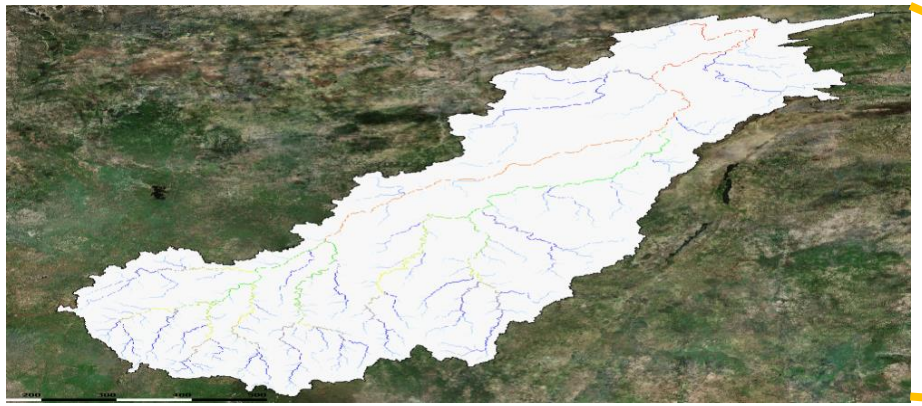
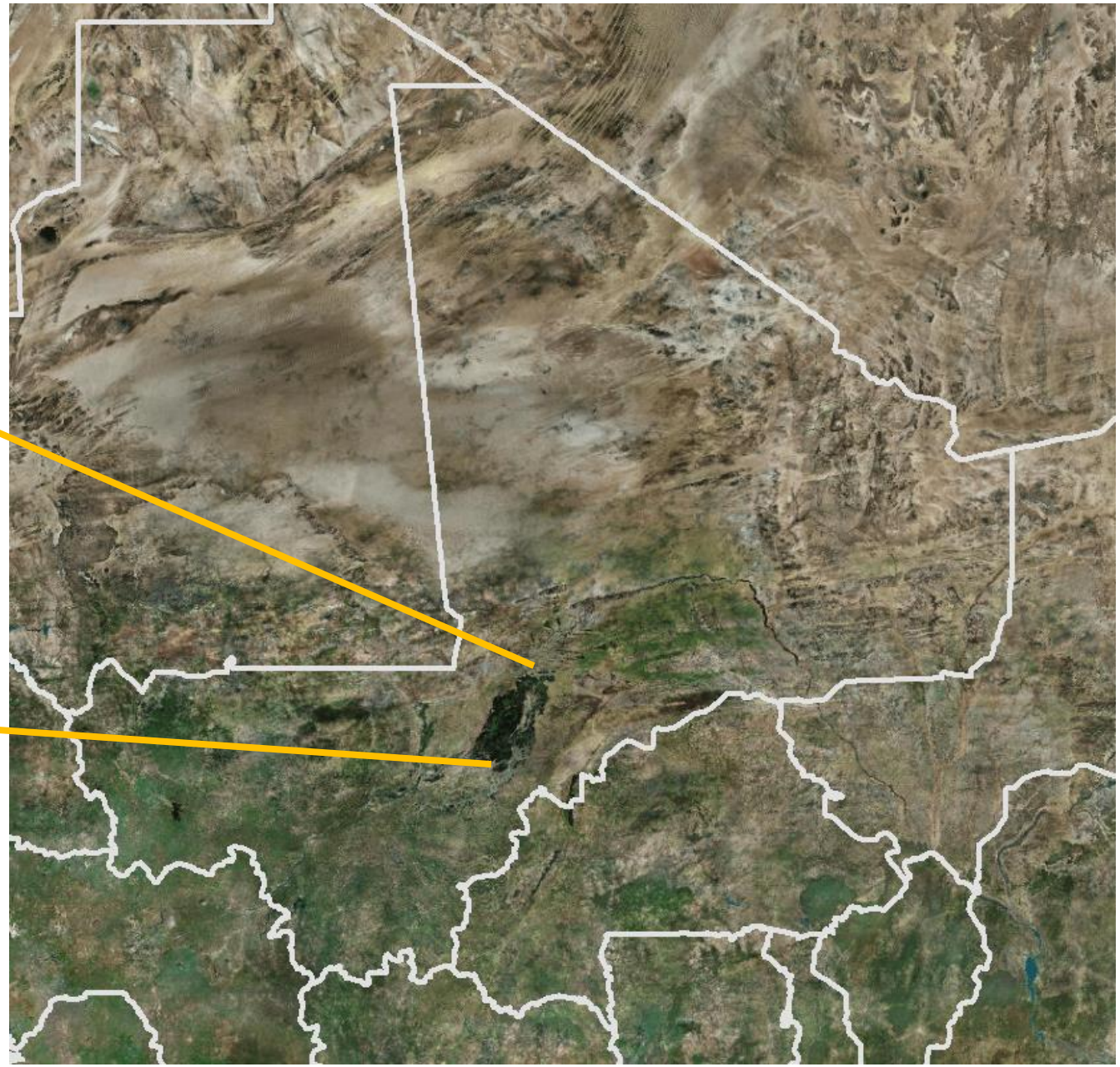
Water, peace and security in the Sahel

