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## Indigenous Groups of Mexico's Northern Border Region

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### INTRODUCTION

The indigenous cultural heritage of Mexico's northern border region includes native tribes—relatively small, rural populations living on communally held ancestral lands—and migrant indigenous groups—larger populations of indigenous descent living in urban areas or agricultural settlements, usually without a community land base. This chapter examines the impact of the border on the environments of both native and migrant groups within the Mexican border region, which is defined as the 100-kilometer (km) zone south of the U.S.-Mexican international political boundary.

Just as this definition of the border region is problematic when considering ecosystems, watersheds, and other natural configurations, it likewise leads to arbitrary distinctions when discussing the indigenous peoples of the border region. For example, the territory of some groups, such as the Tohono O'odham (referred to as Papago in Mexico), extends beyond the 100 km zone. People in this tribe also maintain constant contact with other closely related indigenous peoples beyond the border region. Other groups, such as the Paipai and the Kiliwa of Baja California, live outside the 100 km range but are closely tied culturally, socially, politically, and economically to indigenous and non-indigenous populations within the range. The

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Pai, Yaqui, and Pima are closely related groups on both sides of the border, but their entire territories are north and south of the 100 km designation. For migrant indigenous groups, the concept of the border region is even more problematic, as their residences may range from staying a few hours or days in one place to permanent settlements of transplanted ethnic *colonias* (neighborhoods that sometimes lack access to utility services) in urban areas such as Ciudad Juárez or Tijuana.

In spite of these problems, the 100 km limit has the advantage of bringing into focus a few rural native groups and urban migrant groups whose environments are directly affected by the border. While this chapter should not be construed as a complete vision of the impact of the border on Mexican tribes and their environments, it will examine key issues and indicators of region-wide significance and identify some of the many missing components to guide future research and policy. Perhaps the most consistent finding of this study is the notable lack of published or reliable baseline information—particularly quantitative data such as that used for indicators—for Mexico's border tribes and their environments. The data that exist are dispersed, embedded in databases, or simply unpublished, and would require a major study to compile and synthesize.

Mexican federal government agencies do provide important sources of information, although none offer datasets specific to indigenous people of the border region. The National Commission for the Development of Indigenous Peoples (in Spanish, Comisión Nacional para el Desarrollo de los Pueblos Indígenas, or CDI), until recently known as the National Indian Institute (in Spanish, Instituto Nacional Indigenista, or INI), administers federal programs designed to assist indigenous peoples. The CDI website (<http://www.cdi.gob.mx>) includes monographs on many tribes, including the Kikapu and Papago, a socioeconomic database, and other useful information. The National Institute of Statistics, Geography, and Information (in Spanish, Instituto Nacional de Estadística, Geografía e Informática, or INEGI) (<http://www.inegi.gob.mx>) offers statistical and geospatial data. The Secretariat of Environment and Natural Resources (in Spanish, Secretaría de Medio Ambiente y Recursos Naturales, or SEMARNAT) (<http://www.semarnat.gob.mx>) has an environmental database

and information on environmental conditions and programs involving indigenous communities; however, there is no tribal program such as the one administered by the U.S. Environmental Protection Agency (EPA). The Secretariat of Health (in Spanish, Secretaría de Salud) compiles information based on monthly reports from its doctors throughout the nation and synthesizes this information into the National Health Information System (in Spanish, Sistema Nacional de Información en Salud, or SINAIS) (<http://www.salud.gob.mx/index.html>); this includes information specific to indigenous communities.

Another important source of information is the Southwest Center for Environmental Research and Policy (SCERP) (<http://www.scerp.org>), which has commissioned specific studies on border tribes, including "Indian Groups of the California-Baja California Border Region and Border Environmental Issues" (Kilpatrick, et al. 1998). The Native Cultures Institute of Baja California (in Spanish, Instituto de Culturas Nativas de Baja California, or CUNA) (<http://www.cunabc.org>), a Mexican non-profit association working with the indigenous tribes of the peninsula, has published several studies of baseline environmental information and sustainable development in Baja California's Kumiai, Cucupá, Paipai, and Kiliwa tribes. Back issues of the journal *Borderlines*, which include several articles on issues facing border tribes, can be visited at the Americas Program website (<http://www.americaspolicy.org>).

