



NORTH AMERICAN DEVELOPMENT BANK & BORDER ENVIRONMENT COOPERATION COMMISSION YEAR IN REVIEW



MESSAGE FROM MANAGEMENT

In 2016, the North American Development Bank (NADB) and the Border Environment Cooperation Commission (BECC) continued to carry out their mission of promoting the development of environmental infrastructure with the approval of 15 new projects, including a Property-Assessed Clean Energy (PACE) funding program to support energy efficiency, renewable energy and water conservation improvements in the U.S. border region, a second public transportation project for the purchase of low-emission buses in the Mexican border region and five projects to improve solid waste management in 13 communities in the states of Chihuahua and Coahuila, Mexico. Moreover, nine projects were completed, including the first wastewater treatment plant for Hermosillo, Sonora, a city of more than 784,000 residents, and a storm drainage project in El Paso, Texas, which was partially financed by NADB through the Build America Bonds program.

In the area of technical assistance and institutional strengthening, NADB and BECC approved 22 studies, training seminars and other development activities. Of particular note, was the launching of the Emerging and Sustainable Cities (ESC) initiative for Hermosillo, Sonora, the first Mexican border city to adopt this urban sustainability planning tool developed by the Inter-American Development Bank. Additionally, a technical manual for green infrastructure design is being developed for Mexican municipalities to help

them incorporate sustainable elements into public infrastructure projects.

With respect to the integration of BECC and NADB, significant milestones were achieved in merging their organizational structure by incorporating staff from both institutions into integrated teams in each department and thus facilitating the project development process and other administrative functions. Consequently, once the legal merger occurs, the transition is expected to proceed smoothly. Moreover, a joint 2017 budget was prepared in anticipation of achieving full legal integration during the year.

Finally, NADB and BECC recognize the leadership of Gerónimo Gutiérrez, who at the beginning of 2017 was appointed by President Enrique Peña Nieto as Ambassador of Mexico to the United States. We wish him every success in his new role and thank him for his outstanding work as Managing Director of NADB for more than six years.

Likewise, we wish to thank our many partners in the border region for their support during this transition phase and look forward to continuing to work with you in providing improved environmental conditions and a better quality of life for residents along the U.S.-Mexico border.



María Elena Giner
General Manager, BECC




Alex Hinojosa
Acting Managing Director, NADB



SUMMARY OF 2016 ACTIVITIES AND RESULTS

Infrastructure

NEW PROJECTS APPROVED:



- 7 in the water and wastewater sector**, including expansion of the wastewater treatment plants in Reynosa, Tamaulipas and Douglas, Arizona
- 5 in the solid waste sector** for acquisition of landfill operation equipment and garbage collection trucks that will benefit 10 communities in Coahuila y 3 communities in Chihuahua
- 2 in the renewable energy sector**, including a PACE funding program to support energy efficiency, renewable energy and water conservation improvements throughout the U.S. border region
- 1 in the public transportation sector** for a second financing program for the purchase of low-emission buses in the Mexican border region

PROJECTS COMPLETED AND IN OPERATION:

- 4 in the water and wastewater sector**, including a 57-million-gallon-a-day wastewater treatment plant for Hermosillo, Sonora, which has increased treatment coverage from 11% to 100% of the wastewater collected
- 2 in the storm water sector**, including the first phase of a comprehensive storm drainage improvement plan for the city of El Paso, Texas, which is providing better storm water controls to prevent flooding in benefit of 742,000 residents
- 2 in the renewable energy sector**, consisting of the construction of the Ventika and Ventika II Wind Farms in General Bravo, Nuevo Leon, which together are expected to generate an average of 1,033.7 gigawatt-hours of electricity a year, equivalent to the annual consumption of more than 132,600 households
- 1 in the water conservation sector** for improvements in Engelman Irrigation District No. 6 in Hidalgo County, Texas



Financing



US\$169.6 million

contracted

in loans and grants to support 15 projects

US\$146.9 million

disbursed

to support 22 projects scattered throughout eight of the ten border states



US\$1,411 million

outstanding loan balance at the close of 2016,
representing 6.5% portfolio growth

Technical Assistance

US\$971,676

approved by NADB and BECC

to carry out 22 studies, seminars and other development activities

US\$788,508

approved through the Project Development Assistance Program (PDAP)

funded by the U.S. Environmental Protection Agency (EPA) and administered by BECC, for development of 10 water and wastewater projects

US\$761,383

approved through the U.S.-Mexico Border 2020 Program

for 19 initiatives aimed at addressing existing environmental and public health needs along the border



NEW PROJECTS

During 2016, 15 new projects representing a total investment of US\$176.5 million were certified and approved for financing. Although water-related projects remain a priority for NADB and BECC—seven of the projects approved in 2016 are in this key sector—the two institutions continue to explore other opportunities to address critical infrastructure needs in the border region.