Promoting peaceful and inclusive societies by addressing water threats

European Commission | #edd19 | 18›19 June 2019 | Brussels

Mali and Inner Niger Delta



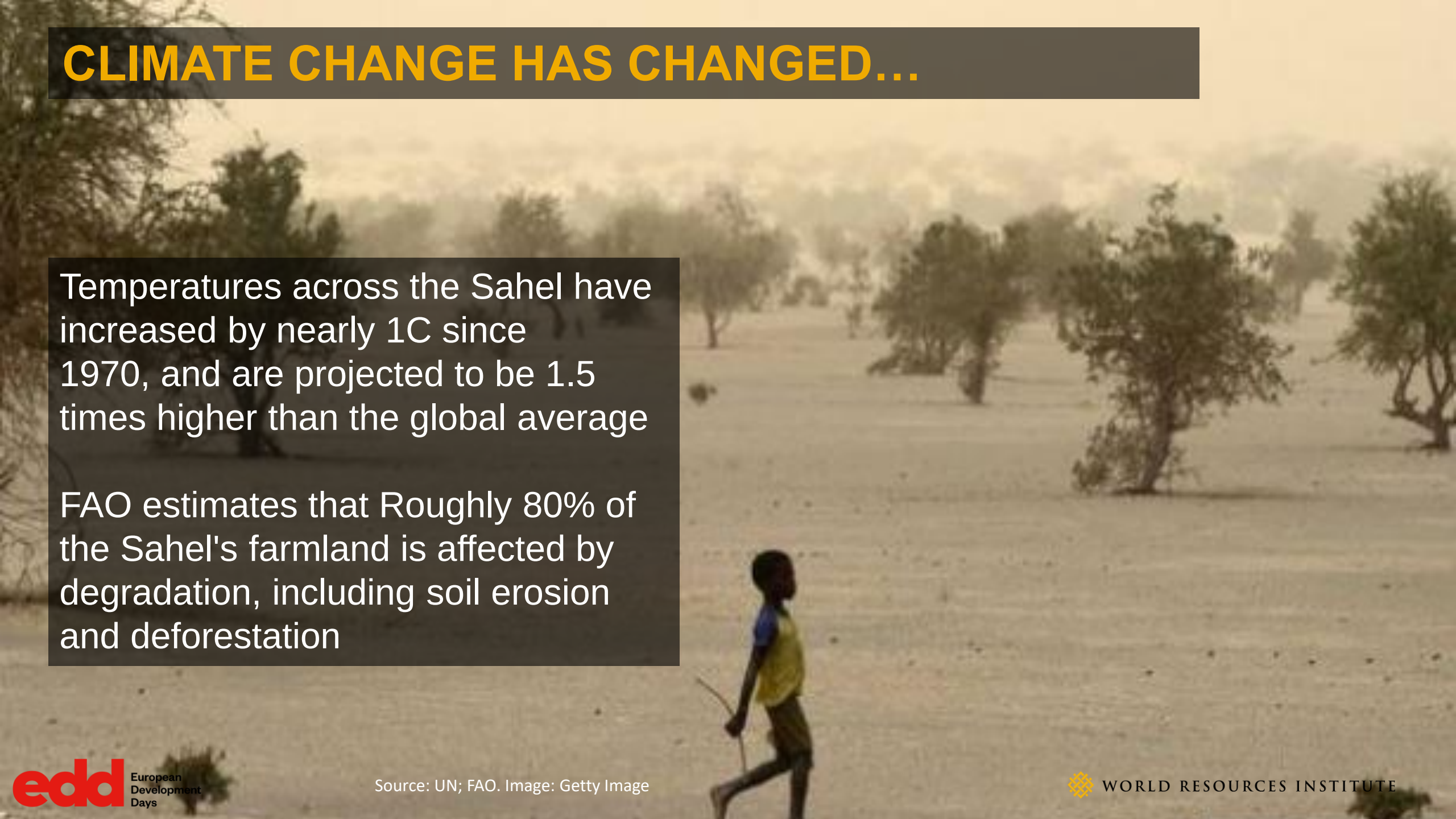


The third largest wetland in the world: more than 4,000 million hectares

CLIMATE CHANGE HAS CHANGED…

Temperatures across the Sahel have increased by nearly 1C since 1970, and are projected to be 1.5 times higher than the global average

FAO estimates that Roughly 80% of the Sahel's farmland is affected by degradation, including soil erosion and deforestation



