



# Research Report

BBC WORLD SERVICE TRUST



SUDAN



BBC WST



# Sudan Talks Climate

The public understanding of  
climate change

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## BBC WORLD SERVICE TRUST

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## CONTENTS

About <i>Africa Talks Climate</i>	
Executive summary	
Recommendations	
Acronyms used in this report	
<b>1 Background</b> .....	<b>7</b>
Climate change in Africa	
Climate change in Sudan	
<b>2 Research methodology</b> .....	<b>9</b>
Focus group discussions	
In-depth interviews	
<b>3 Citizen focus group discussion findings</b> .....	<b>10</b>
<b>What changes have Sudanese citizens experienced in their climate and environment over time?</b>	
<b>How do Sudanese citizens explain and respond to changes they are experiencing?</b>	
Drought	
Flooding	
Deforestation and desertification	
Air pollution and waste	
<b>What do Sudanese citizens know and understand about global climate change?</b>	
Terminology	
Reaction to the concepts	
Frames of reference	
<b>4 Interviews with opinion leaders</b> .....	<b>19</b>
<b>What do Sudanese opinion leaders know and understand about climate change and what are their views on Sudan’s response to climate change?</b>	
An incomplete understanding	
Understanding climate change	
Perceived impacts of climate change	
Where does responsibility lie?	
Do the worst affected understand climate change?	
What response is required?	
<b>5 Conclusion</b> .....	<b>25</b>
<b>References</b> .....	<b>26</b>
<b>Appendices</b> .....	<b>28</b>
Appendix 1 Opinion leaders interviewed	
Appendix 2 Sudan advisory group	
Appendix 3 Methodology overview	

## About Africa Talks Climate

Climate change is one of the most important issues on the global political and economic agenda, yet it has taken at least 20 years to become an international priority. In many ways, this is because climate change was originally communicated as a scientific problem. Complex, confusing, and at times contested scientific information resulted in a slow public and political response to the climate crisis. The climate change debate has also taken place in industrialised nations, among a public largely safe from its worst effects. For many, climate change is an abstract concept.

In Africa, climate change is far from abstract - it is already determining the course of people's lives. Extreme weather events and greater unpredictability in weather patterns are having serious consequences for people who rely on land, lakes and seas to feed themselves and to earn a living. As a result, Africa's engagement with the issue is evolving rapidly, presenting an opportunity to leapfrog the slow evolution of western public opinion and political action.

African citizens' response to climate change is hampered by a fundamental shortage of relevant, useful information for African audiences. The intensive media coverage and public awareness campaigns prevalent in much of the industrialised world have been largely absent in Africa, particularly outside major urban centres. Too often, African voices are absent from the international climate debate.

Africa's response to climate change will be dictated by how well it is understood by its people. *Africa Talks Climate* is founded on the belief that those worst affected by the issue have the right to be better informed, in order to understand and respond effectively to their changing climate. Providing people with the information they need will therefore be crucial. Unfortunately, little is known about how climate change is currently perceived and understood by Africans; *Africa Talks Climate* seeks to address this. It is the most extensive research ever conducted on the public understanding of climate change in Africa. The research teams held discussions with more than 1,000 citizens from the Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Nigeria, Senegal, South Africa, Sudan, Tanzania and Uganda<sup>i</sup>. They also carried out interviews with nearly

<sup>i</sup> Country selection was informed by: consultation with organisations working across Africa on climate change, the presence of a British Council or BBC World Service Trust office, and local research capacity. However, consideration was also given to the country's climate, demographics, geographical situation within Africa and a number of economic, media, and governance indicators.

200 opinion leaders, including policymakers, religious and community leaders, business people, and media and NGO representatives.

The overall objective of *Africa Talks Climate* is to assess public understanding of climate change and identify how communication and media could best support Africans' response to climate change. The research asked four main questions:

1. What changes have African citizens experienced in their climate and environment over time?
2. How do African citizens explain and respond to these changes?
3. What do African citizens know and understand about global climate change?
4. What do African opinion leaders know and understand about climate change and what are their views on their country's responses to climate change?

Only when governments, NGOs and the media are comfortable talking about climate change can they communicate it effectively to citizens. Only when citizens are clear about climate change and its implications for their lives can they respond effectively to it. Equipped with the knowledge that weather patterns are changing and that extreme weather events are more likely to occur, people will be able to debate the issues with their families, communities and governments, and discuss the risks and possible courses of action. This will enable them to prepare more effectively for the future.

*Africa Talks Climate* is the first step in developing long-term strategies for sharing information about climate change. It aims to support all those charged with communicating on climate change, whether they be international organisations, governments, the media, NGOs or community leaders.

Providing people with relevant information so that they can effectively address the issues that affect them most is at the heart of the work of the BBC World Service Trust. This is why, with its network of researchers across Africa, the Trust is uniquely positioned to support Africa's response to climate change by sharing its expertise in understanding and communicating with audiences.

For further information including a policy briefing and executive summary report from *Africa Talks Climate*, visit [www.africatalksclimate.com](http://www.africatalksclimate.com).

## Executive summary

In August 2009, the BBC World Service Trust's Research and Learning Group, on behalf of the British Council, conducted research in Northern and Southern Sudan to gauge the public understanding of climate change.<sup>1</sup> The research consisted of 12 focus group discussions with Sudanese citizens, as well as 18 in-depth interviews with opinion leaders from government, religious institutions, the private sector, the media and civil society. The overall objective was to find out what people think about climate change, and to determine how to tailor communication and media strategies to support Sudan's response to climate change.

### Key findings

- Although some Sudanese in urban areas explain climate change with reference to scientific terms and concepts, most Sudanese outside of urban areas do not. Most Sudanese have noticed changes in the weather and seasons, and experienced drought, flooding, changes in rainfall and temperature increases, but do not associate these phenomena with global climate change.
- There is disparity in levels of awareness and knowledge of climate change along urban-rural lines, with people in urban areas knowing significantly more than those in rural areas. There are no major differences in knowledge, however, between the North and the South of Sudan.
- Changes in climate are not noticed by Sudanese in isolation from broader environmental changes. People in Sudan are keenly aware of environmental degradation and natural resource depletion. They make little distinction between environmental degradation and climate change.
- Drought and flooding caused by shifting seasonal rains and irregular rainfall are causing frustration and despair. Farmers and pastoralists do not have a sense of how they would cope if the problems became worse. Other issues that people are worried about include deforestation, desertification, rubbish and air pollution. Opinion leaders are particularly concerned for rural communities.
- In both rural and urban areas, people think it is the responsibility of government, NGOs and the private sector to respond to environmental problems. They feel that as individuals they are unable to respond to environmental challenges or to adapt (particularly in rural areas), instead calling for organised assistance.
- People believe that it would be possible for them to adapt to environmental changes with improvements to infrastructure (particularly to help them cope with prolonged water shortages) and an increase in food aid and income assistance.
- Although opinion leaders recognise that climate change is a global problem, only a few recognise that industrialised countries are most responsible for causing it.
- Opinion leaders acknowledge the potential for environmental changes or resource scarcity to lead to conflict in Sudan. However, citizens do not make these links; the only way in which people link conflict to environmental change is through smoke, bombs and weapons, and the legacy they have left behind.
- Climate change terminology is poorly understood by those in rural areas, since people are not familiar with the issue in a

<sup>i</sup> The BBC World Service Trust no longer operates in North Sudan. A local research agency was commissioned to carry out fieldwork in these locations.

scientific context. This prevents people from discussing the issue. Opinion leaders agree that climate change terminology is a barrier that prevents public engagement.

- The media in Sudan, together with schools, are people's main sources of information on climate change; however, the media appears to lack sufficient knowledge to effectively inform audiences about the issue. It is felt that the science and complexity of climate change make it a particularly difficult topic to cover.
- Sudanese draw on their existing knowledge and beliefs to explain the effects of climate change. For example, many think that deforestation in their area reduces local rainfall, and some incorrectly believe that smoke from cars and factories damages the ozone layer, which makes it hotter.
- Many also believe that changes in the weather are the will of God, and that the negative changes they witness in the environment are a form of divine punishment or fulfilment of Biblical/Quranic messages. This view is prevalent in all areas outside of Khartoum.
- Most opinion leaders agree on the need to raise awareness of climate change. A few emphasise the need to prioritise the provision of information that will enable the most vulnerable people to adapt.
- NGO representatives say their response to climate change and environmental issues is hindered by the short time scale of project funding and competing donor interests. It is a challenge to initiate long-term response.
- There appears to be little cross-sector coordination and communication on climate change. Links between government and NGO initiatives appear to be strongest, while local and community leaders and the private sector appear to be less informed about decisions made at a national level. A lack of knowledge of climate change and actions being taken to tackle it is most apparent among media representatives.

## RECOMMENDATIONS

The information and communication needs of Sudanese citizens need to be at the heart of any national response to climate change; the ability of Sudanese people to respond effectively to climate change will be determined by the accessibility and quality of the information available to them. The information needs of Sudanese vary significantly by location in rural versus urban areas. Addressing these needs should also acknowledge that the way in which people make sense of climate change - in relation to trees, God, ozone depletion, and smoke - can function as a barrier or facilitator to effective climate change communication. People need more information about the causes of climate change and how its long-term impacts and expected increases in extreme weather will affect their lives.

Increased public understanding of climate change will enable citizens to understand how they can adapt to climate change effects and make informed long-term choices. At the heart of this is the need to cater to the needs of the range of audiences within Sudan.

Opinion leaders also need access to information on climate change. Local leaders from grassroots NGOs and the community, including religious leaders, have close access to communities, and are in a position to communicate and inspire citizens to respond to climate change and implement local adaptation strategies, however they tend to be some of the least informed, among opinion leaders, about climate change and its effects and thus need support in turning this around.

Accessible and relevant public debate will also be key to increasing public understanding of climate change. It will provide a forum for



sharing experiences, bridge the gap between science and society, and enable people and their representatives to exert political pressure, both internationally and on their own governments.

The media clearly has a critical role to play in responding to climate change, and supporting others to communicate about climate change, including governments, national and international NGOs, scientists, religious leaders and community leaders. Three specific recommendations for all those charged with communicating on climate change, follow:

### Provide information

- Raise awareness of global climate change and the ways in which it relates to people's lives and livelihoods.
- Confirm people's observations that weather patterns are changing and that extreme weather events are more likely to occur.
- Build simple, correct mental models of how climate change works. In doing so, be mindful of people's existing frames of reference, and their misconceptions.
- Account for a wide disparity in knowledge and understanding of climate change between rural and urban areas.
- Invest in efforts to develop appropriate climate change terminology in local languages.
- Provide people and communities with access to information on practical ways to adapt to climate change and prepare for extreme weather events.
- Pay particular attention to the needs of information-poor rural communities. For them, climate change represents a tipping point. They need targeted information and resources that will enable them to cope with and adapt to its impacts.
- Communicate in ways that are locally relevant to people, using a variety of news and non-news platforms (e.g. public service announcements and radio dramas).
- Provide local leaders with access to information on climate change, bearing in mind that local adaptation strategies need to take into account local leaders' understanding of the issue.

- Increase opinion leaders' understanding of global climate change so that they can communicate confidently on the issue and incorporate it into their decision-making.
- Increase opinion leaders' understanding of adaptation and its importance for Sudan's response to climate change. Religious leaders are in a particularly strong position to help people to understand climate change, and to encourage planning and adaptation in relation to its impacts.
- Use media and schools to better provide information about climate change to the Sudanese public.

### Facilitate policy and public debate

- Build the capacity of the news and non-news media to support more effective public debate on climate change in Sudan.
- Provide 'public spaces' that serve as forums to exchange information, create understanding and plan for action. Such spaces (e.g. talk shows, call-ins and other interactive media platforms) can also facilitate better cross-sector communication between government, NGOs, the private sector, the media, and local and community leaders, as well as with international actors.
- Draw on a range of Sudanese voices and experiences in discussions and debates: engage citizens, local interest groups, civil society actors, religious leaders and policy makers from all levels of government.
- Build a sense of immediacy and encourage the sharing of current examples of adaptation to climate change. Harness Sudanese understanding and experience of their changing weather and environment, to create a relevant discourse that promotes citizen engagement in Sudan's response to climate change.

### Encourage accountability

- Develop mechanisms which enable Sudanese citizens and their representatives to move climate change on to the political agenda; and to exert pressure on their own governments with respect to climate change policies, adaptation funding, technology transfer, emissions reduction and other response strategies. Such mechanisms will also help Sudanese citizens and their representatives to communicate their own perspectives and demands to the rest of the world.

## I Background

### Climate change in Africa

As climate change threatens Africans' health and homes, and the natural resources upon which many depend to survive, Africa's population faces an urgent crisis.<sup>1</sup> It is predicted that Africa will be one of the regions worst affected by climate change.<sup>1</sup> For people struggling with the challenges posed by climate variability, environmental degradation and poverty, climate change represents a tipping point.

Rainfall patterns across Africa have already changed markedly, and yields from rain-fed agriculture could halve in the next decade.<sup>2</sup> A decline in yields is predicted to lead to a greater risk of malnutrition for people who rely on the land to eat, and increased food insecurity for those who rely on buying food in the marketplace.<sup>3</sup> Indeed, there have been recent food crises in Kenya, Uganda, Somalia and Ethiopia.<sup>4</sup> Imports may also be affected, and food aid is threatened by climate change impacts in the midwest of the United States.

