Cross-border spaces and environmental planning: the Border 2012 Program at the U.S.-Mexico border

Espacios transfronterizos y la planeación ambiental: El programa Frontera 2012 en la frontera México-Estados Unidos

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Abstract

The objective of this article is twofold: first, to describe a pedagogical objective linking planning and policy concepts to the study of borderlands issues; second, to discuss the institutional framework of environmental planning at the U.S.-Mexico border. The Border 2012 program is used as a benchmark to discuss policy objectives, challenges and the shortcomings of cross-border environmental planning. The methodology followed is a program evaluation related to institutional design. The main conclusion is that environmental policy at the border has overlooked land use planning as an important tool for achieving environmental goals as set out by Border 2012. It is important to incorporate a mechanism that will allow better intergovernmental coordination and cooperation in land use planning policy.

Key words: Cross-border environmental planning, U.S.-Mexico Border, Border 2012.

Resumen

El objetivo de este artículo es doble: primero, un objetivo de índole pedagógico que vincule planeación y conceptos de políticas públicas para estudiar aspectos de fronteras; segundo, desarrollar una discusión del marco institucional de la planeación ambiental en la frontera México-E.E.U.U. El programa Frontera 2012 se usa como una referencia para discutir los objetivos de las políticas ambientales, los retos y las fallas de la planeación transfronteriza. La metodología empleada es la de evaluación de programas relacionada con el diseño institucional. La principal conclusión

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es que la planeación ambiental en la frontera no le ha puesto la suficiente atención al tema de usos de suelo y su planeación como un componente crítico para lograr las metas que Frontera 2012 establece. Es importante incorporar un mecanismo que permita una mejor coordinación y cooperación intergubernamental en la política de usos de suelo.

Palabras clave: Planeación ambiental transfronteriza, Frontera Estados Unidos-México, Frontera 2012.

Introduction

The objective of this article is twofold: first, to describe a pedagogical objective linking planning and policy concepts to the study of borderlands issues; second, to discuss the institutional framework of environmental planning at the U.S.-Mexico border. The article revolves around the following questions: What are the main environmental goals being pursued at the border? What kind of institutional mechanisms are in place to develop plans and actions to achieve environmental goals? Has globalization been an obstacle or an opportunity for achieving border environmental goals?

Environmental planning at the border cannot be explained without referring to the Border XXI Plan and its successor, Border 2012. Border XXI operated from 1996 to 2000, replacing the Integrated Border Environmental Plan (IBEP) created in 1990 by the expanded La Paz agreement (see below). Border XXI was composed of nine bi-national working groups (water, air, hazardous and solid waste, pollution prevention, contingency planning and emergency response, cooperative enforcement and compliance, environmental information resources, natural resources, and environmental health). The goal of Border XXI was "to improve environmental conditions and achieve sustainable development along the border."[1]

The subsequent Border 2012 Program, also designed to address environmental problems, was derived from the La Paz Agreement (1983) and subsequent annexes that framed environmental policy on the U.S.-Mexico border. The mission of Border 2012 can be summarized as follows: 1) reduce water contamination, 2) curtail air pollution, 3) diminish land contamination, 4) improve environmental health, 5) lessen exposure to chemical hazards, and 6) improve environmental performance.

This article explores the various mandates and legal powers of different levels of government in both countries (Mexico and the United States) , which allow them to achieve the goals set out by the Border 2012 program. Using a variety of political-territorial scales, the focus is on how

[1] For a more detailed discussion of the Border XXI program see http://www.epa.gov/usmexicoborder/docs/borderXXIprogram-archive.pdf [Accessed November 16, 2009].

governmental, quasi-governmental, and non-governmental organizations facilitate the implementation of the goals outlined by Border 2012.

The Border 2012 Program is a binational, multi-government partnership that includes the peer environmental federal government agencies, U.S. Environmental Protection Agency (EPA), and Mexico's Secretariat of Environment and Natural Resources (SEMARNAT). The scope of Border 2012 also includes the ten border state governments (California, Arizona, New Mexico, Texas, Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon and Tamaulipas) as well as U.S. tribal governments. The respective federal environmental agencies, EPA and SEMARNAT, were assigned the role of coordinators. It is important to add that civil society and academics also play a key role. The sphere of action of EPA and SEMARNAT cuts across several environmental problems related to air, water, and land, which are important to highlight since environmental goals at the border revolve around the management of these natural resources.

The article is divided into five sections. In the first section, I present a discussion of the policy and planning process, and show where Border 2012 fits into policy process and evaluation. The second section conceptualizes planning at the U.S.-Mexico border as an incremental process of institution-building. The third section examines the border actors and institutions engaged in the task of achieving the environmental goals put forward by the Border 2012 Program. The fourth section presents some thoughts on how environmental policy and planning can be re-conceptualized to be more effective in achieving their goals. The last section presents a reflection on the challenges posed by globalization to cross-border environmental planning.

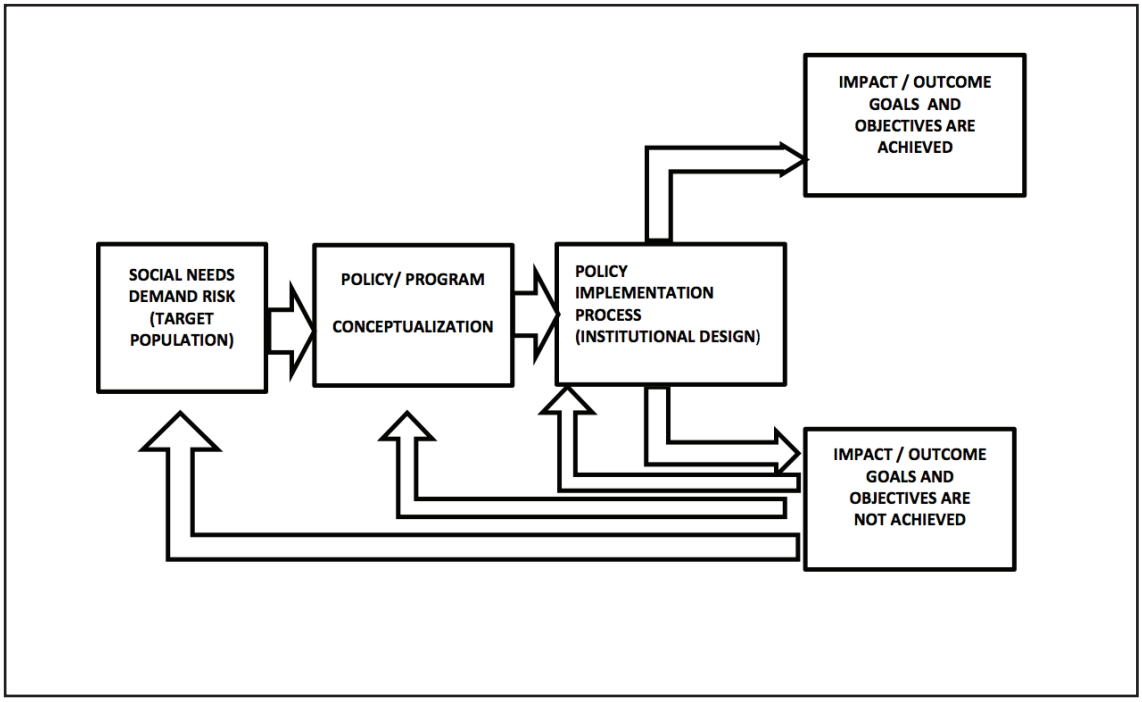
The policy process and the border environment

As stated previously, one of the objectives of this article is pedagogical, and requires linking planning and policy concepts to the study of borderland issues. This section is based on the idea of introducing and guiding students and practitioners to the field of policy and its application to the study of environmental policy at the border. Figure 1 presents a simplified version of a logic model of the basic stages of a program or policy. The model shows that policy is an iterative process that is constantly fine-tuned.

