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# Towards an ILO approach to climate change adaptation

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Investment
Programme

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# Preface

The primary goal of the ILO is to contribute, with member States, to achieve full and productive employment and decent work for all, including women and young people, a goal embedded in the ILO Declaration 2008 on *Social Justice for a Fair Globalization,* [1] and which has now been widely adopted by the international community.

In order to support member States and the social partners to reach the goal, the ILO pursues a Decent Work Agenda which comprises four interrelated areas: Respect for fundamental worker's rights and international labour standards, employment promotion, social protection and social dialogue. Explanations of this integrated approach and related challenges are contained in a number of key documents: in those explaining and elaborating the concept of decent work[2], in the Employment Policy Convention, 1964 (No. 122), and in the Global Employment Agenda.

The Global Employment Agenda was developed by the ILO through tripartite consensus of its Governing Body's Employment and Social Policy Committee. Since its adoption in 2003 it has been further articulated and made more operational and today it constitutes the basic framework through which the ILO pursues the objective of placing employment at the centre of economic and social policies.[3]

The Employment Sector is fully engaged in the implementation of the Global Employment Agenda, and is doing so through a large range of technical support and capacity building activities, advisory services and policy research. As part of its research and publications programme, the Employment Sector promotes knowledge-generation around key policy issues and topics conforming to the core elements of the Global Employment Agenda and the Decent Work Agenda. The Sector's publications consist of books, monographs, working papers, employment reports and policy briefs.[4]

The *Employment Working Papers* series is designed to disseminate the main findings of research initiatives undertaken by the various departments and programmes of the Sector. The working papers are intended to encourage exchange of ideas and to stimulate debate. The views expressed are the responsibility of the author(s) and do not necessarily represent those of the ILO.

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[1] See http://www.ilo.org/public/english/bureau/dgo/download/dg_announce_en.pdf
[2] See the successive Reports of the Director-General to the International Labour Conference: *Decent work* (1999); *Reducing the decent work deficit: A global challenge* (2001); *Working out of poverty* (2003).
[3] See http://www.ilo.org/gea. And in particular: *Implementing the Global Employment Agenda: Employment strategies in support of decent work, "Vision" document*, ILO, 2006.
[4] See http://www.ilo.org/employment.

# Foreword

Climate change is a major environmental problem. But it is far more than an environmental issue: "….. analyses that take into account the full range of both impact and possible outcomes – that is, that employ the basic economics of risk – suggest that for business as usual paths of emissions climate change will reduce welfare by an amount equivalent to a reduction in consumption per head of between 5 and 20 per cent" (Stern, 2006).

While forecast exist on the economic impact of climate change, the social impact on enterprises and workers, on employment and income, on working conditions, on child labour and on many other social dimensions is considerably less well understood.

What is clear is that developing countries and the poor are the most vulnerable and hardest hit. Climate change has been called the single greatest risk for the achievement of the Millennium Development Goals, in particular that of eradicating poverty. It is also clear that climate change is already happening and that countries and individuals have no choice but to adapt. The social and economic cost of not being prepared is often much higher than that of anticipated and planned adaptation measures. Climate change itself is largely about damage and loss but adaptation could also be turned into an opportunity. With the right approaches and with coherent policies the considerable resources invested in adaptation could become opportunities for socially just and inclusive development.

But what action to take? Although the need for adaptation is widely recognized from a country point of view, it is less clear which adaptation needs to prioritize. From a development and social justice perspective – to make adaptation work for the most vulnerable – a key requirement is to put people first. This means focusing on the social dimension of climate change. It also means assessing, in the first instance, the impacts on livelihoods and the incomes of workers and enterprises. Secondly, comes the planning of adaptation measures in ways that maximize employment and development opportunities, at the same time as reducing the vulnerability of people to losing their jobs and incomes. Such thinking calls for the full integration of the social and employment dimensions into our plans for climate change adaptation.

The present publication explores the social and labour market dimensions of adaptation, in order to help policy makers and planners develop a people-centred and holistic approach. It also presents the ILO's contributions to socially inclusive adaptation, to creating opportunities for the labour market and enterprises, and to protecting the most vulnerable and their livelihoods. It is an initial effort to discuss the significance of the Decent Work Agenda for climate change adaptation, the ILO's current contribution and needs for further development.

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# Acknowledgements

This Paper was developed as the result of a close working relationship between the Green Jobs Programme and the Employment-Intensive Investment Programme (EIIP) of the ILO and was based on interviews with more than thirty people from all sectors of the ILO in the Headquarters, as well as in several field offices.

The authors would like to acknowledge and thank the many peer reviewers – including, Emma Allen, Kristine Alsvik, Pavan Baichoo, Christoph Ernst, Christine Hofmann, Vincent Jugault, Tsuyoshi Kawakami, Karin Lundgren, Lene Olsen, Patricia Richter, Anabella Rosemberg, Ana Sanchez, Yuka Ujita, Kees Van der Ree – and would also like to thank all those who participated in the interviews and in the various validation workshops for their valuable input and feedback, which helped to improve the Paper greatly.

## Executive summary

This paper explores the implications of climate change, its impacts on the world of work and the need for the work of the International Labour Office (ILO) to adapt to it. It takes stock of the relevant ongoing work and identifies the needs for further development.

Climate change is already occurring and is having increasingly large impacts on enterprises and workers, and on economic and social development. In the longer-term, the increase in average temperatures, the alteration of rainfall patterns and rises in sea level will be the most significant effects. In the short-to-medium term, the impacts are mostly caused by erratic weather patterns and extreme events such as storms, floods and droughts. In most regions these impacts on the world of work are negative, disrupting businesses, destroying workplaces and undermining income opportunities. In poor countries and communities the impacts on income generation, employment and social security can be particularly devastating. Those who have done least to cause the problem stand to lose the most.

To prevent unmanageable and potentially uncontrollable climate changes, the causes of such change needs to be tackled and measures to reduce further greenhouse gas emissions are needed urgently. In parallel, countries, communities and enterprises have to adapt to the climate change that is already underway as a result of emissions since the industrial revolution, in order to try to prevent losses and exposure.

The strong impacts of climate change on enterprises and workers, labour markets, incomes, social protection and poverty mean that the mitigation of, and adaptation to, climate change are highly relevant to the mandate and work of the ILO. This is in line with the ILO Constitution and International Labour Standards, and has been confirmed by the ILO Governing Body and the International Labour Conference.

The United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC) have produced authoritative definitions of adaptation. The IPCC has also concluded, in its 4th Assessment Report, that adaptation is intricately linked to sustainable development. Based on these definitions and the link to sustainable development the ILO interprets its role in climate change adaptation as: “Reducing vulnerability of workers, enterprises and governments to the effects of climate change and enhancing capacity at individual and society level to respond to, prepare for and adapt to climate change in ways which enhance development and social inclusion". This emphasizes the view that reducing vulnerability must play a central role in adaptation efforts and also that the large investments needed to adapt to climate change should be seized as an opportunity to build a more sustainable society, rather than as defensive expenditure designed to reduce losses.

The ILO has a history of contributing to sustainable development by linking the social, economic and environmental dimensions. Many ILO programmes are relevant to climate change adaptation. Some of these of have a long track record, whereas others are more recent or have yet to be integrated into a climate change context. The Employment-Intensive Investment Programme (EIIP), for example, has more than 30 years of experience working with many of the development partners who are actively involved in adaptation efforts.

Relevant ILO programmes and approaches include:

•Social dialogue: Participation and voice are critical to the adequate coverage of the diverse social impacts and needs of different groups in adaption strategies. Social dialogue is fundamental to everything the ILO does and the organization has extensive experience in this. To date, however, ILO constituents have rarely participated in the formulation of National Adaptation Plans and the plans hardly ever address the employment and income dimensions. One positive exception is the NAP for Lesotho, which prioritizes the protection of the livelihoods of the most vulnerable.

•Employment-intensive disaster risk reduction: Climate-related disasters are predictable, affecting the same areas and groups again and again. Preparedness and pre-disaster planning is, therefore, essential. This includes adequate information about the patterns of employment and income generation. The example of the diagnosis of damage after the severe hurricane Sidr, in Bangladesh, using a methodology jointly developed by FAO and ILO demonstrates how essential the understanding of labour market impacts is for the design of effective measures for recovery.

•Displacement and migration: There is increasing evidence of climate change becoming an additional driver of migration, both internal and across borders. The latter is likely to become more prominent as an adaptation option and ILO Conventions offer guidelines for the migration process.

•Social security and social protection: Both can play an obvious and powerful role in reducing vulnerability, enhancing adaptive capacity and absorbing the residual impact of climate change not buffered by adaption measures. Social security and protection systems are not, however, automatically responsive to climate change and may have to adjust the functioning and funding mechanisms. The application of the relevant ILO Conventions and the efforts to extend coverage through a global social protection floor will make a significant contribution to adaptation.

•Micro-finance and micro-insurance: In the absence of – or perhaps as a complement to – social security, access to financial services, including savings, insurance, emergency loans and money transfer services is especially important for vulnerable populations. The ILO, through its "Microinsurance Innovation Facility", is currently testing approaches in countries identified as vulnerable to climate change such as Ethiopia, India, Kenya and Ghana. Challenges include the relatively high cost and the systemic risk to providers.

•Infrastructure investments: Infrastructure is likely to be a key component of adaptation strategies in most countries and many of the NAPAs developed so far emphasize investment in this area. Since the mid-1970s, the ILO has been evaluating the actual or potential socio-economic impact of public investment budgets, programmes and projects on employment creation and income. This is a very valuable tool for adaptation planning. Numerous projects have been implemented using labour and local resource-based methods, including one to prevent natural disasters by environmental protection and employment creation in Haiti. Offering employment and income to disadvantaged local groups, the labour-based approach promotes social inclusion.

•Local markets and enterprise development: Adaptation needs and opportunities are very context-specific and local. Economic diversification away from activity exposed to climate risks is essential for adaption. The ILO has extensive experience in local economic development (LED) and enterprise promotion, which can embed adaptation into broader socio-economic development strategies.

•New sectors, occupations and green jobs: Adaptation can and should bring about new opportunities. Among the options for economic diversification are green jobs and green enterprises promoting adaptation technologies and services, which should be borne

in mind when developing active labour market policies for countries and areas affected by climate change.

•Skills: Skills development has great potential to reduce vulnerability and effective adaptation will require a host of new skills. Skills policies and development will be most effective if they are anticipatory. ILO research on "Skills for Green Jobs" in 21 countries has shown how skills requirements are changing because climate change has become one of the drivers of skills needs. The ILO can support countries with skills needs assessments and through the formulation and implementation of policies.

•Standards and conditions of work: The structural changes brought on by climate change will also impact on labour standards and working conditions. Especially in sectors that are vulnerable to climate change such as agriculture, fisheries and tourism, the risk of deteriorating rights is significant as these sectors are often already facing significant challenges in achieving the implementation of decent standards and conditions of work. The ILO and its constituents will have to devise strategies to achieve adherence to international labour standards as a tool for reducing vulnerability.

The ILO promotes activities related to climate change adaptation mainly through its Green Jobs Programme, with the support of the various technical units engaging in this area of work. This includes active participation in the UN system-wide effort "Delivering as one on climate change". The UN-issued paper on adaptation, launched in Copenhagen in 2009, integrates most of the components set out above into a broad conceptual framework for adaptation.

The future development of the ILO's approach and programme on adaption will include the development of a comprehensive and long-term ILO strategy for climate change adaptation, integrating and making use of synergies between relevant areas of work and expertise. Three clusters can serve as a basis for this integration, namely: "Local resource-based infrastructure, Social Protection, Income and Local Development", "Re-skilling, Social Protection and Active Labour Market Policies" and "Disaster Risk Reduction and Access to a Range of Financial Services". Priority areas for the ILO strategy should include:

- Assessing the impacts of climate change and adaptation measures on the world of work.
- Protecting and restoring existing employment and livelihoods.
- Ensuring access to social protection.
- Maximizing the employment creation benefits of adaptation measures through local resource-based methods.
- Ensuring that decision-making in adaptation is fair and participative.
- Integrating the Decent Work Agenda (DWA) into adaptation responses.

The strategy should also identify the medium- and long-term implications of climate change in each region and the type of collaboration required for the ILO to have greater impact in its adaptation approaches. Finally, a number of knowledge gaps and additional areas of work were identified, which the ILO needs to address more effectively. The most important of these are:

a. Articulating how the Decent Work Agenda will enhance the equity and effectiveness of adaptation measures.

b. Deciding which additional tools need to be developed, which capacity building is needed and made available to constituents to enable the mainstreaming of adaptation into the work of the ILO.

c. Developing methods and approaches to enable both qualitative and quantitative assessments of climate change on the world of work.

d. Articulating the role of social protection in adaptation and mapping different social protection approaches and instruments that can form part of adaptation plans and strategies in different contexts.

e. Providing further research on the implications of climate change on international migration patterns and amending of existing tools and approaches.

f. Identifying and better documenting cases in which the labour dimension has been successfully considered when designing and implementing adaptation to climate change policies.

# Contents

## List of abbreviations and acronyms

| | |
|---|---|
| CARICOM | Caribbean Community |
| CEB | (United Nations) Chief Executive Board |
| COP | Conference of Parties |
| DWA | Decent Work Agenda |
| EACC | Economics of Adaptation to Climate Change |
| EIIP | Employment Intensive Investment Programme |
| GHG | Greenhouse Gases |
| HDR | Human Development Report |
| ILO | International Labour Organization |
| IOE | International Organization of Employers |
| IOM | International Organization for Migration |
| IPCC | Intergovernmental Panel on Climate Change |
| ITUC | International Trade Union Confederation |
| LDC | Least Developed Countries |
| LED | Local Economic Development |
| NAP | National Adaptation Plans |
| NAPA | National Adaptation Programme of Action |
| PEP | Public Employment Programme |
| PRS | Poverty Reduction Strategies |
| PSNP | Productive Safety Net Programme |
| SAM/DySAM | Static or dynamic Social Accounting Matrices |
| TREE | Training for Rural Economic Empowerment |
| UNDAF | United Nations Development Assistance Framework |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environmental Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| WFP | World Food Programme |
| WHO | World Health Organization |

## Tables

# 1.Introduction

## 1.1 Climate change adaptation in context

Climate change is increasingly recognized as one of the key challenges for the 21st Century. How climate change unfolds and how the world responds to this challenge will decide the major changes and will have profound implications for people around the world. Understanding the dynamics, risks and opportunities that climate change brings and how to respond to these is, in many ways, a new challenge facing ILO's tripartite constituents.

The world is, of course, already changing quickly, and at an accelerating rate, causing transformations and transitions in many systems and institutions. The world of work has not been immune to these changes—which include globalization, growing populations, increasing inequality and environmental limitations—and is trying to cope with and respond to many of the challenges that are arising from these profound changes. This has been an important focus of the ILO and its constituents. Globalization, rapid technological advances and the shifts in global demographics have all been important drivers for change in the world of work. Climate change is also becoming an increasingly important driver for change and will impact not only the world of work but also the other drivers for change. How climate change will interact with these drivers and the world of work is still uncertain and will depend on its degree or the mitigation action that will be taken. We do, however, already know that it will entail job destruction and job creation, decreased productivity in some sectors and locations, as well as increased migration flows. It also appears certain that we are heading for a period of increased unpredictability, with new risks and new opportunities. Like all other organizations and institutions, the ILO is considering how it can support its constituents as they respond to these new risks and opportunities.

Responses to climate change generally fall into two categories: mitigation and adaptation. Mitigation includes responses designed to address the causes of climate change, i.e. reducing the concentration of greenhouse gases (GHG) in the atmosphere; adaptation deals with the effects of climate change on nature and society. This paper focuses on climate change adaptation, although it does recognize the critical importance of mitigation and that the extent of adaptation required will be determined by the reduction in the emission of GHG through mitigation efforts.

However, while there are some interventions such as reforestation that can address both adaptation and mitigation, in general, adaptation measures are very different from those mitigation measures.

The United Nations Framework Convention on Climate Change (UNFCCC), the treaty agreed upon by UN members, has coined definitions for both mitigation and adaptation. Mitigation has been defined as: "a human intervention to reduce the sources or

enhance the sinks of greenhouse gasses." [5] Mitigation remains a central component of the UNFCCC's work as it is generally recognized that without reducing greenhouse gas emissions, the effects of climate change will become so severe that adaptation measures alone will not be able to cope.

There are, however, various definitions of adaptation used by different organizations and agencies. The UNFCCC has defined adaptation as: "Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities." [6] This definition differs from the Intergovernmental Panel on Climate Change (IPCC) definition, which defines adaptation as: "Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects" and explicitly recognizes the reduction of vulnerability as central to adaptation. The IPCC has also identified different categories of adaptation, e.g. anticipatory and reactive, private and public, and autonomous and planned. [7] Building on the UNFCCC and IPCC definitions, the ILO has interpreted its work in Adaptation as: "Reducing vulnerability of workers, enterprises and governments to the effect of climate change and enhance capacity at individual and society level to adapt, respond to and prepare for climate change," [8] emphasizing the view that reducing vulnerability must play a central role in adaptation efforts.

This paper will introduce the ILO's work on adaptation within the context of international developments, most notably the publication of the IPCC's "Climate Change 2007, The Fourth Assessment Report" and, more recently, the publication of the section of the Cancun Agreement that deals with adaptation, in particular the so-called "Cancun Adaptation Framework" agreed upon at the 16th Conference of Parties in Cancun Mexico, in December 2010. The IPCC's Fourth Assessment report actually forms the basis for virtually all projections of climate change and impacts. Several of its conclusions predict serious impacts, including some already in the short- to medium-term on a number of vulnerable regions and sectors. Two of its conclusions are particularly relevant and worth highlighting:

"Adaptation will be necessary to address impacts resulting from the warming which is already unavoidable due to past emissions," and

"A wide array of adaptation options is available, but more extensive adaptation than is currently occurring is required to reduce vulnerability to future climate change. There are barriers, limits and costs, but these are not fully understood." [9]

The need for adaptation and the challenges of implementing more extensive adaptation in essence form the basis for the Cancun Adaptation Framework, the objective of which is "...enhancing action on adaptation, including through international cooperation and coherent consideration of matters relating to adaptation under the Convention." [10] How

[5] Accessed on http://unfccc.int/essential_background/glossary/items/3666.php
[6] Accessed on: http://unfccc.int/essential_background/glossary/items/3666.php
[7] http://www.ipcc.ch/pdf/glossary/ar4-wg3.pdf
[8] As agreed to by the Adaptation Cluster of the ILO Green Jobs Programme, at the 2nd ILO Knowledge Sharing and Planning Workshop, 28-30 September 2010, Turin, Italy.
[9] IPCC 2007.
[10] UNFCC 2011.

the ILO should respond to these conclusions and call for action is what this paper aims to explore. [11]

## 1.2 Examples of how climate change and adaptation affect the world of work

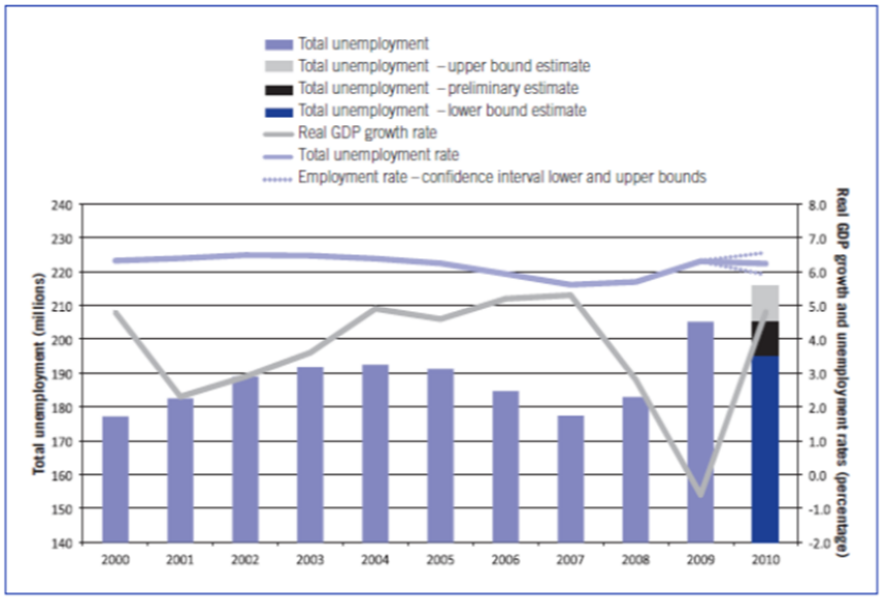
There are many ways in which climate change and adaptation will affect the world of work, and this section provides some examples of these.

