



**CITY PROFILES NO. 3** 

# NAUCALPAN, MEXICO

**NOVEMBER 2022** 

#### **NAUCALPAN**

# About TUC City Profiles

To fight the climate crisis, cities have to become more sustainable now. Transformations towards sustainability must be based on the specific urban characteristics of each city. An analysis of the current factors that may or may not enable urban sustainability transformations is a first step for developing locally suited strategies.

TUC City Profiles is a series of short reports developed as part of the Transformative Urban Coalitions (TUC) project to share insights into the existing challenges and opportunities in order to address crosscutting urban sustainability transformation and development issues through inclusive climate action in the five Latin American TUC cities.

The following short report summarizes the main findings from a political economy and ecology analysis of Naucalpan, Mexico, describing its main geographic, socioeconomic and environmental characteristics, as well as climate governance set-up. It concludes with suggested entry points for transformative change towards sustainability.

This TUC City Profile was developed by United Nations University – Institute for Environment and Human Security (UNU-EHS) in collaboration with the German Institute of Development and Sustainability (IDOS) and WRI México. It is based on an assessment carried out between February and August 2022.

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Cover image: Informal settlements next to the Hondo river in Naucalpan, Mexico, on April 20, 2022. © ARIANNA FLORES-CORRAL / UNU-EHS

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# **Key Messages**

Naucalpan shares critical sustainability challenges with Mexico City due to geographic proximity, notably those related to transport. Furthermore, deindustrialization, lack of integrated urban planning and climate change exacerbate everyday problems in the municipality, including air and water pollution, poor waste management, inequality and poverty. **Better understanding** the links between these issues could inspire transformative climate action at the local level.

A strategic long-term vision for a more sustainable Naucalpan could build upon existing multilevel collaboration agreements and transnational partnerships. Vertical and horizontal integration and formalization of climate change mitigation and adaptation programmes and projects could help the municipality to bridge fragmented climate agendas, sectoral development projects and short-term administrations.

Naucalpan residents are increasingly recognizing socioenvironmental challenges and conflicts at the local level, as well as the shortcomings of the institutionalized channels for citizen participation. As a result, different informal spaces for citizens to voice their opinions regarding government decisions and projects are emerging in the municipality.

Addressing significant gaps in municipal data, knowledge and capacity regarding climate change is critical to accelerate a transformation towards sustainability in Naucalpan. Furthermore, existing community-led initiatives could be leveraged to anchor climate action and ensure buy-in from different actors.







# 1. Urban Development in Naucalpan

Located just north-west of Mexico City in the adjoining state of Mexico, Naucalpan has enjoyed a particularly advantageous position for industrial development at regional and national scales. The municipality's origins are closely intertwined with industrialization processes that occurred in the Basin of Mexico in the midtwentieth century, which attracted an emergent suburban middle class from Mexico City. By 2020, around 834,400 people lived within Naucalpan's borders across 127 neighbourhoods (colonias), 86 suburbs, 18 villages, 6 industrial parks and 2 ejidos (Instituto Nacional de Estadística y Geografía (INEGI), 2020) (See Figure 1).

However, between 2010 and 2020, the average annual population growth rate in Naucalpan was 0.079 per cent, below the national average of 1.2 per cent during the same period (INEGI, 2020) The region has been undergoing a process of deindustrialization since the early 2000s (Villanueva, 2006; Pérez Corona, Juárez Neri and Montes de Oca Sánchez, 2009; Flores, 2013). This process has entailed a shift from manufacturing to a service economy based mostly on goods' storage and distribution. It has also included a certain degree of informalization, particularly associated with small businesses. Ultimately, this 'reconfiguration' has led to both obsolescence of industrial facilities and real estate speculation in industrial areas (Gobierno Municipal de Naucalpan de Juárez, 2020).

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In Naucalpan, there are six environmentally protected areas, including the National Park of Los Remedios and Naucalpan's Metropolitan Park. In addition, there are several important water bodies, including the Madín Dam (Presa Madín). This reservoir is key to the local water supply for industrial, garicultural and human consumption but suffers from acid rain, illegal sewage discharge and solid waste pollution. There is also the Hondo River (Río Hondo), a 17-km intermittent affluent that has been used as open sewage, implying risks related to flooding and the health of nearby settlements. At least 268 informal settlements have been identified in Naucalpan, and they are estimated to host around 9,000 families, many of which live on the banks of the Hondo River (Centro Mario Molina, 2014).