As Figure 1 shows, a program or policy emerges because there is a social need or demand for some form of intervention to alter the existing institutional *status quo*. Social demands are aggregated and channeled through different means such as political parties, policy networks and associations that lobby or campaign to make issues visible in the political agenda. Legislators are decision makers and drivers of institutional change; they will respond to the social demands and needs of their constituencies (North 1990, Bromley 2006, Rossi et al. 2004). Laws and regulations,

passed by the legislative branch, will be transformed into policies and programs implemented by the executive branch through its bureaucracy.

Figure 1: The Policy Process



Source: developed by the author.

The final step, then, is to implement and undertake an impact evaluation to determine whether the policy or program achieved its intended goals and objectives. If the program achieved its goals then the process concludes or people accept the outcome as a stable, social equilibrium. However, if the program failed to achieve its stated goals and objectives, then policy analysts will determine why, in order to fine-tune or rethink the program. According to Rossi et al. (2004), there are three common reasons why programs fail to achieve their goals and objectives. One, the cause of the failure could be the way the program is implemented by agencies and their respective administrations, such as lack of funding and unqualified human resources. Two, the program was not properly conceptualized: ideology may trump pragmatism, for instance conservatives may believe in market solutions whereas liberals may prefer governmental intervention, meaning that the political group that is in the majority will propose solutions according to its political beliefs.

Three, analysts and politicians misunderstood the social problem, in other words the problem was not properly defined.

Applying the above policy framework to the border, the following can be said. Since the 1980s, a combination of factors has made the U.S.-Mexico border an attractive industrial location. On the one hand, a paradigm shift in Mexico's economic development strategy caused a transformation from an import-substitution to an export-led model of growth. On the other, the need for certain industries in the U.S. to restructure forced them to outsource production to cheaper locations such as Mexico in order to remain competitive (Peña, 2007). In time, this economic symbiosis fosters urban development at the border.

The end result of the combination of these factors was the exponential growth of the maquiladora industry and employment on the Mexican side of the border, which in turn accelerated the pace of urban growth of cities along the Mexican border such as Ciudad Juárez, Tijuana and Nuevo Laredo. Some scholars writing about these globalizing processes (Sánchez 1990, Barry and Sims 1994), along with social activists on both sides, made the border environment and the risks associated with industrialization a key policy issue that was difficult to ignore by Washington and Mexico City. Potential risks to public health and the environment resulting from border industrialization created a social demand for intervention to alter the status quo of the environmental institutional framework, the first step in the policy process.

Environmental policy on the U.S.-Mexico border is complex because of its transnational nature. Thus, international treaties and agreements signed by nation-states play a central role. The Environmental Cooperation Agreement between the U.S. and Mexico, known as The La Paz Agreement and signed on August 14, 1983, conceptualizes and frames environmental policy on the U.S.-Mexico border. The main objectives of the agreement are established in Article 1:

> "…to establish the basis for cooperation between the parties for the protection, improvement and conservation of the environment and the problems that affect it, as well as to agree on the measures required to prevent and control pollution in the border area, and to provide the framework for development of a system of notification for emergency situations…"[2]

Thus it is clear that cooperation is a necessary, although not sufficient, condition to address environmental problems. In addition, the above statement offers clues about environmental policy actions and outcomes (protection, improvement, and conservation) that both nations attempt to

[2] To access the La Paz Agreement http://www.epa.gov/usmexicoborder/docs/LaPazAgreement.pdf [accessed September 10, 2009].

achieve. Subsequent annexes to the La Paz Agreement expanded the scope of environmental policy by incorporating sanitation and water pollution (annex I), industrial hazards (annexes II and III), and air pollution (annexes IV and V). These annexes describe the policy conceptualization and environmental objectives of the La Paz Agreement. The next stage focused on implementation; in other words, the means to achieve the ends. The means can take the form of institutions, agencies, and specific plans.

Cross-border planning as an incremental process

Debates in planning theory largely revolve around three approaches on how best to understand the planning process—rational, incremental and collaborative planning. On the one hand, rational planning is often described as a root planning method (Lindblom, 1996), whereby planners attempt to find the "best" solution to social problems by following a methodical process of inquiry.[3] This process is normally top-down and expert-driven. On the other hand, incremental planning is a branch planning approach (Lindblom, 1996), which is politically driven by stakeholders with varying degrees of power, who attempt to find solutions that are "good enough." Incremental changes to the status quo (Bromley, 2006) are preferred over comprehensive or wholesale changes. Collaborative planning is a consensus-building approach, which operates through debate and argumentation, where intersubjectivity and communicative rationality are essential components of the process (Habermas, 1984; Healy, 2006).

Elsewhere, some authors have argued (Mumme, 1992; Peña, 2007) that cross-border planning at the U.S.-Mexico border in general, and environmental policies in particular, have followed an incremental process of institution-building. It is rightly argued that this approach is reactive rather than proactive. In other words, it is only once a problem at the border grows to such an extent that it can no longer be ignored and forces political actors to address it. Border 2012 should be understood within this policy context. Mumme (1992) argues that this is the most feasible – if not perfect – approach, and is subject to the addition of new functions.

It is worth highlighting the following aspects of the planning process. First, from 1889 to 1993, the International Boundary and Water Commission (IBWC) was practically the only cross-border planning institution. The original mandate of IBWC was restricted to the boundary until 1944, when the agency integrated water management issues, thus changing from IBC to IBWC. The role of IBWC has evolved from a redistributive approach of natural resources (water) to being concerned with issues of sanitation and, more recently, incorporating sustainability princi-

[3] The steps are as follows: 1) define the problem, 2) determine evaluation criteria, 3) identify alternative policies, 4) evaluate alternative policies, 5) select the preferred policy, 6) implement the preferred policy, 7) monitoring. See Patton and Sawicki (1993).

ples as required by some federal mandates such as the National Environmental Policy Act (NEPA) among others; particularly on the U.S. side.