Projects Certified	Location	Population to benefit	NADB Funding Approved		
			Type	Amount	
Water and Wastewater Systems					
1	Anthony Lift Station Replacement Project	Anthony, NM	8,700	BEIF	\$ 2.81
2	Wastewater Collection and Treatment Project	Reynosa, TAM	266,853	BEIF	7.08
3	North Alamo Regional Wastewater Collection and Treatment Project	Hidalgo County, TX	1,616	BEIF	1.90
4	Drinking Water System Improvements	Tombstone, AZ	1,380	CAP	0.50
5	Vista del Este Water System Replacement Project	El Paso County, TX	1,068	CAP	0.50
6	Bay Acres Wastewater Collection System and Wastewater Treatment Plant Expansion	Douglas, AZ	17,378	BEIF	7.47
7	Expansion of the Water and Wastewater Systems to the Southwest Area of Town	Nogales, SON	16,701	BEIF	5.26
Solid Waste Equipment					
8	Equipment for Sanitary Landfill Operations	Ahumada, CHIH	11,457	CAP	0.30
9	Equipment for Sanitary Landfill Operations	Madera, CHIH	17,050	CAP	0.30
10	Equipment for Sanitary Landfill Operations	Nuevo Casas Grandes, CHIH	59,337	CAP	0.50
11	Equipment for Sanitary Landfill Operations	Central Region of Coahuila*	345,797	CAP	0.50
12	Equipment for Sanitary Landfill Operations and Waste Collection	Región 5 Manantiales, COAH**	77,800	CAP	0.50
Clean Energy					
13	SEPV Imperial Solar Project	Dixieland, CA	6,436	Loan	11.00
14	Border-wide Financing Program to Improve Water / Energy Efficiency in the U.S.	U.S. border region	-	Loan	50.00
Public Transportation					
15	Border-wide Program for the Purchase of Low-Emission Vehicles in Mexico	Mexican border region	-	Loan	26.25
Total			831,573		\$ 114.87

BEIF = EPA-funded Border Environment Infrastructure Fund

CAP = NADB-funded Community Assistance Program

* Includes the municipalities of Castaños, Frontera, Monclova, Nadadores and San Buenaventura.

** Includes the municipalities of Allende, Morelos, Nava, Villa Unión and Zaragoza.

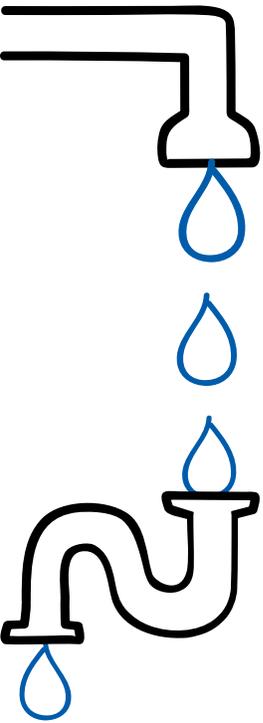
Main Benefits Anticipated

Water Services

- ↳ Improved water quality by reducing arsenic concentrations to permitted levels benefitting 718 households in Arizona
- ↳ Prevention of 5 million gallons a day in water losses from leaks and line breaks benefitting 340 households in Texas
- ↳ First-time access to drinking water service for 2,350 households in Sonora

Wastewater Services

- ↳ 3,930 residential sewer connections to provide first-time service to an estimated 14,851 residents in 2 U.S. communities and 1 Mexican community
- ↳ 10.2 million gallons a day of sewage to be collected for proper treatment
- ↳ 12.0 million gallons a day in increased treatment capacity



Waste Management

- ↳ Proper disposal of 550 metric tons of solid waste per day in sanitary landfills servicing 13 communities with a total population of 2.19 million
- ↳ Improved collection services for 96,000 households in five communities



Air Quality

- ↳ 285 low-emission buses in circulation in 8 communities
- ↳ 5 megawatts of new generation capacity from renewable energy, to displace 4,319 metric tons of carbon dioxide a year



FINANCING ACTIVITY

During 2016, new financing totaling US\$125.0 million was approved for 17 projects, including additional funding for two projects certified previously; financing agreements totaling US\$169.6 million were signed with the sponsors of 15 projects, including eight of the 15 projects approved during the year; and US\$146.9 million in loans and grants was disbursed to support 22 projects in various stages of implementation.

