



KINGDOM OF CAMBODIA

BUILDING RESILIENCE:

THE FUTURE FOR RURAL LIVELIHOODS IN THE FACE
OF **CLIMATE CHANGE**

CAMBODIA HUMAN DEVELOPMENT REPORT 2011
EXECUTIVE SUMMARY



Ministry of Environment
Cambodia



Cambodia

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Building Resilience: The Future of Rural Livelihoods in the Face of Climate Change

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Climate change can no longer be denied or simply ignored.
It is real, it is happening now, and it is as much
a human development issue as
it is an environmental issue.

The *Cambodia Human Development Report* is about people's well-being. This is an in-depth, national policy analysis document. This report will inform Cambodia's responses to the development challenges of climate change at all levels, changing people's perceptions of what this will mean for their futures.

FOREWORD

Around the world, climate change has become the focus of urgent discussion and action. It presents a multi-dimensional challenge, but can also be seen as providing opportunities. Dealing with climate change marks a new paradigm for development. While the more visible impacts of climate change on the country are only now emerging, Cambodia has been active in taking measures to address climate change for more than a decade.

Recent natural phenomena, such as the delayed rains in 2010, further demonstrate the extreme dependence of rural people's well-being on the regularity of seasons, controlled by the climate, and the availability of natural resources like water. The late onset of the rainy season resulted in record-low water levels on the Tonle Sap and Mekong Rivers, and raised concerns in the public media regarding climate change. Many poor farmers were already in a tenuous position, having lost their crops in the previous year to the highly unusual and devastating Typhoon Ketsana in September 2009.

It is in this context that the topic of climate change, with an emphasis on adaptation, was selected for this Cambodia Human Development Report (CHDR), with a particular focus on the implications and opportunities for livelihoods in rural areas, where many of Cambodia's human development challenges lie.

National Human Development Reports (NHDRs) apply the human development approach to specific development challenges that particular countries face. They are independent and neutral, prepared through a process of research, analysis and consultation, supported by UNDP, but involving a wide range of national stakeholders from the government, civil society and the private sector. The overall purpose of NHDRs is to introduce the concept of human development into national policy dialogue, and to open a public platform for such dialogue.

Climate change is a relatively new area of study in Cambodia, but the potential threats arising from such change could be devastating to agricultural communities. At the same time, as a result of the development of the REDD (Reducing Emissions from Deforestation and Forest Degradation) financing mechanism, emergence of carbon markets and increasing donor funds for climate change mitigation and adaptation, new opportunities are becoming available to Cambodia.

In producing this CHDR, the emphasis has been on initiating a process to open up debate on the implications of climate change for rural livelihoods, and the potential for building resilience. The report was guided by a multi-sectoral Senior Advisory Panel drawn from various Ministries, development partners, NGOs, academic institutions, and private companies, and drafted with technical inputs from multiple sources. In addition, focused consultations were held with a variety of experts on health,

agriculture, forestry, water, social protection and climate change, complemented by interviews with rural Cambodians and development practitioners on their personal experiences and perspectives.

It is important to note that the CHDR is a companion report to Cambodia's Second National Communication (SNC) to the United Nations Framework Convention on Climate Change (UNFCCC). It is firmly rooted in the science and findings of the SNC, but this report takes a human development perspective, based on a Human Development Index (HDI) carried out in partnership with the Ministry of Planning (MoP) and the National Committee for Sub-National Democratic Development (NCDD).

With the ever-growing interest in and recognition of climate change challenges across the country and the region, the importance of viewing and discussing these challenges through a human development 'lens' has become particularly apparent. This approach, which both examines the dimensions of people's well-being beyond their income and promotes the active role of households and communities in decisions affecting their livelihoods, allows us to take a broader view, to link the analysis to the sustainability of progress and to develop well informed policies in an inclusive and responsive manner. It also allows us to see the differences and disparities between areas and population groups affected to differing degrees by shocks and crises arising from climate change.

This CHDR has been prepared with several diverse audiences in mind. This is a document for policy makers, development organisations, civil society, students and academic figures. Additional materials derived from this report will bring the dialogue to rural communities, who will be most severely affected by climate change, as well as to the youth of Cambodia, who will continue to be affected by climate change. This report provides a basis for sustained and informed learning and dialogue on climate change and human development in Cambodia.

Working together we actively seek to stimulate debate on the report's recommendations in different forums, and hope that it will engage Cambodians throughout the country as well as international partners in creating opportunities that strengthen and advance human development as the country adapts to climate change.



H.E. Keat Chhon
Deputy Prime Minister
Minister of Economy and Finance



H.E. Dr. Mok Mareth
Senior Minister
Minister of Environment



Mr. Douglas Broderick
UNDP Resident
Representative

EXECUTIVE SUMMARY



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Even though Cambodia is changing rapidly and the distinctions between urban and rural are becoming less clear, most people continue to depend on a rural economy and natural resources.

Climate change is real, and by all accounts is already being felt in Cambodia. Assessments by scientists (MoE 2002, 2005 and 2010) and perceptions of rural people (MoE/BBC Trust 2011) themselves point to significant and recent changes that are compelling people to take action. In turn, these changes have far-reaching implications for rural livelihoods in Cambodia – and for the future of national development.

The focus in this *Cambodia Human Development Report (CHDR)* is on climate change and rural livelihoods. While this captures only part of the picture of climate change in Cambodia, it is an essential starting point. Even though Cambodia is changing rapidly and the distinctions between rural and urban are becoming less clear, most people continue to depend on a rural

economy and natural resources. Although numerous transformations have occurred in this area in recent years, the rural economy remains the cornerstone of national development (UNDP 2009a, WB 2009c).

Overall, Cambodia has experienced one of the highest rates of economic growth in the world and has made important progress in tackling poverty (MoP 2010). But performance has not been even, and costs have been significant. Many aspects of human development remain precarious, and many people remain poor or vulnerable to becoming poor in the face of shocks and crises.