Climate change is likely to alter the transmission patterns of diseases such as malaria.<sup>5</sup> Increased incidences of cholera and meningitis are also thought to be linked to variations in climate. Health threats such as diarrhoea, asthma and stroke affect more people when temperatures rise.<sup>6</sup>

The stark impacts of changing rainfall patterns on Africa are manifest. A more powerful hydrological cycle will bring other challenges, including flooding. The Intergovernmental Panel on Climate Change (IPCC) says that "by the 2080s, many millions more people than today are projected to experience floods every year due to

<sup>i</sup> Of the 20 countries in the world most vulnerable to climate change (in socio-economic terms), 15 are African. See *The Anatomy of a Silent Crisis*, ref 1.

*sea-level rise... [largely] in the densely populated and low-lying mega-deltas of Asia and Africa... small islands are especially vulnerable*".<sup>7</sup>

The links between environmental degradation, political tension and conflict have been highlighted for many years.<sup>8</sup> Environmental degradation reduces the supply of food and fresh water, and resources such as land. Climate change is predicted to exacerbate conflict in Africa, and in some cases is already doing so.<sup>9</sup>

### Climate change in Sudan

Since gaining independence in 1956, Sudan has had two civil wars (from 1955 to 1972 and 1983 to 2005). According to the 2005 peace agreement, the citizens of South Sudan will hold a referendum in 2011 on the issue of independence from the North. With over four million internally displaced persons (IDPs) and international refugees, Sudan has the largest number of displaced people in the world today.<sup>10</sup> The separate conflict in Darfur in 2003 has displaced nearly two million and caused an estimated 200,000 to 400,000 deaths.<sup>11</sup>

Climate change presents an additional stress for Sudanese people already struggling with poverty, post-conflict recovery and environmental degradation. Straddling north and sub-Saharan Africa, with the Sahel running through the centre of the country, Sudan – the largest country in Africa by area – is a country of extreme geographic and climatic contrasts. However, rainfall and the length of the dry season are the most significant climatic variables.

Sudan's rainy season usually lasts from July to September in the north and from June to November in the south.<sup>12</sup> There is less

## Perceptions and coverage of climate change: what do we already know?

To communicate effectively about climate change, it is critical to know how people understand it. While this review is not exhaustive, it is clear that there is a dearth of research on perceptions of climate change in Africa, and it will be essential to address this problem if communication is to improve. Opinion polls to date have largely focused on Nigeria, Kenya and South Africa. They reveal that many people are unfamiliar with "climate change", "global warming" and related terms.<sup>13, 14</sup> This makes it difficult to interpret further opinion-poll results about climate change in Africa; most polls suggest that Africans view climate change less seriously than do non-Africans,<sup>15, 16</sup> which may point to a lack of information concerning the relevance and implications for Africa, but could also reflect a lack of understanding of the questions asked.

Some small-scale perception studies hint at the impact climate change is having on African lives.<sup>17, 18, 19</sup> Lack of information regarding climate change is seen by some as a critical barrier in dealing with its effects.<sup>20, 21</sup> Indeed, research in the United States has shown that a limited understanding of climate change can restrict people's ability to distinguish between effective and ineffective response strategies.<sup>22</sup>

A lack of public understanding of climate change is not exclusive to Africa.<sup>1</sup> A review of research on the perceptions of climate

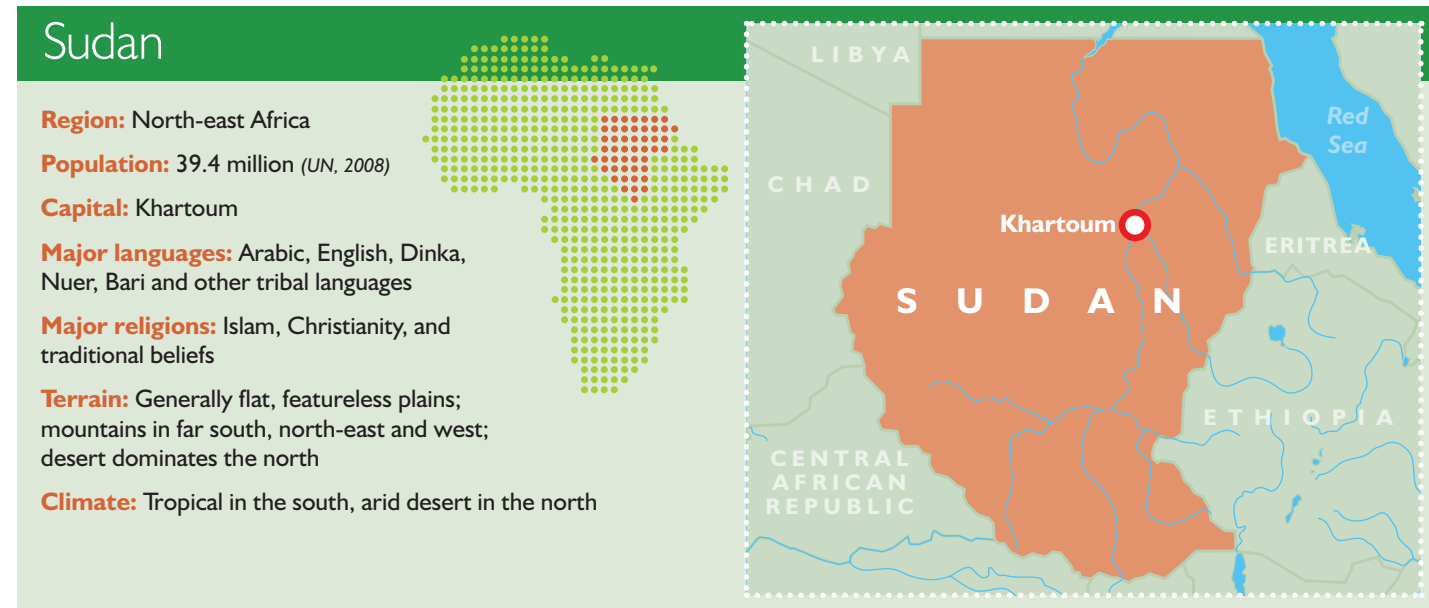
<sup>i</sup> In the absence of extensive research on the public understanding of climate change in Africa, *Africa Talks Climate* also draws on existing research from outside Africa, whilst acknowledging that in many cases this research was conducted in a Western context, and therefore must be applied carefully to the African context.

change in the UK reveals public understanding as "patchy, but generally poor".<sup>23</sup> Similarly, research in the United States has shown that people often have basic misconceptions about climate change.<sup>24, 25</sup> Although high levels of media coverage of climate change in the United States and the United Kingdom have not always translated into high levels of concern among the public, some research suggests this is because climate change is seen as a remote and non-urgent issue.<sup>26, 27</sup> This is less likely to be the case in Africa, where most people are already experiencing the effects in their daily lives.

Although the media are seen to have a critical role to play in raising awareness and information provision on climate change, and disaster preparedness,<sup>28</sup> little research exists on the media coverage of climate change in African countries. However, a recent publication suggests that journalists covering climate change in many developing countries lack training, support from editors and access to information or people to interview.<sup>29</sup> It concludes that while news coverage of climate change in non-industrialised countries is increasing, the quantity and quality of reporting does not match the scale of the problem. It goes on to point out that a reliance on reports from Western news agencies, rather than locally relevant news, as well as sparse coverage of adaptation measures, means that audiences, particularly the world's poor, are being underserved. Finally, it hints at the potentially important role that non-news media (such as talk shows, dramas and public service announcements) can play in providing information to audiences on climate change.

## Acronyms used in this report

BBC WST	BBC World Service Trust	R&L	BBC World Service Trust Research and Learning Group
HCENR	Higher Council for Environment and Natural Resources	SSRRC	Southern Sudan Relief and Rehabilitation Commission
IDP	Internally displaced persons	UNEP	United Nations Environment Programme
IPCC	Intergovernmental Panel on Climate Change	UNFCCC	United Nations Framework Convention on Climate Change
NAPA	National Adaptation Programme of Action		
NGO	Non-Governmental Organisation		



rainfall in the north and the driest regions suffer from massive sand storms, or *haboob*. In the northern and western semi-desert areas, including Darfur and Kordofan, people rely on scant rainfall for basic agriculture and many are nomadic pastoralists.<sup>30</sup> Nearer the Nile, there are well-irrigated farms growing cash crops.<sup>31</sup>

Decreasing annual rainfall and increased rainfall variability are contributing to extreme dry spells and periods of drought in many parts of Sudan, even in the south. A succession of dry years from 1978 to 1987 resulted in severe social and economic impacts, including many human and livestock fatalities and the resettlement of close to three million people close to the Nile and in urban areas.<sup>32</sup> Drought will increase if these trends continue, without efforts to adapt. Devastating floods have also troubled Sudan in the last few decades leading to widespread loss of property, damage to irrigation facilities and water services, and the spread of water-borne diseases.<sup>33</sup>

The country's long history of conflict has had significant impacts on the environment. Population displacement<sup>34</sup>, a lack of governance<sup>35</sup>, conflict-related resource exploitation<sup>36</sup> and underinvestment in sustainable development<sup>37</sup> have been the most severe consequences to date. Any discussion of climate change in Sudan must take into account the political context.

The interrelation of climate change with other factors is complex and evolving. Climate change is projected to affect agriculture, water resources, and health. A recent United Nations Environment Programme (UNEP) report states:

*"An estimated 50 to 200 km southward shift of the boundary between semi-desert and desert has occurred since rainfall and vegetation records were first held in the 1930s. This boundary is expected to continue to move southwards due to*

*declining precipitation. The remaining semi-desert and low rainfall savannah which represent some 25 percent of Sudan's agricultural land, are at considerable risk of further desertification. This is forecast to lead to a significant drop (approximately 20 percent) in food production."*<sup>38</sup>

Projections indicate that climate change will also impact water resources. Reduced groundwater – either through decreased precipitation or increased temperatures and evaporation – would have serious repercussions. National studies show that soil moisture would decline.<sup>39</sup> Coupled with increased water consumption, population growth, a high variation in rainfall, and a high rate of evaporation, climate change is increasing the likelihood of a water crisis for Sudan, particularly in the arid north.

Experts also expect climate change to threaten health. Many communities in Sudan will be at a significantly increased risk of malaria,<sup>40</sup> which could threaten the country's already limited health care system.

In an attempt to address climate change and related issues, Sudan has already completed several activities. It ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 2003 and submitted its initial national communication the same year.<sup>41</sup> The Higher Council for Environment and Natural Resources (HCENR), the Government's national focal point for the UNFCCC, plays an advisory policymaking role with regard to climate-related initiatives. The HCENR is also the national executing agency for Sudan's National Adaptation Programme of Action (NAPA), completed in 2007, which focuses on major impacts and vulnerabilities in five regions: Gedaref, North Kordofan, South Darfur, the River Nile state, and Central Equatoria, representing different ecological settings across the country.<sup>42</sup>

## 2 Research methodology

### Research objectives

The overall objective of *Sudan Talks Climate* is to assess the public understanding of climate change and identify how communication and media can best support Sudan's response to climate change.

The research focuses on four key questions:

1. What changes have Sudanese citizens experienced in their climate and environment over time?
2. How do they explain and respond to these changes?
3. What do they know and understand about global climate change?
4. What do Sudanese opinion leaders know and understand about climate change and what are their views on Sudan's response to climate change?

The research consisted of 12 focus group discussions with citizens and 18 in-depth interviews with opinion leaders across six locations in Sudan in August 2009 (see Appendix 1). The locations were Khartoum and Um-Dawan-Ban in Khartoum State, North Sudan; El Obeid and Alban Jadeed in North Kordofan, North Sudan; and Juba and Lainya County in Central Equatoria, South Sudan (see Figure 1 on page 11). The environmental challenges represented in these areas have already been linked to climate change to some extent, or could be further exacerbated by climate change in the future:

Khartoum is Sudan's capital and largest city. It is situated on the confluence of the Blue and White Nile rivers. Um-Dawan-Ban is a suburb south-east of Khartoum. Both locations are surrounded by the Sahara desert. They are experiencing significant rural-to-urban migration and increasing problems related to pollution and sanitation. Recent flooding and increased deforestation are putting strains on livelihoods.

El Obeid and Alban Jadeed, in North Kordofan<sup>ii</sup>, are located in the centre of the country. Situated along the Sahel, this area consists of fertile plains in the rainy season, which turn to virtual desert in the dry season. The region has been impacted by significant rainfall variability and is particularly vulnerable to desertification. In the past Kordofan achieved high agricultural outputs but these have declined significantly in recent decades.

Juba is the capital city of South Sudan. The climate here is very different to the north with significantly higher rainfall. It is more

<sup>i</sup> *Sudan Talks Climate* uses a qualitative research design. Qualitative approaches, which generate non-numeric data, are particularly useful for exploratory research on topics for which there is little previous research. Through focus groups and in-depth interviews, *Africa Talks Climate* investigates the meanings people attach to climate change and explores how they experience climate-related issues and impacts.

<sup>ii</sup> For security reasons it was not possible to conduct research in Darfur at the time of fieldwork. Kordofan was selected as an alternative location due to the relative geographic similarities between Northern Kordofan and Northern Darfur, in terms of climate, terrain and latitude. However, it is acknowledged that considerable political differences between the two regions mean that perceptions from significant segments of the Sudanese population are regrettably omitted from this study.

geographically similar to East Africa and the Great Lakes region. Limbe in Lainya County in Central Equatoria, faces similar environmental challenges to the rest of the region, including deforestation, flooding, and shifting rainy seasons.

### Focus group discussions

The research set out to gather a broad range of views. Discussions were convened with men and women, rich and poor, rural and urban. Given the implications of climate change for certain livelihoods in Sudan, recruitment of focus group participants also purposefully targeted individuals working in farming in Alban Jadeed and Limbe as well as small traders and casual workers – often recent rural-to-urban migrants – in Juba, Um-Dawan-Ban, and El Obeid.