One way is to see climate change as an external shock and to compare its impacts with those of past economic crises. The comparison might be justified as global real GDP decreased by around 5 per cent from 2007 (5.2 %) to 2009 (-0.6%) while impacts of climate change are estimated to be in the range of a loss of 4–20 per cent of global GDP. [12] Macro-economic indicators such as gross fixed investment contracted sharply in 2009, falling by nearly 10 per cent. Global trade dropped by nearly 12 per cent. The number of unemployed increased by more than 22 million in 2009 alone, with little recovery, and a global unemployment rate of 6.2 per cent in 2010 compares with 5.6 per cent in 2007. Impacts of climate change on vulnerable employment and working poverty, youth and women and child labour, wage losses and working conditions might be even worse in a climate change scenario, which hits the most vulnerable even harder because of their exposure and least adaptive capacity. Such a scenario might be triggered by slow-onset events and ever-increasing droughts, irregular rainfall, floods, sea level rise, melting glaciers, water scarcity and induced conflicts, as well as extreme climate events and disasters such as the increased frequency of hurricanes. The lack of insurance on the Mexican coast and Florida is just one example of how climate change could have increasing impacts on the economic and financial system in the future.

**Figure 1: Global unemployment trends, 2000-10**

[11] On 21 February 2011, the ILO responded to the request in the Cancun Adaptation Framework to provide inputs on the work plan of the Adaptation Committee that will be established under this framework. These inputs emphasized the importance of considering the employment impacts of climate change and adaptation measures. The inputs also suggested an increased engagement and role for the ILO and its constituents in climate change adaptation, and one of the objectives of this paper is to provide inputs on how this role can be articulated and realized.

[12] Stern report 2007.




* 2010 are preliminary estimates.

Source: ILO, *Trends econometric models*, October 2010 (see Annex 4).

Changes in the climate can also have a direct impact on the productivity of a sector. Agriculture is a case in point. In many regions, increased temperature and variability in rainfall (more droughts and more intense rain) require a shift in planning and will have negative impacts on productivity and employment (see Box 1), in addition to possibly increasing migration and incidences of child labour, and significantly affecting levels of food security, which often affect the most vulnerable. Some additional examples of vulnerability of the agricultural sector are also discussed elsewhere in the paper, providing examples of regions where agriculture will be impacted by various climate change impacts simultaneously.

**Box 1: Effects of climate change in employment and incomes in the agriculture sector**

Ethiopia: Ethiopia's GDP is highly dependent on natural capital, and notably rainfall and soil, due to its high dependence on rain-fed agriculture. Agriculture, in which 2.5 per cent of the land is irrigated, accounts for 46 per cent of GDP and 60 per cent of export earnings while employing 80 per cent of the population. In 2003, when Ethiopia was hit by droughts, GDP decreased by 3.5 per cent while the 2004-2010 average growth was 11 per cent. While in 2002, around 7 million people (10% of the population) were in need of food aid due to lack of farm productivity; the number doubled to 14 million (20% of population) in 2003, and decreased again to 7 million in 2004, when weather conditions became normal again. One might interpret this as 7 million people with incomes at risk. It is estimated that in the worst case scenario, climate change in 25 years' time could reduce GDP by 50 per cent.

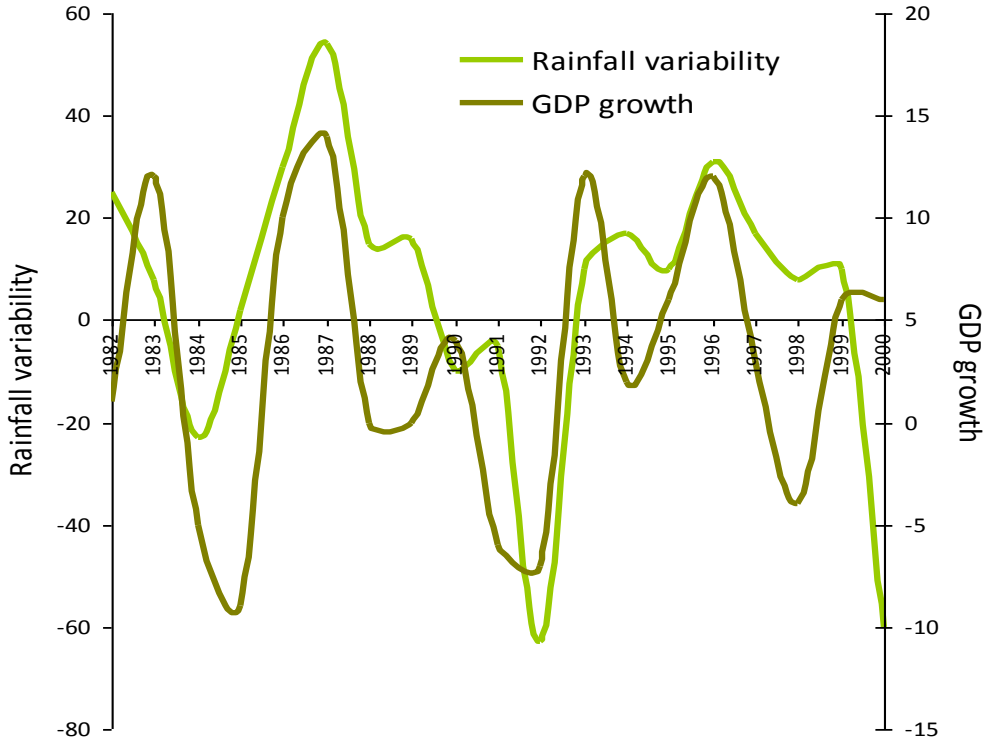
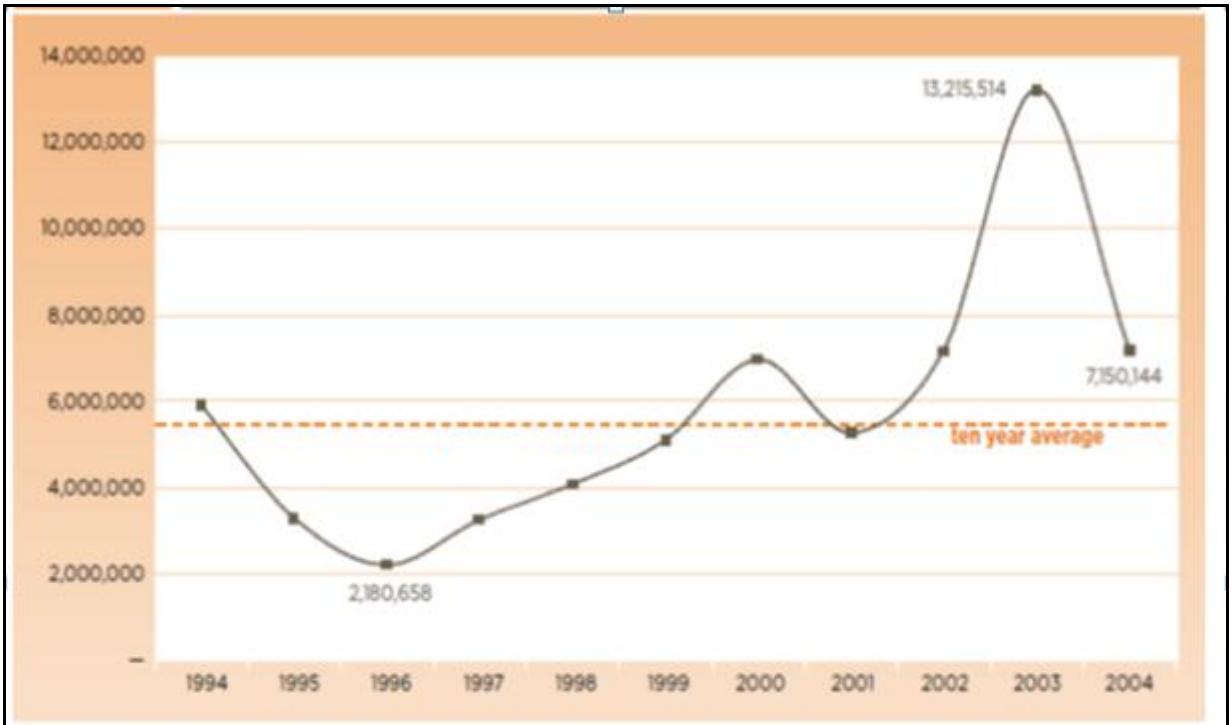


**Figure 2: Population in Need of Food Aid, by Year (1994-2004)**




Source: DPPA data. In: World Bank. *Project Appraisal Document for Phase One of the Productive Safety Net Program*. Washington, D.C.: World Bank, 2004.

Uganda: The effects of increased temperature could lead to massive unemployment and could destroy an entire industry, namely coffee production. An increase of 2°C would make most areas of Uganda unsuitable for coffee production. Given the fact that coffee is a key exporting good in Uganda providing massive employment, climate change adaptation is of high relevance to workers, employers and governmental institutions.

Asia About 50 per cent of the income of rural households is directly related to agriculture production, while the rest comes from waged jobs in the same sector. Adverse effects of climate change are likely to affect both sources of income of these households. Agriculture in Latin America and the Caribbean still accounts for 17 per cent of the global employment share.

Source: ILO/UNEP, 2008

Among the other threats posed by changes in climate to the world of work are the increased risks associated with extreme weather events. Businesses may, for instance, choose to abandon areas that are more vulnerable to these extreme weather events, in order to reduce their own business risk (see Box 2). This out migration does not only have direct local impacts through the job losses caused by the company leaving the areas but will also ripple through the local economy and lead to reduced local demand and all the social problems associated with higher unemployment.

**Box 2: Business reaction to climate change effects (case study by Pew Center, 2008)**

The case study on Entergy illustrates how one business has reacted to extreme events not only by adjusting in the short-term but also by incorporating climate change into longer-term planning.

Entergy Corporation is an integrated energy company engaged primarily in electric power production and retail distribution operations. Entergy owns and operates power plants with approximately 30,000 megawatts of electric generating capacity and is the second-largest nuclear generator in the United States. Entergy delivers electricity to 2.6 million utility customers in the USA. It has annual revenues of more than $10 billion and approximately 14,500 employees.

Entergy had to face significant infrastructure damages ($2 billion in losses) due to Hurricanes Katrina and Rita and the forced relocation of several offices away from New Orleans, with an obvious negative impact on the workers in the New Orleans' offices, and job creation in those other places to where the offices were relocated.

Entergy made decisions about where to locate these important business centres, based in part on information on the climate-related risks in different geographic regions within the service area, and in order to locate centres and buildings in different parts of the service area. In the short-term, Entergy recognizes that unchecked climate change poses potential long-term risks to the economic viability of Entergy's franchise and asset base, both of which are located in an area that is vulnerable to flooding and hurricanes.

Source: Pew Center, 2008.

In some sectors, like fisheries, the impacts of climate change are still difficult to predict, especially at the local level. However, it is expected that there will be changes in many areas due to fish stock migrating and the collapse of some species that are more vulnerable to changes in temperatures, a situation often with associated increases in other stocks. Even these changes can have profound economic and social impacts as the following example of the collapse of the cod fisheries in Newfoundland illustrates. [13]

[13] This example is included mainly to illustrate the transmission channels and range of impacts that climate change can have, and is not meant to attribute the collapse of the cod fisheries in Newfoundland to climate change

**Box 3: Impacts of collapse of cod fisheries in Newfoundland, Canada**

As a case in point, consider what happened to the fisheries in Newfoundland after the collapse of the Northern cod in the early 1990's. A contributing factor to this collapse was the cooling off of the water around Newfoundland at the time. This fishery was both large and valuable, and its disappearance caused a major disruption to the economy and culture of Newfoundland. However, the abundance of crabs and shrimps increased in the wake of the collapse of the cod, probably due to less predation from cod on these species or their larvae. After a few years, the value of the fish catches (including crabs and shrimps) was higher than ever before. However, the impacts on Newfoundland were serious; the benefits of shrimp and crab fisheries were distributed among a much smaller segment of the population than were those of the cod fishery; the cod fishery had been fundamental to the culture of Newfoundland; and there were substantial costs needed in helping thousands of fishers and processing workers make the transition to other industries.

Source: OECD 2011.

Tourism is also a sector that will be affected by climate change in various ways. Rising temperatures will affect areas relying on winter tourism due, for instance, to less snow. Other areas that are currently popular might become too hot in summer or, to cite another example, the river flow in the Nile is foreseen to decrease by some 75 per cent by 2100 (UNEP, 2006), which will certainly result in fewer tourists in the affected areas. Furthermore, regions that depend on specific natural resources such as coral reefs or beaches for attracting tourist may also be impacted in additional ways, as the example in box 4 illustrates.

**Box 4: Vulnerability to climate change of the tourism sector in Tobago**

Tourism in Tobago, an island in the Caribbean, is vulnerable to climate change through various climate change effects and their knock-on effects:

**Sea level rise and storm surges**. Climate models predict that climate change will cause an increase in both average sea levels and the size of waves in stormy weather in the Caribbean. Evidence of coastal erosion and beach loss is already seen along the coastline of Tobago and other islands in the Caribbean. A recent study[14] assessing sea level rise, storm surge and erosion impacts in the Caribbean Community (CARICOM) shows major potential impacts on tourism. These include damage to key infrastructure such as hotels, sea ports and airports that lie close to the coast. Sea level rise or storm surges could also submerge or erode the beaches that are a major natural asset for tourism and are central to perceptions and the experience of a classic Caribbean holiday.

**Warmer sea temperatures**. Tobago's coral reefs are a major attraction for visiting tourists, supporting world class snorkelling and scuba diving. Reefs also protect Tobago's beaches from erosion by reducing the strength of waves breaking on the island's coastline. Warmer seas are thought to be a significant factor in the incidence of coral 'bleaching'. Coral bleaching occurs when environmental factors—including warmer sea temperatures—adversely affect the algae that are an integral part of the coral, giving it its colour and allowing it to grow. In 2005, a major bleaching event affected the whole of the Caribbean. A subsequent survey of Tobago's reefs found that two thirds of the coral was bleached. Bleaching makes reefs less attractive to tourists because of their loss of colour. It also threatens their long-term viability as reefs are eroded more quickly than the coral is replenished.

Knock-on effects. The impact of climate change on one system often has knock-on effects on related systems that can be very difficult to estimate, particularly for natural systems and the ecosystem services they provide. For example, damage to coral reefs reduces their productivity and attractiveness, as well as their ability to sustain biodiversity, which, in turn, affects the size and numbers of economically valuable game fish further up the food

[14] Simpson, M. C. et al. 2010. Quantification and Magnitude of Losses and Damages Resulting from the Impacts of Climate Change: Modelling the Transformational Impacts and Costs of Sea Level Rise in the Caribbean. United Nations Development Programme (UNDP), Barbados.

chain, the resilience of the reef and interest from dive and snorkel visitors. This reduces the quality and value of tourist fishing and diving trips finally impacting employment in the sector, although the scale of this effect and the time it will take to be felt are uncertain.

A basket of goods. Tobago's tourism "product" is not a single good but rather a basket of related goods that are consumed in a bundle. So, for example, the value of natural assets such as beaches, reefs and the forest reserve is realized in the economy through complementary goods such as hotel rooms, diving trips, restaurants and tour guides, on which a large part of employment depends. And the value of any one tourist activity, such as sitting on the beach, is enhanced by the easy access to other activities during a holiday. The complementary and integrated nature of tourism products again makes separating, assessing and valuing the impact of climate change highly challenging. The difficulties in evaluating these impacts do not, however, make them any less real.

Source: IIED 2011.

## 1.3 The ILO's mandate and climate change adaptation

The ILO has been, and is currently, engaged in activities and projects that specifically support climate change adaptation. As will be explored in more detail in this paper, many of the existing activities of the ILO are already either contributing to climate change adaptation or are relevant to further enhancing adaptation efforts. Thereby it is generally recognized that while climate change will have increasingly important impacts on—and implications for—the world of work, notably in developing countries and the poor, the ILO needs to play a more proactive role.

There are a number of entry points for climate change adaptation under the responsibilities and obligations of the ILO.

**1.** Firstly, climate change has a number of implications that relate directly to the core social justice principles and objectives of the ILO as defined in its Constitution (1919), in the Philadelphia Declaration (1944), in the Fundamental Principles and Rights at Work (1998) and, more recently, in the Declaration on Social Justice for a Fair Globalization (2008). The ILO's Constitution states: *"universal and lasting peace can be established only if it is based upon social justice"*. Promoting social justice is, in many ways, the *raison d'être* of the ILO and this makes international issues that have important implications for social justice, such as climate change, of concern to the ILO. In the context of adaptation to climate change, this mandate should be interpreted as the means by which the ILO can reduce the vulnerability of workers, communities, enterprises and governments to the effects of climate change.

The effects of climate change and how societies adapt to them are raising important social justice questions about how the burdens of climate change impacts and adaptation efforts are to be shared. How these dilemmas in the world of work can be approached and resolved could be seen as falling within the mandate of the ILO and the ILO is using the concept of a "Just Transition" as part of its response (ILO 2011). In its International Labour Conference 2007, a common understanding on "Just Transition" was reached.[15]

The International Trade Union Confederation (ITUC) has defined "Just Transition" as: *"a tool the trade union movement shares with the international community, aimed at*

[15] "Decent work for sustainable development" ILC 96/2007 Report I (A) (*http://www.ilo.org/public/english/standards/relm/ilc/ilc96/pdf/rep-i-a.pdf*)

*smoothing the shift towards a more sustainable society and providing hope for the capacity of a green economy to sustain decent jobs and livelihoods for all."*[16]

Rosemberg (2010) has built on this definition and has proposed that a "Just Transition" can be understood as: "*the conceptual framework in which the labour movement captures the complexities of the transition towards a low-carbon and climate-resilient economy, highlighting public policy needs and aiming to maximize benefits and minimize hardships for workers and their communities in this transformation."*[17] Furthermore, Rosemberg indentifies six elements that should form part of a policy framework that would support "Just Transition", namely:

- Sound investments in low-emission and labour-intensive technologies and sectors.
- Research and early assessment of social and employment impacts.
- Social dialogue and democratic consultation of social partners and stakeholders.
- Training and skills development.
- Social Protection.