Climate change is a global challenge, but many of the effects will be felt most acutely by poorer countries

and poorer people (WB 2010, IPCC 2007). While the international community struggles to formulate the kinds of binding commitments that might be able to halt further climate change, the emphasis for action is shifting toward national adaptation, mitigation where possible, and building resilience.

The CHDR aims to contribute to more informed public debate in Cambodia by discussing what will be required to build climate-resilient rural livelihoods in the country that will contribute to meeting long-term development objectives.

Climate change: A development challenge for Cambodia

The term 'climate change' has a very specific meaning. While the climate of the earth has always gone through periods of change, scientific evidence now demonstrates that the changes we are now witnessing – and that are termed '**climate change**' – are the result of man-made actions related to industrialisation, deforestation and changes in land use (IPCC 2001). Moreover, these changes are of a pace and magnitude that the world has never before experienced, and they are irreversible.

Our understanding of the science of climate change has improved enormously in recent years. The most comprehensive scientific review in Cambodia thus far was prepared in 2010 by the Royal Government of Cambodia (RGC), as the Second National Communication (SNC) to the United Nations Framework Convention on Climate Change (UNFCCC). It clearly demonstrates that temperatures in the country have risen steadily over the last 50 years and that **"rapid increase in temperature is expected to occur after 2030"** (MoE 2010). Rainfall patterns are also shifting (Eastham et al 2009). Predicted changes for the future also need to be considered alongside more recent changes.

The ecological landscape of Cambodia has changed dramatically over the last 30 years, possibly influencing

changes in more localised weather patterns. With the forces of global climate change and local ecological change coming together in Cambodia, the climate of the future will be markedly different from that of the recent past.

This Human Development Report looks at climate change as a human development challenge. There are two aspects in responding to this challenge:

- To **address current vulnerabilities**, and the kinds of shocks and crises associated with climate change; and
- To **forge a new development pathway** for the future that is resilient to climate change, and that also reduces poverty, ensures equity and secures livelihoods.

These two dimensions are of particular importance from the human development perspective, which puts people at the centre of development and for which sustainability, equity and empowerment are key elements.

Human development is defined in the 2010 global Human Development Report as:

"...the expansion of people's freedoms to live long, healthy and creative lives; to advance other goals they have reason to value; and to engage actively in shaping development equitably and sustainably on a shared planet. People are both the beneficiaries and the drivers of human development as individuals and in groups."

Limited adaptive capacity is arguably the main factor in Cambodia's vulnerability to climate change. This is related to limited capacity at all levels, and deep-rooted and longstanding challenges: persistent poverty according to key indicators; inequality; insecure access to land and key productive resources; and institutional and governance constraints.

At the same time, Cambodia is becoming well positioned to deal with these challenges and to respond to

climate change effectively. There has been significant progress in reducing many aspects of poverty and generating economic development. The ongoing public administration and decentralization reforms provide a framework for improving governance. New climate change funding mechanisms present a significant opportunity for leveraging investment for the country.

Dealing with climate change means dealing with risk and uncertainty

Climate change puts risk and uncertainty at the heart of development. Current scientific assessments provide a good, broad understanding of the ways in which Cambodia will be vulnerable. Yet the climate change science cannot state categorically what will happen where, or when it will happen. The effects of climate change will be felt differently by different people in different localities and contexts.

While climate change responses need to be well informed and based on the best available science, it is not possible or desirable to simply 'predict and act'. This means that there is a need for more adaptive, responsive, inclusive and accountable development institutions and processes that draw on wide sources of information, and that create space for informed, critical public debate and decision-making.

'No regrets' actions as priorities

Despite the significant degree of risk and uncertainty that climate change brings, there are measures that can be adopted that are 'no regrets'. Such measures would provide benefits by addressing current development priorities, thus strengthening resilience, which will also respond to climate change impacts.

Foremost among these actions in the context of Cambodia today is the need to address key factors in people being poor and or being vulnerable to becoming poor: existing challenges in human health service delivery, and improving disease monitoring

and surveillance; establishing social safety nets; and improving Disaster Risk Reduction (MoH and WHO 2010).

In addition, much of the response to climate change in the country will depend on putting in place effective mechanisms for management of water and land resources. These are already main development priority areas under the Government development strategy. Within the key rural productive sectors of water resources, agriculture, fisheries and forestry, there are significant opportunities to improve overall planning and management, while also promoting climate resilient technologies and practices.

For forestry, the new finance mechanism available through the Reducing Emissions from Deforestation and Forest Degradation (REDD+) programme creates



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Much of the response to climate change in the country will depend on putting in place effective mechanisms for management of water and land resources. These are already main development priority areas under the Government development strategy.

an opportunity to generate financial support to manage forest resources across the country in such a way that local communities can derive economic benefits from sustainable forest management, while also contributing to national and local development. The Royal Government of Cambodia has actively started to prepare for tapping into this mechanism, but there is still a long way to go before the scheme becomes operational. Central to realising the potential of REDD+ will be the need to put in place effective mechanisms for monitoring and ensuring equitable benefit sharing.

Across all of these key sectors, it is essential that the rights of access to key productive resources – most importantly, land – are secured to allow households and communities to make the long-term commitments to resource management that will create tangible livelihood benefits, while securing the sustainability of these resources.

The importance of local action

It is at the sub-national level that much of the action for building resilient rural livelihoods will occur. The need for local action is clearly enshrined in international agreements for sustainable development, as well as a broad range of climate change literature. The ongoing decentralization and deconcentration (D&D) reform based on the Organic Law (2008), and other governance reforms of the last decade, have positioned Cambodia to deal with climate change at the local level.

Cambodia is thus at an important juncture. These reforms provide a new agenda in the country for ensuring democracy and promoting development, based on principles of local strategic planning and action, accountability, transparency and participation. It is at the sub-national level that the potential is greatest for area-based planning and action, bringing different sectors together in an integrated development approach in line with local needs and circumstances.