In Khartoum, El Obeid, Um-Dawan-Ban and Alban Jadeed, focus groups were conducted in the regional Arabic dialect by native-speaking moderators. In Juba, focus groups were conducted in English – one of the two *lingua franca* and official languages of South Sudan (the other being Juba Arabic). In Limbe, the focus groups were conducted in Bari, the language of the Sudan Bari people, with native-speaking moderators.

### In-depth interviews

To understand the wider context of climate change in Sudan, 18 in-depth interviews were conducted with opinion leaders with a particular interest in climate change, or an informed opinion from a certain field, region, or subject area within the country. They included policymakers, religious leaders, business people, journalists and civil society representatives, divided evenly between North Sudan and South Sudan. For further information on the research methodology and guiding principles see Appendix 3.

## The advisory group

The BBC World Service Trust and the British Council set up an informal advisory group of climate change and development experts to provide technical knowledge on climate change and insights into the local climate context in Sudan. All experts were Sudanese or had worked and conducted research in Sudan.

Advisory group members were recruited during the initial phase of research, when consultation calls were held with a variety of individuals and organisations to gather background information on Sudan and climate change. At the same time, experts were invited to join the advisory group.

The advisory group offered informal guidance in three areas. Firstly regarding specific climate change issues facing Sudan; secondly advice on fieldwork and site selection; and thirdly feedback on research findings and reporting. See Appendix 2 for a full list of advisory group members.



### 3 Citizen focus group discussion findings

There are different ways to know about climate change. One way is to understand the science: that human activities, such as the burning of fossil fuels for energy, are increasing the amount of heat-trapping gases in the atmosphere, which warms the earth and affects its climate system. Another is to experience it first hand: to witness over a lifetime changes in rainfall patterns that affect the harvest; to suffer from increased droughts, floods and other climatic disasters that can wipe out homes and crops; or to be at the receiving end of the spread of vector-borne diseases, such as malaria.

The findings from this research suggest that some Sudanese in urban areas can explain climate change with reference to scientific terms and concepts. However, most Sudanese do not know about climate change in the scientific sense but they have experienced it. Observable changes in the weather and the seasons constitute most Sudanese people's knowledge of climate change; they live with the impacts of the changing climate in their day-to-day lives.

The research also shows that changes in climate are not noticed by Sudanese in isolation from broader environmental changes. People in Sudan are keenly aware of environmental degradation and natural resource depletion. They mention, for example, deforestation, pollution and reduced soil fertility. Indeed, the research reveals that most Sudanese appear to make little distinction between environmental degradation and climate change; changes in the weather and seasons form part of the broader changes people have observed over the course of their lives.

Given that climate change is viewed in the context of wider environmental changes, it is important to understand how Sudanese perceive these changes. This report, while focusing on climate change, recognises the complexity of the relationship between climate change and environmental degradation. It begins with an overview of the environmental changes that people in Sudan have experienced, and then focuses on four key issues that people say directly impact their lives: drought, flooding, deforestation and desertification, and waste and air pollution. It moves on to examine people's understanding of climate terminology and concepts and finally, presents four key themes that shape people's understanding of global climate change. In subsequent sections, it explores what Sudanese opinion leaders know and think about climate change, and concludes with recommendations.

#### What changes have Sudanese citizens experienced in their climate and environment over time?

Sudanese agree that the weather is changing. They tell of changes in rainfall patterns, increases in temperature, and more incidences of extreme weather events such as drought and flooding than in the past. An older man in Juba is typical in describing changes in the rains and the impacts on agriculture: "It no longer rains like it used to. Now it can sometimes be three months, four months between rains. The weather is very hot and dry, and even when you plant some crops, they will dry up... Before the war, it was never this way, but now the temperatures have increased."

This is also reflected elsewhere. A woman in El Obeid explains: "The autumn rainy season has become shorter than it was in the past. People here are badly affected by the lack of water... Kordofan depends on the autumn rains. Our agriculture is rain agriculture. The farming here is dependent on rain." An older man from Alban Jadeed, North Kordofan, recalls, "In the 1970s, water could be found near the surface of the soil. Now, water has dived much deeper into the earth; it's become hard to reach, and the only way to get it is by digging wells."

Rural Sudanese, in particular, explain how shifting rainfall patterns,



extreme weather and environmental degradation affect their lives. Of particular concern is declining soil quality and agricultural outputs, drought, and flooding: "In Kordofan, the soil has changed in terms of [food] production. Before, a piece of land for peanuts would produce between 15 to 20 sacks, now it only produces, say, 5 to 7 sacks of peanuts," explains an older male farmer from Alban Jadeed.

Many compare the timing of autumn – the seasonal rains – to the past, often using the war as a measure of when rainfall was more predictable. Sudanese refer in specific terms to annual dates by which, in the past, they would have expected the seasonal rains to have begun and these as a measure of how things are different today. Across the country, people say that the rains now come later in the planting season: "In my home in Eastern Equatoria, many of the seasonal rivers are now drying up," says an older woman from Juba, "from these rivers they used to get... fresh fish and many other things, but now all of them have dried up. Even some of the traditional crops we used to grow when there was much rainfall, we can no longer grow them."

Sudanese across all regions see the natural environment as areas without a significant man-made or urban presence. However, urban respondents have a different set of criteria for determining the impacts of long-term weather changes. People living in urban and peri-urban areas see a strong connection between environmental changes and rural-to-urban migration: "Families have been separated from each other and people have had to move to other cities because of the [annual] flooding," says a young woman from Um-Dawan-Ban, Khartoum State, "floods have really affected our lives".

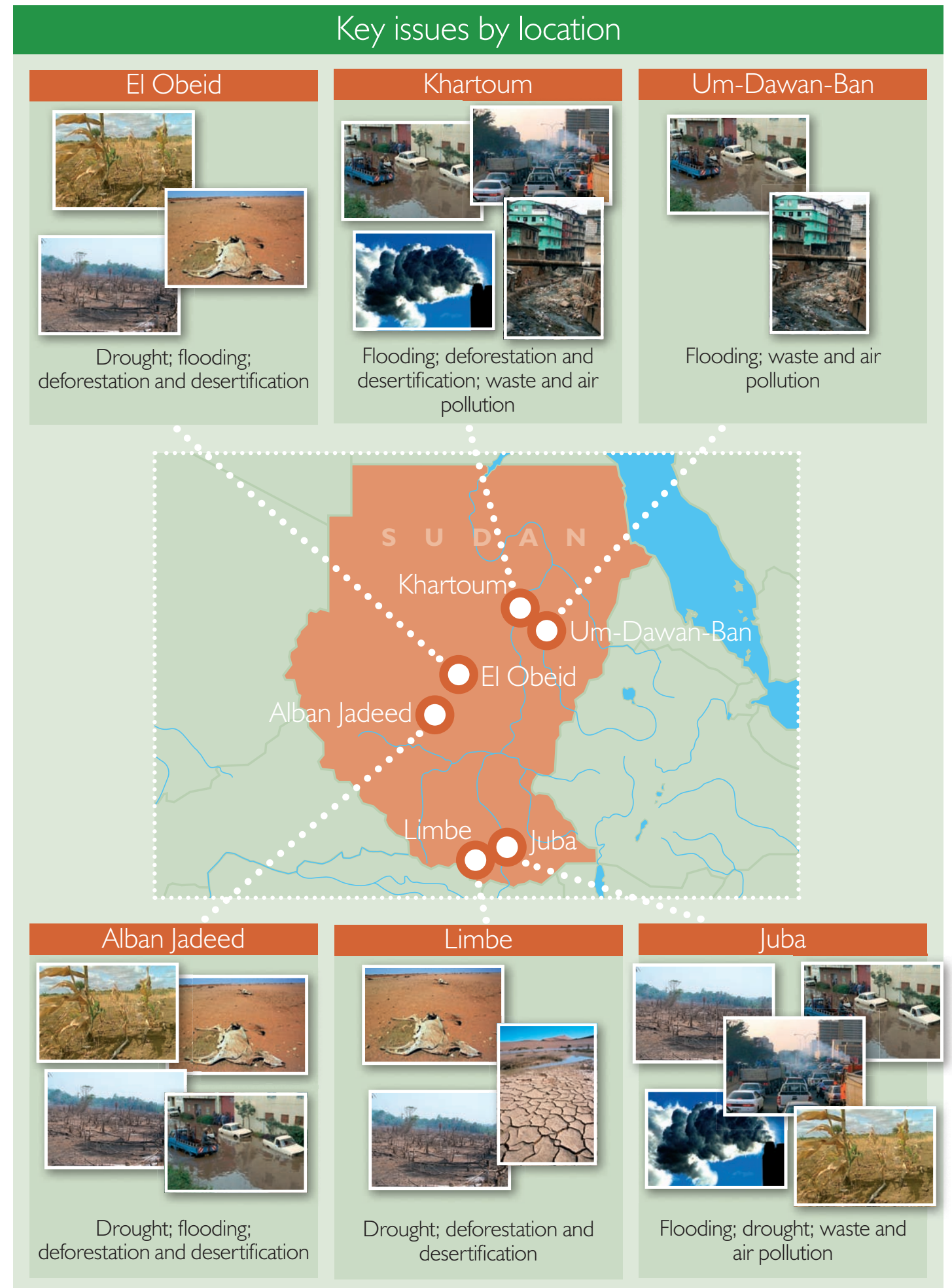
In this context, people in urban areas talk about increases in pollution, waste, exhaust fumes, factory emissions, and deteriorating sanitation facilities in towns. "Factories are polluting our environment," says a woman from Alban Jadeed. People also link these changes to poorer health: "I personally have felt the effects health-wise," says a woman from Khartoum, "I am asthmatic and now I have more attacks than before as a result of air pollution, high temperatures, and increased humidity".

Sudanese have witnessed an increase in levels of deforestation. Those in urban and peri-urban areas associate this with the construction of dwellings and shelters. In rural areas, people believe that deforestation is the main cause of increased heat and changes in patterns of rainfall.

#### How do Sudanese citizens explain and respond to changes they are experiencing?

Many of the changes that Sudanese citizens observe are potentially linked to climate change, and could be exacerbated by climate change in the future. To understand whether people connect local problems to climate change, and to find out how they are currently coping and may cope if these problems become more severe or frequent, they

Figure 1.0





were invited to discuss issues that prominently affected them. A set of 15 images, representing a range of issues that can be linked to climate change, was used to help facilitate the discussion.

Participants, as a group, chose images which had the greatest effect on their lives.<sup>i</sup> Efforts were made to understand how people were interpreting the images – for example, two different images prompted discussions of drought. Subsequent discussions sought to understand attitudes towards these issues and the perceived causes, effects and responses.

Across all the locations, a total of four issues were identified:

1. Drought
2. Flooding
3. Deforestation and desertification
4. Waste and air pollution

Figure 1 shows the images selected in each location.

The issues that people selected tend to be immediately linked to the struggles that they face in their daily lives. Farmers in the Sahel talk about drought and crop failure. Farmers in the more verdant south often describe crop failure as a result of flooding. Pollution, sanitation, and waste are prevalent themes within urban groups. The research did not seek to restrict conversation and, as a result, discussion sometimes moved into environmental degradation and broader social problems. In this way, the most pertinent climate change and environmental degradation issues facing residents in each location emerged.

## Drought

**People in Sudan are concerned about changes in the rainy season and unpredictability of rainfall, which they think leads to more drought. This is of particular concern to rural Sudanese. They feel helpless in the face of drought and say that without aid from the government and NGOs they will be forced to relocate to urban areas.**



Drought is a primary concern for urban and rural people in North Kordofan and Central Equatoria, where people have already experienced prolonged dry spells. Delayed rainfall has severely affected livelihoods and well-being and is felt most acutely by farmers and those in water-insecure areas, particularly in the Sahel. In rural Southern Sudan, a man described the changes he has experienced in rainfall in Limbe: “The weather is very hot and dry and when you plant some crops they will dry up,” he says. “The rain is not raining like usual. Now it can sometimes take three months, four months.”

People feel several factors have contributed to increased drought, including a shifting of seasonal rain patterns, increases in temperature, and deforestation. Outside Khartoum, people also

<sup>i</sup> Participants also had the option to suggest other issues affecting them, that they felt were not covered by the 15 images.

**“Flooding [has] caused waste, illness and mosquitoes, and has paralysed transportation”**

MAN FROM UM-DAWAN-BAN

associate reduced rainfall with religious factors, such as the will of God or traditional rainmakers.

People say that drought leads to failed harvests which in turn has a negative impact on livelihoods. Lower crop yields reduce people’s income and life is becoming more difficult for those subsisting on agricultural outputs. An older man from Alban Jadeed stated, “when the sun’s heat spoils the crops, you will be affected with droughts as there will be no food for the whole year”.

The effect of drought on livestock is a concern for farmers and pastoralists, particularly in Kordofan. Pastoralists, unable to find suitably fertile grazing areas, often great distances away. An older man described how this has impacted pastoralists around his community of Alban Jadeed: “The impact of drought? We had people who have cattle and animals, they immigrated from north to south. Some of them had hundreds of cows [when they left]; they came back with ten cows. Some went with 50 cows and came back empty handed.”

As a result of drought, people also say they have been forced to abandon their traditional farming cycles and repeatedly plant the same crops in one place. They say the soil then becomes degraded, further reducing yields. “The farming here was unsuccessful because of the drought. We could not follow the farming cycle,” says a woman from El Obeid. Because her family was unable to leave an area of land fallow; “it has weakened the soil,” she says.