Proximity to the Mexican capital has represented a double-edged sword for Naucalpan. While potentially providing economic opportunities, it exacerbates problems related to water management and pollution, inadequate waste management, inefficient road infrastructure and public transport, and air pollution, among other issues. Basic infrastructure, namely water, sewage and electricity, covers most of the urbanized land in Naucalpan. Insufficient or inadequate provision is mainly observed in formal as well as informal low-income settlements. The water pollution problems are partly caused by a combination of the sewer system that conveys both surface run-off/ drainage and sanitary sewage (Gobierno Municipal de Naucalpan de Juárez, 2020).

Waste management in Naucalpan is covered by the Santiago Tepatlaxco Metropolitan Sanitary Landfill, with a capacity of 900 tons per day. It has been the only authorized site for urban waste deposits since 2006. Across the city, there is also the informal practice of recycling different materials (plastic, tinfoil, etc.) as a livelihood. However, numerous unauthorized landfills are emerging across Naucalpan, charging fees to dispose of local organic waste but failing to provide adequate waste treatment. Furthermore, in the wake of the 2017 earthquake, several illegal rubble dumps were created in canyons to collect waste from local neighbourhoods in Naucalpan, as well as from Mexico City. It is estimated that around 20-25 per cent of Naucalpan's waste ends up in these irregular dumpsters or is transported outside city limits by private trucks (Centro Mario Molina, 2014; Gobierno Municipal Naucalpan de Juárez, 2020).

Naucalpan's road infrastructure is determined by its position in the metropolitan area, largely following the highways that connect Mexico City to the rest of the state. The city lacks an efficient integration of primary and secondary roads, which results in poor local connections and competition between urban and long-haul transport for the same roads, resulting in traffic congestion and poor road conditions (Gobierno Municipal de Naucalpan de Juárez, 2020). Another challenge concerns the increasing demand for public transport in the municipality (INEGI, 2017). Local passenger mobility in Naucalpan is mainly controlled by private concessions to operators of combis (small vans with a capacity of 15 passengers) and buses that lack the capacity to respond to growing demand, both in terms of units and routes available. Issues like unauthorized buses and shuttles, disordered transit stops, irregular service and insecurity are common in the municipality. In terms of metropolitan connections, the Modal Transfer Center (Centro de Transferencia Modal, CETRAM) and adjacent Mexipuerto Cuatro Caminos represent the main multi-modal transfer stations linking Naucalpan and Mexico City.

Last updated in 2014, Naucalpan's greenhouse gas (GHG) emissions inventory estimates that a total of 1.78 million tons of carbon dioxide equivalent were emitted within city limits in 2012. The energy sector was responsible for almost 75 per cent of total GHG emissions in the municipality, with transport accounting for more than half (52 per cent) of Naucalpan's emissions. In second place was the waste sector (10 per cent), followed by agriculture, forestry, and other land use (8 per cent), and finally, industrial processes and product use (7 per cent) (Centro Mario Molina, 2014) (See Figure 2).

Although Naucalpan-specific data is limited, air quality is closely monitored at the metropolitan level. In 2018, over half of the total number of natural deaths in Mexico City's metropolitan area was caused by a disease or illness that can be directly attributed to or exacerbated by poor air quality (Gobierno de la Ciudad de Mexico, 2021). Because air pollution and GHGs often come from the same sources, cutting GHG emissions in Naucalpan across key sectors could not only help to tackle climate change but also contribute to improving air quality and human health

# Distribution of total GHG emissions in Naucalpan by sector

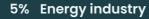
**75%** 

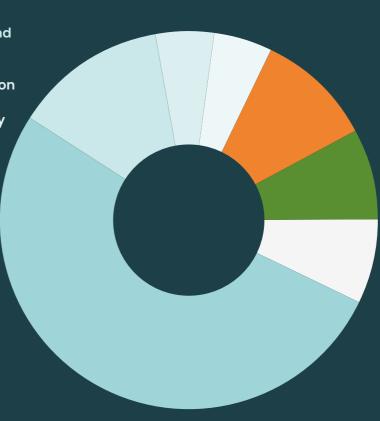
#### **ENERGY**

52% Transport
13% Residential,
commercial an

commercial and services

5% Manufacturing and construction industry





10% WASTE

8%

AGRICULTURE FORESTRY, AND OTHER LAND USE (AFOLU)