As part of the reform process, the Government and other stakeholders are currently going through a review of the functions (roles and responsibilities) of different tiers of Government. This presents a timely opportunity to open up a debate on what is required for mainstreaming climate change in local development, and what the roles are for different actors – communities, Government, private sector and civil society.

The need for action at multiple scales

As significant as the action at local level is, ultimately there is also a need for action according to different, overlapping scales – local, national and also regional (trans-boundary). With much of the country lying within the Mekong River basin, action will need to be in partnership with Cambodia's neighbours. Again this requires new ways of acting, new partnerships at different scales, and new finance mechanisms. More significantly, it will require new governance mechanisms.

Rethinking the meaning, direction and values of development

Climate change is essentially a challenge of governance – about what development means, how it can be realised, and who should be involved in the process of making decisions and taking action.

While limited adaptive capacity is considered the main factor in Cambodia's vulnerability to climate change, much of the groundwork – through policy reform – that could allow the country to rise to the challenges is now being prepared.

Despite hurdles, the new mechanisms for climate change finance and technology transfer promised by international agreements could provide new opportunities for Cambodia. In all, having put in place many of the institutional arrangements for addressing climate change, the country is well placed to take advantage of these opportunities.

Clearly, finance alone will not solve the problems associated with climate change. Ensuring that finance is used wisely – in ways that benefit all, but particularly the most vulnerable, and that provide lasting solutions – will require new ways of working, new partnerships and more informed public debate. This means that institutions will need to work to build cross-sectoral coordination, strengthen mechanisms for public participation and accountability, and build partnerships with the private sector.

This will also require strengthening rights of access as well as decision-making frameworks that relate to development options and their impacts. The decisions and actions that are taken today will have far-reaching implications for future generations. It is essential that these decisions are well informed, and represent the needs and interests of the many Cambodians whose lives remain insecure. For this to occur, rural people, and particularly poor people, must be able to participate effectively in setting development objectives, and making decisions about how development is done.



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The decisions and actions that are taken today will have far-reaching implications for future generations.



CHAPTER OVERVIEW

The threat of climate change raises more fundamental questions about what constitutes 'development,' and how it can be achieved.



CHAPTER OVERVIEW

Chapter 1 Introduction

This chapter sets out the context for the entire report by defining the focus – rural livelihoods and climate change – putting climate change in the context of a human development challenge, and providing an overview of the report structure. The chapter also provides an overview of global agreements and national actions on climate change to date.

The threat of climate change raises more fundamental questions about what constitutes ‘development’, and how it can be achieved.

Responding to climate change impacts is often presented as simply a matter of ensuring ‘good development’. But realising good development is no easy task. While there have been obvious areas of progress in recent years in Cambodia and elsewhere, the reality is that despite investments in development, periods of economic growth and favourable global market conditions, the achievements of development can easily be undone and still have to reach more people. Even though poverty rates have declined, the lives of most people in Cambodia remain insecure.

Equally, development – or rather, certain development pathways – may actually exacerbate long-term vulnerability to climate change. The pathways of industrialisation and economic growth pursued by developed countries over the last 200 years may no longer be as viable as they once were. For example, excessive emission of greenhouse gases (GHG) into the earth’s atmosphere, over-extraction of water resources, pollution, changes to the landscape as a result of changing cropping systems, and changes to farming

systems may generate short-term economic benefits for some, but at the same time increase vulnerability to changing rainfall and seasonal patterns, undermining food security objectives and exerting pressure on the very resources that already face greater pressure with climate change.

Chapter 2 Understanding climate change: Predictions, perceptions and concepts

This chapter gives an overview of the currently available climate change predictions for the world, the region and for Cambodia, drawing on the most updated technical assessments, including the SNC of the Ministry of Environment (MoE).

Climate change predictions can be summarised as being:

- Increases in temperature – Cambodia’s temperature has already been increasing and will keep increasing
- Shifts in the timing and duration of the seasons – with shorter, wetter rainy seasons, and longer, drier dry seasons
- Increased frequency and intensity of floods and droughts
- Sea level rise in coastal areas

By definition, looking into the future is an uncertain science. It is not possible to determine exactly what the future of climate change will look like. With many factors in play, the impacts of climate change will vary significantly across different localities. For decision-making, it is necessary to move beyond trying to ‘predict and act’, toward drawing on a wide range of technical information and wide sources of knowledge, and promoting informed debate among stakeholders.

The perception that something is changing in the climate appears to be gaining ground among people from all walks of life across Cambodia. It is sometimes difficult to determine if people are talking about changes in the 'weather' or in the 'climate' – and indeed, the Khmer language does not make this distinction clear. But whatever is happening, the changes that people are observing and experiencing appear to correspond to the kinds of changes that climate science predicts for the country. For Cambodians, the terms 'climate change' and 'global warming' are closely linked to concerns about deforestation, drought, floods, windstorms and an increase in diseases, which are among the most important issues for the country.

Vulnerability and adaptation

Despite global efforts to reduce climate change people will need to adapt to the inevitable consequences of climate change, to the extent to which they will be able to cope and adjust. Central to this thinking are concepts of 'vulnerability' and 'adaptation'.

Within the arena of climate change, the Intergovernmental Panel on Climate Change (IPCC) in 2001 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 to climate change depends on the inter-relationship of three key elements (Adger 2006):

- **Exposure of a system:** The extent to which it experiences environmental or socio-political stress, in terms of magnitude, frequency, duration and extent
- **Sensitivity of the system:** The degree to which it is modified
- **Adaptive capacity of the system:** Its ability to evolve to accommodate environmental hazards or policy changes and to expand the range of variability with which it can cope



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Despite global efforts to reduce climate change, people will need to adapt to the inevitable consequences of climate change, to the extent that they will be able to cope and adjust.