Drought has also led to increased rural-to-urban migration. Many people say they move from villages to towns in search of alternative livelihoods when they can no longer make ends meet in the rural areas. “Drought is the main reason why the people migrate into the cities,” says a woman from El Obeid. Even in urban areas, where livelihoods are not so directly linked to land, people are conscious of, and concerned about drought. People in towns are conscious of their reliance on rural areas for food and worry that in the future their food supplies may disappear.

In North Kordofan and Central Equatoria, people’s responses to drought reflect feelings of helplessness. They do not talk about ways to adapt and cope with the challenging climate; there is an overwhelming sense of inevitability about rainfall changes. People express feelings of helplessness and a lack of control over the situation. For example, many say that they currently respond to drought by praying. In South Sudan, some respond with anger toward rainmakers, who are seen to be failing in their jobs.

When asked how they would respond if drought were to become more frequent or severe, most people say that without government assistance, they would have to leave farming altogether. Many view moving to urban areas as a solution and say they need increased food aid from the government and NGOs.

Respondents are concerned by the of infrastructure to cope with

significant and prolonged water shortages. People from Kordofan were more confident that the government would provide drinking water, but had no strategies for coping without outside assistance.

## Flooding

**Sudanese people view flooding as part of a cyclical change in rainfall patterns where long periods of drought are followed by heavy rains that destroy crops, damage infrastructure, and threaten health and sanitation. Possible responses are seen in terms of providing food and shelter. Most people say they need aid from the government and civil society or that the only option will be to relocate from rural to urban areas.**



Many Sudanese say they are experiencing more flooding, which they associate with the greater unpredictability in rainfall patterns. People in Khartoum, North Kordofan and Central Equatoria are particularly concerned by increased flooding. In the north and the south, and in rural and urban areas, people link flooding with drought; Sudanese farmers say they are increasingly experiencing longer periods with inadequate rainfall followed by excess rain when the delayed rainy season finally arrives.

Flooding is seen as part of a cycle of environmental change associated with the changing rainy seasons. An older man living in Juba describes the changes in rainfall in his home village, saying that “these climate changes or weather changes has affected us a lot. Even some of the traditional crops that we used to grow, now there is either too much rainfall or there isn’t enough rainfall!”

The consequences of flooding hit those living off the land the most. Farmers say they are unable to cultivate soil that has been flooded and entire harvests are often destroyed by heavy rainfall. “Sometimes when you plant crops, some will survive and some will die, especially when there is no rain, and when rain is also too much the crops will not do well or they also die,” explains a young man from El Obeid.

People are also concerned about the damage flooding can cause to water sources and the country’s limited road system. People feel insecure if vital transport routes become impassable or groundwater reservoirs are contaminated or destroyed.

People also feel that extreme flooding is related to their health, bringing increased incidences of malaria, breathing difficulties, and malnutrition. A man from Um-Dawan-Ban explains: “Floods have caused waste, illness and mosquitoes, have paralysed transportation... [We now have illnesses such as] malaria, typhoid, and TB.”

It is important to note, however, that in some areas along the River Nile, flooding, while difficult and destructive, is perceived as a reality rather than as part of a long-term change in weather patterns.

People’s responses are reactive. In urban areas, some say the government needs to improve roads and provide short-term emergency shelter for those affected by flooding. Few Sudanese have any disaster preparedness plans or long-term strategies. They think the government and the international NGO community should be responsible for helping people cope, with a man from Limbe expressing a widely-felt sentiment: “After the flooding, the

government should provide us with help to plant and with things like building. The government should give us something because we are suffering.”

In rural areas, people express feelings of helplessness and a lack of control over the situation. Because the main impact of flooding is felt on people’s livelihoods, Sudanese feel that the only possible response is to migrate to urban areas in search of alternative sources of income.

## Deforestation and desertification

**People in rural areas believe that deforestation is the main cause of increased temperatures and changes in rainfall patterns. Reduced agricultural output is directly related to the felling of trees. In the north, deforestation is closely linked to the spread of desertification. However, people also say that felling trees is a necessary evil in the absence of alternative energy sources.**



People in North Kordofan and Central Equatoria in particular are concerned about deforestation, although all groups have witnessed deforestation to some extent. The people who most feel that they need to cut down trees in order to meet their basic survival needs – to cook, eat, earn a living, and build a shelter – are farmers from Limbe, Alban Jadeed, and El Obeid.

In rural areas of Kordofan and Central Equatoria, people say deforestation is the main cause of increased temperatures and changes in local patterns of rainfall, which they, in turn, link to declines in agricultural output. People believe that trees attract rain and that cutting them down for wood and land-clearing causes less rain to fall and increases temperatures and drought.

Sudanese people also believe that trees play an important role as wind breaks: “Usually the big trees are the ones breaking the wind and bringing the rains, but now they are not there,” explains an older woman from Limbe. When trees are cut, people say that the soil is eroded and it is more difficult to grow crops.

Deforestation is closely linked in people’s minds to the southward spread of the desert boundary. In North Kordofan and Khartoum, some say that the Sahara has now gone as far south as the 12<sup>th</sup> parallel because of desertification, as an older man from Alban Jadeed explains, “these places used to be known as forest, up to South Kordofan, but the forest gradually started to vanish and now it’s receded to line 12”.

Even in regions of Sudan not exposed to or impacted by the encroaching desert, people are aware of desertification. A young woman from Juba explains, “cutting down trees... causes desertification and when the area is desert, it is even hotter”.

Some Sudanese skip the link between trees and desertification, going directly to the reduction in rainfall and drought. “If rainfall decreases,” says a man from Central Equatoria, “[there will be] drought, desertification, displacement of people living in areas of sub-Saharan, because most people depend on rain water in developed countries and in Sudan certainly, people depend on agriculture in their daily lives.”



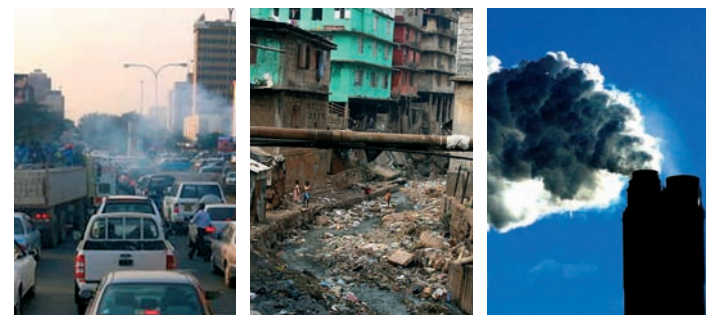
There is a consensus that desertification is pushing people into the towns and cities. *“Famine and desertification have made people move to the city,”* says an older woman from Khartoum. *“They are poor and needy, their environment is a dangerous one.”*

In rural central Equatoria and North Kordofan, little practical action is taken against deforestation or desertification. Similarly, very few people mention any attempts to reduce their use of firewood. People say that they are reliant on government and NGO aid and feel that there is little else they can do.

Across all locations, people are aware of the value of planting trees, but say that unless laws are passed to prevent cutting them down, or until poverty is addressed so that people do not need to cut them down for firewood, people will continue to contribute to deforestation. Alternatives to firewood have only been introduced in a few areas. A man from Um-Dawan-ban says, *“the use of trees is less than before because we have gas for cooking [now]”*.

**Waste and air pollution**

**People in urban areas emphasise different issues to rural respondents - primarily pollution, waste, sanitation, and exhaust emissions.**



For urban Sudanese, one of the biggest environmental concerns is pollution: air pollution in the form of smoke and exhaust emissions and the dumping of waste.

Air pollution is associated with fumes from cars and industry. People are quick to conceptualise that the more smoke that goes into the atmosphere, the more their lives are in danger since it pollutes the environment. *“I can see air pollution by large engines emitting carbon monoxide,”* says a young man from Khartoum, while another from Juba cites *“flames and huge smoke going into the atmosphere”*.

Many Sudanese in urban areas are worried about dumping waste and increased pollution from waste. A man from Juba explains that littering is a common problem: *“When you move around the town you will see people dumping rubbish anywhere like plastic bottles, and after drinking the water they throw the bottle on the road.”*

While Sudanese feel encouraged by development, they also see increased infrastructure, construction, and industrial activity contributing to air pollution. This is felt in both rural and urban areas. A man from Alban Jadeed fears, *“the expansion and rehabilitation of roads with technology that release... gas which affects human health”*.

In urban areas, where Sudanese have a better grasp of climate change, many view pollution from industrialisation as a global phenomenon and cite industrialised nations as culpable emitters. They think foreign countries are having an impact on their lives and that their technological advancement means they are more

**“The autumn rainy season has become shorter than it was the past... Our agriculture is rain agriculture. The farming here is dependent on rain”**

**WOMAN IN EL OBEID**

responsible for global carbon emissions. Urban respondents are knowledgeable about the spreading of air pollution beyond state boundaries.

In North Sudan, respondents also associated air pollution with expansive private sector investment and activity. They cite a recent rise in the number of factories and say they are increasingly ubiquitous. This phenomenon was not expressed in the south with the same degree of concern.

The principle reason that Sudanese people are concerned about air pollution from vehicle exhausts and industrial emissions is because of the effects they perceive pollution has on their health. They say asthma, in particular, is on the increase. People are also concerned about poor sanitation and the spread of infectious diseases, and are aware of the links between the two.

People associate pollution with a wide range of illnesses, including asthma, diabetes, lung cancer, flu, coughs, malaria, and typhoid. *“Air pollution and the industries can cause diseases such as coughs and flu and then also damage the environment because some chemicals are mixed and are dangerous,”* says a woman from Um-Dawan-Ban. People are also concerned that the treatment of these diseases is financially prohibitive for many.

Air pollution is also seen as a possible cause of rainfall variability. Many urban residents believe that pollution from factories and cars is a reason for increased temperatures and that high temperatures cause rain to fall, resulting in flooding.

Individuals offer few insights into how they are currently coping with the volume of exhaust emissions and the resulting air pollution. In the south, one urban resident speaks of using cars that emit less smoke into the atmosphere. But there is little evidence that such technological developments are actually in place.

Some people say that the government must take action, but when asked how they would cope if the situation became more severe, people’s responses are mixed. Many are ready to give advice about what others should do, feeling that if others behave as they behave, the situation might improve.

**What do Sudanese citizens know and understand about global climate change?**

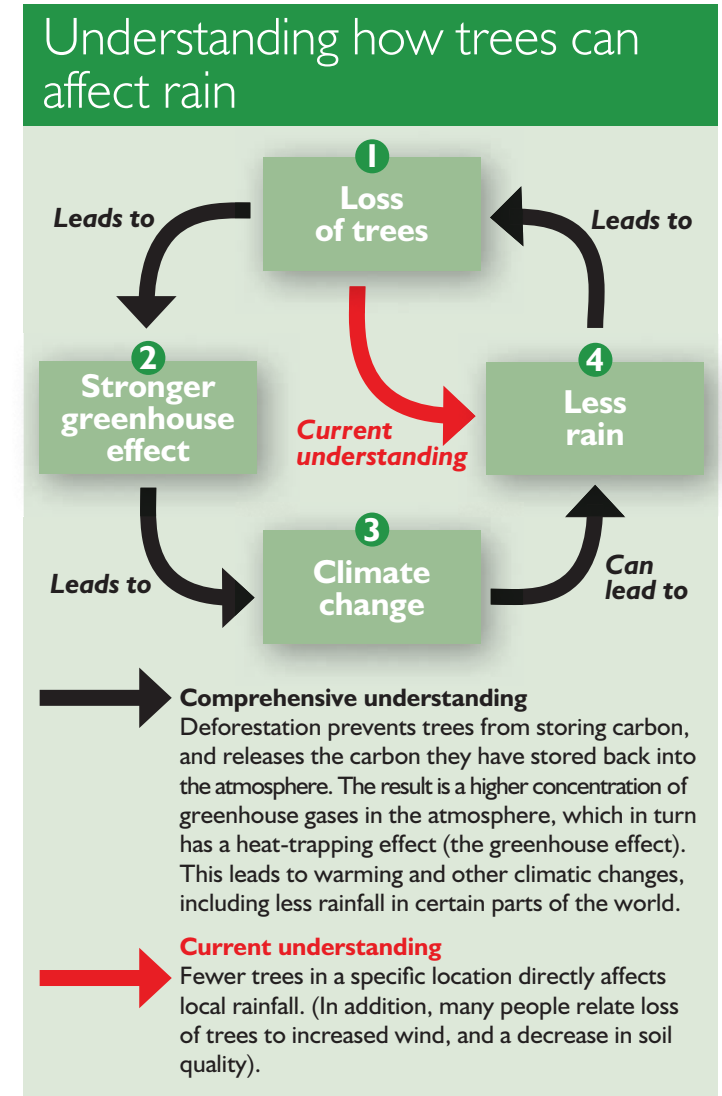
Despite articulating local challenges and recognising differences in nature, weather, and the surrounding environment, Sudanese outside the main cities of Khartoum, El Obeid and Juba rarely link such changes to the global phenomenon of climate change. Not only does climate change terminology not resonate with rural people, they also generally do not have a clear and accurate understanding of climate change concepts. However, in urban areas, particularly in Khartoum and Juba, both men and women have a solid understanding of climate change.

In this context, *Sudan Talks Climate* explores how people make sense of climate change terminology and react to information about climate change. This section closes with five key themes that are shaping people’s understanding of climate change, and affecting the way in which they explain its effects.

**Terminology**

‘Climate change’ is a new term for many rural people in Sudan.