7%
INDUSTRIAL
PROCESSES
AND PRODUCT USE (IPPU)

FIGURE 2. (DATA FROM 2012)

Source: Centro Mario Molina, 2014. Note: Naucalpan's GHG inventory follows the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

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# 2. Climate Governance

The institutionalization of climate governance in Naucalpan has largely been stimulated by state and national policy. Municipal climate governance has also been closely linked with the consolidation of urban environmental governance, advancing in three stages:

#### EMERGENCE OF URBAN AND ENVIRONMENTAL GOVERNANCE (1980s-1990s)

Attributions of urban development were delegated to the municipality in 1984, with the first Municipal Urban Development Plan of Naucalpan being published in 1987. Urban development and environmental governance were closely intertwined at that time as they were both under the responsibility of the General Directorate of Urban Development, Public Works and Ecology. This implies that the most intense phase of urbanization in Naucalpan, which occurred between the mid-1950s and the late 1980s, took place without municipal regulatory intervention or adequate urban planning.

## SPECIALIZATION OF ENVIRONMENTAL GOVERNANCE AT THE MUNICIPAL LEVEL (1990s-2000s)

The second Municipal Urban Development Plan was published in 1997, and the third in 2007. Between the two, the municipal government's mandate was incremented with authority to issue land-use licenses. The former General Directorate was split into three areas: urban development, public works and ecology. It was only in 2007 that the Directorate of Ecology was reorganized and transformed into the current Directorate of Environment.

#### MATERIALIZATION OF CLIMATE GOVERNANCE IN NAUCALPAN (2010s)

In 2014, Naucalpan published its first Climate Action Plan (*Programa de Acción Climática del* Municipio de Naucalpan de Juárez 2013-2023, PACMUNA), developed by experts from the prestigious Centro Mario Molina. PACMUNA included the first emissions inventory for the municipality and a total of 11 strategies and 27 actions for climate adaptation, mitigation, education and communication, as well as a prioritization of actions according to a costbenefit analysis. Although PACMUNA was prompted in a centralized top-down manner by national- and state-level climate laws (implemented in 2012 and 2013, respectively), it became a reference for subsequent local policies in Naucalpan. Yet, municipal government efforts to give continuity and articulate PACMUNA's strategies over time have not been consistent.

In 2022, Naucalpan updated its Citizen Participation Ordinance (Gobierno Municipal de Naucalpan de Juárez, 2022). This decree established a set of mechanisms and procedures (e.g. public audiences and participatory budgets) to channel citizens' has lagged behind. Prior to this, there were already formal spaces for citizen participation in urban decisions in Naucalpan, known as Citizen Participation Councils (COPACIS). Presidents of COPACIS are non-paid auxiliary authorities of the municipality, democratically elected in each of the city's neighbourhoods. They mediate dialogue between the municipal government and neighbours around issues of public services and works, among other issues. Moreover, there are mandatory public consultations linked to policymaking processes, but these have faced criticism recently. One such case was the controversy over the latest Municipal Urban Development Plan in 2021, where local actors successfully challenged the legitimacy of the public consultation process and rejected the plan.

As a response to the identified shortcomings of institutionalized participation mechanisms, informal channels for citizens to voice their opinions are becoming increasingly prominent in Naucalpan. Social media along with online petition platforms and documentaries have become key tools used by local groups to empower themselves, organize and bring visibility to their causes. In some instances, social media has even been used as an immediate channel of communication between the municipal government and Naucalpan's residents during conflicts.

Despite lacking explicit links to climate change narratives, recent environmental conflicts in Naucalpan indicate the emergence of movements focusing on socio-environmental issues and advocating for more meaningful citizen participation in urban decisions. These could be entry points for mainstreaming bottom-up climate action in the municipality. Examples include, first, the Hondo River floods in 2017. The floods allegedly resulted from a combination of atypical rains, deficient infrastructure, illegal sewage water discharges from Mexico City and poor municipal waste management, which together caused significant demands into public policies, but implementation damage to over 100 families. This led to debates around the issue of economic compensation. It also raised tensions between inhabitants and municipal government, as well as between the governments of Naucalpan and Mexico City. Second, in 2019, illegal discharges into the Madín Dam caused an invasion of water lilies that covered the dam completely. The issue triggered huge mobilizations of neighbours and the creation of youth activist groups to fight water pollution in Naucalpan (e.g. Preserva Madín). Third, during the COVID-19 emergency, the local non-governmental organization *Bicimixtles* successfully advocated for a temporary bike lane between Naucalpan and Mexico City as an alternative to insufficient and saturated public transport. Local bike activists then lobbied for the permanence of the lane, which was taken up by the municipal government as a strategic project.