Local analysis and economic diversification plans.

**2.** Another entry point is to view climate change as a cause of structural change in the economy. As committed to in the Employment Policy Convention 122 (1964), constituents should undertake general and selective measures to address "employment problems attributable to structural change".

Economies in the 21st century already find themselves in a transition period of structural transformation and climate change will become an increasingly important driver for further change. Employment policies will need to be adjusted to cope with these changes and the ILO may need to accompany workers and employers in this transition period of structural change. Furthermore, labour market vulnerabilities need to be addressed, in order to reduce the negative impacts of these changes; at the same time, employment opportunities need to be enhanced, in order to capitalize on new emerging markets brought into being by climate change and adaptation efforts.

**3.** The Social Security (Minimum Standards) Convention 1952 (No. 102) is also relevant in this regard. It provides guidelines on how Member States can establish social security measures in a number of branches such as basic income in cases of unemployment, illness, injury, old age, invalidity and pregnancy. For many, the consequences of the climate change transition will include disruption of employment and even unemployment; as such, in order to facilitate the required measures and also make them "just", certain social security measures such as those called for by various ILO Conventions must be respected. In the case of unemployment, Convention No. 102 can be used as guideline to secure unemployment benefits. It provides for protection when people who are capable and available for work are not able to obtain suitable employment (Olsen 2010).

**4.** A fourth entry point involves linkages between climate change and the Decent Work Agenda. These have already been captured in the discussion document for the Governing Body entitled "Decent Work for Sustainable Development: The challenge of climate

[16] Cited in Rosemberg 2010.

[17] From "Building a Just Transition: The linkages between climate change and employment", Anabella Rosemberg, ITUC, in *Climate change and labour: The need for a "just transition"*. International Journal of Labour Research, 2010, Vol. 2, Issue 2, p. 141.

change" in November 2007. [18] It highlights the inter-relationship between climate change and the Decent Work Agenda, and, with regards to adaptation, the most important issues highlighted are

- The threat climate change poses to economic and food security in the Millennium Development Goals (MDG), especially MDG 1, agricultural livelihoods and other vulnerable sectors, in particular tourism and health.
- The risks of increased pressures on social security systems, and if these are not able to cope, the risks of increased migration flows and political instability.
- Investments in adaptation will offer opportunities for employment but at the same time adaptation may require relocations of settlement and industries.
- The effects on employment hardly feature in current debates on climate change adaptation.
- The significant potential synergies between climate change adaptation efforts and sustainable development, and the importance of these being realized.
- The weak role, or even absence, of the ILO and its constituents in the policy debates on climate change.

In summary, we have identified four main entry points for the ILO with regard to climate change adaptation. The first concerns the implications of climate change impacts and adaptation for Social Justice, specifically the protection of the vulnerable. The second entry point is based on recognizing climate change as a driver for structural change and the need for solutions on how to adjust employment policies in the face of structural changes. The third entry point is based on the convention on social security and the increased demands for social protection due to the impacts of climate change. The fourth entry point revolves around the relationship between climate change, the Decent Work Agenda and sustainable development, as has already been articulated in the Governing Body discussion document.

At the same time, the involvement of the ILO in climate change adaptation is also called for because of concerns about the social impacts of climate change. These are expressed in various articles of the UNFCCC Convention (UNFCCC 1992) and the UN System's efforts in delivering as ONE. Perhaps the most relevant of these is Article 1, which states:

*"The adverse effect of climate change will not only be felt in natural and managed ecosystems, but also have "significant deleterious effects" on the operation of socio-economic systems or on human health and welfare".*

Furthermore, in response to these concerns Articles 4f and 4g state: "Member states shall….

"Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change;"

[18] ILO 2007 300th Session, GB.300/WP/SDG/1, http://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_084890.pdf

And

"Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies"

The UN system is committed to supporting:

"Member States in responding to the climate change adaptation challenge by delivering as one at the global, regional and country levels on the basis of its convening, normative and advocacy role, its sectoral expertise, and its operational and coordination capabilities."

Thereby, it is clearly articulated that:

"Adaptation is the foremost priority for the poorest nations, which have contributed the least to the emergence of climate change but suffer from limited adaptive capacity and are generally situated in areas most susceptible to climate impacts"

And that:

*"Vulnerable countries and peoples, as well as the poorest segments of populations within all nations, are the ones most in need of urgent, targeted and effective adaptation action to save lives, livelihoods and life-supporting systems. Empowering individuals, communities and countries to cope with climate change impacts, in particular strengthening the adaptive capacity of the poorest, must go hand-in-hand with progress towards sustainable development in all its economic, social and environmental aspects."*[19]

Finally, it is worth mentioning in this introduction that when talking about the physical impacts of climate change, this paper places great emphasis on the negative impacts and costs of adaptation, as opposed to some of the possible positive impacts anticipated in some regions and sectors. This is deliberate, even though it is recognized that climate change and adaptation will also bring some new opportunities and benefits; for example, in new arable land for agriculture due to higher rainfall or simply through higher yielding crops and higher farm productivity. The focus on negative impacts is for the following reasons. Firstly, on aggregate the burdens and costs of climate change are likely to exceed the benefits (IPCC 2007, Stern 2007). Secondly, particularly those countries and societies that are already poor and in need of assistance with adaptation are those least likely to experience much benefit from climate change. Thirdly, this Paper aims to position itself within the large international debate of how those most vulnerable to climate change, who have contributed least to the problems, can be assisted in the most appropriate way.

Having said this, it is also recognized that the process of change itself brings many opportunities to change things for the better, in particular to reduce present and future vulnerability. And so, in many countries the main opportunity that climate change will present is the likelihood of a process of structural change brought about by climate change during which there may be opportunities to improve on some of the unjust and inefficient features of a society.

[19] UNCEB 2009: "Advancing work on adaptation to climate change, A UN system perspective".

## 1.4 The ILO's current programme on environment and climate change

The current programme on environment and climate change is being coordinated by the Green Jobs Programme of which adaptation is one of the agreed areas of focus. It coordinates climate change adaptation activities across the ILO. It is worth highlighting that some technical programmes, like the Employment Intensive Investment Programme (EIIP), have over 30 years of experience working on relevant areas of adaptation such as on irrigation, water and soil conservation, flood control and rural transport improvement and maintenance. EIIP is currently working with many of the development partners who are currently actively involved in adaptation works. The Green Jobs Programme has worked closely with UNEP, the ITUC and the International Organization of Employers (IOE) on the publication of the Green Jobs Report published in 2008. More recently it also contributed to UNEP's Green Economy Report, published in 2011, in addition to publishing a complementary Background Note on "Promoting Decent Work in a Green Economy."[20] The Green Jobs Programme also initiated the UN Task Team on the Social Dimensions of Climate Change,[21] which works under the UN Delivering as ONE approach. In 2007, the International Labour Conference addressed the implications of climate change for the world of work. Through the UN System Chief Executive Board (CEB) for Coordination, the ILO is engaged in developing a common understanding and approach to adaptation. The ILO has also participated in international efforts through UNFCCC and the Conferences of Parties (COP). Through these engagements, and in particular those of the trade union constituents, the need for a just transition and decent work was recognized in the COP 16 agreement. The strong inter-linkages between climate change and labour markets were acknowledged:

*"Realizes that addressing climate change requires a paradigm shift towards building a low-carbon society that offers substantial opportunities and ensures continued high growth and sustainable development, based on innovative technologies and more sustainable production and consumption and lifestyles, while ensuring a* ***just transition*** *of the workforce that creates* ***decent work*** *and quality jobs;" (UNFCCC 2011, emphasis added)*

More recently, as part of the call for a follow-up to the Cancun Adaptation Framework, the ILO made a submission to the UNFCCC on the Adaptation Committee's work plan. In this submission the ILO recommended the following areas for inclusion:

[20] http://www.ilo.org/employment/Whatwedo/Publications/lang--fr/WCMS_152065/index.htm

[21] The main objectives of this task team are to: 1) develop a comprehensive and inclusive conceptual framework of the social dimensions of climate change; 2) advocate for the inclusion of the multi-dimensional nature of climate change, beyond the environmental impacts in related policies and measures, in particular the potential social and economic co-benefits of effectively addressing climate change and opportunities to enhance the well-being of women, children, the poor and the vulnerable in society; 3) identify ways in which the UN system can more effectively support Member States to ensure that climate-related policies and measures simultaneously provide better living conditions for the whole society and translate into more decent work, better health, adequate housing, education, gender equality, food security, a viable agriculture, social protection for the most vulnerable, and ultimately contributing to poverty reduction and sustainable development, ensuring equitable low carbon development processes.

- Assessments of the impacts of climate change need to place specific emphasis on the risks of disrupted livelihoods and labour markets, higher unemployment and more precarious and informal work, the identification of those who will be most affected by these changes, and how these effects translate into negative social outcomes.
- The definition of universal indicators to measure the socio-economic impacts of climate change adaptation policies and measures.
- Social dialogue[22] and the participation of relevant stakeholders—in particular workers, employers and other members of civil society—in the design of climate adaptation policies, and the planning and implementation of adaptation actions is important as it leads to better and more widely supported policies and measures.
- "Soft Adaptation"[23] options that build the capacities of individuals, businesses, communities and institutions to adapt to climate change thoughtfully and effectively such as: building and managing social protection systems and income security; planning the diversification of local economies, in order to create climate resilient jobs and sustainable and resilient enterprises; enhancing skills development in a timely manner; and creating more responsive and adequately designed labour market institutions. These dimensions should feature prominently in any national adaptation plan.
- Social and employment gains of climate adaptation policies and measures should be an objective and should be maximized. This can be done, for example, by giving due consideration to local economic development and SME's with measures for diversification.
- "Hard Adaptation" and infrastructure works (including irrigation, flood control, soil and water conservation, land management, climate proofing of roads, and making rural and urban low-income settlements more resilient) should be labour-based works through local resources-based approaches enhanced with the choice of appropriate technology and proper capacity building.
- Adaptation approaches should build local capacities and institutions to enable harnessing local knowledge, in particular with regards to the local environment and the priorities of those most affected, and to enable rapid local responses that do not depend on centralized decision-making and approval.
- For adaptation approaches and measures to be sustainable in the long-term, they need to advance climate resilience not only in environmental terms but also in social and economic terms, and should, therefore, promote development that is based on green jobs and particularly on generating them.[24]

[22] Social dialogue is defined by the ILO to include all types of negotiation, consultation or simply exchange of information between, or among, representatives of governments, employers and workers, on issues of common interest relating to economic and social policy. (see: http://www.ilo.org/public/english/dialogue/themes/sd.htm)

[23] Hard and soft adaptations are also frequently used terms. The terms have their origin in software and hardware in the use of computers and information technology. In adaptation it is useful to distinguish between infrastructure-based approaches to adaptation (hard), which involve the construction of new infrastructure or the climate proofing of existing infrastructure, versus the investment in softer measures such as systems, education and skills, information provision, which all enable affected populations to respond to changes brought upon by climate change.

[24] The ILO has defined "Green Jobs" as jobs that help reducing negative environmental impact ultimately leading to environmentally economically and socially sustainable enterprises and economies. These jobs are decent jobs that (i) reduce consumption of energy and raw materials, (ii) limit greenhouse gas emissions, (iii) minimize waste and pollution and (iv) protect and restore the ecosystems. See also: *www.ilo.org/greenjobs*

The ILO identified these areas of work because "Together these approaches can support a process of adaptation to climate change that does not exacerbate or amplify current trends of growing inequality, higher unemployment and declining job quality, but rather contributes to improving the quantity and quality of jobs and thus more climate resilient societies and labour markets."

These introductory sections have provided the context for the remainder of this paper. They have demonstrated the relevance of the ILO to climate change adaptation and have outlined some of the work in progress. Before discussing in more detail how the work and expertise of the ILO is relevant to, and can support, adaptation, some issues and concerns regarding adaptation will be highlighted

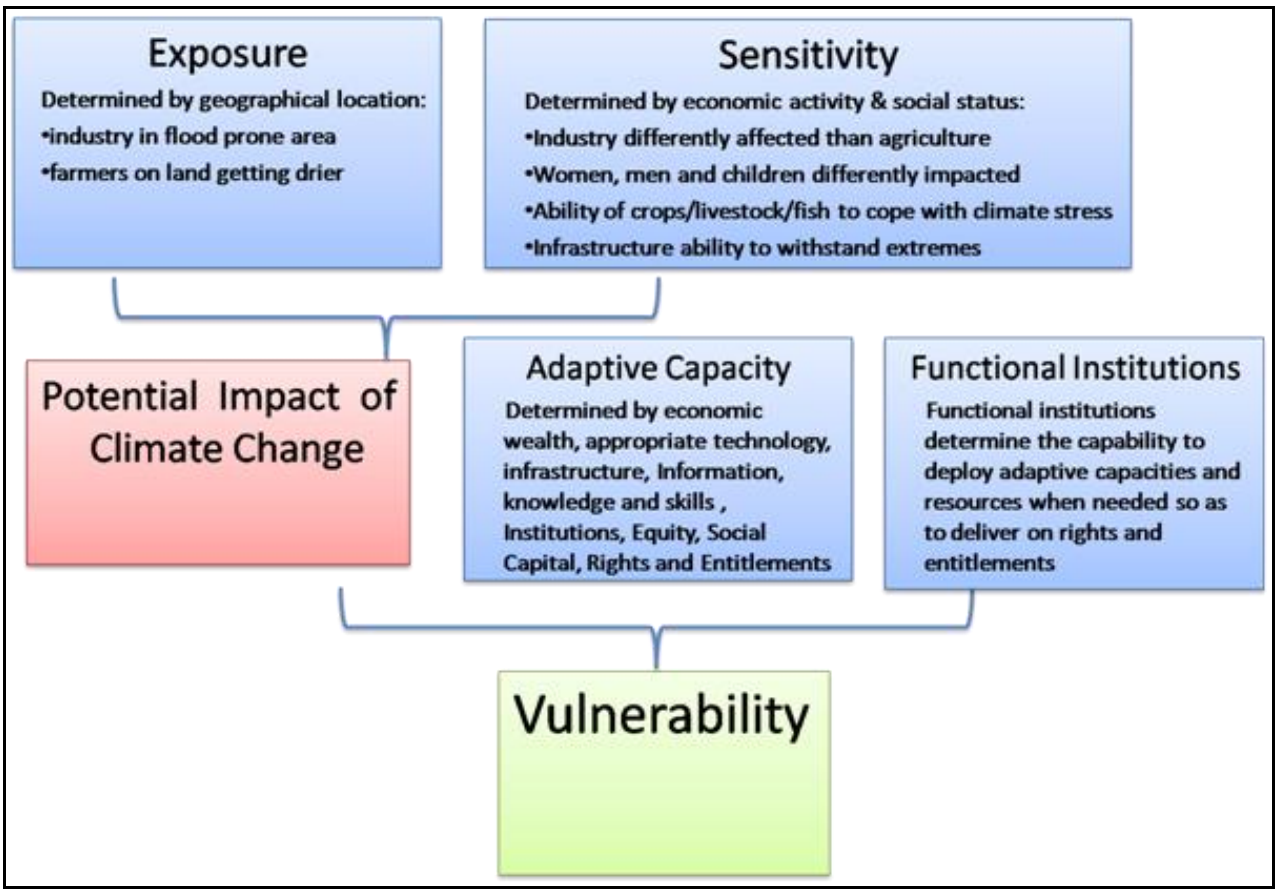
# 2. Concepts, issues and concerns in adaptation

This section highlights some important factors that can impact on the fairness of adaptation policies and interventions, which are of particular interest to the ILO. It also aims to create clarity with regard to the concept of adaptation, in order to enable the formulation of a more focused approach for the ILO.

## 2.1. Adaptation for reducing vulnerabilities

Reducing vulnerability is central to the manner in which the ILO has interpreted its work on adaptation. From a social justice perspective, adaptation measures that aim to reduce the vulnerability of the most vulnerable should be the priority.

**Figure 3: Conceptualization of vulnerability by the ILO, based on the IPCC definition**




Source: Perch 2011

The IPCC has defined vulnerability to climate change as: "The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity". This definition is represented schematically in the Figure 3 above.

Based on the above, three strategies for reducing vulnerability can be identified:

- Reducing exposure to climate change effects; for example, by having early warning systems to better anticipate extreme climate events and variability in rainfall or migration out of severely affected areas.
- Reducing sensitivity to climate change effects; for example, switching to more drought resistant crops in areas that are getting drier or through introducing crop insurance that will reduce income losses in the case of extreme weather events.
- Increasing the adaptive capacity of those affected by, for example, education and training on climate change impacts, in order to enable people to respond; by creating rights to social security; or by increasing access to adaptation technologies. This, in turn, can positively influence the previous two strategies.

There is, however, one important aspect of vulnerability that is often overlooked and is pointed out by Perch (Perch 2011). She identifies rights, entitlements and agency—which she uses to describe the "capability to exercise rights and demand entitlements"—as important influences on vulnerability and argues: "solutions that only cater to needs such

as economic wealth, technology, infrastructure, information, knowledge and skills or access and availability, but that do not address "agency" or capability to deploy such resources when needed, miss a significant piece of the puzzle". Enhancing the ability to exercise rights and demand entitlements is then a critical component of the adaptive capacity of individuals and groups.

This is clearly also an important aspect for the ILO and resonates with much of its work. Strong, rights-based frameworks, in particular the right to organize freely, affect these capabilities and the ILO has been advocating these for a long time. Social dialogue is also critical for enabling vulnerable individuals to effectively exercise rights and demand entitlements.

This approach to adaptation focussing on reducing vulnerability could potentially also be applied to the world of work, which raises three questions. The first is what reducing exposure and sensitivity and increasing adaptive capacity in the world of work would look like. The second is to which strategies the ILO can contribute most given its expertise and mandate. The third is how reducing vulnerability to climate change also contributes to reducing vulnerability to other factors and vice versa. To what extent are those that are vulnerable to climate change also vulnerable to food insecurity, non-climate-related natural disasters or other types of shocks? And how do measures that reduce the vulnerability to these also contribute to reducing vulnerability to climate change? While work done so far[25] indicates that those vulnerable to climate change are also vulnerable to these and vice versa, these are questions on which continued research is needed, so that strategies can be devised to address the underlying causes of multiple vulnerabilities. Many of these questions are currently being addressed by the UN Task Team on the Social Dimensions on Climate Change.

To date, most work on vulnerability to climate change has been focussed on a sector and location level. Sectors like agriculture, fisheries, forestry, tourism and health have been identified in a number of studies as being vulnerable to climate change. How the vulnerability of these sectors translates into the vulnerability of those employed and which other factors influence their vulnerability requires further research. Furthermore, sector specific approaches have limitations as they consider only one aspect of the economy and labour market and cannot give a sense of what the effects will be if various sectors are affected simultaneously. There is clearly a need to gain a better understanding of the social effects of climate change and undertake a disaggregated analysis of the employment impact and the incidence on equality and poverty.