edd European Development Days

Source: UN; FAO. Image: Getty Image

WORLD RESOURCES INSTITUTE

Water stress in the region is projected to increase

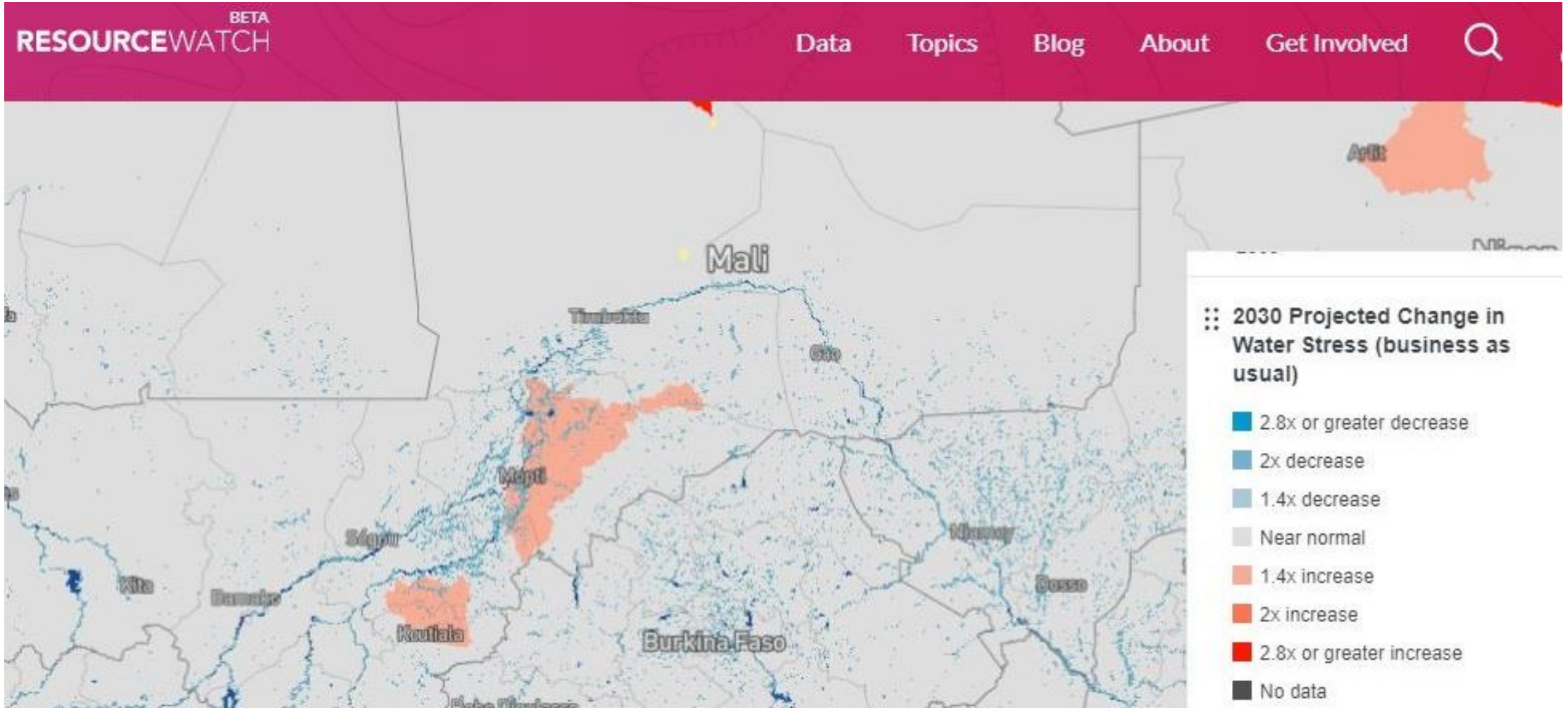


Photo: Resource Watch

CLIMATE CHANGE, ECOLOGICAL CRISIS, WATER TRENDS CAN CONTRIBUTE TO POLITICAL INSECURITY

1. Diminishing water supply
   - Drought
   - Unusable water
   - Dammed/diverted water

2. Growing population/ Growing water demand

3. Flooding / Intermittent-excessive water supply