The judicialization of conflicts, i.e. the reliance on courts and judicial means, appears to be an effective instrument for mainstreaming social initiatives in urban decision-making processes. This was demonstrated by the litigation process that Naucalpan citizens pursued to annul the 2021 Municipal Urban **Development Plan**. Yet, it presents important shortcomings. Apparently, it is an increasingly popular bottom-up approach with two actor groups for channelling their territorial demands, namely local leaders specializing in science and law, and associations of suburban residents (Asociaciones de Colonos<sup>1</sup>). Individuals in the first group are activists who leverage their expertise to challenge controversial policies and projects and advance particular cases, mostly related to the environment (e.g. Madín Dam). The second group, for instance in the case of the Municipal Urban Development Plan, did not feel comfortable with actions such as redensification, mixed land use and regularization of informal housing – all solutions that in principle could help tackle climate change – for fear of how those would affect their neighbourhoods in terms of public services and resource availability. Such insights bring to light the need to better communicate to Naucalpan residents the linkages between climate change and redensification, as well as other issues at the local level. The municipality also ought to find ways to address how to credibly deal with the perceived negative impacts of a redensification process to win the support of neighbourhoods.

Climate finance in Naucalpan has largely come from international development agencies and federal funds from the National Works and Public Services Bank (Banco Nacional de Obras y Servicios Públicos, Banobras), a state-owned national development bank. International agencies such as the Dutch Entrepreneurial Development Bank, the United Kingdom's Partnering for Accelerated Climate Transitions Programme, the United States' Environmental Protection Agency and the German Agency for International Cooperation have sponsored studies for different municipal strategic projects, namely the Rincon Verde waste management plant (co-funded by Banobras) and the Hondo River rehabilitation and sanitation project. The social safeguards included in projects supported by international development agencies can potentially lead to positive results in climate justice. An example is a social program that aims to incorporate pepenadores (informal collectors of recyclable waste) into the Rincon Verde waste management plant (Sánchez-Cataño, 2019).

There are also several state and metropolitan funds available for strategic projects that could be used to pursue climate change mitigation and adaptation goals in Naucalpan, namely the Programa de Acciones para el Desarrollo and Fideicomiso para Apoyar los Programas, Proyectos y Acciones Ambientales de la Megalópolis. In terms of municipal budgets, not enough information is available for a detailed analysis of climate-related public expenditure by the municipality.

<sup>1</sup> Asociaciones de Colonos date back to the 1960s in Naucalpan and can be defined as middle- and upper-class citizen groups that organize around issues that directly affect their neighbourhoods. They typically have a high capacity for organizing and networking with other actor groups, not least the government.



# 3. Entry Points for Urban Sustainability Transformation

The entry points for transformative climate action identified in Naucalpan can be grouped into five categories:

#### LONG-TERM INTEGRATED VISION

Various development initiatives in Naucalpan have the potential to be transformative but are currently being coordinated by independent actors, following sectoral approaches to address particular urban issues in isolation. These interventions could be complementary and. ultimately, more cost-effective if they were integrated as a broader strategic and collaborative vision for a more sustainable Naucalpan. For this, it is critical to find ways of reconciling the work of different areas of government as well as the needs and views of urban dwellers, including what some might perceive as opposing goals, namely social and economic development and climate action. This is particularly relevant for Naucalpan given that the implementation of strategic projects in the past has been partly driven by remedial policies and changes in the prioritization of climate change and related issues in political agendas at different scales. Efforts to improve both horizontal and vertical coordination among government bodies in charge of climate-related issues at the municipal level, by for example creating a transversal climate governance body, could increase accountability.

#### DATA & URBAN PLANNING

Despite publishing several documents that address climate change, implicitly and explicitly, Naucalpan lacks updated and field-grounded diagnostics; appropriate strategic integration; mechanisms for monitoring, evaluation and follow-up; and fiscal transparency at the local level. There is a serious need to update municipal data concerning environmental management, GHG emissions and other issues, such as funding sources to inform better climate governance and facilitate project implementation. Establishing a planning institute at the municipal level, i.e. a decentralized organism of the municipal public administration, could also address some of the existing data gaps and enable a more integrated and long-term vision for urban planning and development. Short administration periods, high turnover rates of political and administrative staff after elections and varying political priorities represent additional barriers to the implementation of a more strategic approach to climate policy and action in Naucalpan.

