



National-level factors affecting planned, public adaptation to health impacts of climate change



A.C. Lesnikowski^{a,1,*}, J.D. Ford^a, L. Berrang-Ford^a, M. Barrera^b, P. Berry^c,
J. Henderson^d, S.J. Heymann^{b,1,2}

^a Department of Geography, McGill University, 805 Sherbrooke St West, Montreal, QC, Canada H3A0B9

^b Institute for Health and Social Policy, McGill University, 1130 Pine Avenue West, Montreal, QC, Canada H3A1A3

^c Climate Change and Health Office, Health Canada, 269 Laurier Ave West Rm. 9-062, Ottawa, ON, Canada K1A0K9

^d Life Sciences Library, McGill University, 3655 Promenade Sir William Osler, Montreal, QC, Canada H3G1Y6

ARTICLE INFO

Article history:

Received 31 May 2012

Received in revised form 22 April 2013

Accepted 28 April 2013

Keywords:

Climate change

Adaptation

Health

UNFCCC

ABSTRACT

Our understanding of whether adaptive capacity on a national level is being translated into adaptation policies, programs, and projects is limited. Focusing on health adaptation in Annex I Parties to the UNFCCC, we examine whether statistically significant relationships exist between regulatory, institutional, financial, and normative aspects of national-level adaptive capacity and systematically measured adaptation. Specifically, we (i) quantify adaptation actions in Annex I nations, (ii) identify potential factors that might impact progress on adaptation and select measures for these factors, and (iii) calculate statistical relationships between factors and adaptation actions across countries. Statistically significant relationships are found between progress on adaptation and engagement in international environmental governance, national environmental governance, perception of corruption in the public sector, population size, and national wealth, as well as between responsiveness to health vulnerabilities, population size and national wealth. This analysis contributes two key early empirical findings to the growing literature concerning factors facilitating or constraining adaptation. While country size and wealth are necessary for driving higher levels of adaptation, they may be insufficient in the absence of policy commitments to environmental governance. Furthermore, governance and/or incentive frameworks for environmental governance at the national level may be an important indicator of the strength of national commitments to addressing health impacts of climate change.

© 2013 Elsevier Ltd. All rights reserved.

1. Introduction

Research is only beginning to examine the potential health implications of climate change and indicates significant vulnerabilities (Haines et al., 2009). Key risks include increasing exposure to infectious diseases, exacerbated water and food insecurity, declining air quality, increased magnitude and frequency of natural disasters, and population displacement (Costello et al., 2011; Watts, 2011; Costello et al., 2009; Patz

et al., 2007, 2008). Populations are differentially vulnerable to these impacts, with those already at high risk for poor health outcomes expected to experience a disproportionate share of the health costs of climate change (Ford, 2012; Ford et al., 2010; Campbell-Lendrum et al., 2009; Walpole et al., 2009; Friel et al., 2008; Louis and Hess, 2008; McMichael et al., 2008; Patz et al., 2008; Watson et al., 2005). Those at highest risk include populations with a high burden of ill-health, who are sensitive to climate-related health risks, and live in nations with limited technological capacity, weak institutions, high levels of poverty, and political inequality (Costello et al., 2009; Walpole et al., 2009). In the least developed countries (LDCs), climate change is expected to compromise the millennium development goals (Friel et al., 2008) while, in advanced economies, recent studies have also identified significant health vulnerabilities (Ford and Berrang-Ford, 2011; Ford et al., 2011; Hajat et al., 2005, 2010; Ebi, 2009a; Ebi et al., 2009; Kovats and Ebi, 2006).

Finding ways to adapt to the health effects of climate change will be one of the key policy challenges for public health this

* Corresponding author. Tel.: +1 604 446 2318.

E-mail addresses: alesnikowski@gmail.com, alexandra.lesnikowski@mail.mcgill.ca (A.C. Lesnikowski), james.ford@mcgill.ca (J.D. Ford), lea.berrangford@mcgill.ca (L. Berrang-Ford), magdalena.barrera@mcgill.ca (M. Barrera), peter.berry@hc-sc.gc.ca (P. Berry), jim.henderson@mcgill.ca (J. Henderson), jody.heyman@ph.ucla.edu (S.J. Heymann).

¹ Present address: School of Community and Regional Planning, University of British Columbia, #433-6333 Memorial Road, Vancouver, BC, Canada V6T1Z2.

² Present address: Fielding School of Public Policy, University of California Los Angeles, 650 Charles E. Young Dr S, Los Angeles, CA 90095, United States.

century (Ebi, 2009a; Ebi and Burton, 2008; Ebi and Semenza, 2008). A significant body of scholarship has emerged examining health system vulnerabilities and opportunities for adaptation. Governments at various levels have also begun planning for, and in some cases, initiating adaptation actions (Berrang-Ford et al., 2011; Ford and Berrang-Ford, 2011; Ford et al., 2011; Moser, 2011; Preston et al., 2011; Ebi, 2009b). Despite growing acceptance of adaptation as a public health issue, understanding of the factors that drive adaptation is limited. While several scholars have considered whether adaptation is taking place (Poutiainen et al., *in press*; Berrang-Ford et al., 2011; Lesnikowski et al., 2011; Preston et al., 2011; Biesbroek et al., 2010; Tompkins et al., 2010; Preston et al., 2009; Gagnon-Lebrun and Agrawala, 2007), few have systematically attempted to identify what makes policy-makers more or less likely to engage in adaptation, particularly in a health context. We therefore have a limited understanding of what contextual factors influence whether countries are likely to be high adapting countries or low adapting countries. Identifying these factors is critical if we are to develop and test hypotheses to better understand why some nations are progressing more quickly on adaptation than others, and to identify nations that are more or less likely to invest in future action.