edd European Development Days

PHOTO: European Commission DG ECHO

WORLD RESOURCES INSTITUTE

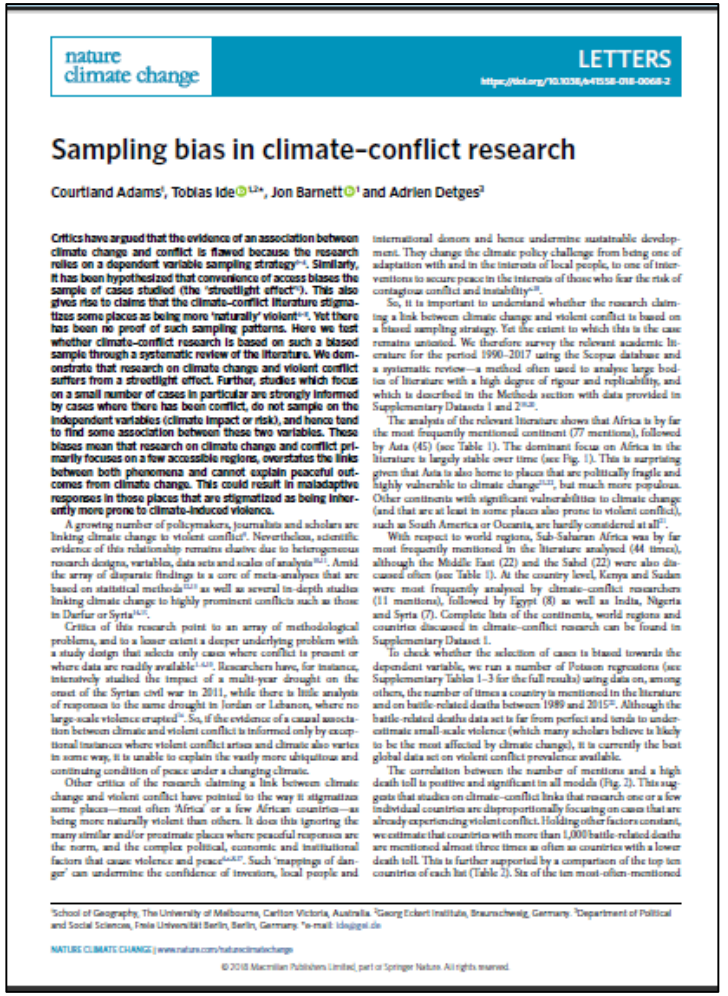
CONFLICT IN MALI

Since 2012, at least 2,000 fatalities and forced migration of over 200,000

PHOTO: UNAMID

MORE RESEARCH IS NEEDED TO BETTER UNDERSTAND THE LINK BETWEEN CLIMATE, WATER AND CONFLICT

"These biases mean that research on climate change and conflict primarily focuses on a few accessible regions, overstates the links between both phenomena . . ."



