools to improve food and water security include undertaking a comprehensive assessment of areas with comparative advantage for food production (for example, potential irrigation areas, areas with higher soil fertility and areas with better access to infrastructure and agricultural services) and water security. This assessment should include traditional and local perspectives on agricultural production and methods as well as livestock keeping.

Based on this analysis, land use zones and plans should be updated and enforced to set aside and protect areas that help ensure food and water security. Land use zoning should reserve sufficient areas for agriculture, livestock production, fishery and homes gardens and ensure that these areas are not converted in alternative and competing commercial or other uses. In areas where agriculture is no longer feasible, it may be appropriate to zone these areas as suitable for livestock keeping or other uses that promote food security.

Equally, this analysis should identify any agricultural and other critical areas that are prone to climate hazards. Land use planning and other measures should then be implemented to protect those areas and to ensure continued food and water security, for example, through infrastructure or ecosystem based measures. Where no protection measures are feasible, the possibility of relocating the agricultural area should be considered.

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[42] *Id.*
[43] *Id.*
[44] Eva Ludi, *Climate Change, Water and Food Security, Overseas Development Institute*, Background Note, March 2009.
[45] *Id.*

An analysis of current and future hazards may also drive the development and implementation of innovative and alternative crops, including more heat, storm, rain and salt water resistant types. These can also be proscribed through land use plans and through ensuring suitable and sufficient agricultural lands.

In general, land use planning should promote and support sustainable agricultural practices that avoid soil degradation. The improvement and protection of soils is critical to supporting agricultural ecosystems in the face of climate variability and extremes. The regeneration of degraded land through improved land use management and other ecosystem interventions can have a significant impact on soil fertility and hence on crop yields.

Developing countries can and should learn and share experiences and expertise with vulnerable, developed countries, which are already taking steps to protect water security in the face of climate change.

Food and water security can also be enhanced through improving access to land and security of tenure. In view of the increasing commercial pressure on land, tenure security is an even more crucial condition for achieving food security. Enhanced tenure security may lead to farmers investing in long term measures to improve soil or begin more expensive cultivations that provide higher yields in the long term.

6. Planned Relocations

One outcome of a hazard and vulnerability risk analysis may conclude that the most effective protection measure for a particular community is the relocation of the entire community to a new region, safe from climate hazards. Planned relocations may also be considered for populations who have already been displaced, but cannot return to their former homes, either because they have been lost or destroyed, or because the risk of hazards is too high.

Such planned relocations in the context of climate hazards are already being considered and implemented – in both developing and developed countries - from Bangladesh, Panama, the Philippines[46] to Fiji,[47] The Solomon Islands,[48] the United States and elsewhere.[49]

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[46] See For example, Alice Thomas, *Resettlement in the Wake of Typhoon Haiyan in the Philippines: A Strategy to Mitigate Risk or a Risky Strategy?* Brookings, June 2015.

[47] "In Fiji…the government is proactively assessing the vulnerabilities of rural communities in anticipation of the possibility that they may need to be moved", Brookings, Georgetown University and UNHCR, *Guidance on Protecting People from Disasters and Environmental Change Through Planned Relocation*, p3.

[48] See, for example, "*Ontong Java Atoll Under Threat – DS completes two-month climate displacement monitoring mission to Ontong Java Atoll in the Solomon Islands*", available at: http://displacementsolutions.org/tag/solomon-islands.

[49] "In the US, a number of Alaskan indigenous communities have sought government support to move for over a decade because environmental changes exacerbated by the effects of climate change (e.g. loss of sea ice, coastal erosion, melting permafrost) have made it difficult to continue living there", Brookings, Georgetown University and UNHCR, *Guidance on Protecting People from Disasters and Environmental Change Through Planned Relocation*, p. 3.

As the impacts of climate change intensify and the serious limits to adaptation and adaptive capacity are realized,[50] it is expected that more and more countries will consider planned relocations as a climate change adaptation measure. It is also expected that the vast majority of planned relocations will occur within national borders. At the same time, some communities have started this process themselves outside of the formal system, this may well continue where states don't consider this option in a serious manner.

When done well, planned relocations can be an effective form of both disaster risk reduction[51] and climate change adaptation.[52]

However, it is critical to emphasise that there are serious costs associated with planned relocations. Relocation is a complex process with a strong potential to violate human rights and to leave people much worse off,[53] including from impoverishment and social fragmentation.[54]

Planned relocations should be a measure of last resort and all reasonable *in situ* alternatives and solutions should be explored first - unless communities themselves have identified planned relocation as their preferred option. [55]

In order to be successful a variety of perspectives and inputs are required, including from development, humanitarian, human rights, disaster risk reduction, environment and climate change actors and stakeholders. Critically, taking seriously the opinions and perspectives of the affected and host communities are essential to the success of any planned relocations.[56]

Financial and technical support from the international and regional communities may

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[50] Doreen Stabinsky and Juan P. Hoffmaister, *Establishing institutional arrangements on loss and damage under the UNFCCC: the Warsaw International Mechanism for Loss and Damage*, Int. J. Global Warming, Vol. 8, No. 2, 2015.