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Linking climate change mitigation and adaptation projects to various urban problems, and formalizing them through official agreements at different governmental and non-governmental levels, could help to provide clearer policy signals that might inspire confidence and ownership both among investors and communities. This could, for example, entail formal agreements at *cabildo*<sup>2</sup> involving a federal institution and/or transnational partnerships with international donors. Exploring such synergies may minimize disruptions associated with policy cycles, help bridge both data and funding gaps and lead to more socially just outcomes.

#### AWARENESS-RAISING & CAPACITY DEVELOPMENT

Several gaps in awareness, technical knowledge regarding concrete actions. Existing social and/or capacity regarding climate change issues and solutions have been identified in Naucalpan. It is important that awarenessraising campaigns and capacity development strategies are context-specific and tailored to the different audiences that could benefit from them. For government officials in Naucalpan, more technical know-how regarding climate change could help them move from policy to action. Such knowledge would include how to identify climate issues and prioritize measures/ solutions in their city, as well as some support in updating baseline municipal data, defining and allocating budgets, and creating a monitoring and evaluation system for climate policy. Environmental education and training for citizens should be promoted according to their microcontexts. While garbage dumping and domestic water pollution are the cause of environmental issues in some neighbourhoods, the excessive use of private transport and lack of waste separation might be the most relevant challenges in others. Such climate education initiatives should also address common misconceptions about climate change at the local level (e.g. negative perceptions regarding redensification processes). Programmes to build technical and professional climate-related capacities among local leaders could also be strengthened as they have been a lever for social and environmental change in past conflicts in Naucalpan.

#### **PARTICIPATION**

The controversy around the last Municipal Urban Development Plan is an indicator of the need to rethink the process of public consultations over governmental decisions and actions in the municipality. On the formal side, this could be addressed by better informing and incorporating citizens in such processes. The working groups promoted by the Madín Dam's Basin Commission<sup>3</sup> are an example of recently created spaces to generate dialogue between authorities and local inhabitants to solve water pollution and illegal discharges in this area. Given the complexity of environmental issues in Naucalpan, this could be an enabler of transformative change as it promotes the involvement of several jurisdictions, and thus accountability, as well as agreements divisions and uneven access to formal participation channels in Naucalpan could also be mitigated by mainstreaming informal spaces and opening them to a greater diversity of citizens in order to organize, deliberate and balance various political stakes, interests, technical arguments and cultural beliefs.

#### **BOTTOM-UP CLIMATE ACTION**

Support for bottom-up mobilization and implementation efforts related to climate issues is often limited in Naucalpan, only receiving occasional government aid for punctual interventions. Existing community-led initiatives on reforestation, cleaning of green public spaces, bike tours and schools represent key local climate actions that typically result in social, environmental and economic benefits. Such benefits could be amplified if more broadly supported and ultimately linked to government

A strategic long-term vision for a more sustainable city should build upon existing local community-led initiatives, multilevel collaboration and transnational partnerships.



<sup>2</sup> As in all Mexican cities, Naucalpan's municipal government is formed by two main government bodies. The municipal council (Ayuntamiento) is a collegiate body that meets in cabildo constituted by professional bureaucrats designated by the municipal president and is in charge of public services.

<sup>3</sup> The Comisión de Cuenca Presa Madín is a concerted mechanism among federal, state and local authorities and Madín Dam users, mostly scientists and neighbours

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#### **ABOUT**

# Transformative Urban Coalitions

The Transformative Urban Coalitions (TUC) project is implemented by the United Nations University – Institute for Environment and Human Security (UNU-EHS), the World Resources Institute (WRI) together with its national offices in Brazil and Mexico, the International Institute for Environment and Development (IIED) together with IIED – América Latina in Argentina, and the German Institute of Development and Sustainability (IDOS), with support from the German Federal Ministry for Economic Affairs and Climate Action under its International Climate Initiative.

TUC seeks to shift the sustainability trajectory of cities towards zero carbon emissions by 2050 by altering the deeper social, technological and political structures and systems that are currently reinforcing high-carbon, resource-intensive urbanization. To achieve this goal, this project facilitates the establishment of transformative urban coalitions in five Latin American cities to develop new strategies for addressing local challenges in urban development and inequality while at the same time reducing carbon emissions.

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