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Contents lists available at ScienceDirect

Environmental Science and Policy

journal homepage: www.elsevier.com/locate/envsci

Short communication

Harnessing cross-border resources to confront climate change

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ARTICLE INFO

Keywords:

US southwest

Northern Mexico

Binational collaborations

Environmental innovation

Cross-border transformation

Research integration

ABSTRACT

The US and Mexico share a common history in many areas, including language and culture. They face ecological changes due to the increased frequency and severity of droughts and rising energy demands; trends that entail economic costs for both nations and major implications for human wellbeing. We describe an ongoing effort by the Environment Working Group (EWG), created by The University of California's UC-Mexico initiative in 2015, to promote binational research, teaching, and outreach collaborations on the implications of climate change for Mexico and California. We synthesize current knowledge about the most pressing issues related to climate change in the US-Mexico border region and provide examples of cross-border discoveries and research initiatives, highlighting the need to move forward in six broad rubrics. This and similar binational cooperation efforts can lead to improved living standards, generate a collaborative mindset among participating universities, and create an international network to address urgent sustainability challenges affecting both countries.

1. Introduction

The US southwest and northern Mexico are generally considered to constitute a single ecological and socio-environmental region (Wilder et al., 2013). They share a common history in many areas, including language and culture, and their economies and ecosystems are highly dependent upon one another. They have faced, and continue to face, changes in land use, depletion of fish stocks, ocean warming and acidification, multiple stresses on freshwater, forests, and wetlands, deterioration in air quality, increased frequency and severity of droughts and rising energy demands (Wilder, 2013). These trends entail economic costs for both nations and have major implications for human health and well-being (Garfin et al., 2013).

Proposed policy initiatives by the current US administration affect international climate change agreements, domestic funding levels for environmental agencies, and regulatory controls on cross-border immigration (United States, Office of the Press Secretary, 2017; United States, Office of Management and Budget, 2017). These initiatives may overshadow academic collaborations that foster research and educational opportunities, the development of cross-border science, and investments in shared environmental visions, laws, policies and agreements (Lazcano et al., 2017). We argue that successful trans-border, scientific collaborations focused on environmental innovation and advances in knowledge can supersede the tenure of an administration of any country, enhance future environmental innovation, and advance in

knowledge from successful scientific collaborations already underway between the US and Mexico.

The La Paz United States-Mexico Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Areas was signed on August 14, 1983 and entered into force on February 16 the following year. Calling for environmental cooperation in the border area based on equality, reciprocity and mutual benefit, this agreement is considered “a stable element of binational relations, institutions, resources, initiatives and reforms” (Mumme and Collins, 2014). A decade later, both governments created the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADB), which from 1995 through 2014 certified 243 environmental infrastructure projects with an estimated investment of \$8.3 billion. Twenty-six projects were related to clean air and efficient energy, and 28 to air quality. Twenty projects were completed by 2014, resulting in new renewable energy capacity that annually displaces 210 thousand metric tons of carbon dioxide emissions (Healy et al., 2014).

In a more comprehensive effort, the United States Environmental Protection Agency (EPA) and Mexico's equivalent agency Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) launched Border 2012, a bi-national network-building program aimed at bringing many previously disparate environmental management efforts into a common framework. Border 2012 brought together federal, state, and local governments, US border tribes, Mexico's indigenous communities, and various other stakeholders in both countries to address environmental

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