Figure 2



**“Air pollution and the industries can cause diseases such as coughs and flu and also damage the environment”**

**WOMAN FROM UM-DAWAN-BAN**

Despite a lack of familiarity with the term, they do attempt to interpret it. They relate climate change to weather changes or the changing environment. A young woman from Limbe, in Central Equatoria, gives a typical explanation of the term climate change: *“It means that our clouds and air have been changed to another place,”* she says, *“and the [clouds and air] from that place are brought to us because the Earth is moving round. That is why sometimes we fail to get rain on time, especially when it is a planting season.”*

Similarly, rural people tend to be unaware of the term ‘global warming’, but think it refers to increased temperatures and heat. *“I have just heard of it as they were always expressing that global warming means a temperature of the Earth now*

*rising... higher than what it used to be like”* says a man from Juba. Respondents accept that the temperature of the earth is increasing all over the world. This is perceived as a long-term, incremental change.

On the other hand, awareness of climate change issues is high in urban areas in both North and South Sudan. The disparity in levels of awareness and knowledge between rural and urban areas is significant.

Not only are urban Sudanese aware of the impacts of climate change on their immediate environment, they are also familiar with international discourse on climate change, referring to key figures and events such as Al Gore, the polar ice caps, the Kyoto Protocol or the 2007 Bali conference, for example.

**Reaction to the concepts**

Low spontaneous awareness of climate-related terms was to some extent expected, based on previous research.<sup>i</sup> Discussions, therefore, also explored awareness and understanding of the concepts of climate change and global warming, using the following statements.<sup>ii</sup>

1. Scientists are saying that human beings are causing weather patterns over time to change around the world.
2. Scientists are saying that human beings are causing the temperature of the earth to increase.

Most participants agree that human beings are causing weather patterns over time to change around the world through tree-felling and pollution. Comments by an older man from Juba exemplify this belief.

*“All that is happening, human beings are responsible... you can see we are emitting smoke there by the factory because we humans want something... you can see human beings are cutting trees because human beings need them. If [we] were not there... then there would be no changes.”*

People also agree that the temperature of the Earth is increasing. However, people from rural and urban areas explain these changes in different ways. In Juba, El Obeid, and Khartoum, people link increases in the Earth’s temperature to global climate change. They talk of countries releasing gases and emissions and polluting the atmosphere. Some are even familiar with international efforts to combat global emissions. *“I heard that the American vice president,*

<sup>i</sup> The *Africa Talks Climate* pilot study was conducted in Nigeria. See Appendix 3.  
<sup>ii</sup> These statements were explored before the terms “climate change” and “global warming” were introduced. See Appendix 3.



Al Gore, made a campaign for these issues in order to encourage people to decrease the amount of released industrial gases,” says an older woman from Khartoum. However, although people have seen evidence of industrial emissions in Sudan, people do not think their country is releasing gases that will have impact on a global scale.

In rural areas, however, people do not link these changes to global climate change. Indeed they attribute them to local factors such as deforestation, over-grazing, and pollution from factories and cars. Temperature rise, in particular, is frequently linked with deforestation.

In addition, there are some who feel that humans cannot influence the weather. They say that God is the only one who has control over weather. While this sentiment was predominantly expressed in rural areas, it could be found all over the country, including cities. For example, a man from Khartoum said: “It’s difficult for human beings to change weather patterns. Only Allah is capable of changing the seasons, making rain fall, or [causing] increases in temperature.”

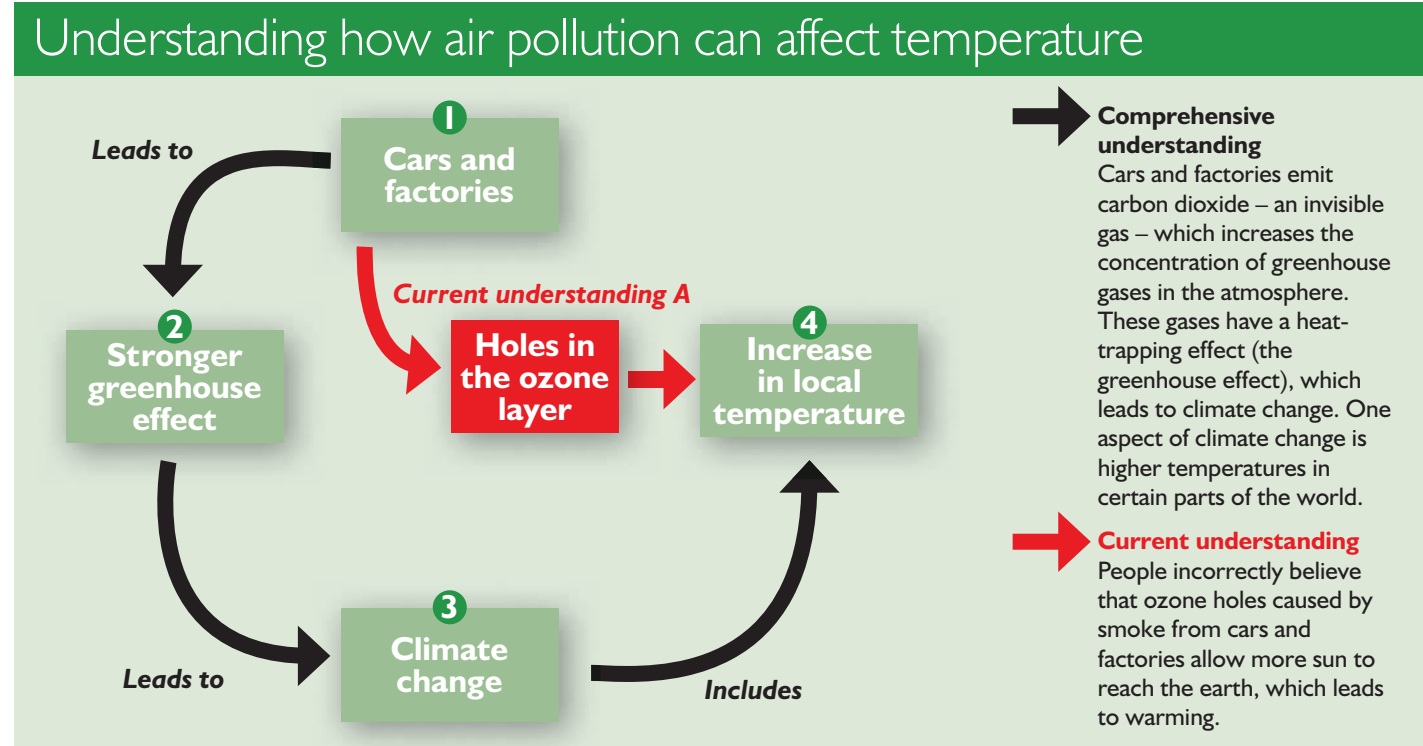
**Frames of reference**

In the absence of a solid scientific understanding of climate change, people reach for explanations that build on their existing knowledge. The discussions on the terms and concepts of ‘climate change’ and ‘global warming’ revealed four important themes that influence participants’ understanding:

1. Emphasis on trees
2. The will of God
3. Ozone confusion
4. Air pollution

Such pre-existing concepts are often referred to as “frames of reference”.<sup>43</sup> These are critical, because they shape people’s understanding of, and reactions to new information. When exposed

Figure 3



to new information, people often use existing beliefs, knowledge, and values to help them process it. The likelihood that people accept or reject new information depends heavily on what they already know and believe.

Crucially, people are more likely to reject new facts and information than they are to dismiss their own existing frames of reference. If new information contradicts a person’s beliefs, it is likely to be rejected. However, if that information is delivered in a way that complements people’s knowledge and values, people are more likely to accept it.

In this way, the four themes – or frames of reference – can function as barriers or as facilitators to effective communication on climate change. Understanding these frames of reference can help communicators in Sudan make their content relevant to their audiences. It is essential, therefore, to understand how existing knowledge and concepts are triggered when communicating about climate change.

**“When you move around the town you will see people dumping rubbish anywhere”**  
MAN FROM JUBA

*Emphasis on trees*

Many people in Sudan place a great deal of value on trees. Universally, trees are seen to provide shade, charcoal, income and windbreak; they are seen to attract rainfall, provide water for drinking and timber for construction.

In the rural areas of Sudan, trees are often the benchmark by which local people measure environmental change. They link changes in the prevalence of trees to long-term climatic changes. Rural Sudanese believe that deforestation is the main cause of increases in the Earth’s temperature and changes in patterns of rainfall.

It is generally believed that tall or big trees are very important for the attraction of rainfall and for reducing strong winds that could easily destroy crops or plantations. A woman from Central Equatoria said, “yes, usually the big trees are the ones breaking the wind and bringing rains, but now they are not there”.

**Rural–urban migration and urbanisation**

When discussing the issues that most directly affect citizens, the topic of rural-to-urban migration was deliberately explored in all groups.

While it is impossible to attribute increases in urban population exclusively to climate change, many Sudanese make a connection between environmental change and migration. Many people in Sudan speak of leaving rural areas to escape drought and desertification; as agriculture becomes less viable, grazing land for cattle is reduced, and forest resources dwindle. “Famine and desertification is the main reason for immigration,” says an older woman from Khartoum, “and congestion is the result, which affects people in city.”

Rural dwellers value their way of living, and feel that quality of living is less in urban areas: “There are problems in towns. Towns are congested and if there is fighting we will not be able to run from the town back to the village,” says a man from Limbe. “People are living close together there is no fresh air. I think moving to the town is not a good thing.” Most are reluctant to move away from the rural areas, and say that they would stay if they had the choice. However, economic opportunities in cities draw Sudanese toward urban areas.

People in urban areas are concerned about an increase in migration from rural areas. They are concerned about issues of pollution, sanitation, health and housing associated with increased urban populations. A man from Um-Dawan-Ban describes a concern that “these people will contribute to the crowded population in the city, which increases amounts of waste... [and] illnesses because these areas don’t have water and people might relieve themselves in the openness which increases illnesses too.”

People in Sudanese cities are also concerned about what this means for their own food security, because their food supply is dependent on farmers in rural areas.

Because of the potential for climate change to increase rural-to-urban migration, urbanisation and living in cities are highly significant in the climate debate.

increasing temperature of the Earth. People believe that deforestation causes desertification, which later on results in hotter temperatures because trees could have offered shade.

What is interesting about the understanding of trees at this level is that it displays a detailed knowledge of the role trees play at a micro-climatic level, but little knowledge of the importance of trees at a global level. In Sudan, there appears to be almost no awareness that trees also act as carbon sinks to reduce carbon dioxide.

The implications of this are both positive and negative. On the one hand, people’s understanding may motivate them to plant and preserve trees, which is good from a climate change and an environmental perspective. On the other hand, this understanding could provide a false sense that climatic problems, such as drought, can be solved at a local level through tree planting.

**Recommendations for communicators**

Build on people’s existing knowledge of trees to help create wider understanding of the role of deforestation in global climate change. Try to do so without removing people’s sense that their local actions matter. (do not disempower people.) Help people move beyond the idea that planting trees will cure all environmental and climate problems. Expose people to other kinds of mitigation and adaptation measures.

*The will of God*

Most Sudanese view weather changes and environmental changes in the context of their religious beliefs. They believe that the natural environment is caused by God or Allah. Many believe that the changes they witness in weather, agricultural output, and disease are dictated by God and that negative changes are a form of punishment. People view themselves as highly indebted to God and believe that a lack of prayer and human destruction of the Earth has angered God. A man from Limbe explains, “God is angry because He is the one who created everything on Earth and we don’t pray to him”.

The exception is in Khartoum, where references to God are rare. In Juba, religious beliefs are as significant a factor in perceptions of environmental change as they are in the rest of South Sudan. However, the framing of climatic changes in the context of acts of God has also led to a sense that individuals are powerless to act in the face of the changes they are experiencing. “If these things [get worse],” says a man from North Kordofan, “only Allah can help you”.

Even where God is not specifically mentioned, people often believe that the disturbance of traditional norms has led to climatic changes. A man from Limbe says: “The traditional norm is no longer there. That is why weather is hot.”

In rural South Sudan many people also consider the role of traditional rainmakers to be important. A man from Limbe believes,

Scientists do not necessarily agree with the notion that deforestation leads to reduced rainfall, but they are agreed that forests recycle rain through a process called evapo-transpiration. This means that water vapour coming off the leaves of trees evaporates and falls again.

Women also say that felling of trees is the main cause of the

**Words for ‘climate change’ and ‘global warming’**

In Sudan, different terms for ‘climate change’ were explored. In the north, the standard Arabic term for climate change, *tagiour almanakh*, was used. The commonly used Arabic term for global warming, *ihtibas alharari*, was also explored.

In Bari, there is no word for climate. In addition, the closest approximation to the word ‘weather’ cannot be translated precisely into English, so it has to be explained using examples of individual weather events. This meant that the moderators had to describe climate change as ‘changes in weather, such as clouds,

rainfall, wind, and temperature, and seasons over time’. This translated as *tuwarju kak na nyena jounda lopugo na na kak* in Bari. *Tindu kak na l saj’u* – or ‘temperature of the earth increasing’ was used to describe ‘global warming’.

This complexity highlights the challenges involved in translating climate change terminology accurately and concisely into local languages. In Juba, the groups were conducted in English and therefore the English terms ‘climate change’ and ‘global warming’ were explored.

“the rain makers are the problem to us... they say they are the ones who stopped the rain from raining they were beaten. The time they were released it did not take more than an hour [before] it rained.”

#### Recommendations for communicators

Be sensitive to people’s faith when communicating climate change. Involve faith leaders in climate change communication. Where possible, facilitate climate change discussions that complement ideas of environmental stewardship present in some religions.

#### Ozone confusion

Many Sudanese appear to confuse climate change with ozone depletion. They incorrectly believe that holes in the ozone layer allow more sun in, which causes temperatures to rise. This is typified by a man from El Obeid, who says “[humans] are destroying ozone layers and causing a lot of global warming and other things”.