## 2.2 Decision-making in adaptation

Planning and decision-making for climate change and adaptation present some major challenges to all involved. Firstly, because there is a high degree of uncertainty on how exactly the changes in climate will unfold; secondly, because there are long timeframes involved; and thirdly because many of the effects of climate change are unprecedented and there is little experience in how to confront them. One thing does, however, look certain,

[25] The FAO for instance is arguing that food insecurity should be used as an indicator of vulnerability for climate change, see http://foris.fao.org/meetings/download/_2011/sixteenth_session_of_the_ad_hoc_working_group_on_f/misc_documents/fao_submission_foodsecurity_cc2011.pdf

namely that planning and decision-making around adaptation will have profound social justice implications and must, therefore, be considered.

Deciding from among different options and making choices will, of course, be critical for how fair adaptation policies and measures will be. The decision-making process in adaptation is, therefore, also important. The participation of all stakeholders, in particular the most vulnerable, in the decision-making process is critically important.

The ILO has a long history and tradition of decision-making that supports social justice. Such decision-making is based on tripartite dialogue, which emphasizes the importance of a just process. While this dialogue should be supported by technical analysis and research, of which cost-benefit analysis is one element, it is only through an inclusive and fair dialogue process that such decisions can ultimately be made. This is, in essence, an explicit recognition that participative justice must be part of any such decision-making process and that "distributive justice without participative justice can only ever be coincidental" (Adger et al. 2005).

There are, however, strong tendencies and pressures to base decision-making on technical analysis and models alone. One commonly used technical decision-making tool in particular warrants further discussion, namely the use of cost-benefit analysis and related tools. Cost-benefit analysis has, in monetary terms, become one of the most widely used decision-making tools. Serious concerns have been raised regarding adaptation decisions based solely on such analyses (Berger and Chambwera 2010, Stern 2007). From a social justice perspective, monetary or economic cost-benefit analyses often fail to take into account equity and rights issues. As a result, decisions are often unfavourable for the poor and most vulnerable because their economic productivity is lower and their assets are worth little and so, economically, there is not much benefit in saving their livelihoods or homes. [26] In particular, when a choice has to be made from among various options, cost-benefit analyses are unlikely to favour the poor and save their assets and livelihoods.

A survey of adaptation responses across the world by Adger et al. (2006) finds that adaptation is often directed towards the greatest resource efficiency, rather than focusing on vulnerability reduction. Cost-benefit analysis would support such an outcome. From the perspective of promoting social justice, different tools for decision-making on adaptation are, therefore, required. Furthermore, greater awareness must be raised on the limitations of cost-benefit analyses as the main tool for decision-making on adaptation, in particular with regards to achieving social justice.

[26] This is clearly demonstrated in the World Bank EACC Case Study of Mozambique, which concluded that the cost of sea defences far outweighs the economic benefits of constructing them and recommended not constructing such defences. While this may be an economically sound argument, it does raise some serious justice issues as to why the homes and livelihoods of people who have not caused climate change are not worth saving and thus whether such a decision should be based purely on economics.

## 2.3 Different categorizations of adaptation measures

A wide variety of adaptation responses exist and they can be categorized in many different ways. The most commonly used are those mentioned as examples in the IPCC definition of adaptation and have been defined by the IPCC as follows: [27]

### *Anticipatory and Reactive Adaptation*

- *Anticipatory Adaptation*: Adaptation that takes place before the impacts of climate change have been observed. Also referred to as proactive adaptation.
- *Reactive Adaptation*: Adaptation that takes place after the impacts of climate change have been observed.

### *Private and Public Adaptation*

- *Public Adaptation*: Adaptation that is initiated and implemented by governments at all levels. Public adaptation is usually directed at collective needs.
- *Private Adaptation*: Adaptation that is initiated and implemented by individuals, households or private companies. Private adaptation is usually in the actor's rational self-interest.

### *Autonomous and Planned Adaptation*

- *Autonomous Adaptation*: Adaptation that does not constitute a conscious response to climatic stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems. Also referred to as spontaneous adaptation.
- *Planned Adaptation*: Adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain or achieve a desired state.

These categories of adaptation are not exclusive and there is usually a wide degree or overlap between the categories. Anticipatory adaptation, for instance, is usually planned and autonomous adaptation is generally reactive. Finally, it is often difficult to distinguish between anticipatory and reactive adaptation in the case of slow-onset events.

## 2.4 Slow-onset events and climate variability

For effective adaptation it also important to understand that climate change manifests itself through slow-onset events—which are long-term and often continuous—and increased climate variability, which has immediate effects. Clearly these two manifestations require different adaptation strategies.

Slow-onset events include sea level rises, increasing temperatures, ocean acidification, glacial retreat and related impacts, salinization, land and forest degradation, loss of biodiversity and desertification (UNFCCC 2011). They will require long-term

[27] IPCC Third Assessment Report, Working Group II: Impacts, Adaptation and Vulnerability, Annex B: Glossary of Terms.

adaptation strategies but because their onset is slow, they are often seen as problems to be addressed in the future. This attitude ignores the fact that they are already happening such as sea level rises, temperature increases and changes in climatic conditions and can reach critical levels after which catastrophic events might occur.

## 2.5 Effects of climate change and adaptation policies

It is important conceptually to clearly separate the impacts of climate change itself from adaptation policies and responses. The impacts of climate change would be those that result from the physical and environmental changes in the climate, for example how a rise in the average temperature will impact on agricultural productivity and employment. The impacts of adaptation policies and measures are those that are caused by the responses to climate change. So, in the above example, if farmers change crops in response to higher temperatures, the social implications and impact this has on the farmer is the direct result of an adaption measure. To further illustrate this distinction, the estimates of the impacts of climate change would be based on a "business as usual" scenario in which no adaptive action is taken and the impacts of adaptation measures would be based on a scenario in which adaptation measures are included.

If no adaptation policies are implemented those affected will have to adapt (on their own) one way or the other. This highlights the important distinction between collective and individual adaptation, which will be discussed next.

## 2.6 Social Justice in adaptation

Achieving fairness and social justice in adaptation is a complex task. Firstly, there is the question of whether those who have caused climate change should be the ones paying for the costs of adaptation, meaning "the polluter pays". This question is particularly important as many poor communities, societies and countries that have contributed the least to climate change are likely to be the most impacted. This aspect has been discussed widely and it is generally not denied that this aspect of climate change is extremely unfair. It is also recognized, however, that even though this principle is fairly simple, it does raise questions that are very complex, in particular from a political point of view. It implies that countries with high emissions (historic, current and future) take responsibility for paying for adaptation measures in other countries, measures of which the costs are still unknown. This is a commitment that is very difficult to make politically.

Linked, but a somewhat different point, is the degree to which those with the least adaptive capacity are left to carry the burden of climate change. While those with the least adaptive capacity are to a large extent—but not entirely—also those least responsible for climate change, a fairness question would arise even if this were not the case. It could be argued that it would be fair that those with greater means assist those with less in covering the costs of climate change. The concepts of collective and individual adaptation are useful for illustrating some of this.

Collective and individual adaptation is similar to the public and private adaptation mentioned earlier but there are certain differences. Collective adaptation can refer to adaptation through public interventions (governments)—just like public adaptation—but can also involve organizations, businesses, communities and individuals coming together to take collective action. It is also useful to understand that in collective adaptation there is a hierarchy. Measures can be taken at the global level by which countries act collectively, for instance with richer countries making funds available to poorer more vulnerable countries that are suffering most but have contributed least to the cause. At the country

level, federal governments could act on a national level or leave certain aspects of adaptation to lower levels of government.

Individual adaptation refers to a situation in which adaptation is undertaken by individual actors. In most contexts, and especially in the case of those vulnerable to climate change, relying on individual adaptation is usually profoundly unjust. For example, small island developing states or communities of subsistence farmers should not be left to adapt to climate change on their own. At the same time, some level of individual adaptation will often be inevitable, whether this involves workers learning new skills or farmers planting different crops or people migrating out of drought stricken areas. The key issue here is that no collective adaptive action in essence represents a policy choice to shift the burden of adaptation from the collective to the individual. This manifests itself across the entire hierarchy of collective adaptation. If global efforts fail, national governments will be left to carry the burden; if national governments do not act, local governments will have to face climate change impacts on their own, and if no public institutions act then either private collective or individual adaptation is the least option. Having the vulnerability concept in mind, it is then the most vulnerable—and notably the poor—who have to adapt individually if no public and collective action is taken. This clearly demonstrates the social justice dimension of climate change adaptation choices.

Adaptation, therefore, also involves policy choices between the degree of collective action and individual action but with the underlying understanding that the option of no action does not exist and that the lack of collective action automatically shifts the burden to the individuals.

Other fairness issues in adaptation will, of course, arise. In a resource-constrained environment societies may face the difficult situation in which they will have to choose between letting certain (rural) areas or urban areas flood if resources are sufficient for saving only one of these areas. The choice here is about who will bear the costs and who will reap the benefits of collective action. The burden shifts among groups, not between individuals and the collectivity. How and on what basis such decisions will be made will depend to a great extent on the strength of democracy in the country concerned.

The question of how to confront climate change effects in a fair and just manner is one being faced by policymakers and societies around the world. One dimension will be how to allocate resources in a fair and democratic manner. Another may be how to balance collective and individual efforts in an equitable manner. This question arises at all levels: what is the role of the global community vis-à-vis individual countries; of national governments versus local governments; of communities and individuals within communities? The principle may well be that the only fair option is that ultimately, those responsible for causing climate change should bear all adaptation costs. Even on this principle there is, as yet, no global consensus, let alone any ideas on how it would be implemented in practice. In the meantime, the costs of adaptation are real and rising, and in many cases the most vulnerable are continuing to bear an unfair share of the burden to which they, themselves, have contributed little.

## 2.7 Residual impacts in adaptation

The concept of residual impact is another useful concept with which to gain a better understanding of the justice implications of adaptation. The IPCC defines a residual impact as the impacts of climate change that would occur after adaptation. It is also referred to as the tolerated impacts and can be seen as the impact society finds acceptable—however that may be defined in that society—and against which no further adaptation measures to avoid the impact are taken (OECD 2010). While, in general, every effort should be made to

avoid or minimize the residual impacts, for a number of reasons it is not unreasonable to assume that there will be unavoidable residual impacts. Firstly, given the uncertainty of how exactly the climate will change and the effectiveness of adaptation measures, it is likely that not all adaptation will be completely effective. Secondly, in many countries and regions there are limited capacity and resources to implement all the required adaptation measures. Thirdly, there are likely to be impacts for which no adaptation measures can prevent their impact entirely meaning that residual impacts will be unavoidable. Residual impacts, then, give rise to some important public policy questions in adaptation:

1. Who decides which impacts are to be addressed publicly and which impacts become residual impacts to be carried by individuals?
2. How are the residual impacts distributed among those affected?

These are two important questions for the ILO. The first of these points to the importance of social dialogue and participatory decision-making. Those who may be left to carry the burden of residual impacts are likely to be the ones who have no voice in the decision-making process and broad participation is, therefore, a necessity for preventing such an unfair outcome. The second question points to the importance of social protection. Social protection systems are likely to be a key instrument of the ability to compensate those who are left to carry an unfair share of residual impacts on a large scale. If social protection is considered to be an adaptive response, as it should be, then it is likely to address the residual impacts of other adaptation measures.

## 2.8 Measures that address both adaptation and mitigation

There are also measures that address climate change adaptation and mitigation simultaneously. Reforestation can, for instance, increase the resilience of the area to withstand climate change effects better. This, in turn, also makes the communities in the area that relies on these forests more resilient and improves or stabilizes their livelihoods. At the same time, the increased forest coverage contributes to mitigation by absorbing carbon dioxide from the atmosphere. Forestry-related activities are the most common measures that address both adaptation and mitigation but such effects are common in the rehabilitation of many natural ecosystems. In most cases, however, adaptation measures are quite different from mitigation measures.

# 3. Assessing the impact of climate change on the world of work

In order to take effective adaptive action, an understanding of the socio-economic impacts of climate change and the possible adaptation options is required. This was identified as a possible area during the 2007 International Labour Conference. [28] In recent interviews with ILO staff there was very strong support for the ILO engaging to a much greater degree on assessing the impacts of climate change on the world of work. This was seen as a critical area in which the ILO could take the lead as it was unlikely that any other agency would do this, and it would seem to be a natural fit with ILO's social mandate. Furthermore, such assessments would be extremely valuable in supporting the ILO's future work on adaptation as it would help to better identify areas and sectors that are more affected. Table 1 below provides a brief overview and some examples of the anticipated impacts of climate change on employment and economic activity. This section highlights gaps that have been identified in the area of assessments, and also provides some examples to demonstrate the relevance of this work and to give guidance on how the ILO could proceed, taking into account some of its existing activities and expertise. Sister agencies, like the World Health Organization (WHO), have research programmes that predict, for example, that by 2030, there will be an increased health burden as 90 million additional people will be prone to malaria. The likelihood of civil conflict might increase by 54 per cent, mainly due to conflict related to water (by 2020, between 75 and 250 million more people than today in Africa will be exposed to increased water stress (IPCC 2007a). This could reduce yields in rain-fed agriculture by up to 50 per cent. Twenty to thirty per cent of plant and animal species are at risk of extinction if increases in global average temperature exceed 1.5 to 2.5°C (IPCC 2007a). The projected sea level rise towards the end of the 21st century is between 0.18 and 0.59 meters (IPCC 2007a). Global temperature is predicted to increase by between 1 and 5–6 degrees C by 2100. While forecast exists on the economic impacts of climate, it is not known what this means for the world of work. What is the impact of climate change on employment? ILO is in the most appropriate position to be answering these questions.

[28] The Conference concluded: *"Furthermore, within the parameters of the programme and budget, the Office should build its knowledge base on emerging issues (for example, through research in such areas as the link between sustainability, impact of climate change on enterprises and employment…and strengthen its technical cooperation programmes"* (ILO 2007).

**Table 1: Climate change effects and impacts on employment and economic activity**

| **Phenomena and direction of trend** | **Likelihood of future trends based on projections for 21st century using SRES scenarios** | **Agriculture, forestry and ecosystems** | *Associated economic activity and employment impacts* | **Industry, settlement and society** | *Associated economic activity and employment impacts* |
|---|---|---|---|---|---|
| **Over most land areas, warmer and fewer cold days and nights; warmer and more frequent hot days and nights** | **Virtually certain** | **Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks.** | *Increased productivity in colder environments; reduced productivity; incomes and livelihoods in warmer environments and those vulnerable to insect outbreaks* | Reduced **energy demand for heating; increased demand for cooling; declining air quality in cities; reduced disruption to transport due to snow, ice; effects on winter tourism** | *Reduced employment in winter tourism areas and areas that become too hot in summer* |
| **Warm spells/heat waves; frequency increases over most land areas** | Very likely | **Reduced yields in warmer regions due to heat stress; increased danger of wildfire; reduced water quality (e.g. algal blooms)** | *Reduced agricultural productivity, incomes and livelihoods for those dependent on agriculture; increased risks for those in forestry; lower productivity of fisheries* | **Reduction in quality of life for people in warm areas without appropriate housing; impacts on the elderly, very young and poor** | *Increase work stresses for those working in inappropriate factories, offices, as well as outdoors* |
| **Heavy precipitation events; frequency increases over most areas** | Very likely | **Damage to crops; soil erosion; inability to cultivate land due to water logging of soils** | *Reduced agricultural productivity, incomes and livelihoods for those dependent on agriculture* | **Disruption of settlements, commerce, transport and societies due to flooding; pressures on urban and rural infrastructu** | *Disruptions reduce viability of commerce and enterprises; loss or property impacts on workers and enterprises; increased pressure on infrastructure reduces quality with impacts on* |

| | | | | | |
|---|---|---|---|---|---|
| | | | | **res; loss of** property | *economic activity* |
| Heavy precipitation events; frequency increases over most areas | Very likely | Damage to crops; soil erosion; inability to cultivate land due to water logging of soils | *Reduced agricultural productivity, incomes and livelihoods for those dependent on agriculture* | Disruption of settlements, commerce, transport and societies due to flooding; pressures on urban and rural infrastructures; loss of property | *Disruptions reduce viability of commerce and enterprises; loss or property impacts on workers and enterprises; increased pressure on infrastructure reduces quality with impacts on economic activity* |
| **Area affected by drought increases** | **Likely** | **Land degradation; lower yields/crop damage and failure; increased livestock deaths; increased risk of wildfire** | *Reduced agricultural productivity, incomes and livelihoods for those dependent on agriculture; increased risks for those in forestry* | **Water shortages for settlements, industry and societies; reduced hydropower generation potentials; potential for population migration** | *Water shortages affects industries and can lead to lower productivity and/ or migration; reduced hydropower can lead to power disruptions or increased costs of power affecting viability of enterprises* |
| Area affected by drought increases | Likely | Land degradation; lower yields/crop damage and failure; increased livestock deaths; increased risk of wildfire | *Reduced agricultural productivity, incomes and livelihoods for those dependent on agriculture; increased risks for those in forestry* | Water shortages for settlements, industry and societies; reduced hydropower generation potentials; potential for population migration | *Water shortages affects industries and can lead to lower productivity and/ or migration; reduced hydropower can lead to power disruptions or increased costs of power affecting viability of enterprises* |
| **Intense tropical cyclone activity increases** | Likely | **Damage to crops; wind throw (uprooting) of trees**; | *Reduced agricultural productivity, incomes and livelihoods for* | **Disruption by flood and high winds; withdrawal** | *Disruptions reduce viability of commerce and enterprises;* |

| | | | | | |
|---|---|---|---|---|---|
| | | damage to coral reefs | *those dependent on agriculture, reduced employment in tourism areas with coral reefs* | **of risk coverage in vulnerable areas by private insurers; potential for population migrations; loss of property; effects on tourism** | *migration of enterprises to lower risk areas; loss or property impacts on workers and enterprises; infrastructure damage reduces access and impacts on economic activity* |
| **Increased incidence of extreme high sea level (excludes tsunamis)** | **Likely** | **Salinization of irrigation water, estuaries and freshwater systems** | *Reduced agricultural productivity, incomes and livelihoods for those dependent on agriculture; negative impacts on fisheries dependent on estuaries and freshwater systems* | **Costs of coastal protection versus costs of land-use relocation; potential for movement of populations and infrastructure; see also tropical cyclones above** | *Affecting decision-making and employment in coastal areas; affecting alternative livelihoods and skills in other economic activities for those relocated; infrastructure damage reduces access and impacts on economic activity* |

Source: IPCC 2007 (text in bold) with additions in italics.