Second, globalization and increasing economic integration through the opening up of the Mexican border to assembly plants in the 1960s and subsequently the adoption of neo-liberal economic policies in Mexico incorporated new issues into the border agenda such as industrial hazards, solid waste management, air pollution and land contamination. These new issues were made visible in the La Paz Agreement signed in 1983. The IBWC, however, was not equipped with the legal tools or mandate to address some of these problems. Political actors, under pressure from border activists and social networks which emerged at the border, realized the need for a new set of institutions to deal with these new challenges.

Third, it is important to emphasize that civil society has also played a key role in this process by making border environmental issues visible on the policy agenda in Mexico and the U.S. Cross-border planning cannot be explained without discussing the role played by policy networks, also called epistemological communities (Faludi, 2002), on both sides of the border. Policy networks work to make issues or problems visible by lobbying and generating and exchanging information (Pacheco, 2006); in other words, they arise through collaborative planning. In some instances, efforts made by civil society, are successful in forcing policy makers to react and bring about change. Local civil society at the border is truly transnational (Vazquez, 2001; Verduzco, 2001) and often this parallel diplomacy through networks is more fluid than the formal practices of national governments. It is in these terms that Pacheco (2006) identifies the emergence of a global environmental citizen movement. The following section will discuss in more detail the role and function of these organizations and the institutional framework in which they operate.

Institutional analysis of environmental planning

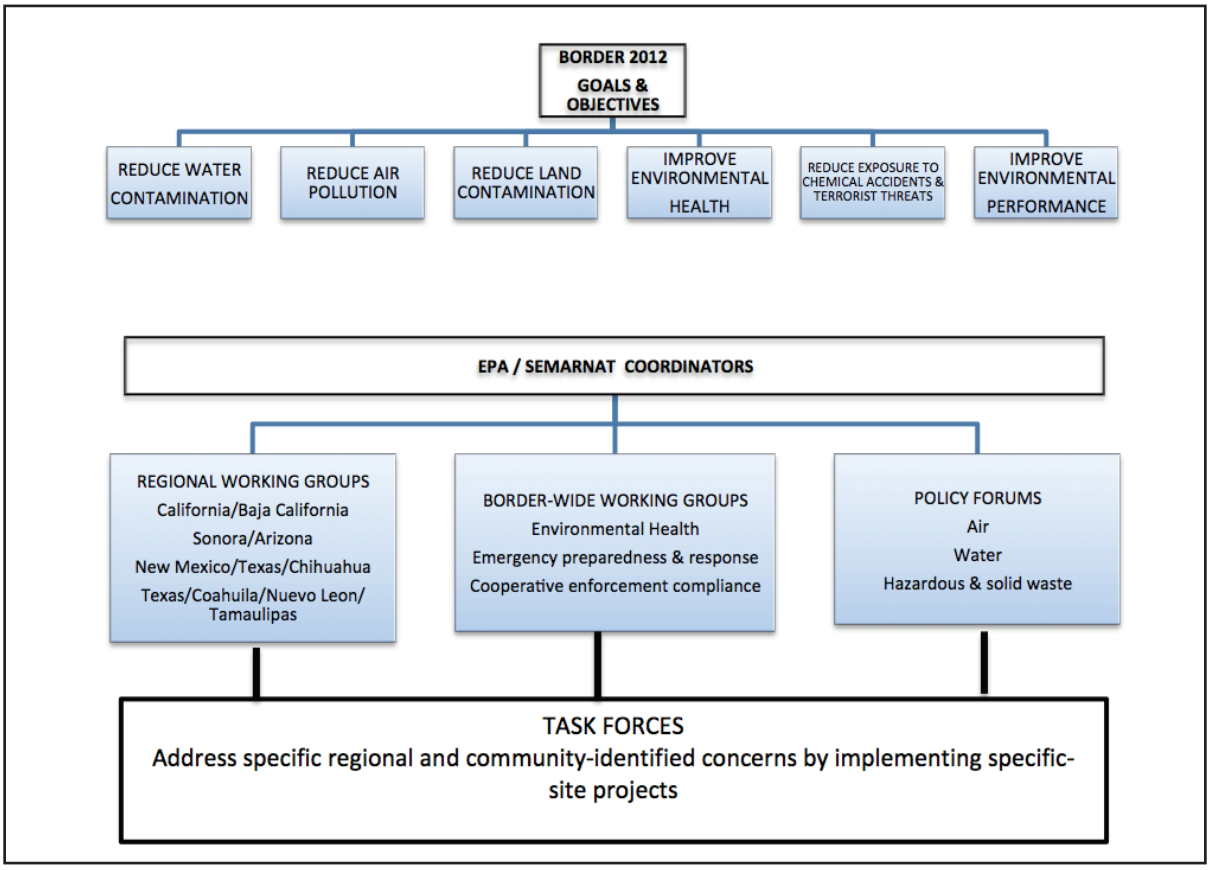
One of the challenges of environmental planning at the border is the extreme policy fragmentation that results from the multiple governmental and nongovernmental layers and actors, leading to a lack of policy coordination. Thus, the fundamental issue at the core of cross-border planning policy is how to devise processes, practices and mechanisms to improve collective decision making; in other words, to devise some sort of *Leviathan*[4] that will put together the pieces of the puzzle and provide cohesiveness in order to meet common goals. Essentially, the issue is how to devise an environmental governance regime to govern common-pool resources (Ostrom, 1990; Pacheco,

[4] A Leviathan, in the view of Thomas Hobbes, is a human-devised institution that forces cooperation among people and has the monopoly power to coerce and punish those who violate norms. Cross-border planning needs some sort of Leviathan, but unlike the Hobbesian one, this would not have the monopoly to force cooperation across the border; instead, it would depend more on persuasion and collaboration than coercion.

2014) and environmental risks (Peña, 2011). The Border 2012 Program was playing the role of a toothless *Leviathan* by attempting some level of intergovernmental cooperation and coordination among federal, state and local bureaucracies, as well as nongovernmental actors on both sides of the border around some general environmental goals, but lacking two of the essential powers of government: police power and eminent domain,[5] essential to land use policy (Peña, 2002) as will be discussed later in the paper.

The next logical question is how environmental goals become operationalized. This not only refers to how the policy concept is translated into specific actions, but also to how institutional design is adopted. Figure 2 shows the institutional design of the Border 2012 program.

Figure 2: Border 2012 Operationalization



Source: adapted from Environmental Protection Agency Border, 2012.

[5] Police power gives governments the authority to pass laws and regulations to protect the safety, morals, public health, and welfare of a community. Eminent domain is the power government has to use private property to advance public interest.

In the field of policy and program evaluation, there is a distinction between outputs and outcomes. Outputs are specific activities and actions that are undertaken to accomplish goals. Outcomes refer to tangible,measurable results that allow one to determine whether the program accomplishes what it intended to, and whether it made a difference to the quality of life of the target population. Figure 2 shows the outputs generated by Border 2012 that are supposed to make a difference to the environment and ultimately quality of life of border residents. Regional working groups, border-wide working groups, policy forums and task forces are the specific outputs (means) through which environmental goals will be achieved.