[51] "Indeed, this type of intervention [planned relocation] may be an effective measure to reduce disaster risk, as affirmed by the Sendai Framework for Disaster Risk Reduction 2015-2030", Brookings, Georgetown University and UNHCR, *Guidance on Protecting People from Disasters and Environmental Change Through Planned Relocation*, p4.

[52] "Planned relocation [in the context of climate change] may serve as an effective adaptation strategy. The Conference of Parties to the United Nations Framework Convention Climate Change, meeting in Cancún in 2010, encouraged enhanced action and international cooperation on planned relocation as one of three types of human mobility that should be considered within climate change adaptation measures. UN Framework Convention on Climate Change, 16th meeting of Conference of Parties, Cancun, 2010, article 14(f)", Brookings, Georgetown University and UNHCR, *Guidance on Protecting People from Disasters and Environmental Change Through Planned Relocation*, p 4.

[53] Brookings, Georgetown University and UNHCR, *Guidance on Protecting People from Disasters and Environmental Change Through Planned Relocation.*

[54] "Recognising that voluntary and involuntary relocation often result in the violation of human rights, impoverishment, social fragmentation and other negative consequences, and recognising the imperative to avoid such outcomes", *Preamble, Peninsula Principles in Climate Displacement within States*, 18 August 2013.

[55] Brookings, Georgetown University and UNHCR, *Guidance on Protecting People from Disasters and Environmental Change Through Planned Relocation*, p4; see also, *Principle 10.a Peninsula Principles on Climate Displacement within States*, "To enable successful preparation and planning for climate displacement, States should: a. ensure that priority consideration is given to requests from individuals, households and communities for relocation".

[56] See, for example, *Principle 10.b, Peninsula Principles on Climate Displacement within States*, "To enable successful preparation and planning for climate displacement, States should: ensure that no relocation shall take place unless individuals, households and communities (both displaced and host) provide full and informed consent for such relocation".

also be required.[57] There is also considerable guidance and practice to draw on in the context of development projects and planned relocation. However, of potential more utility is the *Peninsula Principles on Climate Displacement within States*,[58] which provide a normative and guiding framework for States and stakeholders when grappling with the question of whether or how to undertake a planned relocation in the context of climate change.[59] Also, the forthcoming guidance from UNHCR, Brookings and Georgetown University on planned relocations in the context of natural hazards and climate change will also be useful.[60]

These guidelines emphasize that planned relocations in the context of climate hazards are complex undertakings that should only be undertaken for sound reasons, and must be well-planned, well-financed and well-executed.

Land use planning should also play an important and increased role in supporting planned relocations where appropriate. In particular, land use planning can support the process of ensuring that relocation sites are available and suitable – in that they meet human rights and technical standards, are safe from current and future climate hazards and provide the best possible chance of ensuring a durable solution for the relocated community.

The planned relocation of the Choiseul provincial capital, located on Taro Island in the Solomon Islands provides a useful case study of the value of including land use planners and perspectives in the planned relocation process. In 2014, town planners from Queensland, Australia[61] were an integral part of the development of a comprehensive climate change adaptation strategy for the Choiseul provincial capital, which included a detailed plan for the relocation of the capital from Taro Island to the mainland.[62] The decision to relocate the entire provincial capital was based in part on the increasing risk of sea level rise, tsunami, storm surge and coastal erosion on Taro Island, a small coral atoll lying mostly below 2 metres above sea level.[63] The final climate change adaptation plan included a mapping of existing and future hazards and other land constraints, which informed a community driven vulnerability and risk assessment and the development of a number of adaptation options to improve community resilience – including a detailed programme of works for relocating the

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[57] "Because climate change is a global problem, States should (upon request by affected States), provide adequate and appropriate support for mitigation, adaptation, relocation and protection measures, and provide assistance to climate displaced persons", *Peninsula Principles on Climate Displacement within States*, 18 August 2015.

[58] In particular, *Principles 9-11*, *The Peninsula Principles on Climate Displacement within States*, 18 August 2013.

[59] The Peninsula Principles on Climate Displacement within States, 18 August 2013, available at: http://displacementsolutions.org/wp-content/uploads/FINAL-Peninsula-Principles-FINAL.pdf

[60] Brookings, Georgetown University and UNHCR, *Guidance on Protecting People from Disasters and Environmental Change Through Planned Relocation*, p4.