An existing body of literature considers determinants of and barriers to adaptive capacity, and examines how this in turn impacts vulnerability and adaptation (Huang et al., 2011; Dovers and Hezri, 2010; Gupta et al., 2010; Adger et al., 2009; Smit and Wandel, 2006; Brooks et al., 2005; Ford and Smit, 2004). While it is critical to understand what makes countries more or less capable of adapting, higher adaptive capacity may not necessarily translate into actual adaptation action: adaptive capacity is hypothetical and does not capture whether capacity results in actual action (Eisenack and Stecker, 2012; O'Brien et al., 2006; Repetto, 2009). This paper contributes to this body of literature by assessing statistically significant relationships between core aspects of adaptive capacity and systematically measured adaptation occurring in 38 high income countries. To our knowledge, this is the first study to statistically examine the relationship between determinants of adaptive capacity and adaptation occurring within countries. The findings herein provide an empirical foundation from which to better understand whether countries with higher adaptive capacity are pursuing deeper levels of adaptation planning, and which aspects of adaptive capacity seem to be particularly critical to achieving adaptation gains. Our findings also contribute to our understanding of how certain aspects of adaptive capacity are inter-related with others. The study tests eight factors that capture financial, institutional, regulatory, and normative aspects of adaptive capacity, and provides a basis from which to develop further hypotheses about the translation of adaptive capacity into adaptation.

The factors tested in each hypothesis were selected to represent societal contexts pertinent to anticipatory health adaptation, and are drawn from a basic understanding of the dynamics of vulnerability and adaptive capacity developed in the literature (e.g. Füssel and Ebi, 2009; Smit and Wandel, 2006; Ebi et al., 2006; Costello et al., 2009; Smith and Vogel, 2009; Moser and Ekstrom, 2010). All 38 Annex I countries included here are assumed to have high adaptive capacity with respect to resources, institutions, governance, and information. The analysis focuses on factors at the national level among Annex I Parties to the UN Framework Convention on Climate Change (UNFCCC). This national-level focus reflects the importance of government departments and bodies in promoting (or constraining) health adaptation, and the pivotal role of national governments in climate change policy (Berrang-Ford et al., 2011; Ford and Berrang-Ford, 2011; Dovers and Hezri, 2010; Füssel, 2010a; Smith and Vogel, 2009). The paper goes beyond the existing literature regarding capacity for adaptation to assess

whether adaptation is actually occurring, and identify aspects of national contexts that may impact the likelihood of greater or lesser follow-through on adaptation. A key goal of the paper is to also provide a methodological foundation to examine influences on adaptation, developed in a health context but applicable more broadly.

2. Methods

A systematic methodology was developed to examine factors affecting national-level adaptation by: (i) quantifying individual adaptation actions (policies, projects, and programs) reported by Annex I Parties and coding them by both a typology of adaptive measures and by the health vulnerability(ies) targeted, (ii) calculating national adaptation outcomes by two indices that measure the range of adaptation actions being implemented and the range of health vulnerabilities being responded to, (iii) identifying potential factors that might impact progress on adaptation and selecting data sources for these factors, and (iv) calculating statistical relationships between factors and adaptation indices across countries. See Table 1 for a summary and description of the terminology used in this paper.

2.1. Data source: adaptation actions

The first step in the analysis was to systematically quantify the number of adaptation actions being reported among Annex I Parties to the UNFCCC in the Fifth National Communication (NC5). Consistent with Berrang-Ford et al. (2011) and Lesnikowski et al. (2011), adaptation actions are defined here as studies, policies, programs, and projects that are implemented to better understand or reduce vulnerability to the health impacts of climate change. For the purposes of data collection, adaptation was measured by individual actions reported within each country's vulnerability and adaptation chapter of the NC5. This measure of individual actions was then used to calculate indices that compare progress on adaptation to health impacts of climate change at a national level (see Section 2.3 for further information).

The Annex I group includes countries that have committed themselves to reducing greenhouse emissions levels primarily below 1990 levels. Data on adaptation actions were collected from the National Communications of 38 Parties, which are submitted to the UNFCCC Secretariat with the purpose of outlining national progress on implementing the convention. These 38 countries represent 25% of the world's population and include 29 of the 34 Organisation for Economic Co-operation and Development (OECD) countries, providing a broad snapshot of adaptation efforts being made across higher income nations. The most recent series of submissions is the Fifth National Communication, which was

Table 1
Terminology.

Term	Definition
Adaptive capacity	The ability of countries to engage in adaptation
Factors influencing adaptive capacity	National-level aspects of adaptive capacity, encompassing institutional, normative, financial, and regulatory frameworks that facilitate the translation of adaptive capacity into adaptation
Likelihood to adapt	The extent to which countries may channel adaptive capacity into adaptation action
Adaptation action	Policies, programs, and projects that aim to either inform/prepare for action or to reduce vulnerability to impacts of climate change
Adaptation outcomes	National-level measure of adaptation progress arrived at based on the range of adaptation actions reported through the Fifth National Communications

Download English Version:

<https://daneshyari.com/en/article/10505106>

Download Persian Version:

<https://daneshyari.com/article/10505106>

[Daneshyari.com](https://daneshyari.com)