THE NORTH AMERICAN DEVELOPMENT BANK (NADB) IS SEEKING COMMENTS FROM INTERESTED MEMBERS OF THE PUBLIC REGARDING ITS INTENTION TO EXPAND THE TYPES OF ELIGIBLE ENVIRONMENTAL INFRASTRUCTURE PROJECTS IN WHICH IT INVESTS.

NADB intends to participate in the development and financing of new types of environmental infrastructure projects that will allow the Bank to further its mission to preserve, protect and enhance the environment of the border region in order to advance the well-being of the people of the United States and Mexico. The new project types will allow the effective investment of the Bank's capital, which was recently doubled by the governments of the United States and Mexico, in needed environmental infrastructure projects.

The new types of projects being considered include:

- Energy storage
- Mobility
- Urban development
- Sustainable buildings
- Sustainable industrial parks
- Green manufacturing
- Manufacturing of green products
- Sustainable food value chains
- Climate change adaptation and climate resilience

All new projects will meet the definition of "environmental infrastructure project" established in Chapter VI, Article II of the NADB Charter, as a "*project that will prevent, control or reduce environmental pollutants or contaminants, improve the drinking water supply, or protect flora and fauna so as to improve human health, promote sustainable development, or contribute to a higher quality of life*." The Charter gives preference to water pollution, wastewater treatment, water conservation, municipal solid waste and related matters.

The Charter was drafted with sufficient latitude and foresight to permit the Bank to grow and evolve its operations in accordance with the changing needs of the border region. The definition of "environmental infrastructure project" is broad by design to permit the Board to revisit the types of projects considered eligible for financing in response to changing environmental needs in the region, as well as technological and financial circumstances. In fact, the Board of Directors has, in the past, twice expanded the types of eligible projects as the conditions of the region evolved. This has allowed the Bank to increase its impact while maintaining a strong focus on the preferred sectors of water, wastewater and solid waste.

To date, NADB has participated in the financing of 280 projects in the amount of US$3.4 billion, resulting in a total investment of US$10.5 billion and benefiting more than 18.5 million border residents. In terms of impact by sector, more than one-third of NADB funds went to projects in the preferred areas of water, wastewater, water conservation, storm

drainage and solid waste, followed by wind energy and solar energy projects representing 28% and 21% of the amount contracted, respectively.[1]

Notwithstanding the progress to date, the U.S.-Mexico border region requires significant investments in sustainable environmental infrastructure. This need can be explained by the following factors: (i) a population of more than 32 million, growing at a faster rate than the national average in both the U.S. and Mexico,[2] (ii) rapid urbanization,[3] and (iii) accelerated economic growth in the border region compared to the respective national average in each country.[4] This growth illustrates the need to expand basic infrastructure and replace aging facilities while also presenting opportunities for investments to improve the environmental performance of all facets of the economy.

The Governments of the United States and Mexico recently agreed to support an increase in NADB's capital. The Bank intends to deploy this capital in the border region by continuing to finance the project types it has traditionally supported and by expanding into new project types that have not been its historical focus. The proposed new project types will continue to address legacy needs in the preferred project areas while including components that increase urban sustainability, resource productivity, and quality of life; engender climate change resiliency; and, in general, support the border region in its transition to a green economy.

By expanding its loan portfolio to new types of projects, NADB will be in a position to increase its retained earnings, which can in turn be allocated to address the needs of vulnerable communities in the border region through its non-reimbursable grant programs for the development and implementation of projects in the preferred sectors.[5] These grants are key to the Bank's efforts to address the priority areas related to water, wastewater and solid waste management in communities where loan financing is not a viable option.

The following table provides a brief description of each new project type and summarizes their expected environmental benefits.

[1] Figures as of March 31, 2021

[2] According to the U.S. Census Bureau, the population in the U.S. border region grew at an annual rate of 1.16% between 2010 and 2017 compared to the national average of 0.8%. In Mexico, the national institute of statistics, *Instituto Nacional de Estadística y Geografía* (INEGI), reported that during the same period the population in the Mexican border region grew at an annual rate of 1.37% compared to the national average of 1.08%.