When discussing the ozone layer, people in Sudan frequently conflate numerous scientific concepts, as does this woman from Um-Dawan-Ban: “These poisons made a hole in the ozone layer and the ozone layer is what prevents the Earth from the harmful sun rays. The hole is wider now because of industrial development. This increases the Earth’s temperature in all seasons during the year. The north and south poles can melt down.”

In fact, although ozone holes allow ultraviolet radiation to reach the Earth, which damages human skin, they do not cause an increase in the Earth’s temperature.

Such confusion between holes in the ozone and climate change is also noted in industrialised countries. This may be because climate change and ozone depletion are both caused by gases emitted as a result of human activity.

The danger in confusing climate change with ozone depletion is that people seeking to address climate change may select the wrong activities. For example, reducing CFCs was effective in dealing with ozone depletion, but less effective in combating global warming, which is primarily caused by carbon dioxide emissions. Ozone depletion was largely addressed by regulation in the late 1980s, while the human activities that cause climate change are ongoing.

In Sudan, men are more likely to mention ozone than women.

#### Air pollution

People living in urban areas of Sudan link pollution very strongly with climate change impacts and wider environmental damage. For most,

#### Recommendations for communicators

Leverage people’s awareness of atmospheric ozone depletion to correctly explain climate change, correcting misconceptions. Emphasise which human activities produce the greenhouse gases that cause climate change. Explain the science of climate change in a visual way that resonates with people, as ozone holes do.

this is manifested through awareness of visible air pollution.

In addition to attributing smoke to local pollution, the public associates both burning of rubbish and industrialisation on an international level with climate change.

Many urban Sudanese say industrialised nations make a huge contribution to pollution in the atmosphere. In this way, many people link technological advancements by industrialised nations to climate change and would hold them to greater account in terms of their higher carbon emissions.

“Technological advancement in the form of larger industries, larger plants, the industrialised countries or nations like the USA, China, Japan are creating more problems [for the] globe that result from emissions,” said an older man from Juba.

Sudanese people also believe that bombs and weapons cause environmental damage by polluting the air. “War has affected the environment as a result of using nuclear weapons and energy. They have effects on the weather and the environment, and an increase in illnesses”, says an older man from North Kordofan.

Rural people in Sudan do not conceptualise environmental change in the context of smoke.

#### Recommendations for communicators

Build on people’s understanding of visible air pollution to broaden their understanding of the global effect of greenhouse gases. Use health concerns connected with smoke to engage people and teach them about the causes of climate change.

## 4 Interviews with opinion leaders

This research draws on 18 interviews with opinion leaders across six sectors:

#### Government

##### North Sudan

- Higher Council on Environment and Natural Resources (HCENR)
- Local Umdah (village elder), El Obeid

##### South Sudan

- Ministry of Agriculture and Forestry
- Southern Sudan Relief and Rehabilitation Commission (SSRRC)
- Central Equatoria government

#### Media

- Public television station
- Private radio station
- Private, mass-circulation daily newspaper

#### Private sector

- Two food and agriculture conglomerates
- Tourism company

#### NGO, religious, associations

- International NGO with an emergency assistance and climate change focus
- Local NGO with a gender and development focus
- Sheikh from Um-Dawan-Ban
- Archbishop, head of the Sudan Council of Churches
- Two local farmers’ associations

### What do Sudanese opinion leaders know and understand about climate change and what are their views on Sudan’s response to climate change?

#### An incomplete understanding

**Accurate knowledge of climate change is restricted to a small number of opinion leaders in Sudan – those with a particular mandate in their job to cover environmental issues. Although many feel that they are knowledgeable about climate change, their understanding is not always complete.**

Although this research relies on relatively few interviews with opinion leaders, there is evidence to suggest that while most opinion leaders appear confident in defining climate change, their definitions are not always complete or precise. They talk about climate change interchangeably with global warming, however they inaccurately conflate climate change with their existing knowledge of ozone depletion and other environmental degradation concerns (such as deforestation or waste disposal), and often give inaccurate definitions of scientific concepts such as the greenhouse effect. One opinion leader describes climate change as they understand it:

“Climate change, from the linguistic aspect, is clearly a phenomenon. The reason for this is what is called ‘gas emissions’. Immediately what comes to mind is the intervention of humans in nature’s way. Sometimes it leads to positive things, other times to negative things.”

Those most knowledgeable about climate change are

representatives from the national government, the government of South Sudan and NGOs with a particular responsibility for environmental issues.

Religious and community leaders tend to know less. Their understanding of climate change is similar to that of the average citizen. Generally, they understand climate change to mean changes in the weather, and can describe many of the effects of climate change, such as drought and flooding, but do not connect such changes to atmospheric processes. They frequently take the view that many of the environmental changes they have experienced are influenced by God.

#### Understanding climate change

**Opinion leaders from the national government and NGOs have an understanding of the human causes of climate change. However, many local opinion leaders such as religious leaders, heads of local associations, and local government representatives are unclear as to what contributes to climate change.**

There is a spectrum of awareness among opinion leaders with respect to climate change. This research found knowledge to be highest among representatives from national government and international NGOs working on climate change, and generally among those opinion leaders based in urban areas. In more remote areas, and particularly amongst religious leaders and local government, understanding of the causes of climate change is much lower.

There is evidence that some opinion leaders understand climate change in a similar way to the general public. Most opinion leaders relate the concept to the environmental changes they experience in their everyday lives, such as deforestation, over-grazing, and air and land pollution. Also similar to the general public, many use their religious or traditional beliefs to explain changes they experience in the weather.

Only the few people working directly on climate change issues refer to the greenhouse effect or changes to average climatic conditions.

Even more so than the general public, Sudanese opinion leaders do not relate conflict to climate change. If they make a connection between the two, opinion leaders refer either to waste left over from weapons or deforestation by the military. Dr Samson Kwaje,

“The farmers are only praying: ‘Why is God punishing them?’ Some of them don’t know that we have punished ourselves”

DR SAMSON KWAJE, MINISTER FOR AGRICULTURE AND FORESTRY



minister for agriculture and forestry, Government of South Sudan, suggests that a prolonged period of war meant that Sudan's environment has possibly benefited from delayed industrial development:

*"In the East Africa region we are the luckiest in the sense that during the war there was no development or even infrastructure. The real destruction [to the environment] is during peace... those of us who are responsible in the government must make sure to preserve the environment to prevent adverse climatic changes that will affect the life of our people."*

**The impacts of climate change**

**While global impacts of climate change are known by many opinion leaders, most are primarily worried about the local implications for Sudan. They are particularly concerned about the impacts of food insecurity and famine on farmers and pastoralists. Opinion leaders are also concerned about how food insecurity and migration will affect urban areas.**

Opinion leaders understand that climate change affects people beyond Sudan. Those from the government and civil society, who have the most complete understanding of the issue, also realise that despite Africa's limited contribution to global greenhouse gas emissions, Africa and the rest of the developing world will bear the brunt of global climate change.

Other opinion leaders, however, feel that climate change is a foreign idea from industrialised countries, which doesn't concern them. "This is something foreign," says one. "There is an idea that it comes from the Europe, the Western world and that is something they have imposed on [us]. Why should we be worried about all these things?"

Nonetheless, almost all are concerned about the local implications for Sudan. The main effects that opinion leaders link to climate change are food insecurity and poor soil quality. Leaders in North Sudan also link climate change to water scarcity:

*"We expect our community to be independent in terms of food security and also help in development, but because of climate change, because of the delay in the rains, because of the droughts, because of heavy rains that come late... then we experience very severe damage of our crops and this affects our community very badly."*

Mr Simon Kun Puoch, chairperson, SSRRC, Government of South Sudan

**"They may not understand the exact technical term but they are feeling the changes"**

**AMBASSADOR AMIRA GORNAS, ENVIRONMENTAL DEPARTMENT**

Although they feel that farmers and pastoralists in rural areas will feel the greatest impact from climate change due to their dependence on the land, opinion leaders also see climate change impacting urban areas in the future. If agricultural outputs drop, urban food security will be affected as well.

*"Those in the urban areas depend on the rural areas for food and if the rural areas do not produce, then definitely those in the urban areas will be affected."*

Dr Pius Vincent Subek, commissioner, Government of Central Equatoria

Most opinion leaders are also concerned with growing rural-to-urban migration, which they see as driven by environmental changes. They believe it will exacerbate poor infrastructure and living conditions in cities and adversely affect already depleted rural communities:

*"It is coming out to what we are calling urbanisation. People run away from the village because there is no water, no food, no natural crop coming up as usual and so what do you do in the village? The village dies away and the people run away."*

Archbishop Paulino Lukudu Loro, chairperson, Sudan Council of Churches

Private sector representatives express concern that the costs of running a business would rise with temperatures, both due to reduced productivity in the workforce in extreme heat, as well as additional operational costs such as air conditioning and irrigation.

**Where does responsibility lie?**

**Only a few opinion leaders recognise that industrialised countries are the primary contributors to climate change. They emphasise the importance of local awareness and say that governments and organisations operating in Sudan need to do more to educate citizens about how individual behaviours impact climate.**

There is awareness amongst opinion leaders that the effects of climate change are felt globally, but only a few appear to recognise that responsibility for causing climate change lies overwhelmingly with industrialised countries. Apart from government representatives, most opinion leaders think of climate change in terms of local environmental degradation, through such human activities as cattle grazing, rural-to-urban migration, industrialisation or cutting down trees.

*"The main causes of change in Juba County as I mentioned is the rampant cutting down of forests. People have gone all over the county felling trees... If we continue like that soon we will have desert around, and it is going to cut down the amount of rains."*

Dr Pius Vincent Subek, commissioner, Government of Central Equatoria

Most leaders believe that responsibility lies at the local level and that individuals need to become more aware of how their behaviour affects Sudan's natural environment. Government and NGOs are seen as those whose task it is to inform the general public about these issues.

*"The government has the responsibility to educate its people, not just [about] climate change but generally to educate the people... so when you begin discussing about climate change they will not understand what you are talking about!"*

Mr Khamis Hassan, managing director, Charleston Travel Company, Juba

**Do the worst affected understand climate change?**

**Opinion leaders think that while most people know the climate is changing through personal experience, the term 'climate change' means little to them. The terminology is seen as a barrier to public engagement. Opinion leaders say that the concept has to be simplified so that the average citizen can relate to it more easily.**

Opinion leaders believe that people understand climate change in the context of the environmental changes they see around them, as opposed to a scientific, global phenomenon. It is a very personal experience in that people in Sudan are feeling the impacts.

*"They may not understand the exact technical term but they are feeling the changes. The rainy season is not on the same date, temperature is increasing, no winter season at all – these are very remarkable for the normal citizen. He is living the change."*

Ambassador Ms Amira Gornas, director, Environmental Department, Ministry of Foreign Affairs

Most opinion leaders believe that the general public will not understand the terminology 'climate change' or 'global warming'. Except for a minority of wealthy or well-educated Sudanese, leaders think that most people will be unfamiliar with the concept and therefore unable to relate it to their daily lives. Opinion leaders suggest that climate change be explained to people using a range of points of reference, mostly to do with elements of weather such as rain and temperature, or to its effects, such as famine.

*"Talk to people about the heat, they will understand climate change. Talk to people about the famine, they will understand climate change. But when you talk about climate change specifically they do not understand."*

Mr Khamis Hassan, managing director, Charleston Travel Company, Juba

Particularly in South Sudan, opinion leaders feel that much of the general public views environmental changes in terms of religion or traditional belief. They see this as a barrier to increasing understanding of climate change issues.

*"They will observe the position of the stars... our local people; they predict climate change [by] seeing the way the moon comes out. They may say, 'this year there may be peace' or 'this year there will be disaster'."*

Dr Pius Vincent Subek, commissioner, Government of Central Equatoria

*"The farmers are only praying: 'Why is God punishing them?' Some of them don't know that we have punished ourselves."*

Dr Samson Kwaje, minister for agriculture and forestry, Government of South Sudan

Many also say that the general public will reject discussion of climate change because they are preoccupied with more immediate needs, and suggest that discussion needs to be framed in the context of food security:

*"A hungry person will not understand what you are saying about climate change. A person without shelter will not understand what you are saying about climate change. They may remotely understand what climate change is, but their first concern is that their stomach is in pain and they need*

*food, that they are naked and need clothes, they need a house... then they can start talking about climate change."*

Mr Khamis Hassan, MD, Charleston Travel Company, Juba

Opinion leaders agree that the general public needs more information. Although they acknowledge that citizens experience daily challenges as a result of worsening environmental conditions, most opinion leaders agree that people would be more concerned about climate change if they understood its implications for the way they live their lives, and that there needs to be more education on this issue.

**What response is required?**

**Opinion leaders are aware that more needs to be done to help Sudanese cope with their changing environmental conditions and say that investment is urgently needed in this area. Most opinion leaders view government, NGOs, the private sector, and international assistance as key to an effective response.**

Opinion leaders say that a lack of education, infrastructure and investment in livelihoods leaves people unable to cope with extreme weather events, and is fuelling migration to urban areas. The situation is seen to be increasingly urgent. Some opinion leaders believe that too much focus is on short-term financial aid and food handouts and that not enough is being invested into long-term solutions for farming or technology:

*"There is a solution for this. Sudan is known as a farming and grazing country, we have abandoned the farming activities and their by products. Instead of supporting farmers with the latest technology and help their stability, farmers start to immigrate to the city suburbs where he needs food aid and he can be a thief in the city."*

Mr Ibrahim Hussein Daleel, umdah, Alban Jadeed, North Kordofan state

Government, civil society, and the private sector are seen as the domestic actors with the best capacity to develop long-term strategies. A few opinion leaders call for the developed world to facilitate the response, saying they are the biggest global emitters:

*"We need a helping hand from the advanced world, whether financial or technical assistance, or through the transportation of technology. In this situation we are more the victims than the cause."*

Mr Fadl Allah Mohammed Ibrahim, editor-in-chief, Ra'y El 'Am Newspaper, Khartoum

Opinion leaders also mention engaging lawmakers to help combat climate change by developing laws that prohibit deforestation or littering for example, and working in collaboration with law-enforcement officers to ensure the laws are adhered to. However, they feel that the legal and judicial systems are currently ill-equipped to collaborate in this way.