nature climate change

LETTERS

Sampling bias in climate–conflict research

Courtland Adams[1], Tobias Ide[1,2]*, Jon Barnett[1] and Adrien Detges[3]

Critics have argued that the evidence of an association between climate change and conflict is flawed because the research relies on a dependent variable sampling strategy[1–4]. Similarly, it has been hypothesized that convenience of access biases the sample of cases studied (the 'streetlight effect'[5]). This also gives rise to claims that the climate–conflict literature stigmatizes some places as being more 'naturally' violent[1–6]. Yet there has been no proof of such sampling patterns. Here we test whether climate–conflict research is based on such a biased sample through a systematic review of the literature. We demonstrate that research on climate change and violent conflict suffers from a streetlight effect. Further, studies which focus on a small number of cases in particular are strongly informed by cases where there has been conflict, do not sample on the independent variables (climate impact or risk), and hence tend to find some association between those two variables. These biases mean that research on climate change and conflict primarily focuses on a few accessible regions, overstates the links between both phenomena and cannot explain peaceful outcomes from climate change. This could result in maladaptive responses in those places that are stigmatized as being inherently more prone to climate-induced violence.

A growing number of policymakers, journalists and scholars are linking climate change to violent conflict[1–6]. Nevertheless, scientific evidence of this relationship remains elusive due to heterogeneous research designs, variables, data sets and scales of analysis[10,11]. Amid the array of disparate findings is a core of meta-analyses that are based on statistical methods[12,13] as well as several in-depth studies linking climate change to highly prominent conflicts such as those in Darfur or Syria[14,15].

Critics of this research point to an array of methodological problems, and to a lesser extent a deeper underlying problem with a study design that selects only cases where conflict is present or where data are readily available[1,4,16]. Researchers have, for instance, intensively studied the impact of a multi-year drought on the onset of the Syrian civil war in 2011, while there is little analysis of responses to the same drought in Jordan or Lebanon, where no large-scale violence erupted[14]. So, if the evidence of a causal association between climate and violent conflict is informed only by exceptional instances where violent conflict arises and climate also varies in some way, it is unable to explain the vastly more ubiquitous and continuing condition of peace under a changing climate.

Other critics of the research claiming a link between climate change and violent conflict have pointed to the way it stigmatizes some places—most often 'Africa' or a few African countries—as being more naturally violent than others. It does this ignoring the many similar and/or proximate places where peaceful responses are the norm, and the complex political, economic and institutional factors that cause violence and peace[4,6,17]. Such 'mappings of danger' can undermine the confidence of investors, local people and international donors and hence undermine sustainable development. They change the climate policy challenge from being one of adaptation with and in the interests of local people, to one of interventions to secure peace in the interests of those who fear the risk of contagious conflict and instability[1,18].

So, it is important to understand whether the research claiming a link between climate change and violent conflict is based on a biased sampling strategy. Yet the extent to which this is the case remains untested. We therefore survey the relevant academic literature for the period 1990–2017 using the Scopus database and a systematic review—a method often used to analyse large bodies of literature with a high degree of rigour and replicability, and which is described in the Methods section with data provided in Supplementary Datasets 1 and 2[19,20].

The analysis of the relevant literature shows that Africa is by far the most frequently mentioned continent (77 mentions), followed by Asia (45) (see Table 1). The dominant focus on Africa in the literature is largely stable over time (see Fig. 1). This is surprising given that Asia is also home to places that are politically fragile and highly vulnerable to climate change[21,22], but much more populous. Other continents with significant vulnerabilities to climate change (and that are at least in some places also prone to violent conflict), such as South America or Oceania, are hardly considered at all[21].