[3] According to the World Bank, from 1960 to 2018, the urban population in the United States increased from 70% to 82% and in Mexico from 51% to 80%.

[4] According to the U.S. Bureau of Economic Analysis, during 2017 the U.S. border economy grew 2.75% compared to the national average of 1.70%, while INEGI reported that the Mexican border economy grew 2.78% in 2016 compared to the national average of 2.40%.

[5] https://www.nadb.org/infrastructure-financing/grants/community-assistance-program-cap & https://www.nadb.org/infrastructure-financing/project-studies-designs

Table 1: Expected Environmental Benefits of New Project Types

Type	Description	Environmental Benefits (not exhaustive)
Energy Storage	▪ Construction and operation of energy storage facilities, such as batteries	▪ Facilitate integration of intermittent renewable energy sources in the power grid ▪ Reduce emissions of greenhouse gases (GHG) and criteria pollutants by reducing dependency on fossil fuels and by improving energy distribution efficiency
Mobility	▪ Public transportation systems ▪ Infrastructure for non-motorized transportation ▪ Infrastructure for efficient cargo transportation ▪ International border crossings ▪ Multimodal passenger and cargo systems ▪ Infrastructure for using cleaner fuels ▪ Clean and efficient vehicles	▪ Reduce emissions of GHG and criteria pollutants, as well as energy consumption, by optimizing movement of people and goods, including providing cleaner modes of transportation and technologies
Urban Development	▪ Sustainable urban infrastructure and services ▪ Mixed-use development ▪ Transport-oriented development ▪ Re-densification projects ▪ Smart-city elements	▪ Reduce the environmental footprint of urban centers by: - Increasing energy and water use efficiency - Reducing the number and distance of trips - Enhancing environmental services (e.g., stormwater management)
Sustainable Buildings	▪ Construction or retrofitting of residential, institutional, commercial or industrial buildings designed to improve resource efficiency	▪ Reduce the environmental footprint of new and existing buildings by: - Increasing energy and water use efficiency - Supporting waste reduction and recycling
Sustainable Industrial Parks	▪ Construction or retrofitting of industrial parks designed to improve sustainability	▪ Reduce the environmental footprint of industrial complexes by: - Increasing energy and water use efficiency - Supporting waste reduction and recycling
Green Manufacturing	▪ Manufacturing facilities and practices that feature resource and energy efficient manufacturing processes, as well as minimization of pollution and waste	▪ Reduce the environmental footprint of manufacturing processes by: - Increasing energy and water use efficiency - Supporting waste reduction and recycling, as well as minimizing pollution

Type	Description	Environmental Benefits (not exhaustive)
Manufacturing of Green Products	▪ Facilities to produce components for environmental goods and services such as renewable energy generation equipment, electric vehicles, etc. ▪ Manufacturing of more sustainable consumer goods	▪ Support the development of integrated value chains for manufacturing green products and services ▪ Reduce the environmental footprint of manufactured products by minimizing resource use, emissions and waste generated during a product's life cycle
Sustainable Food Value Chains	▪ Agricultural practices and/or equipment that reduce water and energy usage, as well as fertilizers and pesticides ▪ Agricultural practices and/or equipment to reduce erosion, runoff or other forms of pollution ▪ Technologies and processes to reduce the use of resources or generation of waste during food processing, packaging, storage, distribution and commercialization	▪ Promote resource use efficiency and conservation (i.e., water, energy and land) ▪ Reduce GHG emissions by improving agricultural practices ▪ Reduce risk of water pollution by reducing use of pesticides and fertilizers and improving agricultural practices ▪ Reduce inefficiencies in the commercialization value chain (e.g., packaging, transportation and refrigeration)
Climate Change Adaptation and Climate Resilience	▪ Infrastructure to enhance resilience of water resource management, including development of new supply sources, conservation, drought-proofing, etc. ▪ Low-impact green or gray infrastructure designed to adapt to increased extreme weather events (e.g., flooding)	▪ Increase resiliency to extreme weather events, such as drought, floods and heat waves

The following section provides additional detail for each of the proposed new types of projects.