[61] Buckley Vann Town Planning Consultants: http://www.buckleyvann.com.au.

[62] Buckley Vann Town Planning Consultants, *Newsletter, Climate Change Adaptation Planning for Choiseul Bay Township, Solomon Islands*, August 2014, available at: http://www.buckleyvann.com.au/contents/uploads/files/Newsletters/BV%20Newsletter%20-%20Aug%202014.pdf

[63] Buckley Vann Town Planning Consultants, *Newsletter, Climate Change Adaptation Planning for Choiseul Bay Township, Solomon Islands*, August 2014, available at: http://www.buckleyvann.com.au/contents/uploads/files/Newsletters/BV%20Newsletter%20-%20Aug%202014.pdf

entire Taro Island community, including all housing and infrastructure to the adjacent mainland.[64]

The involvement of land use planning experts in the development and assessment of climate change adaptation options, including the detailed relocation plan, was seen as highly positive and beneficial.[65] However, even with a well-planned process, a number of clear challenges were identified for the planned relocation, including continuity of provincial and social services, continuity of employment, financial capacity of individuals and families to relocate (and to adhere to the land use planning regulations and building controls at the new site), maintenance of access and connection to the sea, and loss of family homes and assets.[66]

Despite the clear benefits of incorporating land use planning in planned relocations, there are also hurdles to overcome. Where land use plans are implemented in countries or regions with no real tradition of land use planning, or method of enforcement, it can lead to some or all of the community not following the plan, creating further financial, social and safety strains at the relocation site. Land use plans must be careful to take account of the local context and realities, and must not be overly burdensome, both in terms of costs and expertise. Where the intended community cannot adhere to the land use planning and building code requirements, support must be provided, or the existence of informal rather than planned settlements may arise at the relocation site, which then need to be addressed systematically and sensitively by the Government. A strong example of taking steps to overcome these challenges – and of regional and international cooperation – was the invitation and hosting of a team of planners from the Solomon Islands, in Australia, with the intention of "expos[ing] these planners to a fully-functioning planning system, thus enabling them to adapt and create methods to improve the planning system in Solomon Islands".[67]

[64] Dr Philip Haines, Kylie Rolley MPIA, Dr Simon Albert, Shannon McGuire MPIA, *Empowering Solomon Islands communities to improve resilience to climate change*, Queensland Planner, Journal of the Planning Profession, Autumn 2015, Volume 55, No. 1.
[65] Displacement Solutions Interview with Buckley Vann Town Planners, 2015
[66] Dr Philip Haines, Kylie Rolley MPIA, Dr Simon Albert, Shannon McGuire MPIA, *Empowering Solomon Islands communities to improve resilience to climate change*, Queensland Planner, Journal of the Planning Profession, Autumn 2015, Volume 55, No. 1.
[67] Alan McNeil MPIA, *Solomon Islands planners' four-day intensive*, Queensland Planner, Journal of the Planning Profession, Autumn 2015, Volume 55, No. 1.

SECTION II: THE ROLE OF LAND USE PLANNING IN RESOLVING CLIMATE DISPLACEMENT

It is essential for States and stakeholders to recognize that there are limits to climate change adaptation and adaptive capacity, and that climate displacement will still take place. In addition to emergency humanitarian measures to meet the immediate needs of climate displaced persons, States and other stakeholders must take additional measures to effectively resolve their displacement.

Ensuring durable solutions for climate displaced persons will require the expertise and input of a broad range of stakeholders. This section addresses specific measures and tools that can be used to resolve climate displacement through land use planning.

1. Lifeline Infrastructure, Evacuation Routes and Shelter

Land use planning can play a vital role in ensuring that lifeline infrastructure and critical facilities remains operational and functional during a climate hazard or natural disaster. Lifeline infrastructure includes water, sanitation, drainage, transport, energy, telecommunications and emergency infrastructure. Where lifeline infrastructure and facilities continue to operate effectively, persons who are displaced are less vulnerable and are able to resolve their displacement more rapidly, for example, through accessing healthcare and being able to communicate with emergency services and family. They are also able to return to their former homes and lands more rapidly where critical infrastructure and services remain functional at the point of origin.

Examples of land use planning measures to protect lifeline infrastructure include, structural improvements and technology upgrades, including the construction of hazard resistant infrastructure, the protection of water, sewer and power lines, and ensuring that critical facilities, including hospitals, shelter and evacuation locations are located out of high-risk areas and protected. As with planned relocations and zoning protection, this again may require land acquisition and buyout of key infrastructure and facilities.

Land use plans should ensure that evacuation routes exist, are accessible and remain functional during any climate hazards. Although evacuation is a form of displacement, it can also be critical to savings lives and ensuring that evacuated populations can return to their former homes and resolve their climate displacement as soon as possible.