Building resilience

Addressing vulnerability centres on strengthening resilience. The term resilience is often used to indicate the ability of systems – whether natural, social or economic – to bounce back from shocks and crises and return to their 'normal' condition. However, the term has come under criticism for the way it is used in developing countries that face persistent poverty and inequality. While these conditions might be somehow 'normal', they are certainly not desired outcomes. Resilience to shocks and crises for these countries is not simply a matter of bouncing back to these conditions, but of being able to absorb shocks and crises in such a way that overcoming poverty and inequality are still possible.

Chapter 3

Human development analysis: Current poverty and vulnerability

Human development considers people as the real wealth of a nation. It is about ensuring freedom to live long, healthy and creative lives with human dignity. History has shown that growth in a country's overall economy alone does not guarantee improved welfare of its people. On the other hand, experiences from across the world have demonstrated that substantial achievements in development are indeed possible even without fast economic growth.

The human development approach considers people not just as the beneficiaries, but also as the key drivers of development, as individuals and in groups. The key elements of the human development approach include:

- **Sustainability:** Development gains may be fragile and vulnerable to reversal. Special efforts are needed to ensure that human development endures – that it is sustainable.
- **Equity:** Human development is also concerned with addressing structural disparities – it must be equitable.
- **Empowerment:** People, as drivers of development, should be empowered to exercise individual choice and to participate in, shape and benefit from processes at the household, community and national levels.

The starting point for thinking through Cambodia's current capacity to respond to climate change and ways to build resilient rural livelihoods is an analysis of the current dynamics of poverty and vulnerability (human development challenges).

Since the early 1990s, Cambodia has made important progress in addressing key drivers of poverty and vulnerability.

However, when viewed through different analytical frameworks, poverty remains persistent in Cambodia. While the number of people below the official poverty line has fallen consistently, inequality remains a concern, with a large proportion of the population living in precarious circumstances, leaving them close to becoming poor – and thus highly vulnerable to climate change impacts.

The extent and characteristics of poverty and vulnerability differ significantly across provinces and districts. There is clearly a localised dimension to poverty – and a need for locally based action.

Levels of development vary across the country

Limited assets and entitlements, institutional constraints, limited capacity and knowledge, and fundamental governance challenges remain key factors leading to persistent poverty. The factors pushing people into poverty include vulnerability to shocks and crises, which are also closely associated with climate change, such as poor health, and the impacts of floods and droughts.

Agriculture (on which 71 percent of men and women in Cambodia are dependent) and natural resources management, will be central for (medium-term) adaptation and to reduce vulnerability.

Climate change and the response to it are a part of the environment, energy and climate change section of the Ministry of Women's Affairs' five-year Neary Rattanak III plan (MoWA 2009) and the Government is encouraging women in rural areas to take advantage of available extension services.

Agriculture remains the single largest source of primary employment for women and men. However, yields are very low and agricultural extension services are limited. Although women comprise 51 percent of the primary workforce in subsistence agriculture and 57 percent

of the workforce in market-oriented agriculture, they receive only 10 percent of agricultural extension services (MoWA 2008).

Women are actively engaged in off-farm income generating activities to supplement household income, however, there is very little understanding of or support for the development and promotion of these activities.

Chapter 4

Implications of climate change

This chapter discusses impacts of climate change according to key sectors, outlining the vulnerability context, predictions of climate change impacts, and discussing the implications of these impacts for human development.

Changes to the hydrological cycle will have important implications for water availability, quality and distribution, with risks of increased competition and conflict between sectors, as well as water users within and between river basins. Cambodia's dependence on Mekong hydrological flow regimes makes it extremely vulnerable to upstream changes that will have enormous implications for all key sectors of rural livelihoods and human well-being.

Changes in temperature and shifts in the seasons have important implications for agricultural production. Studies in the region suggest that rice production could decline significantly for a 1°C rise in temperature, making rice farming unviable for many farmers.

At the same time, the inland capture fisheries of Cambodia are among the most productive in the world and provide the main source of protein in rural diets. Capture fisheries production is highly sensitive to hydrology and land use changes – and thus, to climate change. Any declines in natural productivity would have serious food security implications that could not be offset by other forms of food production. It is likely that the poorest would suffer most from

ensuing food insecurity, while increased competition over remaining fishery resources would most likely lead to poor people being denied access to fishery resources.