I. Energy Storage

This category is intended to include energy storage projects that facilitate the integration of intermittent renewable energy sources and increase the efficiency of the grid, thereby reducing the reliance on fossil fuels and the resulting emission of GHG and other air pollutants. Such projects will also be key in addressing the need to modernize our electricity grids, as well as to respond to the ever-increasing penetration of renewable energy generators. Given the intermittent nature of renewable energy resources, the services and products provided by energy storage facilities are key to enhancing grid stability and reliability. In recent years, power system operators have been encouraging investments in both stand-alone energy storage facilities and hybrid renewable energy projects that incorporate energy storage solutions in order to take advantage of their dispatchability during peak demand, as well as to improve frequency and voltage regulation, among other

benefits. These new systems are also being used to replace obsolete and inefficient power plants. As this type of infrastructure is integrated into the power grids, system operators will be able to increase the integration of renewable energy sources and reduce the use of fossil-fuel-based power plants.

Investment opportunities in energy storage include large-scale battery storage projects, pumped hydropower and compressed-air systems, among other technologies. Annual energy storage deployments in the U.S. are expected to grow from 0.2 gigawatts (GW) in 2017 to 4.7 GW in 2024.[6] The states of California, Arizona and New Mexico, as well as parts of Texas, are promoting the installation of energy storage projects. Likewise, in Mexico one of the strategic goals of the Special Energy Transition Program is to promote the implementation of energy storage infrastructure.

II. Mobility

The Board of Directors has already approved the certification and financing of vehicles that use cleaner technologies, and there is a broad spectrum of other types of projects under this category that could increase the Bank's impact, improving air quality in the border region. Clean and efficient mobility of both people and goods is fundamental for economic competitiveness and quality of life, especially in urban areas. Mobility is becoming increasingly challenging due to population growth, trends in urbanization and the resulting growth of cities, and a growing dependence on privately-owned vehicles that contribute to air pollution, noise and congestion. This reliance on private automobiles is due, among other things, to the lack of efficient public transportation systems and unplanned urban development, which in turn reduces the demand for public transportation, thus creating a vicious cycle of underinvestment. The resulting deterioration in air quality has led to frequent air alerts in metropolitan areas throughout the border region.[7] Providing clean, efficient and safe means of mobility will also have significant social inclusion and gender equity benefits.

It is well-documented that poor air quality causes significant public health problems and reduces life expectancy, which in turn has economic repercussions. The World Health Organization (WHO) estimates that 31,885 deaths in Mexico in 2016 could be attributed to ambient air pollution.[8] A transition to a more efficient urban mobility model for both passengers and cargo would help to reduce air pollution problems—improving the health and general quality of life of the population—as well as to improve economic competitiveness by reducing congestion and travel times. Moreover, improvements in public transportation systems that incorporate cleaner vehicles in public transportation fleets and allow for swifter, more efficient travel times would lead to a reduction in pollution in the associated urban area. Finally, more efficient, comfortable and safer transportation systems will encourage people to use public transportation in place of privately-owned vehicles.

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[6] Source: Wood Mackenzie Power & Renewables, https://energystorage.org/resources/industry-resources/us-energy-storage-monitor/.

[7] Examples include air quality reports on El Paso, Texas, by the Texas Commission on Environmental Quality (TCEQ); on Imperial and San Diego Counties by the U.S. Environmental Protection Agency (EPA); and on Mexicali, Baja California by the Mexican Ministry of Environment and Natural Resources (SEMARNAT); and reports on the emissions of freight vehicles by the Texas Transportation Institute.