## NATIVE TRIBES OF MEXICO'S BORDER REGION

The four native indigenous groups with a permanent land base living within 100 km of the border, followed here by their U.S. nomenclature, are the Kikapu (Kickapoo), Kumiai (Kumeyaay), Papago (Tohono O'odham), and Cucupá (Cocopah). All these groups are directly related to tribal groups in the United States, some continuing to inhabit ancestral territory that was divided by the U.S.-Mexican border and others having been separated from their U.S. counterparts as a result of migrations and other historic processes subsequent to European contact. These groups are primarily rural and have communal land holdings; in many cases, some

tribal members migrate seasonally or permanently to nearby towns. Often, those who remain on communal lands retain indigenous knowledge of traditional environmental management (including hunting, gathering, and fishing strategies), and this increases their possibilities for survival as they adapt to challenging economic, environmental, social, and political changes.

### *Kikapu*

The Kikapu of Coahuila are part of an Algonquin-speaking tribe of northern origin that also inhabits lands in Oklahoma, Kansas, and Texas (Hays 1996a). The Mexican Kikapu live primarily around the town of El Nacimiento de los Kikapúes, located in the municipality of Melchor Múzquiz, Coahuila. According to INI (2003) and the National Council on Population (in Spanish, Consejo Nacional de Población, or CONAPO), there were 339 Kikapu speakers in 1995 and only 138 in 2000 (this may reflect migration patterns when each census was taken; also, many tribal members may not be speakers). They live on approximately 7,022 hectares of *ejido* land, 6,500 hectares of which are used for cattle grazing and 500 of which are used for the cultivation of wheat, oats, corn barley, beans, and squash. Water for drinking and other domestic uses, as well as irrigation, comes from the springs of the Sabinas River; drinking water is brought directly from the source while the rest of the water is channeled into a canal that flanks the community.

Hunting has long been an important economic and ritual activity for the Kikapu. Wild nuts and chilies collected from communally owned wild groves are important natural resources that are gathered for sale. Firewood is the main source of fuel, although natural gas is also brought in tanks from nearby towns. Some families use gasoline-fueled generators or oil lamps (Embriz Osorio 2003). Since 1832, the Kikapu have enjoyed the right to pass freely across the border and although they have had to defend their border crossing rights, they are probably less impacted by the border than any of the other border tribes (Hays 1996a). Telephone, telegraph, mail, and health services are not available in the community; for these the Kikapu must go to the county seat.

## *Papago*

The Papago (known as Tohono O'odham and Hia'ched O'odham in Arizona) have traditionally been agriculturalists. For centuries they have raised beans, corn, teparies, and other plants adapted to the arid desert of northern Sonora and southern Arizona. During the dry season (winter) they focus on hunting and gathering. Even today, the hunting of deer and gathering of saguaro fruit and other wild foods has both economic and ceremonial importance for the Papago. Their traditional territory was bisected as a result of the Treaty of Guadalupe Hidalgo of 1848 and the Gadsden Purchase of 1853. Today, approximately 1,500 tribal members (Taliman 2001) live in a number of villages and towns of Sonora. According to the INI socioeconomic database (2003), there were 142 native-language speakers in 2000. Unlike their northern counterparts who live on the second largest reservation in the United States, the Mexican Papago have lost most of their traditional land base to *mestizo* (non-Indian heritage) ranchers and farmers and have retained less than 729 hectares (Hays 1996a). Many Papago have migrated to nearby towns and cities in search of jobs.

According to INI, in Papago villages, "infrastructure and public services are practically non-existent except in Quitovac where electricity is produced by a small generator. Water is insufficient; it is extracted from hand-dug wells that often show a high level of salinity. The nearest telegraph, telephone and mail services are in Sonoyta, Caborca and Puerto Peñasco" (Ortiz Garay and Saldaña Fernández 2003).

## *Cucapá*

The Cucapá have long lived in the fertile delta region of the Colorado River and the surrounding desert areas, practicing both flood-plain agriculture as well as hunting, gathering, and fishing. Closely related to the Kumiai and other Yuman-speaking groups of Baja California and Arizona, most Cucapá today live in the settlement of El Mayor Cucapá, some 56 km south of Mexicali, and in Pozas de Arvizu and San Luis Río Colorado, Sonora. Their Cocopah

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relatives live primarily in Somerton, Arizona. INI (2003) census data indicates that in 2000, there were 178 Cucapá speakers in Mexico.