## 3.1 Current gaps in assessing the impacts on employment

It is acknowledged by ILO staff that too little has been done concerning assessments of the impact of climate change on employment, especially with regards to quantifying these impacts. These views echo the findings of ETUC in its study of the impact of climate change on employment in Europe, as captured below:

"The study reveals a very obvious lack of knowledge about the links between climate change and employment. The shortcoming is particularly pronounced when it comes to the impact of global warming on employment, a subject on which, to the best of our knowledge, no studies are available. This is a worrying state of affairs, because the situation in certain climate-sensitive sectors would demand immediate action on the possible qualifications and reconversions" (ETUC 2007)

Of particular concern for the ILO would be the impacts on employment and livelihoods (and the achievement of MDG1) and how these would form a transmission channel for worsening social outcomes. It is also important to understand how particular groups might be affected more severely than others. Recent crises have demonstrated the impacts and inter-connections between economic decline and job losses, wage stagnation,

child labour, rising informality and increased poverty, as well as the varying degrees to which responses effectively address these labour market and social concerns. The ILO has also done extensive work on these impacts and inter-connections, and some work assessing the impacts from mitigation, but not yet in the context of adaptation to climate change. Existing methodologies such as those described in the practitioner's guide on "Exploring the links between the environment, economy and employment in developing countries" [29] focus on existing employment in green sectors such as renewable energies and employment dimensions of investment scenarios but are not yet being used to assess the impacts of climate change. Nevertheless, the experience and methodologies developed in this regard will make a valuable contribution to a better understanding and quantifying of the impacts of climate change, and they will need to be incorporated into future work.

Such work would involve developing methods, approaches and models for employment and income assessments, as well as carrying out assessments in different countries, local (sub-national) areas and sectors. The methods should be flexible enough to take into account local concerns and contexts, as well as the limited data available in many developing countries, especially LDCs where such assessments are most urgently needed. All of this would require substantial resources and a long-term commitment by the ILO. While it is recognized that some work could be done using existing knowledge models and resources, efforts will have to be made to mobilize additional resources.

The main objective of these assessments must be to enable better policymaking on adaptation, in particular at the national level. These assessments should not only highlight the nature of the threat that climate change may pose in some areas but should also aim to provide information that will enable governments and other actors to more effectively plan and develop national policies, and take adaptive action. This requires a good understanding of the local context and the type of information that local policymakers are seeking.

## 3.2 Examples of quantitative assessments

While work on quantifying the employment impacts of adaptation to climate change is so far limited, some assessments have already been carried out. Three examples are presented below, with a view to highlighting some of the specific challenges that arise and to highlight the employment impacts.

The World Bank has carried out some research through its Economics of Adaptation to Climate Change project (EACC), which, apart from aiming to develop an overall approach for assessing climate change impacts and adaptation measures, included seven country case studies. [30]

The approach in the World Bank studies first involves establishing a development baseline for each country. It then assesses the likely exposure to climate change based on the climate scenarios developed by the IPCC that are most relevant to the country in the case study. Various approaches are used to assess the sensitivity to the projected changes in climate but they are generally sector based. Geographic areas that are also exposed, such as coastal areas, are assessed. Impacts are then estimated with the assumption of no adaptation taking place and these are presented as deviations from the development base

[29]GHK ILO 2011: Exploring the links between the environment, the economy and employment in developing countries **A Practitioner's Guide.**

[30] These countries are Bangladesh, Bolivia, Ethiopia, Ghana, Mozambique, Samoa and Vietnam.

line. The magnitude of the deviation reflects, in essence, the estimated costs of climate change. For each country, critical sectors are assessed and the studies estimate impacts for these sectors, as well as specific vulnerable regions in this country.

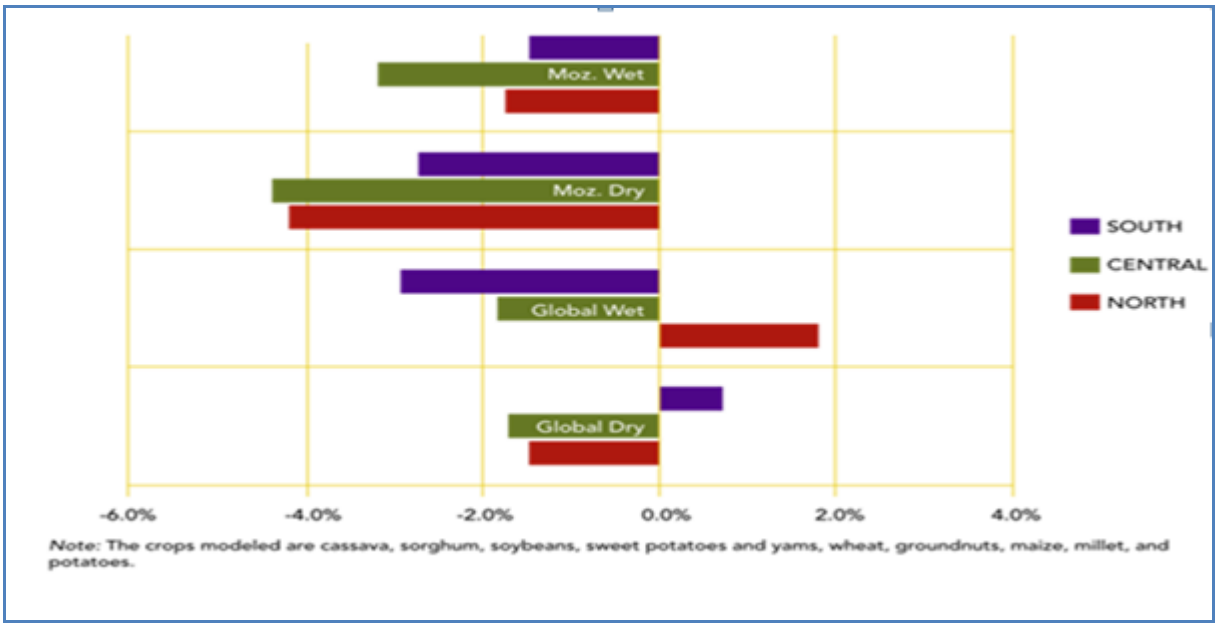
The conclusions of the recent assessments in Vietnam and Mozambique give a sense of the scale and types of impacts of climate change that could occur in these countries. Some conclusions relevant to the employment and livelihoods are presented below. While they all provide limited estimates of the specific employment impacts, it is clear that these impacts are likely to be significant. At the same time, it should be mentioned that these three countries are among the most vulnerable to climate change and so these impacts do not represent typical impacts that can be extrapolated to other countries.

For Mozambique, the EACC WB study finds:

"Agriculture in Mozambique accounts for 24 percent of GDP and 70 percent of employment. In all scenarios, the net average crop yield for the entire country is lower relative to baseline yield without climate change. The impact of climate change over the next 40 years would lead to a 2–4 percent decrease in yields of the major crops, especially in the central region, as shown in Figure 2. This, combined with the effects of more frequent flooding on rural roads would result in an agricultural GDP loss of 4.5 percent (conservative) and 9.8 percent (most pessimistic)."

How exactly these impacts would translate into employment impact warrants further research but based on these findings, it is fair to conclude that they will be substantial.

**Figure 4: Climate effects on yields for all major crops in Mozambique**




Source: World Bank 2010

**Table 2: Total impact of climate change on crop production in Vietnam by scenario in 2050 in millions of metric tons**

| | ***Paddy Rice*** | | | ***Maize*** | ***Cassava*** | ***Sugar Cane*** | ***Coffee*** | ***Vegetables*** |
|---|---|---|---|---|---|---|---|---|
| *Climate Impact Scenario* | *Yields* | *Sea Level* | *Total* | *Yields* | *Yields* | *Yields* | *Yields* | *Yields* |
| Dry | -6.7 | **-2.4** | **-9.1** | **-1.1** | **-1.9** | **-3.7** | **-0.4** | **-1.7** |
| Wet | -5.8 | **-2.5** | **-8.4** | **-1.0** | **-2.6** | **-2.9** | **-0.4** | **-3.1** |
| Ministry of Natural Resources and Environment[31] | -3.4 | **-2.4** | **-5.8** | **-0.3** | **-0.6** | **-1.4** | **-0.1** | **-0.9** |

Source: World Bank 2010b

The Vietnam case study also concluded that the impacts on agriculture would be significant. This is particularly important as: "Despite the country's rapid rate of industrialization in the last two decades, agriculture remains a major economic sector in Vietnam. It generates employment and income for a significant part of the population (57% in 2005)." Results are presented in Table 2 above and the study estimates that paddy rice production might fall by between 5.8 and 9.1 million tons per year, depending on which climate scenario was used as shown in the table above. As references to assist with putting these figures in context, in 2007, rice production amounted to 35.6[32] million tons and between 1961 and 2007, overall paddy production quadrupled in Vietnam. While this decrease would be between 16 per cent and 26 per cent compared with 2007 levels of production, overall production is likely to have increased substantially by 2050. [33]

Another example is work from the International Institute for Environment and Development (IIED), which has also been developing approaches to assess the impact of climate change and is currently working on assessments in a number of vulnerable countries or regions. Its study on Namibia, which was published in 2007, highlights a somewhat different approach (Reid et al. 2007). Some steps are similar in that plausible impacts are estimated, based on exposure and sensitivity in the key vulnerable sectors in Namibia, namely agriculture, fisheries and tourism. Again, the IPCC climate scenarios and models form the basis for assessing exposure. These estimated impacts are then incorporated into a Computed General Equilibrium (CGE), in order to obtain a picture of the impacts on the economy as a whole.

[31] The Ministry of Natural Resources and Environment scenario falls in the middle of a range of alternative climate scenarios for Vietnam when these are arranged by their climate moisture indices

[32] "Table 1. Paddy Rice Production (000t) by country and geographical area". FAO Statistics Division. http://beta.irri.org/solutions/images/stories/wrs/wrs_nov08_table01_production.xls. Retrieved 2011-03-11.

[33] Although it is unlikely that production could be quadrupled again as it was in the previous 40 years, as much of the increased production was due to increased access to irrigation. Most land suitable for irrigation now has access to irrigation and this, coupled with other constraints such as land availability, are likely to limit such huge increases in the next 40 years.

For Namibia, the IIED study published in 2007 concludes: "Thus, even under the best-case scenario, a quarter of the population will need to find new livelihoods. Displaced rural populations are likely to move to cities, which could cause incomes for unskilled labour to fall by 12 to 24 % in order to absorb the new workers" (IIED Namibia Study).

All of these findings certainly imply profound changes on employment and the world of work and warrant further study. Even though they are for the year 2050, a timeframe many may see as the "distant future" for all these countries, these trends have started and action to avoid these impacts may be required in the short- or at least medium-term. Increasingly, projections that raise serious concerns over a much shorter timeframe are becoming available. The IPCC's Fourth Assessment report, for instance, concludes: "By 2020, between 75 million and 250 million people are projected to be exposed to increased water stress due to climate change" and "In some countries (in Africa), yields from rain-fed agriculture could be reduced by up to 50 per cent by 2020" (IPCC 2007). These are projections for only nine years into the future, well within the timeframe of any policy debate and certainly within the timeframe required for effective adaptation measure against these impacts to be taken.

There are many other approaches for assessing the impact of climate change and a compendium of methods and approaches has been compiled on the UNFCCC website. [34] Furthermore, chapter 6 of the Stern Review provides a detailed discussion and overview of the approaches that had been used before 2007 (Stern 2006). [35] Much of the discussion in the Stern Review focuses on impacts at the global level, however, and little is presented on assessment at the national or local level.

## 3.3 Possible ways forward for assessing the social dimensions of the impact of climate change

The ILO's work in this area has been relevant and could form the basis of future work to carry out national assessments of the projected impacts of climate change and adaptation measures. The ILO has also developed expertise in the use of different economic models and multi-sectoral approaches, which could be complemented by sectoral studies (e.g. partial equilibrium models) of identified sectors. These are seen as most appropriate for these types of assessments. Input-output models, static or dynamic Social Accounting Matrices (SAM/DySAM) [36] allow the identification of the links and transmission channels of macro shocks caused by climate change such as rises in sea level and temperature, or macro environment-related policies such as infrastructure investment through the various sectors of an economy to different groups of households and workers. These monetary-based models can be complemented by satellite accounts with physical values: 1) employment disaggregated by gender, age group, employment status and income level; 2) the environment, capturing greenhouse gases emissions, land degradation, among others.

[34] See http://unfccc.int/adaptation/nairobi_workprogramme/knowledge_resources_and_publications/items/5457.php

[35] The Stern Review preceded the IPCC Fourth Assessment Report and, in that sense, some of the discussions in it are now somewhat outdated.

[36] ILO 2011, Dynamic Social Accounting Matrix (DySAM): Concept, Methodology and Simulation Outcomes, J. Alarcón, C. Ernst, B. Khondker, P.D. Sharma, Employment Intensive Investment Programme (EIIP), Employment Working Paper No. 88, Employment Sector, International Labour Office, Geneva.

The DySAM is a dynamic model reflecting the full economic circle of an economy, as well as its time dimension, and it goes beyond a pure accounting framework to include further economic modelling.

These models also allow the inclusion of technology choices and thus enable the comparison of technology options. For example, input-output, static and dynamic social accounting matrices can assist with simulating the employment impacts of different adaptation alternatives and can thus contribute to a better understanding of adaptation options and better informed choices, including how to reconcile the environmental agenda with the social agenda. They provide details on employment, reflecting the full socio-economic structure of countries, including a time dimension going beyond a static approach. This helps with the evaluation of the effectiveness of public policies and the simulation of the socio-economic impact of exogenous shocks (including natural disasters). It can also be used to specifically explore the relationship between employment-intensive strategies, job creation and poverty reduction.

Some of these methods and models have already been used to evaluate the impact of more environmentally sustainable policies and approaches on the creation of Green Jobs. [37] However, they have not yet been used to assess the impacts of projected climate change.

From the perspective of the ILO and its constituents, there are a number of specific outputs that these impact assessments for adaptation should ideally be able to provide. The first set of outputs would be simulations of projected impacts due to the physical changes brought on by climate change. These should include the impacts of slow-onset and extreme weather events on:

- Employment: What will be the direct and indirect employment losses (and gains) due to climate change effects (including migratory flows)?
- Productivity of existing employment and livelihoods: What will be the changes in existing productivity that may not result in actual job losses but are likely to result in the deterioration of employment and livelihoods?
- Multiplier benefits: What are multiplier effects throughout the economy and employment as a whole?
- Impacts of the quality of employment: What are the impacts on informality, standards and conditions, child labour, occupational health and safety?
- Demands for social protection and security, demands on labour markets institutions for retraining and other active labour market policies, increases in transitional unemployment, etc.
- Social impacts of direct and indirect factors: What are the decreases in household income and consumptions, impacts in poverty on health and education?

At the same time, assessments should not ignore the positive impacts that climate change will have on some sectors; these include possible gains through increased precipitation and more arable land, and lower energy consumption in housing due to higher winter temperatures.

[37] See, for example, Pollin & Heintz, 2010 on the impact of the fiscal stimulus package in the USA on green jobs, GHK Study for Bangladesh and Bento de Filho, 2010 on assessing income alternatives to reduce deforestation in the Amazon rain forest.

This first set of outputs would provide an insight into the vulnerability of the world of work, and also into how these should then form the basis of an analysis of the adaptation options. The second set of options would provide projections on how any impact would change if different adaptation options were implemented. They would evaluate public policy measures (e.g. environmental or labour policies, and also sectoral policies) and their impact on employment and poverty. The impacts would fall into the same categories as above: employment, productivity, social and labour standards, social impacts. This would make it possible to compare and evaluate various adaptation options. Ideally, assessments would be able to give indications as to which impacts would be addressed through public policy interventions and whether there would be any residual impacts. Such assessments could become critical policy tools for informing discussions and decisions as they would be able to demonstrate:

- Impacts and effects of taking no public action to adapt to climate change (and thus leaving this burden to be carried by the private sector and individuals).
- Employment and social impacts of various adaptations options and thus better inform adaptation responses, so that employment and social impacts can explicitly be factored into decision-making rather than be treated as "unintended employment or social consequences".
- The risk of (unavoidable) residual impacts and how these can be distributed fairly.
- How other areas of the work of the ILO—such as the income and employment security component contributing to food security, rural and urban livelihoods, access to health and education, and demands for social protection—could be affected by climate change and how policies and plans in these areas might need to be adapted.

## 3.4 Assessment of impact of shocks and structural changes on labour markets

Climate change is projected to manifest itself either through slow-onset events or through extreme weather events. These events will, in turn, impact on human societies in different ways. However, extreme weather events will often lead to shocks such as the sudden losses of income, livelihoods, assets and housing. Knowledge of how societies respond to such shocks is valuable in planning how to minimize the impact of these shocks. Adaptation policies and measures should also be founded on a solid need assessment carried out to determine the actual damage to income-generating assets and land, and loss of employment and income as a result of the extreme weather events.

There are some countries that are more disaster prone than others and where it has been predicted that the severity of natural disasters will increase with climate change. Bangladesh is one such example. It has gradually moved from conventional relief and recovery practices to a more comprehensive disaster risk reduction approach. A rapid assessment of the impact, in 2007, from Cyclone Sidr—carried out by the ILO in cooperation with the Ministry of Labour and Employment—showed that the areas affected were mostly used for farming but that non-farm activity was more important than rehabilitating farms. Rebuilding small, non-agricultural businesses had greater potential for recovery because farming provided the main source of income to only 30 per cent of households. Access to credit was a vital condition for restoring damaged workshops, tools and inventory. The Government initially imposed a ceiling on interest rates, believing that banks were abusing the situation. This led to an effective freeze of regular credit and forced small businesses to pay very high interest rates to money lenders. Only through dialogue with local employers and workers organizations did it become clear that many businesses had significant outstanding loans with formal lenders, that banks reacted to the

high risk of further lending and the ceiling was not an appropriate measure to facilitate access to affordable credit. The damage assessments also concluded that in areas where embankments had eroded or had not been properly maintained, the impact of the storm and devastating consequences were much more significant and that the potential for the labour-based reconstruction of these could provide up to 1,500 workdays per kilometre of road constructed.

**Box 5: Cyclone Sidr (Bangladesh) impacts and employment and livelihoods of natural disasters.**

As a result of cyclone Sidr (Bangladesh), 567, 000 affected people were employed, corresponding to 14 per cent of all households in the twelve affected districts. Livelihoods were affected, mainly by damage to income-generating assets and by loss of employment and income. Damage to assets included the loss of fishing boats and gear, factory equipment, the tools of self-employed workers, damage to fish ponds, loss of livestock, destruction of common assets such as roads and electric networks, destruction of cowsheds and other farm infrastructure, silting of land, destruction of shop inventories and business premises, and the loss of income-earning human capital in many of the households hit by the loss of human life.

Non-agricultural business damage

Private businesses lost infrastructure, equipment and inventory in the cyclone. These businesses included small retail shops in marketplaces across the affected areas, small factories (such as rice mills, sawmills, ice factories, potteries), trade shops (blacksmiths, barber shops, repair shops of various sorts), some wholesale trade stores, many tricycle vans and rickshaws, sewing machines, tools held in private homes by the self-employed, and many other kinds of equipment. The damage affected about 30,500 establishments and 75,000 jobs. In addition, about 27,000 self-employed workers without a fixed establishment lost tools and other assets. The destroyed assets had an estimated total value of BDT 262 million (US$ 3.8 million), mostly in the industrial sector.