In areas of high climate risk, land use plans should also identify and if necessary, set aside locations for temporary shelter in the events of a hazard or disaster. These could be public buildings, or designated open spaces. Well-designed temporary shelter plans, with readily available supplies, can help reduce secondary impacts such as disease and lack of water and food, and help displaced persons return or move into permanent shelter more quickly.

2. Planned Relocations

As discussed above, planned relocations are increasingly being considered and implemented by climate-affected states. This is in response to the increasing impacts of

climate change and an awareness of the serious limits to adaptation and adaptive capacity. As well as preventive relocation to protect communities against the increased risks of climate hazards, planned relocation may also be utilized to provide a durable solution for climate displaced persons. This could occur, where for example, persons have been displaced by climate hazards and are not able to return to their former homes, either due to damage or destruction of their homes and lands, or the severe risk of future hazards. For example, six years after cyclone Aila devastated Bangladesh and India, many of those displaced in South-West Bangladesh are still unable to achieve a durable solution.[68] Some have moved to the slums of Dhaka or Chittagong (where they also may not have achieved a truly durable solution).[69] However, others, trapped in a cycle of poverty and vulnerability, remain living in inadequate shelters, in vulnerable, exposed landscapes, unable to afford the cost of relocation and settlement elsewhere.[70] The planned relocation of such vulnerable persons could well be an effective resolution of their displacement, if guided by human rights law and based on best practices in this regard.[71]

Again, any planned relocations should be considered carefully and seriously. There are many examples of relocations in the context of climate hazards in Bangladesh, where the relocation has not succeeded and the people have returned to their former vulnerable lands, or moved on to the slums of Dhaka or Chittagong:

> "Although…the various relocation projects [in Bangladesh] are often based on good laws and policies -- in practice they face serious challenges in their implementation, including the improper selection of beneficiaries, the selection of inappropriate sites for relocation, a lack of basic facilities at the relocation sites, such as water and sanitation, a lack of secure tenure and a lack of access to socio-economic support, including education, healthcare, livelihood options and transport and communication infrastructure. As a result, persons provided with [state-owned] *khas* land or relocated under the village cluster projects often choose not to remain on the new land."[72]

In addition to guidance and best practice on planned relocations, land use planning should also play a critical role in supporting the planned relocation process. Land use planning can ensure that relocation sites are suitable and that they ensure adequate socio-economic and other support. For at risk countries and regions, land use plans can begin now to assess and set aside suitable land for relocation,[73] both for preventive

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[68] See, for example, IDMC, *Bangladesh: Six years after cyclone Aila, prolonged and repeated displacement continues*, Global Estimates 2015, People Displaced by Disasters.

[69] "Neither can people who relocate to live in poor conditions and without access to basic services in informal urban settlements be considered to have achieved a durable solution", IDMC, *Bangladesh: Six years after cyclone Aila, prolonged and repeated displacement continues*, Global Estimates 2015, People Displaced by Disasters.

[70] Scott Leckie, Ezekiel Simperingham and Jordan Bakker, *Bangladesh's climate displacement nightmare*, The Ecologist, 18 April 2011.

[71] See also Displacement Solutions, *Climate Displacement in Bangladesh: The Need for Urgent Housing, Land and Property Rights Solutions*, 2012; see also, more generally, the work of the *Displacement Solutions' Bangladesh HLP Initiative*: http://displacementsolutions.org/ds-initiatives/climate-change-and-displacement-initiative/bangladesh-climate-displacement.

[72] Ezekiel Simperingham, *The Critical Role of Land in Solving Climate Displacement*, The Dhaka Tribune, 17 October 2015.

[73] See *Peninsula Principles on Climate Displacement within States, Principle 11: Land Identification, Habitability and Use* a. Recognising the importance of land in the resolution of climate displacement, States should: (i) identify, acquire and reserve sufficient, suitable, habitable and appropriate public and other land to provide viable and affordable land-based solutions to climate displacement, including

relocations as well as for relocations designed to provide a durable solution.[74]

3. Strengthening Host Communities & Urban Areas

Land use planning should also play a critical role in ensuring the viability of destination areas for climate displaced persons. Ensuring that urban and other centres are able to cope with increasing population growth, as well as the increasing impacts of climate change, will be critical to ensuring that climate displaced persons are able to achieve truly durable solutions in their new places of residence, as well as to prevent further displacement. All destinations for climate displaced persons should have water and food security, livelihood security and socio-economic support ensured and in place now.