Over the last century, the Cucapá have been drastically affected by the many changes in the upstream uses of the Colorado River's water, which have resulted in floods, drought, salinity, or contamination. The Cucapá land base is the most extensive of all the indigenous communities of Baja California, totaling 143,000 hectares. However, much of it is parched desert without the potential for agricultural or livestock activities. A large part of this land is the usually dry bed of the Laguna Salada, which has been greatly affected by fluctuations in the quantity and quality of water flowing in from the Colorado River. In years when sufficient water is released upstream, the lake fills and the Cucapá are able to practice traditional fishing activities. Yet, contaminants either from the river itself or from toxic waste dumped within the watershed have affected the fish, as has stagnation caused when fresh water no longer flows into the lake. Both of these situations have caused the deaths of large numbers of fish. Some illegal dumping of toxic materials into the lake watershed has been reported by tribal members (Wilken 2001).

El Mayor does have basic water and electric services, but water quantity and quality are serious concerns. Economic activities include fishing, handcraft production (primarily beadwork, bark skirts, and other traditional arts), wage labor in neighboring communities, tourist services, and use of natural resources such as sand and stone (Wilken 2001).

### *Kumiai*

Traditional Kumiai territory originally extended from around Escondido in California to south of Santo Tomás in Baja California. The Kumiai were hunters, gatherers, and fishers who managed a variety of coastal, inland valley, and mountain ecosystems. Like the Papago, the Kumiai of Alta and Baja California saw their lands divided into separate countries after the Treaty of Guadalupe Hidalgo.

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Today, Mexico's Kumiai live primarily in four rural communities—Juntas de Nejí, San José de la Zorra, San Antonio Necua, and La Huerta—with a land base of more than 38,500 hectares and a total population of approximately 600 (Wilken, et al. 1998). Several unrecognized traditional Kumiai settlements also exist, including Peña Blanca, Aguaje de la Tuna, and San José Tecate. INI census data indicates that there were 243 Kumiai speakers in Mexico in 2000. The Kumiai have developed diversified economies that include cattle ranching, agriculture, handcraft production, seasonal wage labor, and natural resource use. Although Mexico's Kumiai are economically disadvantaged in comparison with their U.S. Kumeyaay relatives, they are rich in terms of traditional knowledge and are often invited to teach basketry, language, plant uses, and other traditional arts to Kumeyaay students in the United States. Unfortunately, this vital transfer of traditions has been severely limited by the difficulties the Mexican Kumiai have experienced in acquiring the necessary U.S. work permits.

A study of water quality in the Kumiai communities found that most drinking water came from untreated surface water. The wells that exist are usually hand-dug and unsealed. Water is often stored in buckets or drums within homes. (Wilken-Robertson 1996). In San Antonio Necua, a public health study (Coates Hedburg 1999) (See Chapter VII) and a medical anthropological study (Fleuriet 2002) both examined environmental factors in illness among the local population. Rivera Medina (2000) conducted a Master's thesis that examined traditional uses of natural resources.

Only one of the four Kumiai communities has electrical services. None have telephone, telegraph, or mail services. Health facilities exist in three of the four communities; government (in Spanish, Instituto de Servicios de Salud Pública de Baja California, or ISSESalud) and volunteer doctors make occasional visits.

## BORDER NATIVE INDIGENOUS GROUPS: CLUSTERS AND INDICATORS

### *Tribal Governance and Representation in Regional Research, Planning, and Policy*

Although they are too often overlooked or ignored by federal, state, and local governments, all border tribes have their own governments that may include both traditional and elected authorities. The former have evolved to meet the changing leadership needs of tribes over hundreds or thousands of years; the latter (*comisarios*, or elected chiefs) are often an interface between tribes and non-Indian governments. Most tribes hold regular community *asambleas*, or meetings, to discuss issues and make decisions. Like all political systems, these mechanisms are not without their problems. For example, some tribes may have two opposing groups with two separate governments. Nonetheless, these forms of governance are critical points of articulation between tribes and their authorities and municipal, state, and federal governments. All too often, governments and institutions disregard these mechanisms or give undue authority to self-appointed “representatives.” True representatives should be designated by their communities through a town meeting or by an elected chief or traditional authority with the knowledge of the community.