Loss of output and revenue in non-agricultural businesses

Private businesses had to interrupt or reduce activity for varying lengths of time as a result of the cyclone, extending in some cases to more than two months because of the destruction of assets, the lack of electricity or for other reasons. Other small and informal businesses took even longer to recover and some lost their economic base completely. The average industrial establishment interrupted its operation for more than 40 days. Commerce and service enterprises stopped for much shorter periods but were also affected. The total loss of revenue in industrial and commercial establishments due to reduced activity has been estimated at BDT 3.3billion (US$ 47 million), most of it in the non-industrial sector.

Source: Government of Bangladesh 2008.

The various units of the ILO have also studied many other types of shock such as the financial and economic crisis. They have also examined how such shocks impact on various aspects of the world of work including livelihoods, incomes, child labour, national and international migration and increased informality, and also what types of responses can be effective in minimizing these impacts. The recent recession has been examined particularly closely from a number of such perspectives. [38]

[38]See, for example: "*From the Great Recession to Labour Market Recovery. Issues, evidence and policy options*" (Islam and Verick 2011), and *"Brazil: An innovative income led strategy*", available on http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_153768.pdf

# 4. ILO activities relevant to enhanced climate change adaptation

Many of the ILO's current activities are already quite relevant to climate change adaptation. In turn, climate change and adaptation efforts will also have implications for many of these activities, for example on active labour market policies. Areas in which the ILO is active or has expertise that is relevant to these priorities are briefly discussed below. It is, however, important to emphasize that even in areas in which the work of the ILO is highly relevant there should be no automatic assumption that all existing tools and approaches are immediately useful. Some may require amendments or additions, or may need to be adjusted and tested in adaptation programmes. In others, it is a question of scaling up efforts with a more direct focus on climate change.

The following list is structured according to the inventory of work that was made to identify areas in which the ILO has existing technical expertise and experience that can easily be scaled up to enhance adaptation activities.

## 4.1 Social dialogue, participatory planning and decision-making

Social dialogue, participatory planning and decision-making are critical to all forms of public and planned adaptation. Through its long history of promoting and supporting tripartism and social dialogue, the ILO has built up significant knowledge and expertise in the area of participatory decision-making in national planning using social dialogue. The importance of social dialogue rests not only on its ability to generate decisions that are more informed and democratic but also on the fact that decisions derived through such participatory and inclusive processes are more likely to be seen as fair and legitimate, and as enjoying broader public support.

There are two areas in which the ILO and its constituents can contribute to improving the planning and decision-making processes adaptation. The first is to engage in adaptation planning using existing planning structures and mechanisms. This would mean worker and employer organizations and labour authorities engaging in the processes through which adaptation plans are formulated. To date, the ILO's constituents have not been directly involved in the development of National Adaptation Plans of Action (NAPA) and employment effects have been given little consideration. The participation of constituents will improve the likelihood that the employment and social dimensions of adaptation plans are given proper consideration. This would, however, also require climate change and adaptation to be placed on the agenda of existing social dialogue agendas, so that the constituents will be able to discuss and agree positions and approaches. This is also important, given that it is through these processes that positions and approaches to be included in National Adaptation Plans (NAP) and NAPA's can be developed and articulated.

**Box 6: Early lessons on the effectiveness and legitimacy of National Adaptation Programmes of Action**

At present, there is sparse documentary evidence on outcomes of NAPA planning processes or implementation. One case that has been examined is that of the Bangladesh NAPA (Huq and Khan, 2006). The authors recommend that NAPAs should adopt: a) a livelihood rather than a sectoral approach; b) a focus on the short- and medium-term impacts of climate variability, as well as the long-term impacts; c) the integration of indigenous and traditional knowledge; and d) procedural fairness through interactive participation and self-mobilisation (Huq and Khan, 2006). They found that NAPA consultation and planning processes are subject to the same constraints and exhibit the same problems of exclusion and narrow focus as other national planning processes (such as those for poverty reduction strategies). They conclude that the fairness and effectiveness of national adaptation planning depends on how national governments already include or exclude their citizens in the decision-making process and that effective participatory planning for climate change requires functioning democratic structures. Where these are absent, planning for climate change is little more than rhetoric (Huq and Khan, 2006). Similar issues are raised and findings presented by Huq and Reid (2003), Paavola (2006) and Burton et al. (2002). The key role of non-government and community-based organizations in ensuring the sustainability and success of adaptation planning is likely to become evident over the incoming period of NAPA development and implementation. (Source IPCC 2007b pp.732).

Prioritizing protecting livelihoods of the vulnerable in Lesotho

Another interesting case is the NAPA of Lesotho. This NAPA has, to a high degree, prioritized maximizing the positive livelihood and employment impacts of adaptation measures. Proposed adaptation measures were evaluated based on six criteria: impact on vulnerable groups and resources; impact on the economic growth rate of the vulnerable communities; impact on poverty reduction; multilateral environmental agreements synergies; employment-creation; and prospects for sustainability. As a result, the top three adaptation options identified were: 1) improve the resilience of livestock production systems under extreme climatic conditions in various livelihood zones in Lesotho, 2) promote sustainable crop-based livelihood systems in the foothills, lowlands and Senqu River Valley; and 3) capacity-building and policy reform to integrate climate change into sectoral development plans.

Source: Lesotho's NAPA. [39]

The second potential role of the ILO and its constituents would be to use its expertise to enhance the planning and decision-making processes around adaptation to address some of the challenges identified in the current planning processes (See box 1 and Perch 2011). This could mean supporting the establishment of dialogue frameworks and processes to support more inclusive decision-making. Concretely, this would imply two key objectives. The first is that the processes for formulating NAP and NAPA are enhanced to ensure that the decision-making process is balanced, based more on dialogue and less on hierarchical or technocratic approaches. It would imply that broad involvement is not just for the purpose of consultation of affected groups but that their views and interests are also ultimately reflected in the decisions made. The second key objective would be to create measures and mechanisms to ensure that all relevant actors are involved. From the side of the government it would mean additional relevant ministries take part but the bigger challenge would be to ensure that those most vulnerable to the effects of climate change are enabled (and empowered) to participate effectively and to have a voice in these processes.

## 4.2 Employment-intensive disaster risk reduction

Over the years, the ILO has developed an approach to disaster risk reduction that focuses on preventing the loss of livelihoods and income and the recovery of livelihoods after disasters strike. An important focus of this approach centres on ensuring the

[39] Accessed on http://unfccc.int/resource/docs/napa/lso01.pdf

preparedness of central and local authorities and stakeholders for quick livelihood recovery in future disasters through pre-disaster livelihood recovery planning. [40]

An important component of climate change adaptation measures for sustainable livelihoods is the implementation of a pre-disaster recovery planning process to improve the preparedness of authorities and stakeholders in responding to climate change events when they happen. Though humanitarian relief in the event of a disaster becomes the priority of the authorities and the international community and can be effective, the need for a rapid livelihood recovery is less present in the disaster response agenda and has no predictable funding channels. Moreover, delays in implementing efficient and effective recovery processes are often caused by the lack of recovery- specific preparedness measures.

This lack of preparedness for recovery has an effect in increasing the vulnerability of communities to future disaster risk and in setting back years of development gains. Actions taken during the first few weeks and months after a disaster have a major impact on the recovery process to follow, and they need to be planned and implemented accordingly. Choices made immediately after a disaster on issues such as livelihood recovery can affect later choices for longer-term vulnerability reduction and local economic recovery and can have severe consequences for the ability of the poor to recover.

Waiting for foreseeable climate change events to strike and then rushing off to support the recovery of the affected populations is not a wise choice. The aftermath of a disaster is the wrong time to create new institutions, establish new policies and legal frameworks, and recruit staff as all of this takes time. Lessons learned from recent recovery operations have resulted in recommendations that governments must consider, ahead of time, how best to organize government agencies, institutions, laws and finances, in order to address large-scale recovery and reconstruction needs with minimal delay and maximum effectiveness. All this should be part and parcel of existing labour-intensive public employment programme strategies, if they exist, allowing for a rapid scaling-up if and when needed.

For the above reasons, pre-disaster planning for the recovery of productive livelihoods should be considered a priority among climate change adaptation measures. Pre-disaster planning is a process that includes the systematic identification of vulnerabilities and risks, the designing of possible scenarios and the development of the necessary regulations, institutional and financial mechanisms, instructions, responsibilities and the information required for key stakeholders to be prepared to effectively and efficiently restore and improve the pre-existing facilities, livelihoods and living conditions of the affected population.

Therefore, pre-disaster recovery planning plays a critical role in overall disaster risk management and climate change adaptation for productive livelihoods. It includes the process of reducing risks to livelihoods in disaster prone areas before disasters strike, as well as plans and actions aimed at restoring and improving livelihoods efficiently and effectively during the post-disaster recovery phase.

[40] This section is an edited excerpt of the ILO's contribution to the UNFCCC workshop "Increasing Economic Resilience To Climate Change And Reducing Reliance To Climate Change On Vulnerable Economic Sectors Through Economic Diversification," held in Cairo, Egypt, from 28– 30 April 2009).

## 4.3 Displacement and migration

Although migration is likely to be an adaptive response in some countries and areas, the work done on how climate change will affect international migration, in particular, has so far been limited. The International Organization for Migration (IOM) is leading the work on how climate change will affect migration in general, and it acknowledges that projecting the scale and nature of climate and other environment-related migration flows remains extremely difficult.

This is partially because all migration, especially international migration, is complex and is driven by a combination of factors (See Box 6). Migration is often also a reactive adaptation response and it is, therefore, very difficult to predict migration patterns or attribute migration to climate change alone (Fritz 2010). This would, however, indicate that more and not less work is required to understand possible migration patterns that will result from climate change, so that measures and policies to address these can be formulated.

Some key principles for shaping migration polices in the face of climate change have, however, emerged from the work of the IOM. Firstly, as with all migration, it is critical to "ensure that migration can be a choice and to prevent forced migration" (IOM 2009). Secondly, it is argued that (voluntary) migration should be considered an adaptation strategy in itself because:

"While migration can be a manifestation of acute vulnerability, it can also represent an adaptation strategy since it can: help to reduce risk to lives, livelihoods and ecosystems; contribute to income diversification; and enhance overall capacity of households and communities to cope with the adverse effects of environmental and climate change. Migration has been used for millenniums as an adaptation strategy and is likely to be of growing importance in the future."

The ILO has a specific mandate with regard to international migration and is promoting a rights-based approach. While the Office would need to work closely with other agencies and organizations to address some of the likely challenges to arise from climate related migration and displacement, it should make sure that standards are at the centre of the debate and action. Indeed, beyond the protection of the rights of migrant workers contained in Conventions 97 and 143, these two instruments provide for sound and sustainable migration policies based on cooperation between states (countries of origin and countries of destination), social dialogue in the formulation and implementation of migration policies and the promotion of integration policies. The current knowledge of possible future migration flows is further confirmation of the need to actively promote the ratification of these conventions and seek their implementation. The ILO Multilateral frameworks for labour migration also offer guidance and advice to constituents on the many facets of labour migration and could serve as a tool for the promotion, ratification and implementation of policies.

**Box 7: Migration as an adaptation strategy in practice – The example of Guatemala**

Guatemala is exposed to seasonal hurricanes, flash floods, landslides, flooding and droughts; while poverty, environmental degradation, crowding in high-risk areas, poorly planned infrastructure and insufficient preparedness heighten its vulnerability.

A 2008 survey on remittances and the impact of the environment revealed that in 2005, Hurricane Stan forced inhabitants of municipalities in Sololá, particularly the poor living in degraded areas, to flee to other communities, in order to start new lives. However, the study came up with no conclusive findings on the incidence of extreme environmental hazards on international migration; only one per cent of the respondents, essentially Guatemalans living abroad, indicated that they had migrated as a result of natural disasters. This underlines that factors ranging from economic to sociological come into play in their decision to migrate.

The survey did, however, confirm that Guatemalans living abroad do tend to provide significant support to the populations affected by natural hazards in their country of origin, through a sharp increase in remittances for reconstruction in the aftermath of disasters. A relevant indicator is the fact that families receiving remittances usually live in concrete houses (94.5%) that help them to cope better with natural hazards.

Source (IOM 2009). For further information, please see http://www.iom.int/Template/gmaps/migenv.htm

## 4.4 Social security and social protection

Social protection, including basic social security such as healthcare and minimum income schemes, is a well-established mechanism for reducing vulnerability and risk sharing with regards to loss of income, and its strengthening should be an integral part of adaptation measures. The ILO has been at the forefront of efforts to extend social security to all and is the responsible UN agency in this regard; it also has extensive expertise in this area of work. The ILO should, therefore, play a leading role in ensuring that social protection is a key pillar of adaptation policies and plans.

Social protection is important in climate change adaptation for at least four reasons. Firstly, it can reduce vulnerability to impacts such as rising food prices or unemployment, which exacerbate vulnerability to climate change even further. Secondly, social protection can enhance the adaptive capacity of the vulnerable, for example by supporting their nutrition, health and education. Thirdly, as explained earlier, social protection measures will be critical for addressing the residual impacts of other climate change adaptation measures. For example, if adaptation measures involve supporting farmers to switch to less temperature sensitive crops, social protection measures can form a safety net for those farmers. Especially in countries that will be significantly impacted by climate change, it is hard to imagine effective adaptation strategies that do not incorporate strong social protection. The reason is the high likelihood that some people will lose their income and that if they are not assisted through social protection they will fall further into poverty. Fourthly, historical experiences with structural change and shocks have demonstrated the importance of social protection to absorb these shocks and at the same time act as "automatic stabilizers" of the economy leading to faster recovery. In the context of climate change this means that impacts of climatic events on people and their income will be buffered by social protection. Economies that are highly exposed to climatic changes will be less vulnerable as people are capacitated to overcome times of climate stress. Investing in social protection is, in essence, an anticipatory adaptation intervention that enhances the adaptive capacity of society. At the same time, social protection systems should also include a reactive mechanism, so that they can react to sudden or unexpected climate change impacts.

All this highlights the importance of social protection in adaptation and the fact that it must form a major pillar of work for countries adapting to climate change. The important role that social protection must play in adaptation strategies aligns with the need of most

developing countries to strengthen their social protection schemes. Indeed, this has already been reflected in the ILO's work on promoting the establishment of a social protection floor and implementation of the various social security conventions, especially the Social Security (Minimum Standards) Convention, 1952 (No. 102). At the same time, however, it should also be recognized that social protection cannot be the main adaptation response. Ultimately, preventing the loss of, or restoring, employment and livelihoods must be the main objective of adaptation policies. How social protection systems will adapt to the new demands that climate change will place on it will be explored below.

The table below presents some of the new or additional demands that climate change is likely to place on social protection systems. The table also gives examples of situations when these demands would arise, as well as possible social protection responses. The possible social protection responses are not meant to be exhaustive as there are many ways in which social protection systems can respond to these new demands.

**Table 3: New or additional demands climate change can place social protection systems**

| New or additional demands | Example | Possible adaptation of social protection responses |
|---|---|---|
| Increased coverage due to loss of income/ higher unemployment | Businesses may move away from areas vulnerable to extreme weather events leading to higher unemployment and closure of local businesses due to reduced local demand | Administrative ability and financial capacity to increase coverage to cover in increased number of unemployed |
| Increased coverage due to reduction in income | Productivity of small farmers is decreased due to increased droughts and floods | Schemes to provide complementary income or assistance to those who have experienced temporary or long-term losses in income to ensure they maintain a minimum income level and are not obliged to migrate |
| More frequent crises and shocks, greater instability | Due to climate impacts on agriculture, food prices increase and are more volatile food prices thus destabilising household consumption and increased numbers of households that move in and out of poverty (sometime poor) | Flexible arrangements and eligibility requirements for social protection schemes targeting the poor are adjusted to avoid exclusion of the sometimes poor |
| Increased need to support transitions and migration | Workers in sectors negatively affected by climate change may need to shift to other economic sectors | Social protection systems to be designed to support such transitions by guaranteeing income during training and searches for new work |
| Increased need for health care coverage | Increased spread of diseases due to increased temperatures combined with reduced income results in additional need for supporting access to healthcare | Universal health care coverage is expanded to cover those diseases whose spread has increased due to increased temperatures |

The examples in table 3 highlight a number of issues. Firstly, existing social security systems are not automatically responsive to climate change and it is likely that some adjustments will be required. It cannot, for instance, be assumed that those vulnerable to climate change will automatically be able to access existing social protection benefits should they need them. This is particularly the case for social protection programmes that are not universal but rather targeted to specific vulnerable segments of the population. In such programmes, targeting criteria and processes may need to be adjusted to ensure that those affected by climate change are not being excluded or are currently only able access benefits after lengthy application and testing procedures. Land ownership is sometimes used as an eligibility criterion or is factored into means testing in rural areas, and ownership of more than a certain area of land can make a household ineligible. However, if climate change has reduced the productivity of the land then such criteria may need to be adjusted.

Occupations in particularly vulnerable sectors such as agriculture and fisheries may also require specific social protection, for instance to compensate for lost income or to ensure a continued minimum level of income for those most affected by climate change. However, these sectors often have a high degree of informality and so tend to fall outside national systems that cover only the formal sector. Approaches that are also effective in targeting informal workers such as cash transfers or public employment programmes may be required to cover these sectors. While public employment programmes are often instituted as short-term measures in response to shocks and disasters, it is becoming increasingly evident that seeing these as long-term programmes that are designed to be responsive to changing circumstances is likely to be more effective (ILO 2010b).

Where changes in occupations are envisioned because of climate change and/or adaptation policies, the re-skilling of workers may be required and social security interventions may need to be put in place, in order to provide workers with an income during their re-skilling.

The mechanisms used to finance social security may also need to be reviewed and adjusted if a social security scheme is to be "climate proofed". For instance, the financing mechanism will have to be flexible and be able to extend coverage on short notice. Or, in the case of contributory schemes, it may be necessary to ensure that those who are likely to be in need of social protection schemes also start contributing.

It is worth noting that many of the issues raised by the impacts of climate change further support the promotion of universal social protection as opposed to targeted schemes. One of the key criticisms of targeted social protection is that it fails to take into account the dynamic nature of poverty (ILO 2010a). The instability generated by climate change is likely to result in even more people moving in and out of poverty more frequently and thus increasing the risks of excluding more people in need of social protection. Furthermore, universal schemes are generally designed to be able to shrink and expand due to changing demands, and so their design is more compatible with the changing demands that climate change impacts will require.

Given the important role of social protection in adaptation, and the responsibility of the ILO in promoting social protection, additional efforts will be required to further develop the role of social protection in adaptation. Some important questions to be explored in greater depth are: which social protection instruments are feasible for use in adaptation strategies, how different social protection and social security systems can be adjusted to also address vulnerability to climate change, how social protection should be integrated with other adaptation strategies, and to what extent adaptation funds can and should be mobilized to finance social protection systems in LDCs.