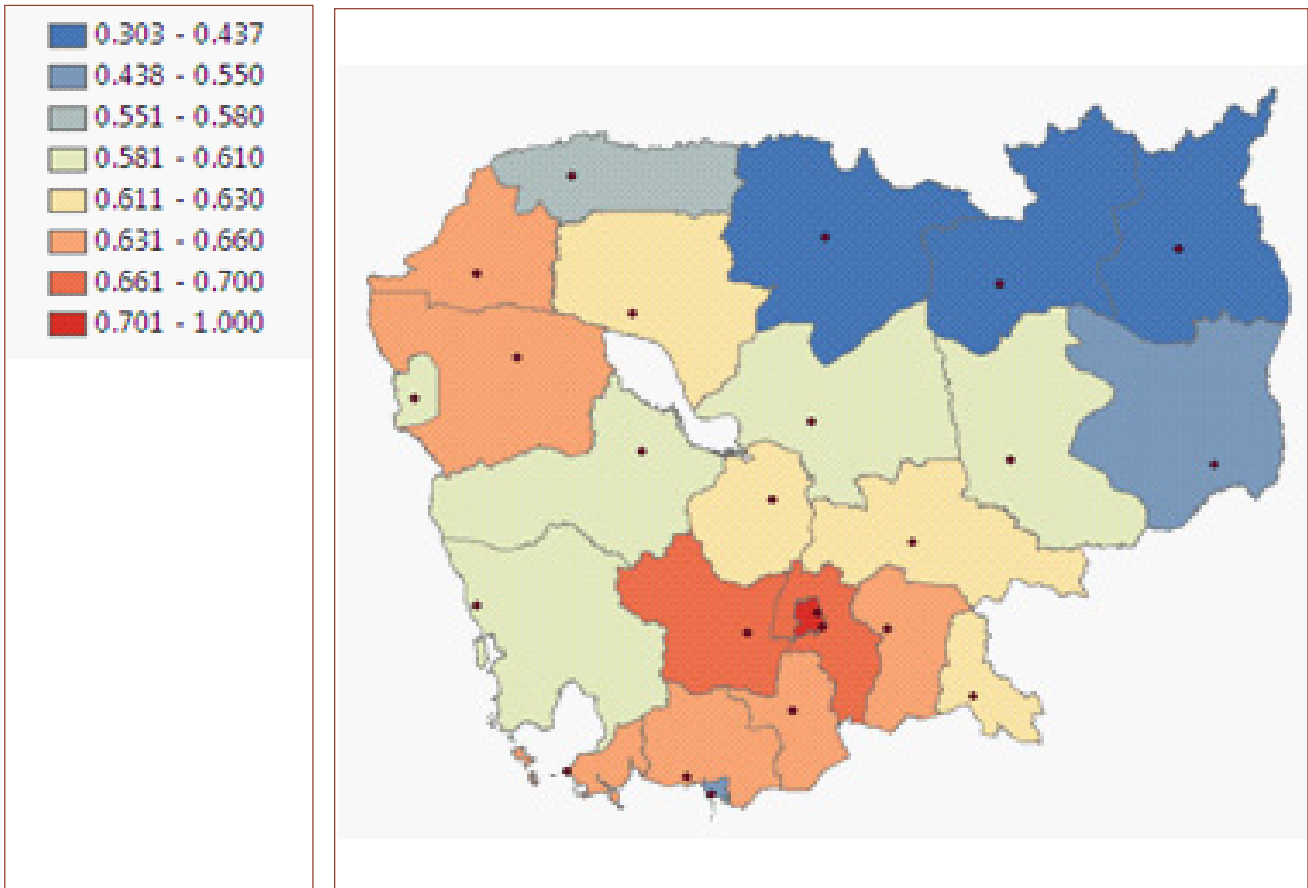
With continuing pressure on forest and land resources – which make the largest contributions to GHG emissions in Cambodia – forest resources are likely to be further degraded by human activities. The impact of climate change may also contribute to changes in forest types in the future. Almost 4 million people are dependent on forest resources, which have also traditionally provided safety nets in times of crisis. Rural people also see a clear connection between the changes in local weather that they have witnessed, and changes in forest cover and land use.

Ill health is also one of the main factors pushing people into poverty and destitution, and it is in the area of health that some of the main challenges in meeting the Cambodia Millennium Development Goals (CMDGs) targets remain. Climate change is predicted to intensify health challenges, putting greater pressure on health care systems and putting the well-being of rural people at risk. It is in the area of health that Cambodian people most fear the negative impacts of climate change (MOE/BBC Trust 2011).

In addition to poor health, floods and droughts are key factors in people becoming poor. While people have been able to withstand such disasters in the past, more frequent and intense floods and droughts will intensify existing pressures, and make it all the more difficult for people to recover.

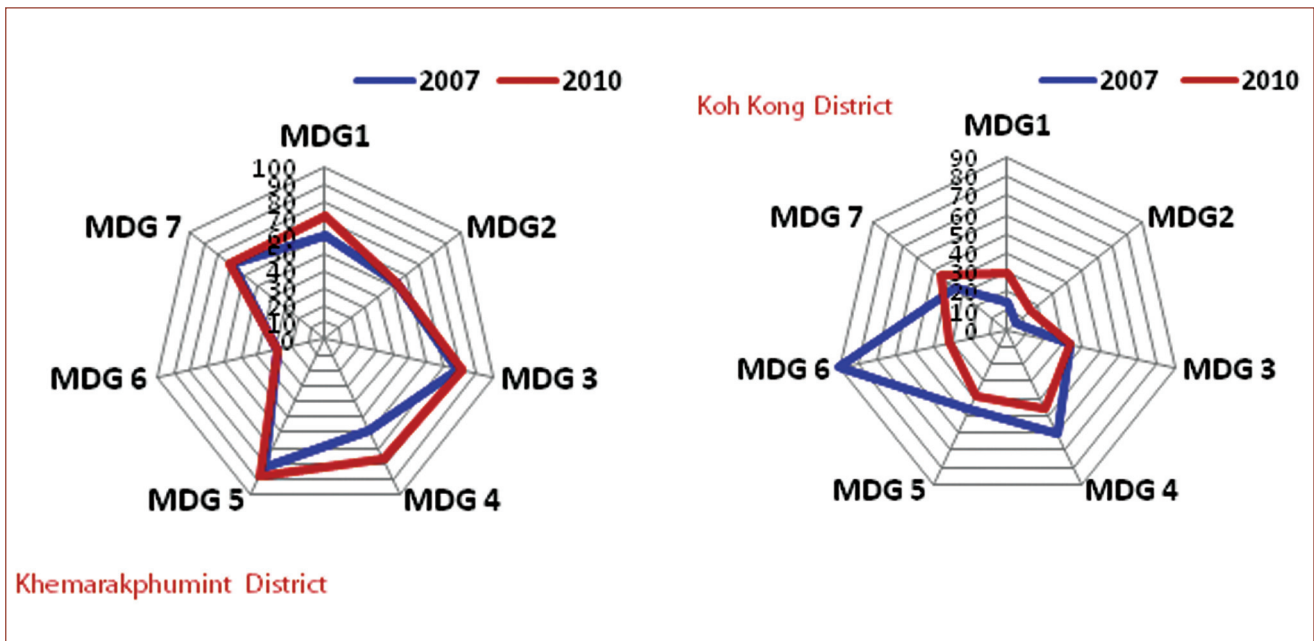
Climate change will impact different areas of the country in different ways. The Coastal Zone is most vulnerable to sea level rise (SLR) and increased salinisation, affecting rural people who already have limited assets and entitlements and few alternatives to working within the rural economy. The Tonle Sap supports the largest proportion of the agricultural population, but changes in natural hydrology, combined with existing land use and resource pressures, threaten

Human Development Index 2010



Source: Boret 2010 (see annex)

Examples of local (district) CMDG scoring: Development profiles are different even within a province
 Koh Kong: Khemarakphumint District and Koh Kong District



Source: MoP 2010

to affect both fisheries and agricultural production. The Upper Mekong is also an area dependent on natural hydrological systems and the productivity of natural forests. While there is a relatively smaller population in this area, they are among the poorest in the country and already face significant development constraints. The delta region is the main agricultural area of the country, but it is also susceptible to floods and droughts, with implications for the viability of rice production.