In the following paragraphs, the institutional framework that guides environmental policy on the U.S.-Mexico border will be described in more detail. The description of the institutional framework will give us some idea of the challenges that EPA and SEMARNAT face in coordinating environmental policy along the border through the Border 2012 program. The focus is on discussing specific governance aspects related to water management, air quality and contingency planning, since these are the areas with which environmental policy is intimately concerned. Land contamination issues will be addressed last due to the fact that land use decisions play an important role, followed by natural risk and anthropogenic hazards.

Water quality

This section provides an historical overview of the specific laws and policies relating to water quality in both countries. The right of governments to regulate issues affecting water quality is based on police power. This refers to the power of governments to impose regulations and laws to protect the safety, morals, public health, and welfare of their citizens (Black, 1991). Regulation of water outflows or uses can protect water quality and, thus, the public health and welfare of the people.

The signing in 1979 of Minute 261 by IBWC, entitled "Recommendations for the Solution to the Border Sanitation Problems,"[6] represents a paradigm shift from quantity or resource allocation to quality in regards to water. Until the signing of Minute 261, IBWC was mainly concerned with water allocation based on the 1944 Treaty; since then, sanitation and water quality issues have become part of the binational policy agenda. Previously, there had been efforts to build sanitation infrastructure, such as the binational wastewater plant in Nogales, Arizona, but Minute 261 set the stage for more comprehensive rather than ad hoc efforts. According to Minute 261, a sanitation problem means "…each case in which the waters that cross the boundary, including coastal waters, or that flow in the border reaches of the Río Grande and the Colorado River, have

[6] This minute, signed September 24, 1979, was the result of a request made to IBWC by Presidents López Portillo and Jimmy Carter to deal with sanitation issues on the U.S.-Mexico border. http://www.ibwc.gov/Files/Minutes/Min261.pdf [Accessed November 2, 2010]

sanitary conditions that pose a threat to the health and well-being of inhabitants on either side of the border or impair the beneficial uses of these waters."

The signing of an environmental side agreement to NAFTA in 1993 brought new institutions into the policy arena such as the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADB) to encourage the development of environmental infrastructure, with drinking water and sanitation being important concerns.[7] IBWC and BECC are vested with a mandate to deal with water quality and sanitation, among other issues, and thus have become two of the most relevant environmental planning agencies along the U.S.-Mexico border. Water quality, which directly relates to one of the environmental goals targeted by Border 2012, is an area where federal governments in both countries also play an active role.

A number of federal mandates in the U.S. directly or indirectly relate to water, including the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Wild and Scenic Rivers Act, the Clean Water Act, and the Safe Drinking Water Act (Goldsteen, 1999), among others. A key characteristic of environmental policy in the U.S. is that the federal government sets environmental standards and state and local governments are free to develop and implement their own policies to comply with and enforce federal mandates. The EPA supervises compliance or non-compliance and provides technical and financial assistance to local governments (Goldfarb, 1988; Goldsteen, 1999).

In Mexico, two constitutional articles address water pollution prevention. The 1987 constitutional reforms to Article 27 incorporated concepts such as conservation, restoration, and ecological balance. Article 73-XXIX-G empowered Congress to pass legislation to coordinate policy at all levels of government to protect, conserve, restore, and balance the environment. These reforms led to the most comprehensive environmental law, called the Ley General del Equilibrio Ecológico y la Protección al Ambiente known as LGEEPA [Ecological Balance and Environmental Protection General Law]. The 1987 reforms by the Mexican Congress put environmental policy at the top of the national agenda, creating key cabinet-level agencies such as Conagua in 1989, and SEMARNAP in 1994, renamed SEMARNAT in 2000 (González and Montelongo 1999).

Water quality management is challenging due to three main factors: first, the way each country defines water rights in its respective constitution; second, the distribution of powers among

[7] BECC provides technical assistance to border communities to develop plans to address issues such as drinking water, solid waste, air pollution, and planning. BECC certifies the projects' compliance with certain criteria such as environmental sustainability, technical feasibility, public support, etc. Once BECC certifies the projects, these are eligible to receive loans from NADB. A binational board composed of federal agencies (Treasury, Department of State and Environment), border state representatives and public representatives oversees BECC and sets policy priorities. For a more detailed explanation of BECC mandate and projects see http://www.cocef.org/ingles.php [Accessed November 2, 2010].

the different levels of government; and third, the role of politics in water management. These three factors pose a challenge to developing rational policies for improving water quality at the border.

With regards to water rights, in the U.S. those rights are considered to be like any other property right and subject to constitutional protection, whereas in Mexico, water is considered a concession, the nation being the ultimate owner. This means that water policy in Mexico is more centralized whereas in the U.S. it is more decentralized, making coordination more difficult because of the number of stakeholders with rightful claims (Peña and Fuentes, 2005). In theory, Mexico's institutional framework allows for a more comprehensive rational approach through watershed management; whereas a more liberal tradition in the U.S. means interests are more fragmented and less conducive to comprehensiveness (Brown and Mumme, 2000).

Concerning the distribution of powers, legal issues constrain the coordination of water policies and land use decisions. Water quality largely depends on land use decisions (e.g. wetlands preservation and zoning). Both federal governments gave IBWC the legal authority to address border sanitation problems in part. However, IBWC's authority is limited to projects in the floodplain or along the international boundary rather than to broader urban land use decisions. In the U.S., land use decisions are a local matter, according to the 5th and 10th Amendments of the U.S. Constitution. In Mexico, Article 115 of the Constitution gives local governments limited authority to regulate land uses, meaning federal and state governments must have a strong position on the issue, as set forth in Article 73-XXIXC of the Mexican Constitution.

As regards the role of politics, the asymmetry in the level of development between the two countries affects and shapes the planning practice of local water utilities. In the U.S., much of the work of local water utilities is geared towards compliance with federal mandates on water quality as set out by the Clean Water Act and the Safe Drinking Water Act. In Mexico, water utility agencies known as Juntas de Agua or Organismos Operadores emphasize issues of service coverage and to a lesser extent quality. Water utilities in the U.S. have more planning independence and are overseen by the Public Service Board (PSB); in Mexico, water utilities are either a municipal or state agency. As a result, water management in the U.S. is more professional and driven by efficiency parameters, whereas in Mexico, water management is extremely politicized and water is often used as a means to achieve political-electoral ends (Peña, 2005). Planning cultures, bureaucratic values and practices of public servants in both countries are not necessarily the same nor do they pursue the same goals, meaning that this is an area of opportunity to bridge the gap in planning and administrative practices (Saint-Germain, 1995).

According to Herzog (2000), environmental problems are linked to land use decisions. This means any environmental policy enacted on the border must also consider its link to land use deci-

sions and practice. In summary, water quality cannot be separated from land use. Thus, a strategy is required to coordinate efforts that would bring together agencies in charge of land use planning and those in charge of water quality issues.