[8] Source: WHO, Public Health and Environment (PHE): Ambient air pollution. Deaths attributable to ambient air pollution (age-standardized), 2016, http://gamapserver.who.int/gho/interactive_charts/phe/aap_mbd/atlas.html.

The types of mobility projects in which NADB could participate include:

(a) *Public transportation systems*: Buses, bus rapid transit (BRT), light rail, metros, etc., including both the vehicles, as well as the urban infrastructure necessary for proper operation and access;

(b) *Infrastructure for non-motorized transportation*: Bicycle lanes, pedestrian walkways, bicycle stations, etc.;

(c) *Infrastructure for efficient cargo transportation*: Transfer stations, low-emission cargo vehicles, efficient logistics merchandise distribution systems, etc.;

(d) *International border crossings*;

(e) *Multimodal passenger and cargo systems*: These systems help interconnect various means of transportation to create a more efficient system;

(f) *Infrastructure for using cleaner fuels in urban areas*: Natural gas fueling stations for natural-gas powered vehicles (NGVs) and recharge stations for electric vehicles; and

(g) *Clean and efficient vehicles*: Converting gas- and diesel-powered vehicles into NGVs; financing for electric vehicles and non-motorized modes of transportation.

III. Urban Development

As stated above, Mexico and the United States are becoming increasingly urbanized, with close to 80% of the population of each country living in urban areas. Population growth combined with rapid urbanization and poor urban planning has worsened conditions for residents in many cities in terms of pollution, access to basic services and green space, mobility and security.

Better urban planning using innovative and sustainable design and construction techniques and incorporating smart-city technology allows for more orderly and sustainable growth of neighborhoods and cities. Moreover, sustainability in urban areas should be comprehensive, addressing technical, economic and social factors, in addition to environmental considerations. Concepts such as mixed-use urban development, re-densification and transportation-oriented development have great potential for increasing access to services and economic opportunities, reducing the environmental footprint of cities and improving mobility. Similarly, incorporating green infrastructure components can enhance the management of water resources and provide open space and aesthetic value.

IV. Sustainable Buildings

The International Energy Agency estimates that, in combination, the buildings and building construction sectors are responsible for more than one-third of global final energy consumption and account for nearly 40% of direct and indirect carbon dioxide (CO_2) emissions.[9] Similarly, buildings consume a significant portion of urban water supplies. Additionally, significant amounts of energy and water, and thus GHG emissions, are embedded in the materials used for construction, as well as during the construction process. Cement and steel, much of which is used in buildings, are some of the most energy- and carbon-intensive industries.

[9] Source: International Energy Agency (IEA), https://www.iea.org/topics/buildings.

Public opinion research conducted by the U.S. Green Building Council (USGBC) found that 32% of the respondents had had "direct, personal experience with bad health associated with poor environments or living situations," demonstrating the importance of building spaces that promote health and comfort.[10] Having more efficient buildings throughout their lifespan offers significant opportunities to reduce resource use and emissions in addition to contributing to economic development and quality of life. There can also be considerable social inclusion implications when translated to the incorporation of eco-technologies in housing.

The design and construction of a sustainable building is based on incorporating interconnected features that promote efficient water and energy consumption, indoor and outdoor air quality, the selection of more sustainable materials and the reduction of waste and hazardous substances, among other benefits. Projects with sustainable building certifications have been shown to reduce energy consumption by 25%, leading to a reduction in CO_2 emissions of up to 34%.[11] A similar reduction in water consumption has been demonstrated, ranging between 21% and 40% depending on the type of building.[12]

V. Sustainable Industrial Parks

This term refers to industrial park projects that incorporate practices for the efficient use of energy and resources, which in turn reduce stress on natural resources, water usage, energy consumption and waste generation and pollution.