Particular attention and sensitivity should be paid to urban centres. Already most of the world lives in cities, despite taking up less than 2 percent of the Earth's surface. This number is projected to continue to increase, with already a growth rate of 187 percent in urban populations since 1970, which is twice as fast as global population growth. Of particular concern is that urban populations in developing countries have grown at 326 percent over the same period. This rapid growth has been mostly unplanned, leading to high exposure and vulnerability in cities, which will become a greater concern as the effects of climate change intensify. The need for ensuring that cities and other human settlements are safe, resilient and sustainable has now been recognised as one of the Sustainable Development Goals.[75]

The dangers of a lack of land use planning and attention to resilience of urban areas in the context of climate displacement is exemplified by Dhaka City, Bangladesh. Dhaka is already and will increasingly become a destination for the climate displaced persons of Bangladesh.[76] However, the increasing population density of Dhaka, already home to 16 million people, and the lack of effective urban planning have led to severe health, security and socio-economic challenges for large numbers of the urban poor. This is combined with Dhaka's vulnerability to the effects of climate change, including increasingly frequent and severe flooding and cyclones as well as sea level rise, with most urban areas being 6-8 metres above sea level. It is critical that land use planning and other measures are taken to ensure that Dhaka remains viable, and able to provide a potential durable solution for climate displaced persons.

It is critical that land use planning measures are implemented to ensure that cities can grow in a more sustainable way, provide adequate services to their populations, and deal with the increased pressures of population growth as well as the effects of climate change. Land use planning will need to ensure effective water and food security, strong housing, land and property rights, diversification and protection of livelihoods, energy,

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through a National Climate Land Bank; (ii) develop fair and just land acquisition and compensation processes and appropriate land allocation programmes, with priority given to those most in need; and (iii) plan for and develop relocation sites including new human settlements on land not at risk from the effects of climate change or other natural or human hazards and, in so planning, consider the safety and environmental integrity of the new site(s), and ensure that the rights of both those relocated and the communities that host them are upheld.

[74] Ezekiel Simperingham, *The Critical Role of Land in Solving Climate Displacement*, The Dhaka Tribune, 17 October 2015.

[75] Sustainable Development Goal 11: *Make Cities and Human Settlements Safe, Resilient and Sustainable*, available at: https://sustainabledevelopment.un.org/?menu=1300

[76] Displacement Solutions, *Climate Displacement in Bangladesh: The Urgent Need for Housing, Land and Property Rights Solutions*, 2012.

infrastructure and critical services. Other areas for intervention include affordable housing, slum rehabilitation, public health, water supply, sewage, and sanitation. It is vital to institutionalise good planning and building practices now.

The possibilities of incentives to settle in less vulnerable areas may also need to be put in place. These can be facilitated in part through land use planning measures, including ensuring adequate food and water security, livelihoods and socio-economic support. As with planned relocation, land use planning can begin now to set aside or otherwise ensure available, affordable and suitable land in regions close to livelihood opportunities, or other desirable locations for displaced persons.

4. Strengthening Housing, Land and Property Rights (HLP)

In order to ensure truly durable solutions for climate displaced persons, States must take steps to strengthen and ensure housing, land and property (HLP) rights for all. A lack of respect for HLP rights – including insecure tenure and poor land governance - has been shown to increase vulnerability to climate hazards and disasters.[77] Where persons have insecure HLP rights they may be reluctant to leave their homes and lands during a disaster, for fear of losing access once the hazard has subsided. [78] Equally, persons with insecure tenure may be reluctant to return to their homes following a disaster because of a perceived threats or an inability to access the land again.[79]

The poorer and marginalized members of society are often disproportionately affected and vulnerable to HLP rights violations.[80] Informal settlers and those without formal land ownership also often face difficulties in receiving support during a disaster and in achieving durable solutions once a disaster subsides. Women and children face disproportionate obstacles to restoring their housing, land and property rights.[81]

Ensuring HLP rights for persons facing and experiencing climate displacement will require States to take a variety of measures, however, effective land use planning and land governance can and should play a key role in reducing vulnerability to climate hazards and ensuring the realization of durable solutions for climate displaced persons.

Prior to displacement, States should seek to strengthen the HLP sector by addressing clear vulnerabilities. For example, States should take steps to recognize and protect a variety of land tenure forms, rather than taking a predominant or exclusive focus on freehold ownership.[82] This should occur across all regions, including rural, urban and climate vulnerable areas. Land use planning can play a key role in recognizing, mapping and strengthening various forms of tenure. Displaced persons can also be vulnerable to land grabbing, which operates as a key impediment to return and to