Air quality

The La Paz Agreement is the main accord between the U.S. and Mexico that frames public policy at the border regarding air quality. January 29, 1987 saw the signing of Annex IV, which represents a shift from an ad hoc to a more comprehensive approach to dealing with cross-border air pollution. The annex targeted copper smelters, and the U.S. agreed to close the Phelps Dodge Copper Smelter in Douglas, Arizona. Mexico agreed to reduce sulfur dioxide emissions produced by a copper smelter in Nacozari, Sonora. The establishment of commissions and working groups comprised of public officials in both countries opened up new opportunities for the emergence of other more regionalized efforts to monitor air quality. Subsequent efforts have focused on non-point sources such CO emissions resulting from cross-border traffic and airborne particulate matter (PM).

Initially, the Border XXI[8] Program (1996-2000), and later its successor Border 2012, have been very active in translating the goals set out by the La Paz agreement into specific policy action. In addition, NAFTA opened up the opportunity for new transnational agreements by including Canada and establishing the North American Commission for Environmental Cooperation[9] (CEC). Border 2012 provided the policy framework for dealing with air quality at the border. In November 2002, the Border Air Quality Strategy (BAQS) was launched by Border 2012 with the objective of fostering the exchange of information, and promoting the coordination and cooperation of local governments. The objective of Border 2012 is that cities located along the border meet the standards of established norms in their respective states or nations.

Nationwide, there are a series of laws and regulations in each country that frame air quality policies. The Clean Air Act (CAA) in the U.S. and the General Law on Ecological Balance and Environmental Protection in Mexico provide the policy framework in each nation.

In the U.S., the National Air Ambient Quality Standards (NAAQS) is the regulatory document complementing the Clean Air Act (CAA). NAAQS establishes a list of contaminants as well

[8] The mission of Border XXI was to achieve a clean environment, protect public health and natural resources, and encourage sustainable development along the U.S.-Mexico border. http://www.epa.gov/usmexicoborder/docs/borderXXIprogram-archive.pdf [Accessed November 16, 2009].

[9] The CEC states that "The Commission for Environmental Cooperation (CEC) is an international organization created by Canada, Mexico and the United States under the North American Agreement on Environmental Cooperation. The CEC was established to address regional environmental concerns, help prevent potential trade and environmental conflicts, and promote the effective enforcement of environmental law. The Agreement complements the environmental provisions of the North American Free Trade Agreement" (NAFTA). http://www.cec.org/who_we_are/index.cfm?varlan=english [Accessed November 16, 2009].

as standards based on the principle of Maximum Achievable Control Technology, which takes into account current technology, economic and environmental conditions. Federal mandates are adopted through State Implementation Plans (SIP). The SIP includes elements such as preventive measures, monitoring, contingency plans, enforcement mechanisms, etc. (Goldsteen, 1999). Any area that does not meet the NAAQS is classified as a non-attainment area, which often applies to urban areas located along the border such as El Paso, Texas; Doña Ana, New Mexico, and all the counties located along the border in Arizona and California which exceed NAAQS in at least one pollutant.[10]

In Mexico, the 1988 LGEEPA, as modified in 1996, provides the institutional framework regarding air quality. A parallel law to NAAQS exists in Mexico, known as Reglamento de Prevención y Control de la Contaminación de la Atmósfera [Air Pollution Prevention and Control Act, hereafter referred to as RPCCA]. Overall, the RPCCA covers aspects such as technical and administrative requirements related to mobile and stationary sources of air pollution. The RPCCA establishes the official norms based on the principle of maximum levels allowed, in which the ministries of public health and industry and trade play a key role in setting standards (González and Montelongo, 1999). SEMARNAT, the National Institute of Ecology (INE) and the Environmental Protection Federal Enforcement Office, known as the Procuraduría Federal de Protección al Ambiente (PROFEPA), are the federal agencies in charge of enforcing the laws related to air quality.

In October 1989, Annex V of the La Paz Agreement was signed to directly address air quality in relation to urban activities along the border, referred to as transport of urban air pollution in the annex.

Key aspects in this annex include willingness to develop an information system of the inventories and sources contributing to air pollution, the establishment of air monitoring and modeling tools, and the harmonization of standards. The uniqueness of this annex is the recognition, involvement, and empowerment of local communities in the planning process by creating a pilot program and Joint Advisory Committee for the improvement of air quality in the transnational conurbation of El Paso, Texas-Ciudad Juárez, Chihuahua- Sunland Park, New Mexico. This pilot program was adopted as a policy strategy by Border 2012 through the Paso del Norte Air Quality Task Force.

BECC and NADB gave another boost to cross-border planning in the area of air quality through the 2004 revision of BECC's mandate states. Key issues included the geographic scale or scope which expanded the regional target of BECC-NADB jurisdiction from 100 KM from the

[10] For a more detailed explanation of NAAQS and non-attainment areas, see http://www.epa.gov/air/oaqps/greenbk/mapnpoll.html [Accessed November 2, 2010].

border (62 miles) to 300 KM (186 miles) in Mexico and added air quality and municipal planning to BECC's charter.

> BECC is authorized to work in an area covering 62 miles (100 km) on the U.S. side of the border, and 186 miles (300 km) on the Mexico side. Its mandate includes projects related to water pollution, wastewater treatment, municipal solid waste management and related matters. Related matters are defined to include hazardous waste, water conservation, hookups to water and sewer systems, and waste reduction and recycling. Projects related to **air quality**, transportation, clean and efficient energy, and municipal planning and development, including water management, have also been added to the BECC's mandate [emphasis added].[11]

The vast majority of BECC-certified projects deal with water and solid waste management, with only a few directly addressing air quality. Air quality projects mainly target Mexican cities. In the State of Baja California, projects were certified for the cities of Ensenada, Mexicali, Rosarito, Tecate, and Tijuana to pave streets to reduce atmospheric dust particles with a diameter of less than 10 microns (PM10). In the cities of Agua Prieta and Nogales, Sonora projects were certified for paving streets as a strategy to reduce PM10. Finally, another paving project to reduce particulate matter was approved for Ciudad Juárez in Chihuahua. In 2009, out of a total of 161 certified projects only 13 (8%) were related to air quality, with street paving being the main strategy to reduce PM and thus improve air quality.[12]

There are a variety of cooperative efforts to improve air quality; the best known cases being those that emerged from Annex V of the La Paz Agreement. These efforts have substantially contributed to generating information and monitoring stages of the planning process. There are monitoring stations at San Diego, California-Tijuana, Baja California; Imperial Valley, California-Mexicali, Baja California; Nogales, Arizona-Nogales, Sonora; El Paso, Texas-Ciudad Juárez, Chihuahua; Brownsville, Texas and Laredo, Texas to mention just a few.[13] There are also private initiatives including one in the Paso del Norte Region, funded by El Paso Natural Gas Co. to develop clean technology based on gas as a fuel to reduce air pollution produced by brick kilns using old tires as fuel in Ciudad Juárez.

[11] http://www.cocef.org/background.htm [Accessed November 16, 2009].

[12] http://www.cocef.org/pcertified.cfm [Accessed September 11, 2009].