NADB proposes to support the financing and construction or retrofitting of sustainable industrial parks and complexes. The design of the parks would be based on the principles of efficient use of resources, energy efficiency and waste minimization. The potential for implementing these types of initiatives along the border is very high, as approximately 53% of industrial parks in Mexico are concentrated in the six border states.[13] Moreover, of the approximately 350 industrial parks located in the Mexican border states—the vast majority of which are within NADB's geographic jurisdiction—some 40% or 143 have been awarded a green certification. Such certifications tend to be either LEED or EDGE.[14] Broken down by state, Nuevo León, Chihuahua, and Tamaulipas host two-thirds of all industrial parks, and, with the exception of Hermosillo and the Saltillo-Monterrey belt, the region's industrial parks are concentrated in the border cities.[15] This concentration stems from the fact that the border region is one of the largest international trade regions in the world, due, to a considerable degree, to the North American Free Trade Agreement (NAFTA) and its replacement, the United States-Mexico-Canada Agreement (USMCA).

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[10] Source: U.S. Green Building Council (USGCB), https://www.usgbc.org/articles/new-usgbc-research-explores-green-building-industry%E2%80%99s-role-highlighting-importance-building.
[11] Source: USGBC, https://www.usgbc.org/press/benefits-of-green-building.
[12] Source: Kats, Greg, "The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force." 2003
[13] Source: Forbes México, https://www.forbes.com.mx/la-franja-fronteriza-con-ee-uu-ubicacion-preferente-de-los-parques-industriales/.
[14] Leadership in Energy and Environmental Design (https://www.usgbc.org/leed); Excellence in Design for Greater Efficiencies (https://edgebuildings.com/).
[15] Figures are based on research prepared by the consultancy firm THREE Consultoría Medioambiental for the benefit of NADB. THREE is a recognized firm that provides services in environmental consulting and environmental architecture.

VI. Green Manufacturing

In 2019 direct industrial emissions accounted for 23% of total GHG emissions in the U.S., making the industrial sector—including manufacturing, food processing, mining and construction—the third largest contributor to GHG emissions in the U.S.[16] The term "green manufacturing" refers to manufacturing facilities, processes and practices that generate reduced environmental impacts or that contribute to the "greening" of production processes via the more efficient use of resources, including energy and water. Green manufacturing facilities incorporate investments in technologies that allow for efficiency gains in resource and energy use and adopt sustainable processes that minimize pollution, waste generation and GHG emissions and support recycling.

Given the environmental benefits of incorporating sustainable industrial practices in the manufacturing sector, NADB proposes to support the financing and construction of projects such as manufacturing facilities or equipment that feature resource and energy efficient manufacturing processes. The potential for investing in these types of projects along the border is high given the high concentration of industrial parks in the six border states, as mentioned in the section above. In 2018, there were 579,828 manufacturing companies in Mexico employing 6.5 million people and representing 18% of GDP, while the Mexican border states accounted for 40% of manufacturing value.[17] In terms of the contribution of sub-sectors to GHG emissions, the largest consumers of energy in 2018 were basic metals (27%) and chemicals (22%).[18] Such industries are intensively located in the Mexican industrial clusters in the border region.

VII. Manufacturing of Green Products

This term refers to the manufacture of products that use fewer natural resources or produce less pollution during their life cycle when compared to conventional products. NADB proposes to support investments in manufacturing facilities and equipment for the production of more sustainable consumer goods or industrial components, which could include equipment for renewable energy and electric vehicles. The potential impact from investing in these types of projects is very high given the concentration of industrial activity in the six Mexican border states. Investments in these types of projects could also foster the integration of sustainable value chains in the United States and Mexico.

VIII. Sustainable Food Value Chains

The demand to feed a growing population has strained ecosystems and natural resources through the different activities of the value chain—from farming, processing and packaging to transportation and storage.[19] Throughout the value chain, large amounts of land, water and energy are used. Some agricultural practices also cause erosion and runoff of fertilizers and pesticides that impact water quality, causing considerable damage to the soil,

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[16] Source: EPA, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#:~:text=In%202019%2C%20direct%20industrial%20greenhouse,the%20Transportation%20and%20Electricity%20sectors.