## 4.5 Microfinance and microinsurance

Access to financial services, including savings, insurance, emergency loans and money transfer services (sending and receiving remittances) is particularly important for vulnerable populations to enable them to a) manage risk (protective purpose) and b) adapt to business challenges and opportunities (productive purpose). Financial inclusion contributes directly to building effective adaptive capacity. Indirectly, it helps to alter exposure or reduce sensitivity. Examples in section 5.3 show the potential for altering exposure and reducing sensitivity if people have access to effective financial services for productive investments. However, the reality for a majority of vulnerable populations is that they are excluded from the financial system. Often, microfinance providers are their only source, offering a narrow range of services. In addition, vulnerable populations tend to lack the financial literacy to effectively compose a coping strategy to adapt to climate change.

Developing innovative and tailor-made financial products that help vulnerable populations adapt to climate change remains a challenge that financial service providers are yet to meet. Innovative microinsurance products, e.g. weather index-based crop and livestock insurance for small farmers, are increasingly recognized as an important component of an effective adaptation strategy. However, serious challenges remain in understanding the associated risks and establishing an "insurance culture" among the most needy, for scaling up microinsurance for wider coverage and finding effective delivery channels that reach poorer and more vulnerable populations. Another important issue remains the affordability of, for example, crop insurances for small farmers. Given that many such products are new with a relatively high price, it is likely that in particular small farmers in developing countries will require some type of subsidies or support, in order to ensure that effective insurance products are, indeed, used by those people who need them.

The ILO, through its "Microinsurance Innovation Facility" [41] is currently testing approaches in countries identified as being vulnerable to climate change such as Ethiopia, Ghana, India and Kenya. In addition to crop and livestock, the Facility is also experimenting with other microinsurance innovations such as health, property and life, which will enable vulnerable households to improve their risk management strategies.

Smaller providers of financial services, especially microfinance providers, have highly correlated risks in their portfolios (e.g. serving clients in limited geographic area that depend primarily on the agricultural value chain). This makes them vulnerable themselves to sudden climate change effects. These providers, similar to their often vulnerable clients, need climate change-related capacity-building not only for innovative product and delivery channel development but also for their own risk management.

[41] See: http://www.ilo.org/public/english/employment/mifacility/

**Box 8: ILO Microinsurance Innovation Facility (Facility) - Protecting the working poor from climate change impacts**

Housed within ILO's Social Finance Programme, the Microinsurance Innovation Facility seeks to increase the availability of quality insurance for the developing world's low-income families to help them guard against risk and overcome poverty. Microinsurance is intended to protect the working poor, particularly those working in the informal economy.

Poverty alleviation efforts focus on boosting incomes, building assets or creating jobs, all of which are important objectives. But these efforts must be balanced with a corresponding intervention on the protective side. Severe weather can wipe out a family's crop and leave it with nothing to eat until the next harvest. Other climate change impacts will have a similar effect on low-income families.

Microinsurance has the potential to help low-income families cope with these and other risks. Set up in 2008, the Facility endeavours to promote the development of new products and provide improved access to "value for money" insurance services for large numbers of low-income households and enterprises through provision of grants, supporting capacity-building, conducting research and disseminating good practices.

The Facility's portfolio includes initiatives that build knowledge and capacity about how climate change effects impact employment and incomes.

Two examples of these initiatives are:

The Risk-Modelling Crop Loss research in Ghana aims to collect and analyze information on weather events and crop losses, as well as on health and economic data in Ghana. This research will add value by fully developing new correlations among these variables and comprehensive indices, which will be useful for designing weather-indexed products to mitigate agricultural losses. By reducing covariant risk, these insurance products would enable banks to lend to farmers in Ghana and other drought-prone regions.

In Asia and the Pacific the project Evolving Climatic Adaptation through Crop Insurance: The project aims to use weather indexed crop insurance as a tool with which to adapt to climate change. Farmers organized as self-help federations under People Mutuals will act as risk carriers, with a risk transfer mechanism from Eureko Re, and will develop location-specific crop insurance products. To stimulate demand and build capacity, farmers will be trained in climate change, and drought and water management issues. Farmer federations will develop, through Mutual Insurance Committees, a mutual solution for specialized, localized crop insurance needs. Although the products are envisioned to cover location-specific risks associated with local crop, soil and climatic conditions, the model for risk identification and sharing is designed to be replicable.

## 4.6 Infrastructure investments and public employment programmes

Infrastructure is likely to be a key component of adaptation strategies in most countries. In fact, many of the NAPA developed so far place significant emphasis on investment in infrastructure. Infrastructure investments are, in essence, planned and anticipatory forms of adaptation, and are popular as they can also contribute to the various adaptation strategies that form part of efforts to reduce vulnerability. Furthermore, increased investment in infrastructure allows the promotion of direct, indirect and induced employment in both rural and urban areas. The table below provides examples of this.

**Table 4: Role of infrastructure investments in various adaptation strategies**

| Adaptation Strategies | Labour intensive response | Comments |
|---|---|---|
| Alter exposure | Planting trees; building dikes and other flood defences | Can reduce exposure to rising sea levels and floods |

| | | |
|---|---|---|
| Reduce sensitivity | Raising road embankments; paving roads thus ensuring livelihoods and access to basic services (education, health, water); climate proofing of buildings, structures to reduce soil erosion; irrigation in drought prone areas; slum upgrading | Raising of road embankments reduces the sensitivity of roads to flooding; paved roads better withstand heavy rains and floods; climate proofing of buildings may involve raising them; strengthening foundations or other parts of the structure; upgrading slum areas can make them less sensitive to heavy rains. |
| Enhance adaptive capacity | Investments such as irrigation and other water structures that improve water management; investments that stimulate local development in general | Investments that are aimed at enhancing adaptive capacity are often difficult to distinguish from more general sustainable development interventions; many investments that contribute to reducing sensitivity can also enhance adaptive capacity; reforestation can, for instance, reduce the sensitivity of land to water damage and erosion but enables economic diversification |

There are, however, different strategies for infrastructure investments and for more than thirty years, the ILO has been advocating an employment-intensive and local resource-based approach to infrastructure development. [42] This applies a needs-based, inclusive and participatory approach using appropriate technology, often minimizing capital-intensive equipment and applying environmental-friendly construction methods. In this way, the employment and local development potential of these investments are maximized, while the quality of the infrastructure is maintained. Applied in local communities, it helps them adapt to the effects of climate change, as well as generate income, and create much-needed jobs. These approaches can contribute to environmental and private or public infrastructure preservation and improvement, soil conservation—in rural and in low-income informal urban settlements—whether in times of crisis or not. They can also support local SME contractors, offer community contracting tools and strengthen effective local organizations and national institutions in the management of these programmes. Maximizing the use of local resources will also have significant multiplier effects on the economy, thus supporting local economic development.

Public infrastructure investment strategies can be an important instrument with which to create a much needed jobs boost in employment and employability. Since the mid 1970's, the ILO has been evaluating the actual or potential socio-economic impact assessment on public investment budgets, programmes and projects on employment creation, [43] assessing the employment impact of infrastructure components of different sectors using micro project level data to the macro level national employment impact assessments. The latter can provide governments with a useful instrument with which to assess the employment impact potential in different sectors, thus allowing them to develop the policies needed. This holistic and integrated approach ensures that macro-micro linkages are appropriately addressed, in order to have a greater impact in reducing vulnerabilities and also in increasing sustainable livelihoods.

Through its standard-setting activities the ILO can also promote Convention No. 122, thus, in turn, promoting "full employment" through its Employment Policy Convention and Convention No. 94, the Labour Clauses (Public Contracts) Convention, with a view to

[42] See: http://www.ilo.org/eiip

[43] ILO 1998, "Of Nets and Assets: Effects and impacts of employment-intensive programmes – A review of ILO experience", W. Keddeman, SETP No. 1, Employment Intensive Investment Programme (EIIP), Development Policies Department, International Labour Office, Geneva.

ensuring that substantial public investment in infrastructure and the purchase of goods and services do not have a depressing effect on working conditions elsewhere in the economy.

Infrastructure can also be provided through more centrally driven public employment programmes (PEP) and public works programmes, and there is also scope for integration with social protection measures. These programmes are common in contexts of surplus labour, such as post-crisis situations or times of high unemployment. The main focus of these programmes is to create employment and provide income to the otherwise unemployed, thus contributing to social protection. In many instances, the employment created is in the form of infrastructure-related projects and activities, and these can easily be directed at adaptation-related infrastructure. Increasingly, however, projects and activities that have an environmental or social focus, or both, are also included in these programmes, and these can also contribute to adaptation efforts. How PEPs can integrate social protection and adaptation outcomes will be discussed further in section 6.1.

**Box 9: Green Jobs in practice: Employment-intensive investment programmes to reduce the negative effects of natural disasters by environmental protection and employment creation in Haiti**

Hurricanes are a major cause of concern in Haiti as they are occurring more frequently and with greater intensity. Hurricane Jeanne, one of the deadliest to hit the region, ripped through the shores of Gonaives causing heavy mudslides, killing more than 3,000 people in Haiti and leaving thousands more homeless. As a response, since 2006, the local population has been helping to restore the extremely fragile and weakened environment around the city in a programme managed by the ILO and implemented in cooperation with the Haitian Ministry of Planning and External Cooperation, the United Nations Development Programme (UNDP) and the World Food Programme (WFP). Workers associated in local federations have implemented watershed management plans carrying out multiple activities—everything from gully erosion control measures such as check weir construction, to contours for slope protection, river training, the protection of structures and afforestation—all in exchange for cash and food for work.

Although originally initiated as a rapid recovery intervention designed to provide immediate relief and livelihoods to the most vulnerable and affected populations, from the outset the employment intensive investment approach in Haiti has embedded a long-term approach to sustainable development by ensuring social dialogue and organization, local employment generation, environmental rehabilitation, and by introducing disaster risk reduction mechanisms into their works.

Capacity building was a major component of the programme. Local populations, influential economic operators and local authorities have been informed, sensitized and trained in organizational, managerial and technical issues related to watershed management, simultaneously increasing their awareness to modify their environmental protection behaviour. Regional technical departments (planning, agriculture and environment) participated in the selection and planning process, implementation, follow-up, as well as in defining maintenance strategies.

The main impacts of the programme until 2011 have been:

Improved social stability through employment creation and increased income.
Creation of direct (> 2 million workdays) and permanent employment (220 people managing and working in tree nurseries).
Improved nutrition (2 food ration supplements per WD provided by WFP) benefitting 35,750 people, (about 40% in food and 60% in cash).
Decreased vulnerability by having different water and soil conservation activities and infrastructure works completed (private properties and agricultural land).
Creation of federations capable of negotiating contracts and implementing such works.

Source: Employment Intensive Investment Programme, ILO 2011

## 4.7 Local markets and enterprise development

Adaptation needs and opportunities are very context specific and have a high local dimension. To support local communities and reduce exposure, diversification is vital. A strong focus on local economic development (LED) [44] can be an important mechanism for supporting the process of economic diversification as it shifts the focus to the local needs and opportunities, which tend to be more diverse, and away from concentrating on sectoral needs only. Diversification is a key strategy for all economic sectors including small farmers and micro, small and informal enterprises. Measures to support these enterprises with diversification are an area in which the ILO has considerable experience through its work on LED and enterprise development.

Focusing on the businesses, communities and workers at the local level is critical for building the resilience of local economies as it tends to lead to a more diversified local economy and more opportunities for job creation. Because of its focus on the local area, it is also more in tune with locally available resources and the state of the local environment. LED—as an approach—promotes the diversification of household income options for vulnerable populations. It is aimed at ensuring that their income and assets become less vulnerable to climate change impacts. Other elements of LED include supporting enterprises in consolidating their position in the formal or informal market, working with governments, and employers' and workers' organizations on policies and programmes to facilitate financing for small and medium enterprises, as well as giving advice on tools and approaches for the responsible restructuring of sectors, value chains and enterprises.

## 4.8 New sectors, occupations and green jobs

There are some regions and sectors that will stand to benefit from new opportunities created by climate change and adaptation efforts. This will lead to the creation of new jobs and professions. These new jobs could be created in existing enterprises, governments and third sector organizations and be related to climate proofing within their sector or sphere of work and so also reduce the risks of job losses. Alternatively, they could also give rise to new enterprises and organizations. Examples of these include the increasing number of agricultural extension officers helping farmers to adapt to climate change, and increased employment in the design and production of irrigation technologies or new research institutions established to further investigate the impact of increased water temperatures on fisheries in a specific country or region.

In areas in which adaptation measures also contribute to mitigation efforts, there will also be significant potential for new jobs and occupations. The forestry sector is one such sector, although there is still some uncertainty about the scale of this potential, as was concluded in the Green Jobs report:

"Due to the lack of information about employment in this sector, it is impossible to give a global quantification of green jobs that might be created through agro forestry, afforestation and reforestation, sustainable forest management (SFM), and avoided deforestation projects. These sustainable land-use changes are likely to have positive long-term impacts on employment measured both in the quality and quantity of jobs. These sustainable land-use changes may, however, have some immediate negative consequences,

[44] See http://www.ilo.org/empent/Areasofwork/lang--en/WCMS_093862

but sustaining this sector is likely to have a long-term positive effect on employment as jobs are extended over a much longer period of time (UNEP 2008)."

Green jobs and green enterprise promotion in adaptation technologies and services, as well as in mainstreaming adaptation needs into existing jobs and business promotion programmes and tools should be borne in mind when developing active labour market policies. These tools could be delivered through public and/or private training programmes and BDS support. The ILO's long standing expertise in promoting entrepreneurship through its Start and Improve Your Business, Know About Your Business and Cooperative creation tools are very valuable in this regard. Some tools have already been adapted and include new business opportunities in adaptation products and services, as well as measures for existing business and cooperatives to cope with environmental and climate change.

## 4.9 Skills policies and development

Skills-aimed interventions have great potential for reducing vulnerability and effective adaptation will require a host of new skills. Skills policies and development will be most effective if they are anticipatory. What these skills encompass, however, will depend partially on what adaptation strategies and responses are chosen. However, skills development should be a part of all three adaptation strategies, as demonstrated in the table below, and is likely to be a valuable component of any adaptation approach. A recently completed study by the ILO (Striestka-Ilina et al. 2011) on Skill Needs for Green Jobs has, however, highlighted that skills development strategies have so far rarely been recognized as possible adaptive responses in the NAPAs.

**Table 5: Examples of the role of skills development in various adaptation strategies**

| Strategy | Example | Skills requirement |
|---|---|---|
| Alter exposure | Improve accessibility of relevant climate information and forecasts<br>Slow-onset event and disaster preparedness | New skills required to interpret, communicate and understand/ internalize new information<br>People trained on how to avoid exposure in case of slow onset events (e.g. plant mangroves along the coast) and future disasters (climate proof infrastructure, etc.) |
| Reduce sensitivity | New farming techniques; seeds and crops that are less sensitive to drought; irrigation; water and soil conservation techniques | Farmers need to be trained in the use of these new techniques |
| Adaptive capacity | Switch to other work/ economic activities | Core skills, new technical skills, portable skills |

The aim of this research carried out on skills for Green Jobs in 21 countries was to obtain a better understanding of how skills requirements are changing because of climate change among other drivers of the evolution in skills needs. The ILO can support countries by providing skills needs and skills policy assessments, as well as with the implementation of recommendations arising from these assessments.

It was also found that placing the emphasis on education and training, and on basic and portable skills, helps workers adapt to changes in labour markets and move more easily into new jobs in other sectors. This emphasis on basic and core skills is likely to be beneficial, regardless of the adaptation strategy chosen. Training should not, however, focus exclusively on those in the formal sector since training in rural areas will be equally important. [45]

Apart from the training content, access to training was also identified as a critical issue, especially for specific disadvantaged and vulnerable groups. In particular, the poor, illiterate and low-skilled, as well as those living in rural areas, women and the disabled are likely to require specific targeting efforts if they are going to participate in skills development to the level required for effective adaptation.

It was also found that training programmes are important components in the diffusion of new technologies related to adaptation, e.g. the introduction of new farming techniques and crops. Besides capacity-building for decision-makers to support research and development and technology diffusion, a key challenge in this regard is to ensure that skills to design, adopt, adapt, implement and maintain appropriate technologies are incorporated quickly enough within the relevant training programmes. This requires anticipation of, and planning for, these new technologies and can generally only be achieved if there is close cooperation between the training sectors, employers and employees. Multi-stakeholder cooperation and coordination among universities, research centres, training providers, the private sector and NGOs has proved to be an important success factor in the effective and appropriate development and diffusion of technology and skills.

Finally, it was found that relevant skills for adaptation in developing countries could include:

"capacity building for micro and small enterprises and within the informal economy to enable green jobs to be created in localities where they are most needed; the provision of entrepreneurship skills for young people and adults, in conjunction with microfinance projects and continuing business coaching, to enable them to establish and maintain green businesses; capacity development and environmental awareness raising among decision-makers, business leaders and administrators as well as institutions of the formal and non-formal training system; capacity development among tripartite constituents to strengthen social dialogue mechanisms and to extend that dialogue to address the accessibility and availability of green jobs and related training for all; building on synergies with NGOs that already provide skills for green jobs, mainstreaming these mostly uncoordinated and fragmented training programmes within the system; and last but not least, increasing the capacity and level of formal education and training systems and institutions to provide basic skills for all and enhance the skills base of the national workforce."

Recognizing the requirement for environmentally driven skills, a strategic response is needed. Policy-makers, in consultation with social partners, want to ensure that support for skills and training matches the focus and ambition of their strategies, in order to promote

[45] For supporting diversification of livelihoods in rural areas the ILO has *inter alia* developed the Training for Rural Economic Empowerment (TREE) package, a proven platform that assists those working in largely informal economies to acquire the skills and abilities needed to generate additional income. The package uses a systems approach to identify emerging and potential employment, income generation and small business opportunities and delivers training in practical skills and business management.

investment in green innovation and infrastructure. To allow socially acceptable restructuring, governments must ensure that fundamental rights are respected and they must use the set of international labour standards that the ILO has developed over the years as guidelines in this work. The ILO has several instruments that can be used in relation to the development of skills policies. Recommendation No. 195, for instance, provides guidance on a number of issues that are central to contemporary education and training policy and the system reforms underway in the Member States. [46]

## 4.10 Standards and conditions of work

The ILO's work on standards and conditions of work is constantly faced with the challenges of maintaining and improving these in the face of structural changes in economies and societies. The structural changes brought on by climate change will also impact on the implementation of these standards and their conditions of work. The risk of deteriorating rights are especially significant in sectors vulnerable to climate change such as agriculture, fisheries and tourism, not least because these sectors are often already facing significant challenges in achieving the implementation of decent standards and conditions of work.

Furthermore, if climate change does increase the volatility and instability of economies this is also likely to increase pressure to realize decent work. The ILO and its constituents will need to develop strategies to face up to these challenges, and these may require efforts to "climate proof" labour market legislation and institutions to cope with this increased volatility. In many of the most vulnerable countries, where much employment is informal, it may also require that efforts be increased to extend features of labour market legislation and related social security measures to include those employed in the informal labour market.