With respect to world regions, Sub-Saharan Africa was by far most frequently mentioned in the literature analysed (44 times), although the Middle East (22) and the Sahel (22) were also discussed often (see Table 1). At the country level, Kenya and Sudan were most frequently analysed by climate–conflict researchers (11 mentions), followed by Egypt (8) as well as India, Nigeria and Syria (7). Complete lists of the continents, world regions and countries discussed in climate–conflict research can be found in Supplementary Dataset 1.

To check whether the selection of cases is biased towards the dependent variable, we run a number of Poisson regressions (see Supplementary Tables 1–3 for the full results) using data on, among others, the number of times a country is mentioned in the literature and on battle-related deaths between 1989 and 2015[23]. Although the battle-related deaths data set is far from perfect and tends to underestimate small-scale violence (which many scholars believe is likely to be the most affected by climate change), it is currently the best global data set on violent conflict prevalence available.

The correlation between the number of mentions and a high death toll is positive and significant in all models (Fig. 2). This suggests that studies on climate–conflict links that research one or a few individual countries are disproportionally focusing on cases that are already experiencing violent conflict. Holding other factors constant, we estimate that countries with more than 1,000 battle-related deaths are mentioned almost three times as often as countries with a lower death toll. This is further supported by a comparison of the top ten countries of each list (Table 2). Six of the ten most-often-mentioned

[1]School of Geography, The University of Melbourne, Carlton Victoria, Australia. [2]Georg Eckert Institute, Braunschweig, Germany. [3]Department of Political and Social Sciences, Freie Universität Berlin, Berlin, Germany. *e-mail: tide@gei.de

NATURE CLIMATE CHANGE | www.nature.com/natureclimatechange

Source: Adams et al. 2018

UNESCO IHE DELFT

Wetlands INTERNATIONAL

The Hague Centre for Strategic Studies

Oregon State University

Ministry of Foreign Affairs of the Netherlands

international alert

PACIFIC INSTITUTE

WORLD RESOURCES INSTITUTE

Deltares
Enabling Delta Life

edd European Development Days

Thank you!