Chapter 5

Principles for building resilient rural livelihoods

Based on the analysis of vulnerability and likely impacts discussed in the previous chapters, this chapter considers principles and options for building resilient rural livelihoods, highlighting the need for more:

- *Informed, strategic and participatory approaches to planning and decision-making*

- *Rights-based approaches to protecting the interests of the poor and marginalised*
- *Integrating area-based approaches*
- *Placing ecological considerations at the heart of development*
- *Building of adaptive, flexible, and learning-oriented institutions*
- *'No regrets' options*

Two aspects in responding to climate change are highlighted:

1. The need to address current vulnerabilities and short-term shocks and crises (based on health, social safety nets and Disaster Risk Reduction [DRR])
2. The need to forge a long-term development pathway, including a discussion of the options for adaptation according to sectors (water, agriculture, fisheries and forestry)

Options for building resilient livelihoods according to various key sectors are of these two types.



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People, as drivers of development, should be empowered to exercise individual choice and to participate in, shape and benefit from processes at the household, community and national levels.

Chapter 6

Addressing immediate needs – Safety nets and Disaster Risk Reduction

This chapter discusses the importance of addressing current drivers of vulnerability as a means of building resilience to climate change, focusing on promoting social safety nets and social protection, and strengthening DRR.

Despite the significant degree of risk and uncertainty that climate change brings, there are measures that can be adopted that are 'no regrets' – or 'safe to fail'. Such measures will provide benefits by addressing current development priorities, thus strengthening resilience for responding to climate change impacts.

Foremost among these actions, in the context of Cambodia today, is the need to address key factors in people being poor and vulnerable to becoming poor. These include challenges in ensuring universal access to health care and enhancing the quality of health service delivery, and in improving disease monitoring and surveillance; establishing social safety nets; and strengthening DRR.

These climate change priorities fit well with current development priorities and figure prominently in national development strategies and action plans. However, there is greater urgency in addressing these challenges. By strengthening these critical areas of vulnerability and poverty, the likely impacts of climate change can be reduced. At the same time, the human capital of the country can be strengthened and directed toward the kinds of actions needed to make positive longer-term development changes.

At the same time, there is a critical institutional challenge to avoid creating specific 'sectors' from the crosscutting issues of social protection and DRR, and to make sure that these ways of acting shape more integrated development strategies at both the national and local levels.

Chapter 7

Sectoral actions

This chapter considers the current challenges and opportunities for securing people's well-being through the following key rural sectors: water resources, agriculture, forestry, fisheries and rural energy.

Across all sectors, there is a need to put in place the planning, implementation and decision-making institutions and processes that allow for a more integrated approach to sectoral responses. These will need to address the degradation of key natural assets as well as the limited access and entitlements of poor people. For all sectors, addressing constraints to poor people's access to productive resources, as well as limited access to extension support, market opportunities, and information and technology, will be necessary.

Specific examples of technologies and practices that are appropriate for poor people, and that adhere to the principles of climate change resilience are also discussed, based on experience within Cambodia. It is also in this area of appropriate technologies that many new climate change related financing opportunities will be made available.

Chapter 8

Local action for climate change resilience

This chapter then moves into the critical discussion of thinking through what it would take for Cambodia to put these options into practice. It is framed firmly within the governance reforms for strengthening decentralization and deconcentration, and a discussion of how these can be oriented to take on board the challenges of climate change.

The chapter provides an overview of local governance reform under the Organic Law, which shapes the direction of democratic development in Cambodia. It argues that the ongoing reform provides a basis for

dealing with the core recommendations for climate change adaptation that emerge from international literature and experience. However, climate change considerations have long-term, far-reaching implications that have not yet received enough attention in the country, and in some cases, that pose fundamental challenges for local institutions and processes.

The chapter discusses the potential for sub-national level planning and development to move toward:

- More strategic, long-term planning processes
- Assessments of options and impacts – including through Strategic Environmental Assessments and Environmental Impact Assessments
- ‘Climate change screening’ of existing national and sectoral strategies
- Moving from sectoral approaches to territorial approaches
- Promoting effective stakeholder participation
- Building adaptive, flexible, learning-oriented institutions

The chapter highlights the importance of access to information. For climate change action to be capable

Examples of technologies, techniques and practices discussed for climate-resilient rural livelihoods:

- Multi-purpose farming
- Conservation agriculture
- System of Rice Intensification (SRI)
- Farmer Business Advisor (FBA) model
- Improved crop varieties
- Improved weather forecasting and crop insurance
- Low-cost and small-scale infrastructure/water management schemes
- Improved post-harvest processing and trade
- Community forestry
- Alternative rural energy – e.g. biogas, improved cook-stoves
- Floodplain fish refuges and rice field fisheries
- Agro-forestry

of dealing with uncertainty and risk and meet the needs of the poor and marginalised, it is essential that decision-making processes are based on good-quality, locality-specific information and data analysis, and that information is accessible and acceptable to decision makers and stakeholders.