Regional councils exist in some of the border tribal areas. One example is the Baja California Intertribal Council, which includes elected and traditional authorities representing the Kumiai, Paipai, Kiliwa, and Cucupá tribes at a state level. Sonora and Chihuahua also have regional councils that represent all or part of tribal nations in those states.

Appropriate indigenous representation in regional research, planning, and policy development is itself a significant indicator of community involvement. However, this elusive goal is rarely met because there are special circumstances that need to be considered to facilitate tribal participation. Time must be allotted for meeting with the tribe, providing clear information, allowing for internal decision-making processes to take place, and ensuring follow-up. If

tribal representation is requested, the time and expense that representation implies should be considered. Since few tribes have telephone or mail service, communication is slower and more costly, usually implying several trips to and from other communities. Tribal funds for travel, communications, computers, and other standard operating expenses of governments are often extremely limited or non-existent. Furthermore, most tribal authorities also work at regular jobs, so a day off to attend a meeting or participate in a planning workshop means a day of lost wages. In spite of these challenges, fostering tribal participation has the potential to strengthen the effectiveness of regional planning and policy processes and avoid many problems in the long term.

Historically, the Mexican federal government's relationship with tribes has been based on the idea that all Mexican citizens share the same rights and, therefore, indigenous groups should not be treated differently. Unfortunately, this policy has meant—among other things—that Mexican tribes have been glaringly unrepresented in the EPA's Border XXI process. This situation is said to be changing under the continuation of that program, Border 2012.

### *Economy, Biodiversity, and Sustainable Development*

Due to the arid climate throughout the border region, most of the original native inhabitants developed hunting and gathering economies, except in areas where rivers provided sufficient water for the development of irrigated agriculture. Traditional indigenous environmental management involved maintaining or propagating flora and fauna beneficial to humans. Political and economic changes have led to the drastic reduction of tribal territories, and consequently, changes in land use, including the abandonment of traditional management practices over wide areas (Shipek 1993).

Because of demographic pressures since European contact, native groups have lost much of their original land base, especially valuable agricultural lands. Native groups have adapted to the regional pastoral cattle ranching economy that has allowed them to extract value from non-agricultural lands. However, extensive cattle raising has a variety of impacts on wide areas, including the reduction of vegeta-

tive cover, accelerated soil erosion, and the introduction of invasive species. Mexican government programs have often focused on agricultural projects that involve the total removal of vegetative cover and the establishment of irrigation systems. Many of these projects have failed, leading to desertification. Some groups, such as the Cucapá and the Papago, like other groups of the Southwest, have long cultivated plants adapted to the arid climate, including corn, beans, teparies, squash, and gourds. In some cases, hunting, gathering, and other traditional or innovative uses of natural resources continue as survival strategies in a diversified economic base. The case of the Papago illustrates this diverse adaptive strategy—economic activities include work in the mines and on non-Indian ranches, the sale of wood and handcrafts (basketry and pottery), small-scale commerce, and wage labor in the cotton fields (Ortiz Garay 2003).

Biodiversity values remain fairly high in many native communities. Invasive species, particularly related to cattle ranching and agricultural activities, have been little-studied, and in some cases, such as with mustard, tamarisk, and castor bean, may be perceived as useful by tribal members. In most native communities, natural living resources remain in a fairly good state of conservation due to the remote nature of areas and infrequent access to government programs and capital for economic development projects that result in large-scale changes in land use (Escoto 2000). Demographic pressures from outside and inside the communities are the primary pressure on living resources. Encroachment on tribal lands always involves an interest in appropriating and exploiting land, water, or living resources. Economic pressures from within communities may lead to overexploitation of resources, including overgrazing, unmanaged firewood gathering, and fencepost cutting. Cattle ranching has had the farthest-reaching affect in many communities, resulting in erosion, desertification of riparian areas, and some loss of vegetative cover when not carefully managed (Ahumada Cervantes 1999).