[13] http://www.epa.gov/ttncatc1/cica/monsum_e.html. See also http://www.ozonemap.org and Alegría, 2000. There is information regarding the following pollutants CO - carbon monoxide, NO2 - nitrogen dioxide,SO2 - sulfur dioxide,O3 – ozone, PM2.5 - particulate matter with diameter < 2.5 micrometers, PM10 - particulate matter with diameter < 10 micrometers, TSP - total suspended particulate matter (all particle sizes), Pb - lead [Accessed November 16, 2009].

The improvement of air quality by reducing PM10 particulate matter may be more practical in the short run than dealing with the reduction of carbon monoxide (CO) and sulfur dioxide (SO2). The reduction of CO is a more complex issue because that would necessarily involve mobile sources such as vehicles. Vehicles idling as they wait to cross the border are one of the main contributors to air pollution and it is not unusual to spend two hours waiting to cross the border, particularly since 09/11. Improving cross-border mobility would be the best long-term comprehensive strategy to reduce air pollution levels and CO emissions; however, this is more difficult to achieve politically since it would involve a range of agencies at all levels such as Immigration and Customs Enforcement (ICE), Homeland Security, IBWC, the Department of Transportation (DOT); Metropolitan Planning Organizations in charge of coordinating regional planning on the U.S. side; the Federal Roads and Bridges Agency (CAPUFE), and Municipal Planning and Development Committees, known as COPLADEM in Mexico. This is probably the biggest challenge environmental efforts face because a strategy to reduce air pollution will require a great deal of transportation planning and improving border crossing efficiency (Sweedler et al., 2003; Parks et al. 2003).

The adoption of Secure Electronic Network for Travelers Rapid Inspection[14] or SENTRI lines on the border is a small step towards addressing not only issues of security but also air pollution. SENTRI operates in transnational conurbations such as San Diego,California-Tijuana, Baja California; Calexico,California-Mexicali, Baja California; Nogales, Arizona-Nogales, Sonora; El Paso, Texas-Ciudad Juarez, Chihuauhua; and Laredo, Texas-Nuevo Laredo, Tamaulipas. The SENTRI program is part of the Trusted Traveler Program developed to manage travel flows between NAFTA partners more efficiently. Chambers of commerce together with maquiladora executives have been important promoters of this program together with ICE. SENTRI expedites cross-border crossings by reducing waiting times, therefore reducing pollution. The main drawback of the program is the high fees paid in the U.S., particularly on the Mexican side by CAPUFE, which charges about 500 dollars per year.

Hazards and emergency management

The Declaration of the United Nations Conference on the Human Environment adopted in Stockholm in 1972 is one of the most significant multilateral treaties directly relating to cross-border externalities. Principle 21 of the Declaration recognized the sovereign right of every nation to exploit its resources according to its laws but also the responsibility to ensure that its activities will not cause damage to the environment of other states beyond its political jurisdiction. In this regard, the export of hazardous waste material, normally from industrialized to developing countries, has

[14] For a detailed explanation of the program see http://www.cbp.gov/xp/cgov/travel/trusted_traveler/sentri/ [Accessed November 2, 2010]

been one of the main focuses of attention of the international community (Sánchez, 1990). Furthermore, this is extremely important to the context of the U.S.-Mexico border, given the exponential growth of international trade and the maquiladora industry. The Stockholm Declaration was used as a framework for Annex III of the La Paz Agreement signed by the U.S. and Mexico to deal with externalities resulting from hazardous materials at the U.S.-Mexico border.

The 1989 Basel Convention is the main international treaty regarding the control of the movement of hazardous waste materials across borders. According to Sánchez (1990), the negotiation of the text of the Convention showed the divide that existed between industrialized and developing countries. On the one hand, the developed world was reluctant to accept anything that would rule out the possibility of relocating dirty industries and exporting hazardous waste to other countries. On the other hand, developing countries were reluctant to become the dump sites of the developed world's hazardous material.

There is a long history of international diplomacy and agreements between the U.S. and Mexico including the creation of institutions. However, it was not until the signing of the La Paz Agreement that the two countries began to address hazardous waste transportation and contingency planning more comprehensively. The La Paz Agreement states that the United States and Mexico intend:

> "…to agree on necessary measures to prevent and control pollution in the border area, and to provide the framework for development of a system of notification for **emergency** situations."[15] [Emphasis added].

Subsequent annexes to the La Paz Agreement have been signed, and of particular importance for contingency planning is Annex II, concerning hazardous substance disposal. Article II of the same annex specifically deals with contingency planning in which the two countries agreed to establish joint contingency plans. Annex III is also relevant because it specifically deals with cross-border shipments of hazardous waste and substances. Article III, in the same Annex III, sets out the framework for developing a notification and tracking system of cross-border shipments of hazardous waste. This tracking or accounting system, known as Emergency Response Notification System (ERNS), has made it possible to determine the difference between the flows (inputs) going into Mexico and what is returned to the U.S. as hazardous waste. The ERNS program was unilaterally terminated by the administration of U.S. President George W. Bush.

[15] Emphasis added by the author. A copy of the agreement can be obtained at http://www.epa.gov/usmexicoborder/ [Accessed November 16, 2009]

The La Paz agreement has become the main benchmark for developing plans to address cross-border environmental issues. Goal five of Border 2012 is the most relevant to contingency planning. The goal is "[to] reduce exposure to chemicals as a result of accidental chemical releases and/or acts of terrorism."[16] Goal five is consistent with Annex II of the La Paz Agreement regarding the creation of a Joint Contingency Plan (JCP). The objective of goal five is to complete joint contingency plans for all 14 pairs of twin cities by 2008.[17] The Fourth Border 2012 National Coordinators' Meeting held in May 2007 in San Antonio, Texas reported that the plans for the 14 binational conurbations or twin cities were signed and implemented.[18] These inter-local agreements were facilitated by federal agencies within the La Paz Agreement.

The above initiatives comply with legislation at the national level, where there are two main legislative initiatives in each country that address contingency planning. In the U.S., the Disaster Relief and Emergency Assistance Act, known as the Stafford Law,[19] which is in accordance with the police power that the U.S. Constitution grants to local governments under the 10th Amendment, defines emergency preparedness and mitigation assistance and the parameters under which federal funds should be allocated under the Federal Emergency Management Agency (FEMA). As a complement to the Stafford Law, there are other laws that are relevant to contingency planning such as the Clean Air Act, Chemical Safety Information Site Security and Fuels Regulatory Relief Act, and the Emergency Planning and Community Right-to-Know Act (EPCRA), to mention just a few. These plans basically describe protocols governments must follow in cases of chemical emergency spills, clean up methods, mitigation actions, etc. (Goldsteen, 1999).