Chapter 9

Way forward: Conclusions and policy considerations

The final chapter presents conclusions and issues for policy considerations around the need to strengthen assets and entitlements as well as institutions; information, knowledge and capacity; and decision-making and governance. Timeframes for different actions are also discussed.

The chapter considers the need for action at different scales. Strengthening national-level policy framework and coordination – for example, through a National Strategy and Action Plan for Climate Change, as recognised in the National Strategic Development Plan (2009-2013) – will be critical for forging long-term climate change resilience. In addition, climate change intensifies the need for regional cooperation, particularly within the Mekong region.

Build awareness, knowledge and capacity

Three key areas need to be addressed in responding to climate change in order to build awareness, knowledge and capacity:

- Improving knowledge and education
- Building research capacity
- Improving data and information systems

Ensure secure and reliable access to finance

The costs of climate change adaptation and mitigation will be considerable. Yet the clearest opportunity from climate change appears in the growing availability of international finance to support countries such as Cambodia.



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The extent and characteristics of poverty and vulnerability differ significantly across provinces and districts. There is clearly a localized dimension to poverty and a need for locally based action.

This finance represents a significant addition to current official development assistance (ODA), and as such, an opportunity to overcome Cambodia's underlying vulnerabilities to climate change while also creating conditions for investment in more long-term, low-carbon development pathways. Given the long-term nature of building climate change resilience, it is essential that the availability of finance is secure to allow for the kinds of long-term planning and investments required.

Ensuring that climate change funding does indeed add value to development efforts rather than dilute them, and ensuring that the funding is put to good use, depends on building upon donor harmonisation efforts, as well as the transparency and accountability of funding allocations.

Strengthen access rights

Underpinning these policy options is the need to strengthen governance and decision-making – to allow for more participatory, deliberative and informed debate, and to ensure that appropriate checks and balances are in place to protect the rights of vulnerable people.

Running through the discussion in this report is the need, on the one hand, for capacity development and awareness raising, and on the other hand, for the promotion of rights of access to information, participation, and redress and remedy.

As climate change takes hold, it will be increasingly important to monitor and debate the significance and implications of changes, and to determine the extent to which human actions are either creating further vulnerability or strengthening resilience. For this to occur, information must be freely available.

The media and civil society have a vital role to play in making information available and in holding both the State and the private sector accountable.

It is timely that the Government of Cambodia is in the process of going through consultations on the development of legislation regarding the right to information (MoNASRI 2007). Putting in place such a legal framework will go a long way to opening up space for public debate about many important aspects of climate change, while further strengthening overall transparency and accountability. Including specific guidelines on access to information as it relates to climate change issues will strengthen the country's capacity to respond.

TABLE 1.1 INCOME, EDUCATION AND HEALTH

PROVINCE	INCOME [Per capita consumption in Riel/day]				EDUCATION [% Adult (18-60) Literacy rate]				EDUCATION [% Children (6-14) attending school]				HEALTH [Child survival rate beyond age of 5]			
	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010
1-Banteay Meanchey	3541	3813	4027	4794	86.2	87.1	88.0	87.7	83.8	84.9	84.7	87.5	950	969	977	980
2-Battambang	3863	4225	4603	5292	86.0	86.8	87.6	87.7	83.8	83.9	85.0	85.4	955	969	939	976
3-Kampong Cham	4214	4472	4839	5708	82.8	82.9	84.7	85.8	86.4	86.5	87.2	85.9	949	951	957	963
4-Kampong Chhnang	3310	3547	3869	4581	86.8	88.0	90.4	90.9	86.3	87.8	89.1	90.4	935	937	955	965
5-Kampong Speu	3370	3758	4340	5205	86.1	92.6	93.2	93.7	92.1	89.9	91.1	91.7	946	960	980	984
6-Kampong Thom	3122	3216	3618	4240	76.9	76.9	77.7	79.6	84.1	86.2	85.1	85.8	933	958	972	970
7-Kampot	4210	4411	4928	5646	83.6	85.4	85.5	86.6	86.1	86.7	88.9	89.1	943	958	965	977
8-Kandal	6095	6490	7296	8628	91.6	91.7	92.8	93.2	92.9	91.0	91.8	92.8	970	977	983	990
9-Koh Kong	3493	3747	4288	4837	76.3	78.7	77.4	79.1	77.7	73.6	83.2	83.5	922	914	963	955
10-Kratie	2913	3105	3319	3967	78.3	80.5	82.0	84.1	82.4	81.0	83.4	81.1	930	944	973	957
11-Mondulkiri	2847	3018	3407	3695	52.5	57.9	60.8	59.8	72.6	67.7	73.2	76.9	895	880	906	923
12-Phnom Penh	17144	18062	18431	20425	96.4	97.2	97.4	97.8	92.6	94.7	95.5	94.3	979	976	988	994
13-Preah Vihear	2256	2368	2564	2976	66.3	67.2	67.9	69.3	82.9	81.9	82.3	84.6	836	879	890	877
14-Prey Veng	3887	4117	4499	5314	88.4	88.2	88.7	89.6	91.7	92.5	92.6	93.2	934	936	962	963
15-Pursat	3048	3377	3644	4394	82.3	83.9	84.6	83.9	82.2	83.0	82.6	81.1	929	956	960	969
16-Rattanakiri	2164	2275	2707	2827	52.2	45.1	46.1	47.0	51.4	52.0	57.3	62.0	820	882	886	884
17-Siem Reap	3481	3729	4032	4605	76.9	77.8	79.9	81.4	82.8	83.6	86.7	85.8	950	956	978	981
18-Preah Sihanouk	5050	5663	6210	7023	90.8	93.3	93.6	95.6	85.7	89.1	90.2	93.2	937	902	973	958
19-Stung Treng	2446	2562	2747	3135	66.7	68.9	68.3	70.2	80.2	76.9	78.7	76.8	882	897	934	815
20-Svay Rieng	4356	4807	5377	6461	89.4	88.6	89.6	90.1	91.6	92.2	92.7	94.7	923	947	944	948
21-Takeo	4077	4318	4699	5612	87.7	87.7	89.4	89.3	92.3	91.4	92.0	91.6	951	952	965	964
22-Oddar Meanchey	2596	2846	3150	3691	68.0	72.4	72.7	73.6	77.2	79.6	80.8	81.4	915	938	961	969
23-Kep	3496	3960	4524	5153	85.4	87.4	85.9	85.4	83.1	79.8	73.1	83.5	971	969	983	901
24-Pailin	3660	4046	4969	6525	76.8	78.1	79.7	80.7	78.4	75.5	80.7	82.7	926	883	916	954
0-CAMBODIA	4525	4822	5242	6149	85.2	85.9	86.9	87.6	86.9	87.0	87.9	88.2	941	952	964	967