Traditional knowledge of the environment and its natural resources allows many indigenous groups to not only survive, but seek new options for living off the land. These include the harvesting of yucca, jojoba, sage, and basketry plants. Handcraft production—originally used for domestic purposes or traded with other

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groups—that uses natural resources has been adapted to the modern cash economy (Wilken 1998; Rivera 2000). Hunting of bighorn sheep and deer was traditionally part of indigenous subsistence strategies. But today, expensive permits are required and favor wealthy U.S. and Mexican citizens—there is no benefit for tribes. Poachers also take an unknown amount of game, which affects faunal populations. The impact of undocumented worker migration and drug trafficking activities on the environment of the border region is little understood or documented.

Rather than involving the groups to provide them with new options for sustainable development, biosphere reserves often limit tribes' access to traditional use areas. Hays (1996b) points out that “biosphere reserves and other mechanisms for protecting ecologically sensitive areas have proven to be barriers to indigenous access to traditional homelands, whether in Mexico or the United States. Federal efforts to shield such zones from environmental degradation have also effectively denied Native peoples the rights to collect traditional food and medicinal and ceremonial plants.” In the northern Gulf of California, Cucapá fishermen charge that the biosphere reserve has drastically limited their ability to fish in traditional areas (Franco 2003). Authorities, on the other hand, claim that some Cucapá engage in illegal business practices by simply selling their permits to commercial fishermen. Similar problems exist with the Papago (particularly the Hia'ched O'odham) and the Pinacates reserve (Hays 1996b). As a result, the Sonoran Desert Alliance, a non-governmental organization (NGO), has worked to “increase ... indigenous participation in the planning and management of federally protected Native homelands” (Hays 1996b).

An approach that avoids these pitfalls are conservation easements with tribes in which sustainable development activities benefiting communities—including ecotourism, sustainable harvesting of natural resources, and research field stations employing tribal members—are supported in exchange for conservation and traditional management of tracts of tribal lands. Wetlands restoration and reforestation projects, particularly those focused on yucca, plants used in basketry and other plants that can be used for sustainable development, have already been carried out on a small scale through collaborative efforts between tribes, NGOs, and government pro-

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grams. They should be further explored. Ecotourism offers the opportunity to encourage conservation and stewardship of living resources and the landscapes, habitats, and ecosystems in which they occur, while at the same time providing benefits to communities.

Another important opportunity is the establishment of indigenous environmental management programs. Preliminary efforts in this direction have already been undertaken in Baja California, where indigenous community members have been trained in the use of Global Positioning Systems (GPS), Geographic Information Systems (GIS), and basic environmental management techniques through collaborations between CUNA, SCERP, Universidad Autónoma de Baja California (UABC), and the communities themselves. Centers for indigenous environmental management have the potential to provide tribal members with the technology and technical expertise necessary to drive indigenous sustainable development initiatives in tribal lands.

### *Air*

No indicator data for any of the border native groups could be found on air emissions inventories and ambient monitoring, visibility measurements, cases of asthma as measured by hospital visits, or ambient air concentrations of select criteria air pollutants. Except for the dust raised by the ubiquitous dirt roads that service native settlements, air quality appears to be excellent in most rural indigenous communities of Baja California. Only the Cucapá community has been affected by the ever-expanding air pollution of the Mexicali and Imperial Valleys. Good air quality is one of the valuable resources for ecotourism and conservation projects in native communities. Well-preserved, oxygen-producing forests and vegetative cover provide a valuable environmental service to the greater regions.

### *Water Quantity and Quality*

Data on measurable indicators of water quantity and quality are practically unavailable, except in Baja California. Among rural native communities, agricultural use of water is generally limited to

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small-scale, traditional agricultural practices adapted to arid conditions. Groups like the Papago and Cucupá have lost access to most of their traditional lands and water for irrigation. Hays (1996a) also cites the example of the Kikapu in the 1940s: "protracted drought and excessive groundwater pumping by the American Smelting and Refining Company (ASARCO) left the Kickapoo unable to support themselves by traditional agriculture." Today, the Kikapu irrigate using channeled water.

Rainfall and natural water production is of great concern to rural native communities as changes in land use—for example, cattle ranching and clearing of natural vegetative cover for intensive agriculture—lead to less rain. Desert tribes such as the Papago have also pointed to the lack of appropriate ceremonials as a factor in drought.

A successful example of a cross-border activity with the potential to increase water supply is the wetlands restoration project carried out by the Campo EPA, CUNA, and the Kumiai community of San José de la Zorra. A sediment retention structure—based on traditional methods of collecting water—works naturally to recharge the community's aquifer.