In Mexico, the 1985 earthquake in Mexico City triggered legislation regarding contingency planning and management. In 1986 the national system of civil protection was established by decree. In 1999, Article 73-XXIX-I of the Mexican constitution was reformed to give Congress the authority to legislate on civil protection matters. Complementary to this law are the General Law of Ecological Balance and Environmental Protection, the General Law of Population, and the Federal Public Administration Law, among others. Various authors (Garza and Rodríguez, 1998; Inam, 2005; Peña, 2007b) agree that contingency planning in Mexico is mostly reactive; indeed, one of the responses to natural disasters is the Plan DN III implemented by the Mexican army

[16] http://www.epa.gov/usmexicoborder/ (Accessed 11/16/2009).

[17] The 14 pairs of twin cities are: San Diego, California-Tijuana, Baja California; Calexico, California-Mexicali, Baja California; Yuma, Arizona-San Luis Río Colorado, Sonora; Nogales, Arizona-Nogales, Sonora; Naco, Arizona-Naco, Sonora; Douglas, Arizona-Agua Prieta, Sonora; Columbus, New Mexico-Puerto Palomas, Chihuahua; El Paso, Texas-Ciudad Juárez, Chihuahua; Presidio, Texas-Ojinaga, Chihuahua; Del Rio, Texas-Ciudad Acuña, Coahuila; Eagle Pass, Texas-Piedras Negras, Coahuila; Laredo, Texas-Nuevo Laredo, Tamaulipas; McAllen, Texas-Reynosa, Tamaulipas; and Brownsville, Texas-Matamoros, Tamaulipas. Source: U.S.-Mexico Border XXI Program: Progress Report 1996-2000.

[18] http://www.epa.gov/usmexicoborder/docs/ncm_2007_goal5.pdf [Accessed 09/14/ 2009].

[19] US Code, Title 42, The Public Health and Welfare, Chapter 68 Disaster Relief. Amended Oct. 30, 2000.

whose objective is mainly to respond to contingencies by evacuating, rescuing and searching for victims, performing first aid and undertaking clean-up.

At the state and local level, contingency planning between the two countries could not be more different. In the U.S., state and local governments not only have the legal tools but also access to more resources to implement contingency planning compared to their Mexican counterparts. Even though an institutional framework to prevent disasters (natural or anthropogenic) exists in both countries, unless local governments have the resources and capacity to plan, the outcome and effectiveness will be questionable. Effective local planning (strong land use regulations, enforcement of building codes, regulation of time and routes to transport hazardous material, etc.) is a necessary condition for successful contingency planning.

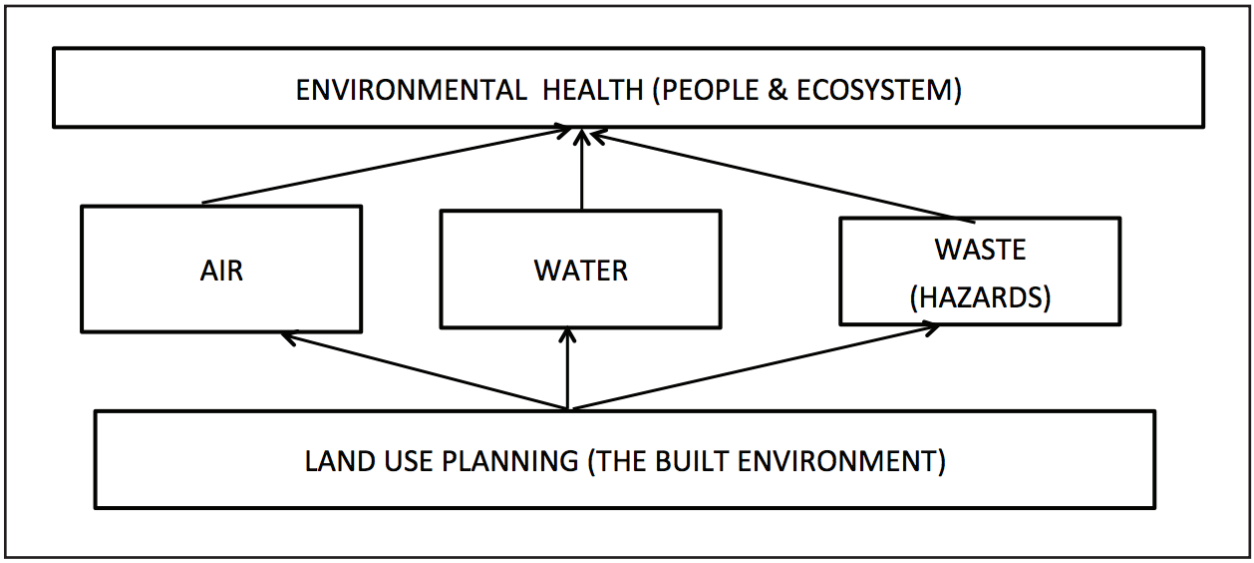
Re-conceptualizing cross-border environmental planning

Among the environmental goals at the U.S.-Mexico border yet to be discussed are land contamination and the improvement of environmental health and performance. Land contamination can result from several factors such as unsuitable location of particular land uses, lack of facilities to confine hazardous waste, and lax enforcement of regulations regarding hazardous waste disposal and management, among others.

Potential health risks are one of the main negative externalities relating to land contamination. The risks of polluting water sources (underground or superficial) would have tremendous cross-border health impacts, particularly in communities such as El Paso, Texas-Ciudad Juárez, Chihuahua that not only share aquifers but depend on them for drinking water. Thus, from a cross-border planning perspective regarding land contamination, the main issue is how to set up a regime or institutional framework that would allow the management of common pool resources (e.g. aquifers) to prevent potential health risks. Land use policy or planning must be central to strategies to prevent health risks resulting from land contamination.

The goal of preventing land contamination as means to ensure a healthier border environment necessarily has to be linked to land use planning. Authors such as Herzog (2000: 144) have argued precisely this issue. I argue along the same lines that land use should be at the center of cross-border environmental planning. In other words, land use policy and decisions are key to managing environmental externalities that the La Paz Agreement is concerned with. Figure 3 illustrates this point, showing that land use planning is an important tool for building a more sustainable urban environment that will not jeopardize future generations' enjoyment of equal or better environmental quality, which is the main objective of sustainable development. Also, land use planning does not operate in a vacuum but rather operates within a social, political and economic context.

Figure 3: Reconceptualization of Cross-border Environmental Planning



Source: elaborated by the author.

Land use decisions are important to consider due to the fact that they have a direct impact on the natural environment. Land use decisions relate to the location, density, compatibility and impacts of activities in urban space. For instance, lower densities will generate more traffic due to the fact that people will travel longer distances to commute to work or shop. Zoning as a land use tool separates activities that are incompatible, leading to separate places of residence, places of work, and retail districts, and contributing to more traffic thereby affecting air quality and so on. Decisions as to where to locate local undesirable land uses (LULUs), such as wastewater treatment plants, landfills, and polluting industries (e.g. copper smelters, oil refineries, etc.) will have an impact on public health and safety. Land use decisions with regard to stormwater management and drainage will not only affect water sources and quality but also public safety and health.