*"Most of [our measures] have not been successful because, as I said, our law enforcement agencies are still weak, so we are still trying to raise their capacity and also to continue educating our public and pushing the law enforcement agencies to be able to carry out their duty."*

Dr Pius Vincent Subek, commissioner, Government of Central Equatoria

**"The government is... struggling to keep up with the basic needs of their human beings, food, shelter"**

**MR KHAMIS HASSAN, MANAGING DIRECTOR, CHARLESTON TRAVEL COMPANY, JUBA**



## Government response

**North Sudanese government representatives emphasise their participation in a global response to climate change. At the local level, the focus of both North and South governments tends to be on livelihoods or reduction of environmental degradation. Other opinion leaders, however, say the governments' responses could be improved with greater co-ordination.**

Government representatives suggest that the government is taking an active approach to climate change. Acknowledging that Sudan is a relatively low emitter of greenhouse gases, the government's primary focus is on adaptation:

*"To us the main work should be on how to adapt the conditions of Sudan to the changing climate."*

Dr Saadeldin Ibrahim, secretary general, Higher Council for Environment and Natural Resources

The details of the government's response are outlined in its National Adaptation Programme of Action (NAPA) which targets the agricultural, health and water sectors. Implementation of the action plan is in its early stages, with pilot adaptation projects underway in five states. The programme will be fully implemented in 2010.

According to Sudanese policymakers, the government in Khartoum is committed to all international protocols and agreements on climate change. Coordination of international climate change activities is done through a dedicated department of environment in the Ministry of Foreign Affairs. The government in South Sudan is not engaged in the international arena in the same way but policymakers explain that investments are being made into agricultural livelihoods programmes. The government has also recently implemented legal regulations against deforestation:

*"We [have passed] regulations and by-laws that prevent random destruction of vegetation and trees. We also encourage farmers to do some agro forestry and tree planting and we avoid locating farmers along rivers so that cultivation towards rivers does not occur."*

Dr Samson Kwaje, minister for agriculture and forestry, Government of South Sudan

Although government representatives describe successful coordination of activities across government agencies and with civil society actors, few outside the government are aware of any integrated policy efforts. One media representative laments the management of government climate change projects:

*"By Allah, [the government]'s role is big but truthfully there is no integration between these roles, everybody is working on his own there is no real partnership between the government and the international organisations and the civil society and the private sector and journalism. There should be at least one plan... to coordinate people's efforts because as we said [there are] many stages amongst them is awareness, acknowledging the problem, and contributing towards solving it. This takes coordinated awareness."*

Mr Fadl Allah Mohammed Ibrahim, editor-in-chief, Ra'y El 'Am Newspaper, Khartoum

In fact, hardly any opinion leaders are aware of any national government response to climate change, despite the general belief that the government should be spearheading strategies to address the impacts of climate change. This suggests a need for greater cross-sector communication and awareness of adaptation projects.

Other opinion leaders are concerned that the Sudanese government has a difficult enough time addressing basic human needs such as food and shelter, so they require private sector and international

community support to develop an effective response.

*"The government is in a different situation... [it] is struggling to keep up with the basic needs of their human beings, food, shelter so we need partners like the business community and the international community to alleviate first of all general poverty then we can go to discussions about climate change."*

Mr Khamis Hassan, managing director, Charleston Travel Company, Juba

## NGO response

**NGOs working on climate change tend to focus on adaptation. Opinion leaders believe NGOs are well placed within local communities to assist with livelihood and reforestation projects in particular, as well as disaster response. However, NGO representatives believe that an effective response is hindered by the short term nature of project funding and competing donor interests. They say initiating a long-term response remains a challenge.**

NGOs in Sudan focus on adaptation strategies rather than mitigation. NGOs have a deeply rooted presence across the country. Opinion leaders identify them as either local actors well placed within local communities to assist with development or as large international actors whose main role is to bridge the gaps in social services and aid that the government is unable to provide. Many outside the NGO sector also feel NGOs are the best channel through which to address climate change in Sudan.

Most NGOs are generally focused on post-conflict recovery and emergency response. Many, however, also indirectly address climate change issues through economic or infrastructural development projects. Examples include livelihoods projects in areas where traditional dependence on land is reduced or water projects in drought-prone areas. Many NGOs place a large emphasis on reforestation.

*"What my organisation does for climate change is to protect the environment. We have nurseries for seedlings for trees of any type, for building, fire wood, food, or trees. So we give them to our members to plant wherever they are cultivating to replace trees that have been cut down."*

Mama Lucy Akello, advisor, Women's Self Help Development Organisation

NGOs representatives, as well as other opinion leaders, believe that an effective response to climate change is hindered by the short-term time scales of project funding, as well as competing donor interests. Lack of coordination also creates a significant challenge. Several opinion leaders believe NGOs would be more effective in adaptation if they took a national approach to project implementation.

*"If there is any sort of coordination among these bodies then the funds can be directed to one big national project and everybody can work in his specialisation. One project to be sponsored by the government through a complete plan for the adaptation of climate change."*

Mr Alhadi Ali, director of disasters, Red Crescent, Sudan

*"I tell you [NGOs] are useful, they contribute in training, they try to train people, they try to present some help to the small producers, but their projects always come to an end and of course any project has a time limit it could be four years, sometimes two years"*

Mr Hassan Ismail Ghaboosh, president, Farmers Union, North Kordofan state

Representatives from international NGOs and the national

government of Sudan describe cross-sector collaboration on relief issues, including humanitarian response to environmental crises such as food insecurity and drought. Expanding these coordination efforts into long-term projects could help to improve the effectiveness of adaptation responses to climate change.

*"We have been working with the NGOs and the UN, [who] provide non-food items like shelters, blankets, etc. And food from the World Food Programme. We have been providing a lot of support for the people who have been affected by the climate change."*

Mr Simon Kun Puoch, chairperson, SSRRC, Government of South Sudan

## Private-sector response

**The private sector in Sudan is primarily concerned with climate change in terms of how it might affect profits and employees' health and productivity. However, they say they are developing environmental projects that are currently in place may serve as a model for other organisations. Other opinion leaders do not feel the private sector is playing a significant role in Sudan's response to climate change.**

Private sector representatives in Sudan seem primarily concerned with the impacts of climate change on their clients or their profitability. They frequently refer to ways in which their commercial activities are affected by increases in temperature:

*"Climate change has affected our production [in terms of] temperature increase, because it affects the productivity and we have solved this by installing cooling systems in the hanger with exhaust fans with large generators for good circulation for quick and effective ventilation... We are spending a lot of money and effort to make it healthy."*

Mr Mahmoud Salah, managing director, Al Brair Food Industries

When asked if their companies contribute to climate change, private sector interviewees tend to emphasise ways in which they are helping to protect the environment. For them, climate change is associated with environmental issues (e.g. use of pesticides, water consumption through irrigation, waste disposal) and is considered in a corporate social responsibility context. However, several say they have begun large-scale environmental projects that could serve as models for other organisations and help promote environmental conservation in line with the economic development needs of the Sudanese people.

Several private sector representatives say they have developed recycling programmes to reuse water or other materials in agriculture and production. One provided an example of investing in local bakeries to change from wood-burning to gas ovens, which is not only environmentally-friendly but also results in a better product.

*"Concerning the private sector, in the end you're running a business... you run a business for commercial reasons, but while you are generating profits you can make an impact on the environment, a positive impact. A perfect example is the green bakeries, we benefit when we transfer the bakeries from*

**"There is a cleaning and tree-planting campaign going in Khartoum, but you feel that its goal is very limited"**

FADL ALLAH MOHAMMED IBRAHIM,  
RA'Y EL 'AM NEWSPAPER

*wood to gas because we are in business with them, the result is our product is also better."*

Mr Ihab A. Latif, managing director, DAL Food Industries

Few people outside the private sector say much about the current role of business in mitigating or adapting to climate change. There is little awareness of any such activities in the business world and one government official lamented that, despite the rhetoric, the private sector, in fact, neglects its environmental responsibilities.

*"If anything they are contributing to the destruction of the environment and of course some of the private sector are the people who are rich and can even afford to get food from outside [the country], who can afford things that an ordinary citizen cannot."*

Dr Samson Kwaje, minister for agriculture and forestry, Government of South Sudan

## Local responses

**Most local opinion leaders say they are responding to climate change by encouraging tree-planting within their local community or engaging in small-scale agricultural projects. Community leaders appear particularly isolated from decisions made at a national level. Many see climate change responses as the role of NGOs and the national government.**

At the local level, government, local association and religious leaders report relatively little action on climate change. Most community-level projects exist to promote tree-planting or prevent over-grazing. Although some leaders link environmental challenges to climate change, most projects are short-term, reactionary responses to immediate issues that the community is facing.

*"We are telling our communities out there to reduce the rampant cutting of trees, and if somebody is cutting a tree, let him also plant one or two or three. And then our people are also used to burning forests and we are telling them not to do that because that will also harm us eventually in reducing forest cover and eventually also reduce rains."*

Dr Pius Vincent Subek, commissioner, Government of Central Equatoria

Limited capacity at the local level has restricted the response of local leaders to climate change issues. Some opinion leaders say that community-based responses are short-term solutions to particular crises and do not address the underlying issues:

*"These days there is a cleaning and tree-planting campaign going in Khartoum but you feel that its goal is very limited and it is not long-sighted besides being a mere reaction to this year's delayed autumn [rainy season]."*

Mr Fadl Allah Mohammed Ibrahim, editor-in-chief, Ra'y El 'Am Newspaper, Khartoum

Religious leaders do not indicate that they are involved in any climate change initiatives, although others believe they have an important role to play in local communities teaching people to protect and respect the earth that God created:

*"We believe that God is the one that created the world and the church teaches us that we should take care of it."*

Mr Michael Kwaje Loku, head, Farmers association, Lainya County



Local leaders readily talk about what action should be taken at the local level but there is no evidence that anything is happening. Although local leaders believe that environmental protection is important, they have little capacity to develop a response. A religious leader maintains that the scale of the local climate change challenge is too great to tackle alone. Most local opinion leaders tend to agree that larger international NGOs, the national government, and the private sector are best placed and able to implement an effective response.

#### Media response

**Representatives from the Sudanese media are aware of climate change and believe that the public needs for more information on the topic. Many cover environmental issues, but climate change is largely covered in a political context. The media feel that the complexity of climate change issues makes it a difficult topic to cover.**

In the media climate change tends to be grouped with environmental issues. Media representatives say that their station or newspaper has regular features on environmental issues and that occasionally climate change issues are included. However, most coverage is based on extreme weather events or major international conferences:

*“It’s not our primary concern as a political newspaper, it depends on what comes to us and if any event forced itself in the news, for example like the Asian Tsunami, it was the main headline everywhere. That is how we approach the climate change topic.”*

Mr Fadl Allah Mohammed Ibrahim, editor-in-chief, Ra’y El ’Am Newspaper, Khartoum

*“We are covering the drought continuously. We have a programme named Rboaa alghara which covers the rural areas.”*

Mrs Amna Mohamed Abdelrahman, general manager, El Obeid Association of Radio and Television

Media opinion leaders feel that the science and complexity of climate change make it a particularly difficult topic to cover. They feel that the general public would not understand climate change discussions. They say they cannot sacrifice editorial space to return to the basics and explain the issue thoroughly and accurately to audiences.

*“They [the general public] don’t have enough awareness to enable them to deal with the issue. It is difficult because most of them are illiterate and this subject needs specialised people [within the media] who understand and are cultured to be able to discuss it. It’s not easy.”*

Mr Fadl Allah Mohammed Ibrahim, editor-in-chief, Ra’y El ’Am Newspaper, Khartoum

Several media representatives feel that Sudan is lagging behind other countries in awareness-raising about climate change issues because the entire country has been preoccupied with conflict for so long. They feel that the time is now right to begin increasing understanding of climate change, and that the media is well poised to take the lead in this:

*“[There] is a great opportunity for us in the media to create awareness, to begin raising awareness here in Sudan because I think that because of the war, the world went ahead in this awareness raising but in the Sudan we have [done] nothing. Until recently only some of us who have the opportunity to travel or to go outside the Sudan and perhaps reading on the internet and hearing some international news [know about climate change].”*

Sister Cecilia Sierra Salcido, director, Bakhita FM

All the media representatives express an interest in environmental issues and feel that Sudanese people would benefit from more information. It will be important for the media to develop their understanding of climate change, given that people cite media as a key source of information on the topic.

## 5 Conclusion

This research has shown that although some Sudanese in urban areas explain climate change with reference to scientific terms and concepts, most Sudanese outside of urban areas do not, and it is poorly understood in rural areas. They have noticed changes in the weather and seasons, and experienced drought, flooding, changes in rainfall and temperature increases, but do not associate these phenomena with global climate change. While there is disparity in levels of awareness and knowledge of climate change along urban-rural lines, disparity is not found between the North and the South of Sudan.

Most Sudanese perceive a link between human activity and changes in climate, but this connection is either explained in relation to local activities such as deforestation or inaccurately linked to the depletion of the ozone layer. Many link individual human activities such as tree felling to the degradation of the local environment and changes in weather patterns. A wider understanding of the role of rising levels of greenhouse gases play in causing climate change is only alluded to by those in urban areas, and their knowledge is often incomplete. People do not identify environmental changes or resource scarcity as a cause of conflict.