Source: CDB 2007-2010/MoP and NCDD/M&E Unit

The components have different units of measurement, so they were converted into comparable units. A normalisation method was used to convert all components into normalised indices that range from 0-1. Please see *Cambodia Human Development Report 2011*, page 163 for more detail on the method used.

TABLE 1.2: NORMALISED INCOME, EDUCATION, HEALTH AND HDI

PROVINCE	INCOME DIMENSION				EDUCATION DIMENSION				HEALTH DIMENSION				HDI			
	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010
1-Banteay Meanchey	0.426	0.439	0.449	0.480	0.696	0.702	0.707	0.713	0.616	0.684	0.713	0.724	0.579	0.608	0.623	0.639
2-Battambang	0.442	0.458	0.473	0.497	0.695	0.698	0.705	0.707	0.634	0.684	0.576	0.710	0.590	0.613	0.585	0.638
3-Kampong Cham	0.457	0.468	0.482	0.511	0.685	0.684	0.696	0.698	0.612	0.620	0.641	0.663	0.585	0.591	0.606	0.624
4-Kampong Chhnang	0.414	0.427	0.442	0.472	0.707	0.715	0.732	0.738	0.562	0.569	0.634	0.670	0.561	0.570	0.603	0.627
5-Kampong Speu	0.418	0.437	0.462	0.494	0.718	0.746	0.752	0.757	0.602	0.652	0.724	0.738	0.579	0.612	0.646	0.663
6-Kampong Thom	0.404	0.409	0.430	0.458	0.647	0.651	0.652	0.664	0.555	0.645	0.695	0.688	0.535	0.568	0.592	0.603
7-Kampot	0.457	0.465	0.485	0.509	0.689	0.698	0.704	0.711	0.591	0.645	0.670	0.713	0.579	0.603	0.620	0.644
8-Kandal	0.522	0.533	0.554	0.584	0.750	0.744	0.752	0.757	0.688	0.713	0.735	0.760	0.653	0.663	0.680	0.700
9-Koh Kong	0.424	0.436	0.460	0.481	0.626	0.626	0.645	0.655	0.515	0.486	0.663	0.634	0.522	0.516	0.589	0.590
10-Kratie	0.392	0.403	0.415	0.446	0.649	0.656	0.670	0.676	0.544	0.594	0.699	0.641	0.528	0.551	0.595	0.588
11-Mondulkiri	0.388	0.398	0.420	0.434	0.482	0.497	0.528	0.532	0.418	0.364	0.458	0.519	0.429	0.420	0.469	0.495
12-Phnom Penh	0.705	0.714	0.718	0.736	0.775	0.784	0.787	0.786	0.720	0.710	0.753	0.775	0.733	0.736	0.753	0.766
13-Preah Vihear	0.347	0.355	0.369	0.396	0.585	0.586	0.591	0.604	0.205	0.360	0.400	0.353	0.379	0.434	0.453	0.451
14-Prey Veng	0.443	0.453	0.469	0.498	0.730	0.729	0.732	0.739	0.558	0.566	0.659	0.663	0.577	0.583	0.620	0.633
15-Pursat	0.400	0.418	0.431	0.465	0.671	0.680	0.683	0.675	0.540	0.638	0.652	0.684	0.537	0.579	0.589	0.608
16-Rattanakiri	0.339	0.348	0.379	0.387	0.423	0.385	0.405	0.422	0.148	0.371	0.385	0.378	0.303	0.368	0.390	0.396
17-Siem Reap	0.423	0.436	0.449	0.473	0.643	0.648	0.668	0.673	0.616	0.638	0.717	0.728	0.561	0.574	0.611	0.625
18-Preah Sihanouk	0.489	0.509	0.526	0.547	0.727	0.748	0.753	0.771	0.569	0.443	0.699	0.645	0.595	0.567	0.659	0.654
19-Stung Treng	0.361	0.369	0.381	0.405	0.580	0.582	0.583	0.589	0.371	0.425	0.558	0.130	0.437	0.459	0.507	0.375
20-Svay Rieng	0.463	0.480	0.500	0.533	0.735	0.731	0.737	0.745	0.519	0.605	0.594	0.609	0.572	0.605	0.610	0.629
21-Takeo	0.451	0.461	0.476	0.508	0.727	0.723	0.734	0.732	0.620	0.623	0.670	0.666	0.599	0.602	0.627	0.635
22-Oddar Meanchey	0.371	0.388	0.406	0.434	0.579	0.608	0.613	0.620	0.490	0.573	0.656	0.684	0.480	0.523	0.558	0.579
23-Kep	0.424	0.446	0.470	0.493	0.690	0.691	0.664	0.689	0.692	0.684	0.735	0.439	0.602	0.607	0.623	0.540
24-Pailin	0.432	0.450	0.486	0.534	0.631	0.628	0.651	0.662	0.530	0.375	0.494	0.630	0.531	0.484	0.544	0.609
0-CAMBODIA	0.470	0.481	0.496	0.524	0.699	0.701	0.710	0.714	0.584	0.623	0.666	0.677	0.584	0.602	0.624	0.638

Source: table 1.1



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