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[77] UN Habitat, *Land and Natural Disasters: Guidance for Practitioners*, UN Habitat, Global Land Tool Network, FAO, IASC Cluster Working Group on Early Recovery, 2010.
[78] Displacement Solutions, *Regulatory Obstacles to Rapid and Equitable Emergency and Interim Shelter Solutions after Natural Disasters*, 22 July 2011.
[79] *Id.*
[80] *Report of the Special Rapporteur on adequate housing as a component of the right to an adequate standard of living, and on the right to non-discrimination in this context*, Raquel Rolnik, UN Doc. A/HRC/16/42, 20 December 2010.
[81] UN Habitat, *Land and Natural Disasters: Guidance for Practitioners*, UN Habitat, Global Land Tool Network, FAO, IASC Cluster Working Group on Early Recovery, 2010.
[82] *Report of the Special Rapporteur on adequate housing as a component of the right to an adequate standard of living, and on the right to non-discrimination in this context*, Raquel Rolnik, UN Doc. A/HRC/16/42, 20 December 2010.

achieving durable solutions. Keeping effective records of land use and land tenure prior to displacement can act as protection against land grabbing, or can assist in resolving grabbing where it does occur.

Once displacement occurs, recognition and protection of HLP rights is essential for sustainable relief, recovery and for ensuring durable solutions for climate displaced persons. Following a climate hazard, or disaster, HLP rights should be integrated as a key component of planning, preparation and implementation of not only the humanitarian response, but also the reconstruction and development phases. Again, the poor, marginalized and otherwise vulnerable should be a priority concern, including, informal settlers, tenants, non citizens or those that have lost land records during their displacement.[83] Affected communities must be genuinely consulted and involved in the design and implementation of the response, including on matters of HLP rights.[84] States and stakeholders, including humanitarian and development agencies should ensure that all persons, regardless of forms of tenure, receive adequate humanitarian and ongoing assistance to achieve durable solutions. Often persons who do not have formal property ownership are not eligible for or receive lesser shelter or humanitarian assistance from government or NGO agencies, despite their clear needs. For example, after Hurricane Katrina in New Orleans, smaller amounts of financial assistance were provided to rebuild rental units, compared to the amounts provided to owner-occupiers.[85] Land use plans can and should take steps to ensure that all forms of tenure are recognized and strengthened, both prior to and following a disaster.

CONCLUSIONS AND RECOMMENDATIONS

Climate displacement will be one of the greatest human rights, humanitarian and development challenges of the 21st century. Much needs to be done in both developing and developed countries to prevent climate displacement from happening, and to ensure that rights based durable solutions are in place to resolve displacement where it does occur. Addressing climate displacement effectively will require legal, policy, environmental, structural and institutional measures and tools to be implemented. Land use planning can and must play a more central role in the design, implementation and coordination of these measures and tools to prevent and resolve climate displacement.

There are, however, clear challenges to implementing land use planning solutions to climate displacement. Land and land use is an arena of intensely competing interests and priorities. Deciding how to use land is demanding enough. The increasing pressures and effects of climate change will create further demands. Further, the many different and competing perspectives on the role that land can play in addressing climate change and displacement will need to be resolved. A central difficulty in resolving these differences is the uncertainty about climate hazards, particularly the long-term nature of slow onset events. Creating an effective suite of laws and policies, and a complementary institutional structure, to ensure that positive measures are taken, will require political willingness and foresight, as well as the support of the

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[83] UN Habitat, *Land and Natural Disasters: Guidance for Practitioners*, UN Habitat, Global Land Tool Network, FAO, IASC Cluster Working Group on Early Recovery, 2010.
[84] *Report of the Special Rapporteur on adequate housing as a component of the right to an adequate standard of living, and on the right to non-discrimination in this context*, Raquel Rolnik, UN Doc. A/HRC/16/42, 20 December 2010.
[85] Displacement Solutions, *Regulatory Obstacles to Rapid and Equitable Emergency and Interim Shelter Solutions after Natural Disasters*, 22 July 2011.

regional and international community. However, it is essential that solutions are not driven solely by politicians, but that all stakeholders, including affected communities themselves have their voices heard and their perspectives central to any response. In countries and regions with no history of land use planning, or methods of enforcement, there are further challenges.

However, these challenges can be overcome. As described throughout this report, there is much that land use planning can offer in protecting and resolving climate displacement – and ensuring that the scenario of hundreds of millions of vulnerable people being deprived of socio-economic opportunities and their basic human rights does not come to pass.

The following recommendations provide suggestions for how to implement land use planning measures and tools in a manner that overcomes these and other challenges.

It is hoped that this report, and these recommendations, are considered and adopted by those individuals, communities and States across the globe that are facing and experiencing climate displacement. However it is equally hoped that this report will be valuable for those persons and States who, in the spirit of global solidarity, are considering how best to support those affected by climate displacement.