Sudanese opinion leaders agree on the need to raise awareness of climate change, but most perceive it as a complex scientific topic that the general population will not understand. Although the media and schools are the main sources of information on climate change for the general public, there is evidence to suggest that people working in the media lack sufficient knowledge to effectively inform audiences about climate change and facilitate public discussion. There is little cross-sector communication between the media and those who are working on climate change initiatives in government or at the local level.

It is clear that communication and information provision is going to be central to Sudan’s response to climate change. Many opinion leaders spontaneously mention the need for better communication on climate change, and all agree that the general public needs more information in order to make informed decisions. Although this research set out to present the perceptions of the Sudanese public on climate change, rather than a detailed climate change communications strategy, various communications recommendations can be made:

### Provide information

Firstly, the media have a critical role to play in providing information on climate change and supporting others to do so, including governments, national and international NGOs, scientists, religious leaders and community leaders. Sudanese citizens have a fundamental right to access information on an issue that affects their

lives. Increased awareness and understanding of global climate change will enable and equip citizens and communities to discuss the problem, adapt to the effects of climate change and make informed long-term choices about their future.

Efforts to improve climate change communication need to confirm to people that weather patterns are changing and that extreme weather events are more likely to occur. They also need to raise awareness of global climate change and the ways in which it relates to people’s lives and livelihoods, taking into particular account the wide disparity in knowledge and understanding in rural and urban areas. People need information on ways to adapt to climate change and prepare for extreme weather events.

Communication efforts should also help people to build appropriate, accurate mental models of how climate change works, being mindful of people’s existing understanding. In order to do this appropriate climate change terminology should be developed and tested in local languages. Evidence and facts need to be communicated in a way that is locally relevant using a variety of news and non-news platforms.

### Facilitate policy and public debate

Secondly, the media needs to facilitate accessible public debate. Sudan is being affected by climate change. Internally-driven, relevant debate on the issue is essential. The news and non-news media will shape and mediate that debate to a very substantial extent. For that reason, building the capacity of the media and providing support for “public spaces” which enable discussion on climate change that draws upon Sudanese voices and experiences, engaging citizens, local interest groups, civil society actors, religious leaders and policymakers from all levels of government, will be crucial. These spaces, which can be created through talk shows, call-ins and other interactive platforms, can be forums to exchange information, and create understanding and plans for action. They can also serve to facilitate better cross-sector communication between government, NGOs, the private sector, the media, and local and community leaders.

### Encourage accountability

Thirdly, debate can increase accountability, enabling citizens to exert political pressure on their own governments with respect to climate change policies: including adaptation funding, technology transfer, emissions reduction and other response strategies. Only when Sudanese citizens and their representatives are fully informed about and able to debate climate change will they begin to influence the national and international climate change policies and processes which affect their lives.

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## Appendix 1 Opinion leaders interviewed

Name and title	Region	Organisation	Sector
Ambassador Ms Amira Gornas <i>Director</i>	North Sudan	Environmental Department, Ministry of Foreign Affairs	National government
Dr Saadeldin Ibrahim <i>Secretary General</i>	North Sudan	Higher Council for Environment and Natural Resources (HCENR)	National government
Dr Samson Kwaje <i>Minister for Agriculture and Forestry</i>	South Sudan	Minister for Agriculture and Forestry, Government of South Sudan	National government
Mr Simon Kun Puoch <i>Chairperson</i>	South Sudan	South Sudan Relief and Rehabilitation Commission (SSRRC), Government of South Sudan	National government
Mr Ibrahim Hussein Daleel <i>Umdah [community leader]</i>	North Sudan	Alban Jadeed, North Kordofan state	Local government
Dr Pius Vincent Subek <i>Commissioner</i>	South Sudan	Government of Central Equatoria	Local government
Mr Fadl Allah Mohammed Ibrahim <i>Editor-in-Chief</i>	North Sudan	Ra'y El 'Am Newspaper, Khartoum	Media
Mrs Amna Mohamed Abdelrahman <i>General Manager</i>	North Sudan	El Obeid Association of Radio & TV	Media
Sister Cecilia Sierra Salcido <i>Director</i>	South Sudan	Bakhita FM (Sudan Catholic Radio Network)	Media
Mr Mahmoud Salah <i>Managing Director</i>	North Sudan	Al Brair Food Industries, Brair Group (Food)	Private sector
Mr Ihab A. Latif <i>Managing Director</i>	North Sudan	DAL Food Industries (Food, Agriculture, Infrastructure)	Private sector
Mr Khamis Hassan <i>Managing Director</i>	South Sudan	Charleston Travel Company, Juba (Tourism)	Private sector
Sheikh Salih Altayeb Wad Badir <i>Khalifa [religious leader]</i>	North Sudan	Grand Mosque (Almaseed), Um-Dawan-Ban	Religious institution
His Grace, Archbishop Paulino Lukudu Loro <i>Chairperson</i>	South Sudan	Sudan Council of Churches	Religious institution
Mr Hassan Ismail Ghaboosh <i>President</i>	North Sudan	Farmers Association, El Obeid	Local Association
Mr Michael Kwaje Loku <i>Head</i>	South Sudan	Local farmers association, Lainya County	Local Association
Mr Alhadi Ali <i>Director of Disasters</i>	North Sudan	Red Crescent, Sudan	NGO
Mama Lucy Akello <i>Advisor</i>	South Sudan	Women's Self Help Development Organisation	NGO

## Appendix 2 Sudan advisory group

Name	Organisation
Dr Balgis Osman-Elasha	IPCC and Higher Council for Environment and Natural Resources, Government of Sudan
Dr Yagoub Abdalla Mohamed	Environmental Society
Dr Sumaya Zaki Eldin	Institute of Environmental Studies, University of Khartoum
Dr Noureldin Ahmed Abdalla	Practical Action, Sudan

## Appendix 3 Methodology overview

*Sudan Talks Climate* employs a qualitative research design. Qualitative approaches – which generate non-numeric data – are particularly useful for exploratory research on topics for which there is little previous research. Through focus groups and in-depth interviews, *Sudan Talks Climate* investigates the meaning that people attach to climate change, and explores how they experience climate-related issues and impacts.

A total of 12 focus groups with the general public and 18 in-depth interviews with opinion leaders were carried out across the six locations in Sudan in August 2009.

For security reasons it was not possible to conduct research in Darfur at the time of fieldwork. Kordofan was selected as an alternative location due to the relative geographic similarities between North Kordofan and northern Darfur, in terms of climate, terrain and latitude. However, it is acknowledged that considerable political differences between the two regions mean that perceptions from significant segments of the Sudanese population are regrettably omitted from this study.

The six fieldwork locations were selected on the basis of desk research and consultation calls with the Sudan advisory group. The environmental challenges represented in these areas have already been linked to climate change, to some extent, or could be further exacerbated by climate change in the future. Selection also sought to ensure suitable geographic, ethnic, linguistic and urban/rural diversity. The locations selected for research were as follows: Khartoum and Um-Dawan-Ban (Khartoum State, North Sudan); El Obeid and Alban Jadeed (North Kordofan state, North Sudan); and Juba and Lainya County (Central Equatoria, South Sudan).

### Focus group discussions

Focus groups were held with farmers, pastoralists and business people, women and men, rich and poor, rural and urban. Given the implications of climate change for certain livelihoods in Sudan, individuals working in farming (Alban Jadeed and Limbe) and recent rural-to-urban migrants (Juba, Um-Dawan-Ban, and El Obeid) were purposefully targeted.

Two focus group discussions were held in each location. The focus groups were single sex with approximately eight participants in each who fell within a similar age range. The age ranges were 18-24 years, 25-34 years and 35-50 years. Age and gender were taken into consideration, in order to facilitate easy conversation among participants.

Participants in each focus group occupied a similar socio-economic class or profession. Socio-economic class was determined by income in the cities of Khartoum and Juba; however, it was not possible to determine socio-economic class outside of the cities due to limited data on socio-economic indicators. Profession was therefore used as basis to recruit participants in these areas.

Moderators for each group were matched to participants in terms of gender and language. In Khartoum, El Obeid, Um-Dawan-Ban and Alban Jadeed, focus groups were conducted in the regional dialect of Arabic, of which the moderators were native speakers. In Juba, focus groups were conducted in English, one of two official languages of South Sudan (the other being Juba Arabic). Focus groups conducted in Lainya County were conducted in Bari, one of the many local languages of the region.

### Structure of the discussions

Moderators used a structured discussion guide to lead the focus groups. This was refined after the *Africa Talks Climate* pilot study in Nigeria, during which several improvements were made.

To begin with, participants were shown eight images of nature, including trees, water and the sun, and asked if they had any words to describe the images all together. In this way the discussion guide sought to elicit words used to describe 'nature'. The participants were then asked if they had noticed any changes in nature over the course of their lifetimes, and invited to share stories about these changes.

The second set of images shown to participants depicted the effects of climate change. There were 15 such images, showing issues such as drought, crop failure, erosion and flooding. Participants were asked if the pictures had anything in common, and then invited to choose the two images which had the greatest impact on their lives. A discussion of the chosen images followed.

The next section of the discussion guide introduced the concepts of climate change and global warming, without actually introducing the terms. Two statements were read out to participants:

*Statement 1* Scientists are saying that human beings are causing weather patterns over time to change around the world.

*Statement 2* Scientists are saying that human beings are causing the temperature of the earth to increase.

Participants then discussed their reactions to these statements. Finally, the terms 'climate change' and 'global warming' were explored. These terms were intentionally introduced relatively late in the discussion guide based on experience from the pilot study in Nigeria, which suggested that most participants would not be familiar with the terms.

The subsequent sections of the guide explored responses to climate change, barriers and facilitators to environmental stewardship, rural-urban migration and the potential role of media.

With the exception of Nigeria, the discussion guide was the same for all *Africa Talks Climate* countries. It was translated into local languages through a consultation process with the moderators who spoke those languages, and, in the case of Bari translations for South Sudan, with a local linguistic expert on the dialects of the region.

### In-depth interviews

The research team conducted 18 in-depth interviews with opinion leaders to elicit the views of policymakers and opinion formers on the issue of climate change. These opinion formers were individuals with a particular interest in climate change, or an informed opinion from a certain field, region or subject area within the country.

Interviewees were selected based on desk research, and consultation with the local advisory group and local researchers.

Opinion leaders were selected from six different sectors, according to a quota. The sectors were: government, the media, the private sector, religious institutions, local and national associations (for example, farming associations), and NGOs and academic institutions. In Sudan, the quota was achieved for each sector.

Sector	Quota	Achieved in Sudan
National government (3 national; 2 local)	5	6*
Media	3	3
Private sector	3	3
Religious leaders	2	2
Local associations (such as farming associations)	2	2
NGOs, academics	2	2
Total	17	18

In Sudan, as in all *Africa Talks Climate* countries, every effort was made to speak to the climate change focal point at the national government level. The remaining ministries were selected according to the ways in which climate change played out in the country. In North Sudan, representatives from Government of Sudan's Ministry of Foreign Affairs (Department of Environment) and Higher Council on Environment and Natural Resources were consulted. Government of South Sudan representatives included the Ministry of Agriculture and Forestry and the Southern Sudan Relief and Rehabilitation Commission.

In the media sector, representatives were sought from radio, television, and print media. Private and public media were represented as well as national and local media. In the private sector, two food and agriculture companies and a tourism company represented the north and south respectively.

At the local government level, a local village elder from North Kordofan, and the state commissioner of Central Equatoria state were interviewed. The two religious leaders represented Islam and Christianity; from the North, an influential sheikh from Um-Dawan-Ban, and from the South, an archbishop who is head of the Sudan Council of Churches.

The two associations represented were local farmer and pastoralist associations, in the north and south respectively.

Finally, representatives from two NGOs were interviewed, one with a focus on emergency assistance and climate change, the other focussing on gender and development.

*All the opinion leaders interviewed gave permission for their reflections and opinions to be used in Africa Talks Climate reports.*

\* At the national government level an extra interview was conducted to ensure the governments of North and South Sudan were consulted.

### Analysis and reporting

All focus group discussions and interviews were recorded and transcribed. Transcripts were produced in both the original language of discussion, and additionally in English where necessary, by the focus group moderators. For focus groups held in North Sudan, this meant that Arabic transcripts were produced. In the south, transcripts from Juba were solely in English while for the Limbe (Lainya County) groups, Bari transcripts were produced.

A similar process was used to produce transcripts for the in-depth interviews, with the regional breakdown of languages being consistent across both the focus group discussions and the one-to-one interviews.

The focus group transcripts and interview transcripts were systematically coded by a team of researchers, using a common list of codes. This list was generated through a detailed consultation process that began with open coding. Inter-coder reliability ultimately averaged 0.92. Coding enabled the researchers to group the data according to emerging themes. Each code was then analysed to pull out the insights and findings.

### Guiding principles

*Africa Talks Climate* endeavoured to adhere to the following guidelines:

- This research initiative will be led by BBC World Service Trust's Research and Learning Group (R&L) researchers working across Africa.
- R&L London will co-ordinate the research and provide support for research design, analysis and reporting.
- Informal advisory networks will be established at a strategic and country level to guide research approach, delivery and reporting.
- Thematic training will draw on local academic or other institutions with expertise and local knowledge such as the International Development Research Centre (IDRC).
- All moderators and interviewers undertaking fieldwork will receive intensive skills-based and thematic training on climate change.
- Any research agency employed to help deliver fieldwork will employ local researchers/moderators and their work will be quality controlled by R&L.



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