For native groups living in remote rural locations with small populations, the challenge is to motivate local governments to help develop appropriate infrastructure. Some of the opportunities for communities with low water supplies are traditional agriculture, sustainable use of natural resources based on traditional knowledge (including the harvesting of medicinal and basketry plants), and ecotourism. Given many communities' remote locations, appropriate technology such as solar, wind, and gravity is often cost-effective compared to the expense of connecting to distant municipal systems.

Water quality studies specific to native or migrant communities of the border region have not been carried out, except in Baja California's Kumiai communities. Most communities depend more on surface water than groundwater because the cost of drilling and maintaining wells is prohibitively expensive. Aquifers may not have been tapped due to the high cost of drilling and maintaining wells. Remote native communities tend to have fairly clean sources of surface water or groundwater. Small improvements like fencing surface water collection areas, well seals, backflow valves, and chlorine

bleach can make a significant difference. Some communities do not perceive a need for purification because they are accustomed to local flora (Kilpatrick, et al. 1998).

In rural native communities, water is administrated by user groups. Existing infrastructure is often poor due to difficulties in raising funds for repair and maintenance. Old, broken, or leaking PVC pipes are commonly seen wrapped in rags with water leaking from them (Coates Hedberg 1999).

Among native groups, infrastructure varies from simple wells or surface water where people fill buckets and drums to community-wide water systems where water is available all day or periodically. Pressurized and purified water systems and community-wide wastewater systems are non-existent; generally, gray water is discharged into gardens and human waste is disposed of through outhouses.

Water infrastructure projects in Baja California have been promoted through a collaboration between CUNA and Aqualink, a U.S. NGO. The Border 2012 Program's focus on water quality and health (EPA 2002) represent potential opportunities to work with tribes in Mexico, driving further cross-border collaborations. U.S. tribes have also expressed interest in helping Mexican tribes with water systems.

### *Other Indicators*

Quantitative data on solid, hazardous, and toxic waste; health; emergency preparedness; public safety; transportation; quality of life; and other indicators are not available or would require an extensive interdisciplinary, intersectorial study to compile.

## MIGRANT COMMUNITIES OF THE BORDER REGION

The number of migrant indigenous people along Mexico's northern border is often much greater than that of native populations. A case in point is Baja California, where an estimated 92.8% of the state's 37,000 Indians are migrants (INI 2003; INEGI 2003). It is well known that a large part of the swelling population of the border is made up of migrant indigenous people primarily from central and southern Mexico, but specific statistics of migrant indigenous pop-

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ulation and breakdowns by ethnolinguistic affiliation—let alone environmental data—are not available. Although many ethnically homogeneous *colonias* exist in the border regions, not all indigenous migrants settle in *colonias* with others of their same ethnic group, further complicating the effort to identify them. The demographic databases that exist provide more generalized information organized by state or language. Furthermore, the criteria used by INEGI, INI, and CONAPO to define indigenous speakers or tribal members differ so significantly that INEGI's national census found 8 million indigenous people in Mexico in 2000 while INI and CONAPO found more than 12 million.

Several academic institutions, including Colegio de la Frontera Norte (COLEF), state universities, Colegio de México (COLMEX), and Colegio de Sonora (COLSON), have been carrying out research on migration and indigenous people of the border region. However, only a few, such as Velasco-Ortiz (2000; 2002) have focused on the combination of these factors.

Migrants often establish their residences in cities or agricultural settlements that are much more densely populated than their places of origin. Migrants' marginal economic status often push them into less-desirable areas or to the margins of cities where they may end up in poorly constructed homes in irregular settlements lacking proper planning for basic services such as electricity or piped water. Often these settlements begin as "invasions" in high-risk areas such as canyons and slopes, eventually leading to problems with floods, landslides, and legal disputes. In most cases, urban migrant Indians face the same problems as other non-Indian, marginalized social groups (Pombo 2000). Indigenous migrants living in agricultural camps are exposed to pesticides and a variety of other toxic chemicals, as well as smoke and dust.

Some researchers believe that ethnic identity may provide opportunities for community organization. Many migrants maintain social and cultural ties with their places of origin, often sending significant percentages of their earnings back to their families and hometowns for traditional fiestas. Where monolingualism is a significant factor, environmental education materials may need to be developed in native languages.

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