1. Ensure that Rights-Based Laws and Policies are in Place

The majority of land use planning measures to prevent and resolve climate displacement will be undertaken at the national level (and often implemented at the local level). This complements the primary responsibility of States to utilize all effective legal, policy and practical measures to protect and resolve climate displacement within their territories.[86] However, it also complements the consensus that the vast majority of climate displacement will occur within States, rather than across international borders.

Land use planning laws, structures and policies to address climate displacement will necessary be context and risk specific. However, all countries, when creating policies and laws should ensure that they are focused towards ensuring the rights of climate affected populations. This recognises that in all countries, the poor, marginalized and otherwise vulnerable will be disproportionately affected. Rights-based laws and policies must include genuine consultation and engagement with affected communities, ensuring the principle of non-discrimination and adhering to all national and international human rights standards.

Where possible, these laws and policies should be strategic and forward looking, rather than reactionary. However, often in practice, it is the existence of a major natural

[86] States have the "primary obligation" to provide all necessary legal, economic, social and other forms of protection and assistance to climate displaced persons. This is based on the principle in international law that providing protection and humanitarian assistance to nationals is a primary duty and responsibility of the state. This principle has been affirmed in a number of UN General Assembly Resolutions, see: General Assembly Resolutions 45/100 Humanitarian Assistance to Victims of Natural Disasters and Similar Emergency Situations, 14 December 1990; 46/182 Strengthening of the Coordination of Humanitarian Emergency Assistance of the United Nations, 19 December 1991 and 62/92 International Cooperation on Humanitarian Assistance in the Field of Natural Disasters, from Relief to Development, 1 February 2008.

disaster that provokes the necessary political and financial support for creating effective legal and policy change.

Land use planning laws and policies also need to be wary of unintended consequences. For example, as a result of severe flooding, Buenos Aires enacted laws that established a minimum distance for the construction of housing from water sources as well as strict regulations for urban housing, including plot sizes and layout. Although effective in reducing disaster risk, and recognising that land use planning had a key role to play in addressing flood risk, after the law was passed the cost of urban land increased significantly, which meant that large sectors of the lower income population could not longer afford plots in urban areas.[87]

In order to address these unintended consequences, and in general, land use planning laws and policies to address climate displacement should be sufficiently flexible. For example, rather than blanket zoning rules that prohibit any development, or require strict adherence to plot design and locations, laws and policies should seek to allow for a variety of measures that would permit safe habitation in at risk areas, for example, creating protective infrastructure or ecosystem measures, or flexible building codes and controls. This flexibility should also draw on and ensure that local traditions and skills are able to be included in building design and the location of habitation.

2. Ensure Effective Institutional Structures and Capacities

These rights-based land use planning laws and policies must be supported by an effective institutional structure, one that ensures accountability, capacity and funding.

There are many possible forms that a national institutional structure could take, although a commonality is that almost all countries rely on local government to implement land use planning. However, commitment and willingness to implement land use changes to prevent and resolve climate displacement can be lacking at the local level, particularly where there are competing concerns, for example, basic infrastructure, unemployment, housing and education. It is essential that any institutional framework ensures commitment and accountability at the local level to implement rights-based laws and policies.

Land use is a broad and complex endeavour and a lack of accountability can also exist where responsibility for land use is devolved across a number of institutions, ministries and areas. It is critical that coordination is ensured across all institutions, ministries and departments with responsibility for land use planning. One way of achieving this could be locating responsibility for climate risk management in a central ministry or secretariat, with a high level of political authority. This structure should also support maintained engagement, continuity and commitment to addressing climate risk over the time frame of climate change and slow onset events.

The diversity of fields that land use covers also means there can be a lack of capacity at the local level to implement land use laws and policies. For example, there can be an operational and professional separation between urban and regional planning and disaster management. Local governments, especially in smaller towns or poor districts, often do not have adequate staff with the technical capacity to implement complex land

[87] Cassidy Johnson, *Creating an enabling environment for reducing disaster risk: Recent experience of regulatory frameworks for land, planning and building in low and middle-income countries*, 2011, p8.

use, climate change adaptation and disaster risk reduction laws and policies. It is essential that the capacity of all staff and officers responsible for implementing land use plans is enhanced and ensured. Again, where States or regions do not have the resources, knowledge or experience to implement effective land use plans for addressing climate displacement, a strong example of capacity building and regional and international cooperation is the hosting of a team of planners from the Solomon Islands in Australia with the intention of "expos[ing] these planners to a fully-functioning planning system, thus enabling them to adapt and create methods to improve the planning system in Solomon Islands".[88]

Ensuring adequate funding over the time frame of climate change and slow onset events is also a critical issue. It can be challenging for national and local government to allocate sufficient resources to land use planning, disaster risk reduction and climate change adaptation measures, given competing priorities as well as the annual budget cycle and regular political changes. As costs to address slow onset events may initially be large and most benefits may not be apparent for many years, it may be difficult to find the resources and motivation to implement land use planning changes. This, again highlights the need for political leadership and commitment to addressing climate displacement.