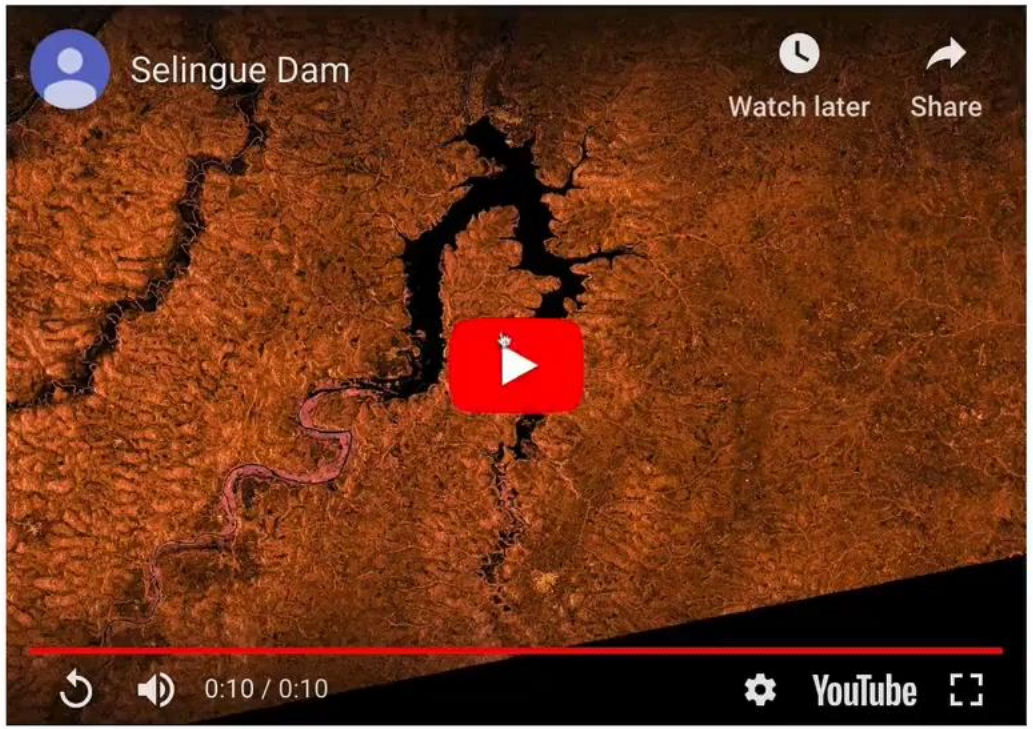
Yamide Dagnet

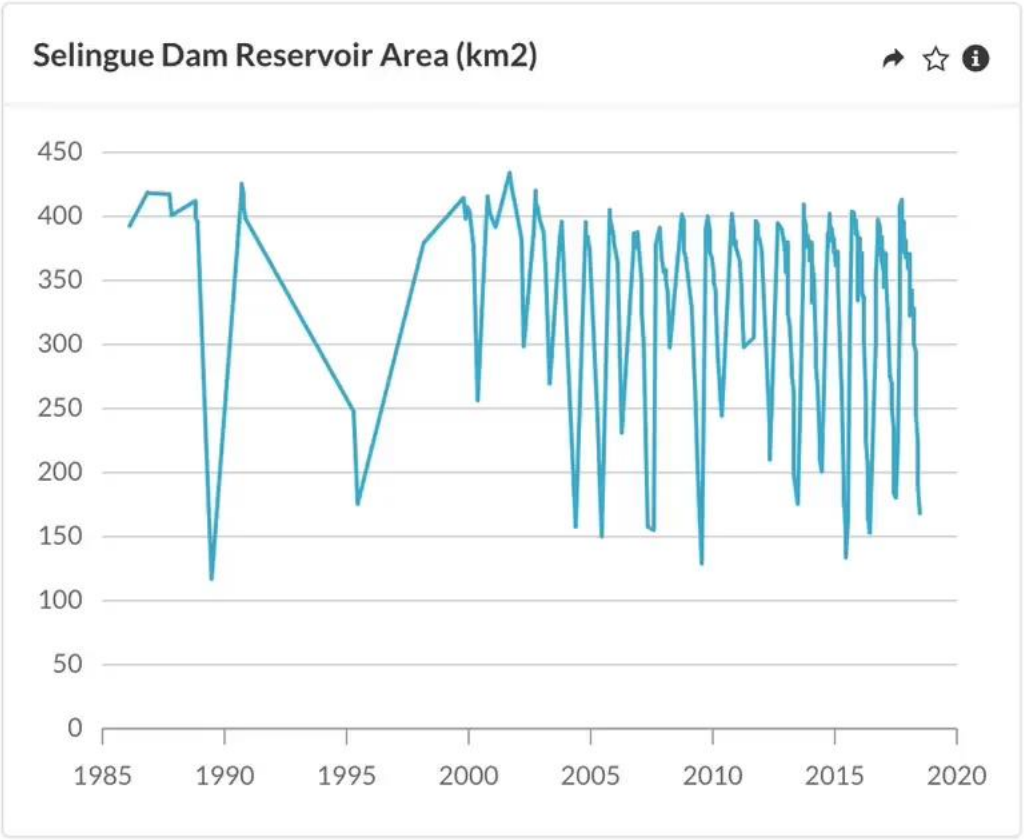
WRI

YDagnet@wri.org

www.wri.org

Reservoir and Water Body Area





This dataset provides estimates of surface water extent changes for all known waterbodies in the larger Middle East and North Africa region. Results can be seen visually through refined waterbody geometries and corresponding time series files. The water bodies were identified using the HydroLAKES dataset. For every waterbody, a refined maximum extent geometry was estimated using the European Commission Joint Research Centre (EC JRC) surface water occurrence. The resulting geometries used all available medium resolution optical images from the NASA Landsat and ESA Sentinel missions using methods described in Donchyts, 2018. Imagery coverage begins in the early 1980's.

Feedback