[17] Source: INEGI, http://cuentame.inegi.org.mx/economia/secundario/manufacturera/default.aspx?tema=E\.

[18] Source: IEA, Energy Efficiency Indicators, https://www.iea.org/reports/energy-efficiency-indicators.

[19] FAO estimates that a third of the world's farmland is moderately to highly degraded, a situation that will continue to worsen despite the need for a 50% increase in food production by 2050 to meet the expected increase in demand (http://www.fao.org/3/i6583e/i6583e.pdf).

watersheds, air quality, climate and human health.[20] Current distribution and consumption patterns generate significant amounts of wasted food, as well as packaging waste, such as plastics.

Approximately 30% of GHG emissions are estimated to be related to food production, with 24% attributable to agricultural practices and their effect on land use (e.g., deforestation), and the remainder to the rest of the supply chain.[21] Moreover, agriculture is water intensive. The amount of water consumed for agricultural purposes in the U.S.-Mexico border region is almost twelve times greater than water used for domestic and commercial activities in the urban areas of the region.[22] As such, agriculture has a particularly relevant role to play in implementing environmentally sustainable practices in the border region, which has limited water resources and is highly susceptible to drought.

Agriculture is an important economic driver in the U.S.-Mexico border region, with modern farming enterprises having a significant impact on the local economies. Incorporating sustainability practices throughout the food value chain is important to maintain the economic opportunities created by this industry while reducing its environmental footprint. It is also important to point out that trends in consumer preferences may favor foods that are produced in a more sustainable manner, thus presenting additional opportunity to create value.

NADB proposes to participate in projects that support incorporating more sustainable practices throughout the food value chain, including the more efficient use of resources (i.e., water, energy and land), low-impact agricultural practices and less generation of waste. These projects may include investments for more efficient irrigation techniques; energy efficiency and renewable energy use; climate-smart agricultural practices;[23] and more efficient food processing, packaging and distribution (i.e., transportation, storage and refrigeration). Some of these investments could also increase yields, produce more valuable crops and reduce the environmental footprint. Finally, a more sustainable model for food production could have significant social implications in terms of employment and nutrition, as well as being a prerequisite for climate change resiliency.

IX. Climate Change Adaptation and Climate Resilience

All the project types described above can play an important role in climate change *mitigation*, i.e., the reduction of GHG emissions. On the other hand, the border region also needs to implement actions for climate change *adaptation,* i.e., how will communities cope with the impacts of climate change as they are manifested in the form of more extreme weather events such as flooding, droughts and heat waves. Given its arid climate, the border region is particularly vulnerable to these threats, which pose significant environmental, social and economic risks.

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[20] In 2004, the WHO estimated that more than 3 million people are hospitalized each year due to pesticide poisoning, which in turn results in approximately 250,000 premature deaths (https://www.who.int/mental_health/prevention/suicide/en/PesticidesHealth2.pdf).
[21] Source: Denkstatt, https://denkstatt.eu/download/13985/.
[22] Source: Journal, *IOP Science*, "Land and water use changes in the US-Mexico border region, 1992–2011," published October 2018, https://iopscience.iop.org/article/10.1088/1748-9326/aae53e.
[23] Source: United Nations World Water Development Report 2020. According to the report, climate-smart agriculture (CSA) is "a recognized suite of well-informed approaches to land and water management, soil conservation and agronomic practice that sequester carbon and reduce GHG emissions." These practices include irrigation and drainage techniques to adjust or extend cropping calendars.

Projects supported by NADB may include infrastructure to enhance resilience of water resource management, including development of new supply sources (such as brackish and seawater desalination, reuse, etc.), water conservation and drought-proofing, among others. In addition, projects to enhance stormwater management, including water capture and storage through low-impact green or more traditional gray infrastructure can reduce risks to lives and property, while enhancing water availability and supply. Finally, projects to enhance environmental services through ecosystem restoration or protection can also help reduce the impacts of climate change while providing important co-benefits, such as access to green areas and the protection of biodiversity.