3. Ensure Genuine Consultation and Cooperation among Stakeholders

As emphasised throughout this report, the contribution of a variety of stakeholders and perspectives are required in order to effectively address the complex challenges of preventing and resolving climate displacement. This requires genuine and meaningful consultation and coordination, not just in the design of any measures and tools, but critically, in their on-going implementation.

This includes consultation and coordination among government stakeholders at the local, regional and national levels. Different regions should ensure that key information on risks and response is shared and should seek to achieve consensus on priorities for land use, disaster risk reduction and climate change adaptation. Coordination between regions is critical as climate hazards do not respect political boundaries and ineffective coordination and regional planning can result in the transfer of risk from one region to another.

Policymaking and implementation should be based on a truly multi-stakeholder approach. In addition to consultation and coordination between local, regional and national government stakeholders, this should also include professional groups (eg developers), civil society, NGOs, business groups and academics. The genuine participation of local communities is critical and enables information to be incorporated on local hazard vulnerabilities as well as local knowledge on traditional coping mechanisms for addressing hazard risk. These consultations should also include equality in participation across gender, religious, ethnic and indigenous groups.

In order to ensure that all stakeholders are genuinely consulted and a vital part of the design and implementation process, national and local platforms for consultations and coordination could be created. Local or national advisory committees could reinforce

[88] Alan McNeil MPIA, *Solomon Islands planners' four-day intensive*, Queensland Planner, Journal of the Planning Profession, Autumn 2015, Volume 55, No. 1.

these platforms on an on-going basis, with representatives from government departments, community-based organisations and civil society, experts, and those representing private interests.

4. Ensure Support from the Regional and International Community

Global solidarity is required to effectively address climate displacement. This includes ensuring that countries share information and data on climate risks, hazards and responses. It is also critical that the most affected countries, who are also often the countries with the least resources, receive sufficient financial, technical and other support to effectively address climate displacement within their territories.

The sharing of data and information on climate hazards, risks and responses – for both sudden and slow onset events - should be accompanied by the sharing of technology and hardware (and financial and capacity support) to monitor and analyse climate hazards. Many developing countries are not equipped with even basic monitoring equipment for collecting hydrological and meteorological data. This information is critical to developing responses to climate hazards, including the initial hazard and vulnerability risk analysis.

Coordinated mechanisms at the national, regional and international levels that pool necessary data, information and expertise may be an effective way to enhance technical capacity and cooperation. These mechanisms and databases could be designed to include sudden and slow onset hazards, as well as their impacts, including for example, the number of displaced persons.

5. Address the Challenges of Informal Settlements

A significant proportion of housing and settlements in many countries are informal. These informal settlements often operate outside of land use plans, including building codes and controls, and are often home to millions of people, all of whom are rights-holders. It is critical that any land use planning measures and tools to address climate displacement take into account informal settlements.

Informal settlements are often characterised by high population density, poor quality construction and often have a lack of adequate services, including water, sanitation and energy. This means that informal settlements can be vulnerable to the impacts of climate change, and a lack of adequate planning, and basic services in these settlements can be a cause of climate displacement. Investing in informal settlements, and being aware that they are not only vulnerable locations, but also a main destination for newly displaced persons, should be an important priority for states and stakeholders. As discussed above, strengthening housing, land and property rights including security of tenure for informal settlements can enable investment in infrastructure and in better quality housing, this in turn to can reduce the impact of climate hazards. Stronger social networks can also be created through longer term tenancy, which in turn can be important coping mechanisms in disaster events.[89] Other options for addressing informal settlements include sensitive regularisation and participatory upgrading. An example of good practice is the City Statute, a Federal Law of Brazil that, through a

[89] Cassidy Johnson, *Creating an enabling environment for reducing disaster risk: Recent experience of regulatory frameworks for land, planning and building in low and middle-income countries*, 2011, p8.

rights-based approach, ensured the safety of the population in informal settlements, provided social services and brought informal settlements under city administration.

There is also, as mentioned above, a need to take care not to create negative and unforeseen consequences from applying land use planning measures and tools to address climate displacement. This is especially true in countries or regions that do not have a strong history of land use planning, or the mechanisms to enforce land use plans. Land use plans and regulations, including building codes and controls, can drive the price of land up, making it unaffordable to poor and marginalised communities. It can also lead to the eviction of informal settlers. An inability to adhere to the land use plan or building codes may force people to create further informal settlements, or to move to periphery areas, which may be far from livelihoods and may themselves be vulnerable to climate hazards. States and stakeholders must avoid these complications by being sensitive to the need to take account of the local land use context and realities.