Land use planning and policy at the U.S.-Mexico border has been fragmented and little or no coordination exists. For many years, land use decisions have been implemented without taking into consideration cross-border spillovers and externalities. Given the limitation of space here, I only emphasize a few aspects of land use planning policy.[20] There are a number of activities placed right at the border that support this claim; for instance, under cohesive and unified land use planning, zoning would mean that a smelter or wastewater treatment plant would not be allowed next

[20] For a more detail analysis of land use planning at the border see Peña (2002) & Azuela (1989).

to a residential development. However, there are several examples of incompatible land uses right at the border; for instance, in Tijuana in the Playas area, there is a bullfight arena next to a wetland reserve on the U.S. side; in El Paso, Texas the ASARCO smelter is located right at the border while on the Mexican side, residential land use was allowed, even though this was the result of squatting.

Since the terrorist attacks of 09/11, U.S. focus has been placed on national security, and federal and local interests have begun to clash overthe environment and land use. There have been studies (Cordova & De La Parra 2007) documenting the environmental impacts of the border fence such as the fragmentation of ecosystems that are wildlife corridors in the Sonoran and Chihuahuan desert.

Homeland security policies are qualitatively different since historically the federal government was reluctant to override or challenge local governments' police power to implement land use policies, whose objectives include environmental protection. However, this has changed with the passage of the Real ID Act (PL 109-13) in 2005 by the U.S. Congress. Section 102 of this Act states that:

> "Notwithstanding any other provision of law, the Secretary of Homeland Security shall have the authority to waive, and shall waive, all laws such Secretary, in such Secretary's sole discretion, determines necessary to ensure expeditious construction of the barriers and roads under this section." [21]

The U.S. Congress approved the construction of a fence along significant portions of the approximately 2000 miles of border between the US and Mexico. As noted by the Good Neighbor Environmental Board (GNEB, 2007:13) the Real ID Act waives requirements of federal laws in the U.S. such as NEPA, the Endangered Species Act, Coastal Zone Management Act, Clean Water Act, National Historic Preservation Act, Migratory Bird Treaty Act, Clean Air Act, and Administrative Procedures Act. This policy clearly puts environmental and national security goals on a collision course.

The Real ID Act prioritizes safety over the environment; in some ways, border localities' police power granted by the 10th Amendment redefines priorities, meaning citizens' personal safety is placed above environment or wildlife. As discussed previously, land use policy is an important tool for achieving a better built environment that would guarantee better environmental quality.

[21] 109th Congress (2005-2006): H.R. 418. http://thomas.loc.gov/cgi-bin/query/F?c109:3:./temp/~c109cvnWFP:e11226: [Accessed November 3, 2010].

However, the policy of waiving federal requirements affected the ability of local governments and federal agencies to achieve the environmental goals set by Border 2012. In essence, there is an implicit assumption that national security and the environment are incompatible.

Globalization, environment and cross-border spaces

The rescaling of political territorial institutions (Brenner, 1999) as an outcome of globalization is an issue I explore in order to understand the institutional architecture and the changes that take place at the U.S.-Mexico border. The border environment is perhaps one of the few policy areas, other than trade, in which this rescaling process has been prominent.

I argue that economic integration forced the U.S. and Mexico to adopt changes in the institutional architecture or regime that not only would pay attention to common pool resources issues, but also reconceptualize and retool the risk management regime. This change of regime regarding risk management led to the creation of a new set of institutions, such as BECC, which were embedded with a different meaning of border space. The border space was transformed or rescaled from a notion of absolute space (e.g. the border as a dividing line) towards a more relational space (e.g. binational epistemic community and global citizenship). This means that the state relinquished part of its sovereignty to a transnational bureaucracy whose mandate is to manage cross-border environmental risks. The planning practice adopted by this transnational bureaucracy changes from a top-down expert-driven approach towards a more collaborative bottom-up approach that places emphasis on community input; knowledge is produced through communication that flows across borders. In other words, policy is developed through a communicative rationality and inter-subjective process (Habermas, 1984; Healey, 2006). Thus, problems at the border are no longer technical issues, but problems that are socially constructed through argumentation and debate to define a situation,where global citizenship plays a key role (Pacheco, 2006).

Cross-border planning in general, and environmental planning in particular, have come a long way in the past few decades on the U.S.-Mexico border. The environment is an issue that galvanizes stakeholders across borders and builds a sense of transnational community. The United States and Mexico, despite their differences on many issues (e.g. immigration, the war on drugs, security, etc.), have found common ground on the environment, making considerable progress. The IBWC and BECC leadership have been key to the construction and expansion of environmental infrastructure wastewater treatment plants; some binational ones such as those in San Diego, California-Tijuana, Baja California; Nogales, Arizona-Nogales, Sonora, and other more local ones such as Nuevo Laredo, Tamaulipas, and Ciudad Juárez, Chihuahua.

The Border 2012 Program is a good example of a comprehensive cross-border cooperation effort between the two countries. Programs such as Border 2012 are necessary if cross-border planning is to be undertaken. It is therefore important to point out some of its shortcomings in order to improve future cross-border planning in order to make it more effective in achieving the environmental goals previously mentioned.

Environmental policy at the border has overlooked land use planning as an important tool to achieve the environmental goals set by Border 2012. It isessential to incorporate a mechanism that will allow better intergovernmental coordination and cooperation on land use planning policy. It is clear by looking at Figure 2 that urban policy or land use are absent from the border-wide groups, policy forums and task forces responsible for operationalizing and translating goals into actions.

Border 2012 placed greater emphasis on vertical intergovernmental coordination and not enough on horizontal intergovernmental coordination. That is, as a program it focuses heavily on coordination among the different levels of government federal-state-local, such as EPA and SEMARNAT efforts to coordinate with environmental agencies at the state level in order for border localities to comply with national standards or other standards. There is not enough emphasis on horizontal coordination that would focus on inter-local cooperation of peer governmental or local agencies. It is important to bring together local agencies to cooperate and coordinate policies that directly or indirectly have a land use component. Local governments are poorly equipped, legally speaking, to be more proactive due to constraints ontheir capacity to undertake international treaties and accords (Peña, 2002; Peña, 2007a). It is important to replicate in other areas more of the successful contingency plans that are the result of cross-border planning at the local level, since coordination of land use policy is key to a healthy environment.

For instance, Metropolitan Planning Organizations (MPOs) in the U.S. need to coordinate with planning agencies in Mexico such as CAPUFE with regard to cross-border transportation; planning departments and agencies need to be more proactive in terms of cross-border impacts of land use decisions. BECC has the potential to be the institutional mechanism that would serve the function of a regional metropolitan planning organization that would facilitate cross-border urban policy.

Lastly, environmental issues are among the few issues on which the U.S. and Mexico agree regarding common goals and objectives. However, the main challenge is not whether the two countries agree on the goals but rather whether they can agree on the institutional design that would work best within the constraints of national politics. It is important to keep adjusting and fine-tuning institutional designs and programs. As Mumme (1992) suggests, we need to keep in mind

what is good and not aim for what is perfect. Environmental management is an incremental work in progress.

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