At the same time, policy coherence is needed to ensure that decisions on climate change measures are consistent with international labour standards. Coherence among policies within and across governance levels is a necessary condition for improving human well-being and environmental concerns. It will be important to look at labour standards as part of policy packages on climate change to ensure a just transition for workers. Standards relevant to the labour market must be taken into account as part of a policy package that incorporates broad social concerns as natural complements to economic measures. This message is reinforced when conventions are seen to support successful solutions to problems, bringing parties together to achieve a shared goal. While developing adaptation policies, many standards can become part of a package that can guide policy makers in this work. In addition to Convention No. 122 on employment policy, such a package could also include conventions on tripartite consultation, training and education, and wages and employment services, to name but a few. Depending on specific sectors, standards related to them must also be included. [47]

[46]See:http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---actrav/documents/publication/wcms_153352.pdf

[47] From Olsen 2010.

# 5. Supporting countries to integrate ILO expertise for enhancing adaptation

All the measures and expertise identified above can be used individually and can have beneficial adaptation impacts on their own. Applying these approaches in isolation is, however, likely to have a limited effect and integrated approaches are likely to be much more effective. Rather than supporting countries in promoting these various measures separately, it would be of far greater strategic value to promote more integrated approaches to adaptation that are aligned to country specific contexts and needs. Over the course of the interviews and discussions with ILO staff in preparation for this paper, a number of areas of possible synergies emerged. The integration of work in these areas could potentially enhance efforts at various levels; these areas are elaborated upon below.

It must be stressed that these proposed areas for possible integration are examples of combined existing measures, which are mutually reinforcing and are the most obvious ones. Regarding their implementation, these should be based on socio-economic country-level assessments and priorities as set by participatory social dialogue. This paper tries to highlight relevant measures in a modular approach as a way to support governments, employers and unions' organizations in identifying the most appropriate adaptation elements to be integrated and combined as appropriate to suit regional, national and local specific needs.

## 5.1 Multi-sectoral public employment programmes: providing quality infrastructure, social protection and local development

Experiences all over the world have demonstrated that large-scale public employment programmes can combine the provision of adaptation infrastructure, the rehabilitation of natural resources, [48] enhanced local employment and social protection, as well as high degrees of local participation. These programmes are an important option for prevention and rehabilitation measures related to slow-onset events. In times of climate related crisis, they can also complement and fill the gap when the private sector is unable to invest or provide the much needed safety net to ensure a just transition.

Large-scale national programmes like the National Rural Employment Guarantee Scheme in India, the Productive Safety Net Programme in Ethiopia and the rehabilitation of the Loess Plateau in China are current examples of the ability of these approaches to operate at scale and rehabilitate degraded regions, restoring or protecting livelihoods while at the same time providing incomes, social protection and employment to those who need them most. All of these programmes incorporate the use of labour-based methods to maximize the employment and income effects targeting the poorer and more vulnerable segments of the population. The ILO has been promoting such approaches as Public Employment Programmes (PEP). [49] The strength of these programmes is that they have the potential to address various causes of vulnerability such as working conditions and wages,

[48] Relevant activities of these programmes include irrigation works, water and soil conservation, flood protection, roads and forestry.

[49] Through its Employment Intensive Investment Programme (EIIP) and the International Training Centre (ITC) in Turin, the ILO offers the "Innovations in Public Employment Programmes" that assist with building capacity on this.

skills, the development of quality and productive assets and services. As the various designs and approaches of these Public Employment Programmes—and their use in a wide range of contexts and conditions—demonstrate, they can be designed and adapted to suit local conditions and priorities, and can contribute to building the resilience of ecological and socio-economic systems simultaneously.

These programmes are mostly public sector driven and financed, and their impact can be maximised by integrating them with LED interventions that boost local private sector development. The local markets are stimulated by the increased local demand generated through these PEPs. LED programmes need to support the local private sector so that the latter can benefit from increased local demand. At the same time, PEPs should aim to provide improved infrastructure and services that will support local enterprises as they grow and diversify. Together, these approaches can constitute very effective instruments for adaptation.

**Table 6: Objectives of integrated PEP, social protection and LED approaches**

| Objective | PEP, social protection & LED outcomes | Examples |
|---|---|---|
| Employment Creation | Additional public and private employment, typically at minimum wages for those available for work; dignity, income and empowerment from work | Enhanced adaptive capacity due to access to employment and income; increased self-confidence and ability to improve local context |
| Investment in climate proofing infrastructure, natural infrastructure and natural resources | Roads and other infrastructure climate proofed; natural infrastructure such as mangrove sea-level protection build; soil and water conservation measures reduce erosion effects of heavy rains | Reduce exposure (flood and sea level rise defences) or reduce sensitivity (soil and water conservation); employment created diversifies income and increases resilience (and so reduces sensitivities) |
| Social protection | Income security at a minimum level of income | Reduces sensitivity to extreme weather effects or other losses due to changes in ecosystems. |
| Local development | Strengthened local institutions<br>Increased local demand<br>Increased local production and more diversified income | Local, resource-based approaches have strong multipliers, contribute to sustainable development; stronger local institutions increase adaptive capacity; local enterprises can grow by responding to increased local demand |
| Governance | | Stronger local institutions; adaptive capacity; better disaster risk reduction; strengthen local skills and economies; strong local involvement; legitimacy, local knowledge |

These programmes do, however, always have multiple objectives and as such would be hard to categorise as exclusively adaptation programmes. In fact, such programmes address sustainable development at large. This is an issue for most measures that invest in increasing adaptive capacity; they are, and should be, linked to a much broader set of development goals and outcomes. The key question is how PEPs, which would include a focus on local development and social protection, can be designed to be more responsive to specific local adaptation priorities. These are likely to be a combination of social protection and employment measures and the adaptation of infrastructure. Often, building natural infrastructure and rehabilitating natural resources is not only the most cost-effective

way to adapt but is also the most environmentally mutually supportive way. For example, in coastal areas of Vietnam, mangroves were planted as flood defences rather than dikes because the former were cheaper, and this resulted in multiple environmental and economic benefits. To harness economic benefits and ensure the sustainability of employment creation of such adaptation programmes, local economic diversification and enterprise development is key.

**Box 10: Ethiopia's Productive Safety Net programme**

"Before this programme, we could only eat twice a day. In the hungry time before the harvest perhaps we would only have one meal. The children suffered. Sometimes I could not keep them in school or pay for medicines when they were ill. Of course life is difficult but at least now I have something to get us through the hard times. Now we eat better food, I can keep my nine-year-old in school, and I am saving to buy a calf."

These are the words of Debre Wondimi, a 28-year-old woman with four children, who lives in Lay Gant woreda (district) of South Gondar, Ethiopia.

Like millions of people across the country, her life is a struggle to cope with the lethal interaction of drought and poverty. Today, she is a participant in Ethiopia's Productive Safety Net Programme (PSNP), a bold attempt to tackle the food security threats posed by an uncertain climate. This programme could provide important lessons for countries addressing the risk management challenges posed by climate change. Food insecurity is an integral element of poverty in Ethiopia. Traditionally, the response to food insecurity has been food aid. The PSNP is an attempt to break with this humanitarian model. It is an employment-based social transfer programme. Targeting people facing predictable food insecurity as a result of poverty rather than temporary shocks, it offers guaranteed employment for five days a month in return for transfers of food or cash, i.e. US$4 per month for each household member. Coverage has been extended from five million people in 2005 to eight million by 2010. Unlike the food aid model, the PSNP is a multi-year arrangement. Financed by government and donors it has entered its second five-year phase, shifting the mode of support away from sporadic emergency aid towards more predictable resource transfers. Predictability is one of the foundations of the PSNP.

Source: HDR 2007/08 and updated using World Bank 2010.

## 5.2 Re-skilling, social protection and active labour market policies

Another approach in which the ILO has extensive experience and knowledge are active labour market policies that can assist with making a transition in society. Integrated active labour market policies could be designed as measures to increase the adaptive capacity across a broad spectrum of society. Such an approach would include measures that include skills training and re-skilling to enable people to cope with or take advantage of changes in their work or allow them to enter into new employment or livelihoods.

It can be combined with social protection and income support measures to enable those who lose income while in training to take advantage of these opportunities. These measures could be pooled with placement efforts and/or subsidies, in order to encourage or support the growth of new industries.

Strengthening institutional capacity to respond to climate change should also include institutions that are responsible for economic development, social protection, social dialogue, employment and skills development and infrastructure planning. Particular

emphasis needs to be placed on creating the link between national and local institutions to enable the planning and execution of local adaptation measures. Furthermore, strengthening the skills sector to offer vocational training relevant to adaptation measures is a critical part of enabling effective adaptation.[50]

### 5.3 Employment-intensive disaster risk reduction and access to range of financial services

In areas prone to extreme weather events, the combination of disaster risk reduction strategies to protect and quickly restore livelihoods with access to financial services has a high potential for synergies. Measures to protect and restore livelihoods are likely to reduce the impact of extreme weather events, which, in turn reduces the risk and consequently the premiums of microinsurance that cover such weather events. At the same time, microinsurance, savings, emergency loans and access to money transfer services are effective tools for restoring livelihoods after a disaster, especially in circumstances in which assets need to be replaced. Insurance products can be even more interesting if they cover various aspects of livelihoods including livestock and crops and also property and assets of small enterprises, for example tools of artisans or the stock of small shops. Institutions offering financial services need to be prepared through effective pre-disaster planning for when disaster strikes and the majority of clients need liquidity.

The ILO should carry out further research on the risk to which financial service providers are exposed and how they can build their capacity effectively, in order to assist the poorer and more vulnerable populations in protecting or restoring their livelihoods in times of disaster.

In section 4 we identified some of the ILO's work and expertise on enhancing climate change adaptation and in section 5 we highlighted some areas in which this expertise could be integrated to maximize the impact of some of the ILO's expertise and work on adaptation. This chapter has highlighted the range and diversity of the ILO's expertise that can be used to enhance adaptation efforts when working with in specific countries or regions and with other agencies.

We now turn our attention to the larger and more strategic question of how the ILO should aim to offer its expertise to the global adaptation agenda. It is argued that this will require integration at two levels.

## 6. Integrating adaptation and the ILO's work

The first aspect of integration deals with integrating the Decent Work Agenda into adaptation policies and interventions, in order to ensure that adaptation policies and efforts are based on social dialogue and that they foster employment, social protection and Decent Work Standards. The second aspect concerns integrating climate change adaptation into the ILO's existing work or "climate proofing" existing work to ensure that it recognizes the impacts of climate change and supports adaptation efforts.

[50] The ILO has been working on strengthening institutional capacity in a number of relevant areas such as social protection and social security, industrial relations, prevention of child labour, labour market and training institutions, and local government infrastructure implementation capacity.

## 6.1 Mainstreaming the Decent Work Agenda into climate change and adaptation

Mainstreaming the work of the ILO and the Decent Work Agenda into climate change and adaptation policies, programmes and projects implies that the strategic objectives of the Decent Work Agenda are included in issues related to the effects and impacts of climate change, as well as responses and measures to cope with it. Such integration will increase the likelihood that these measures are focused on reducing vulnerability to climate change and not just on promoting economic efficiency.

Table 6 presents some of the questions and implications that arise when the four strategic objectives of the Decent Work Agenda are integrated into adaptation. Mainstreaming will require more work to be done on these questions, in order to establish clear objectives and guidance for those engaging in adaptation. The mainstreaming of the Decent Work Agenda into adaptation efforts would require the engagement of all levels of the ILO and its constituents. This entails participation in the planning and decision-making processes that define adaptation strategies and policies, as has already been discussed in section 5.2. In addition, it would also require ways to overcome institutional boundaries, which, in many instances separate employment policy from environmental policy. Many policymaking processes related to adaptation are driven by institutions that have environmental mandates and are not inclined to prioritize employment and social concerns. Simultaneously, those engaged in economic, employment and social protection policy making are often not engaging enough with their counterparts to impress the relevance and importance of a more holistic policymaking that captures the economic, environmental and social concerns simultaneously.

At the same time, it can already be argued that promotion of Decent Work is in line with efforts to increase adaptive capacity. Those who have a decent job are likely to have better adaptive capacity and be less sensitive to the effects of climate change. And from this perspective, the ILO should also aim to ensure that its work on promoting Decent Work is recognised as a legitimate adaptation strategy that can reduce vulnerability by enhancing the adaptive capacity of workers and communities.

**Table 7: Implications of Decent Work Agenda and Adaptation for each other**

| DWA Strategic Objective | Implications of integrating the Decent Work Agenda into adaptation efforts | Implications of Climate Change for the Decent Work Agenda and the work of the ILO |
|---|---|---|
| Employment | Which employment and livelihoods are vulnerable to climate change and how can protecting employment and livelihoods be made part of adaptation efforts? How can the employment and livelihood benefits of adaptation be maximized? | What threats and opportunities do climate change and adaptation present to decent work? |
| Social Protection | What role should social protection play in reducing vulnerability to climate change and transition from threatened or lost livelihoods to new forms of economic activity? | How can social protection and security systems be designed to address and cope with new demands created by climate change? |
| Standards and rights at work | How do standards and rights contribute to reduced vulnerability to climate change? And how can they be integrated into adaptation | Does labour legislation and the regulatory environment need to be "climate proofed" so that it can adapt to climate change without sacrificing |

| | | |
|---|---|---|
| | policies? | standards and rights? |
| Social dialogue | How can social dialogue support more just and inclusive decision making on adaptation? How can decision making in adaptation be structured around the principles of social dialogue? | How can those most vulnerable to climate change be brought into social dialogue processes? |

## 6.2 Integrating climate change adaptation into the ILO's existing work

The other aspect of integration is to ensure that climate change and adaptation is integrated into all the ILO's work and projects. One approach for this would be to structure climate change as an increasingly important driver for change of the world of work, in particular in those countries more vulnerable to climate change. Globalization, social crisis such as food insecurity or lack of social protection, the recent economic and financial crisis, as well as changes in technology and changes in global demographics are currently important drivers for change in the world of work. Just as all units of the ILO are aware of these other drivers and generally consider their implications for the work of the specific unit, so climate change and adaptation need to become drivers for change and the implications of this must always and consistently be considered in the ILO's work.

The ILO has approached these changes in the world of work from the framework of its Decent Work Agenda and the Declaration of Social Justice, which stresses a holistic and integrated approach by recognizing that the four strategic objectives—employment, social protection, social dialogue and rights at work—are, indeed, "inseparable, interrelated and mutually supportive". [51]

The main advantage of this framework is that it does not isolate individual drivers such as climate change but does emphasise that it is one of many drivers for change. Such a framework also creates the space in which to discuss and understand how the other drivers for change are impacted by climate change and vice versa. What is important, however, is that efforts continue to build a greater understanding of how climate change and adaptation efforts impact on the world of work so that these can be correctly factored in, and in a manner consistent across the work of the ILO.

From a perspective of mainstreaming climate change and adaptation into specific areas of work and projects, it is worth mentioning that various agencies and institutions have developed tools to do just this. [52] The main objective of these tools is to enable programmes and projects to be screened, in order to ensure either that they are climate proof or that they support climate change adaptation, and if not, that they can be adjusted. Some of these tools are very useful for the ILO in screening its own policies, programmes, projects and activities and would enable mainstreaming to be easier.

[51] http://www.ilo.org/wcmsp5/groups/public/@dgreports/@cabinet/documents/publication/wcms_099766.pdf

[52] See A. Olhoff and C. Schaer (2010). *Screening Tools and Guidelines to Support the Mainstreaming of Climate Change Adaptation into Development Assistance – A Stocktaking Report for an overview of such tools*.

# 7. Conclusions and recommendations

The inseparability of sustainable development, the labour market and climate change adaptation calls for adaptation programmes that turn the climate challenge into a development and employment opportunity for the poor. When the poor and their livelihoods are made the focus in adaptation, the potential for inclusive social and economic development is enormous. This is because the poor and their income are not only the most affected but within the current development paradigm they are already suffering and sidelined, even in the absence of climate change. Given this, the many intersections between the work and mandate of the ILO and climate change adaptation imply that it is important for the ILO to strengthen its engagement across the organization and through its Member States and social partners. It also calls for developing a strategy for increased engagement over time, with a more immediate focus on research and the assessment of the likely impacts of climate change on the world of work, notably the impacts on unemployment and vulnerable employment, working poverty and social inclusion, youth, women and child labour, working conditions and occupational safety and health. There should be a focus on employment in geographic areas and sectors that are already affected (i.e. water and agriculture). Also, sectors that have long lead-in times such as forestry and fisheries require more immediate action; the possible impacts need to be understood sooner, so that effective measures can be taken to prevent much larger long-term costs. Over time, this engagement would need to grow as adaptive action becomes more and more necessary. This will also mean mobilizing additional resources from climate change adaptation initiatives and funds, in order to engage more intensively in this field.

The ILO has expertise and a number of competencies that can be mobilized and scaled up to enhance the existing work on adaptation to make it more just and fair by focusing more on reducing vulnerability. But perhaps more importantly, the ILO also has a responsibility to further articulate and advocate an adaptation approach that will place, at the centre of adaptation objectives, the reduction of vulnerability by protecting and restoring livelihoods and ensuring social protection.

With this in mind, it is recommended that the ILO, within the UN system and with national and international constituents and partners, should further develop a long-term strategy on approaching climate change and adaptation, one that should incorporate the following:

A-Undertake research and assessment to be better informed and to be able to better inform governments, trade unions and enterprises about the impacts of climate change on the world of work.

- Assessment tools need to be revisited to be able to address the impacts of climate change and adaptation measures on the world of work.
- Assessments need to be conducted relevant to the dimensions of Decent Work such as climate change impacts on: unemployment, underemployment, vulnerable employment, working poverty, youth, women, child labour, occupational safety and health, standards, dialogue, social protection and finance, employment policies, employment intensive investments, local economic development, green jobs and sustainable enterprises.
- Assessments need to be undertaken on the global, as well as on the regional and national level. If climate change could reduce welfare by an amount equivalent to a reduction in global consumption per head of between 5 and 20%, now and into the future (Stern, 2006), what is then the current and future impact of climate change on employment? ILO is in the most appropriate position to answer these questions.

B-Based on the evidence, priority areas in adaptation should to be identified for the ILO. While these should to be discussed, agreed upon and elaborated further, it is recommended that these areas be:

- Assessment of the impacts of climate change and adaptation measures on the world of work.
- Measures that focus on protecting and restoring employment and livelihoods.
- Ensuring access to social protection and providing income security to those already vulnerable to climate change, as well as those most likely to be affected.
- Maximizing the employment content and job creation benefits of adaptation measures.
- Ensuring that decision-making in adaptation is fair and participatory, and is based on the principles of social dialogue.
- Integrating the Decent Work Agenda into adaptation policies and responses.

C-Responses to short, medium and long-term implications of climate change and adaptation. The strategy should:

- Identify the urgent action that is required in some sectors and geographic areas in which the effects of climate change are already being felt and where medium and long-term impacts are already unavoidable.
- Anticipate the increasing need for adaptation over the medium-term and include measures that will enable the ILO to respond to these.
- Recognize the major implications of climate change and associated adaptation needs in the long-term, especially if mitigation efforts continue to yield results below what is deemed necessary based on the IPCC assessments.

D- The strategy should identify the type of working relationship required for the ILO to be more effective and provide guidance on how institutional barriers could be overcome, in particular concerning cooperation

- By ILO members and constituents, with one another and with other national-level actors.
- By the Office, with other UN agencies and multilateral institutions.
- By the climate experts, including the UNFCCC, with workers, employers and labour institutions.

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