2016 Financing Activity by Program

(US\$ Millions)

Program	Approvals		Signings		Disbursements	
	No.	Amount	No.	Amount	No.	Amount
Loans	4	\$ 96.88	4	\$ 46.77	7	\$ 136.25
BEIF grants	6	25.02	7	21.23	10	10.23
CAP grants	7	3.10	4	1.60	3	0.32
WCIF grants	–	–	–	–	2	0.12
Total	17	\$ 125.00	15	\$ 169.60	22	\$ 146.92

BEIF = EPA-funded Border Environment Infrastructure Fund

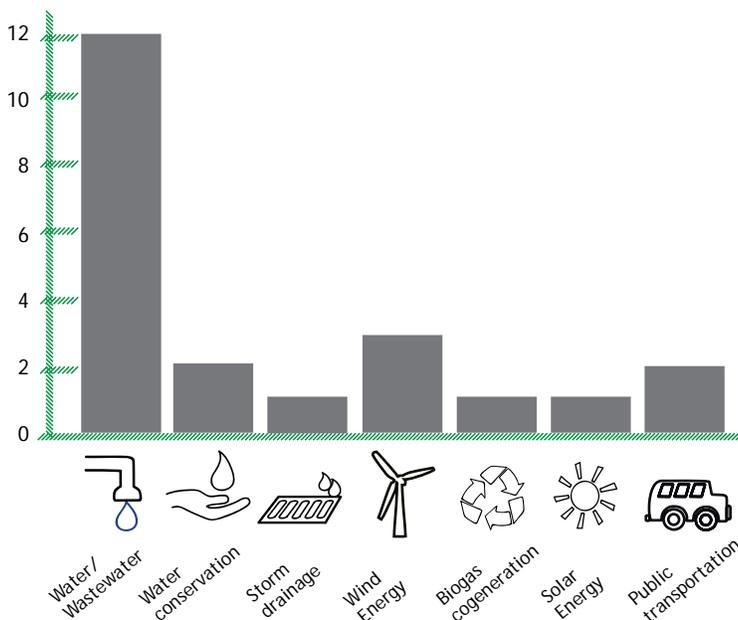
CAP = NADB-funded Community Assistance Program

WCIF = NADB-funded Water Conservation Investment Fund, terminated in 2013. Grant agreements totaling US\$918,921 were pending disbursement for the last two projects under construction as of December 31, 2016.

2016 Disbursements

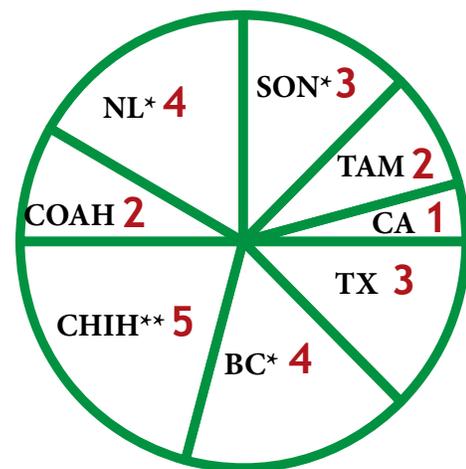
HOW FUNDING WAS INVESTED

(No. of projects)



WHERE FUNDING WAS INVESTED

(No. of projects)



*Includes second border-wide public transportation project.
 ** Includes both border-wide public transportation projects.

PROJECT IMPLEMENTATION

During the year, two projects began construction: an arsenic removal facility to improve drinking water for the 3,500 residents of Tornillo, Texas; and the second border-wide financing program for the purchase of low-emission buses in Mexico. Moreover, nine projects representing a total investment of US\$810.5 million completed construction as detailed in the table below.



U.S. Representative Will Hurd (center) and NADB Managing Director Gerónimo Gutiérrez (second from left) presided over the groundbreaking ceremony in Tornillo, TX.

Completed Projects	Location	Population Benefited	NADB Funding	
			Type	Amount
Water and Wastewater Systems				
1 Rehabilitation of the Wastewater Collection System in Colonias Loma Linda and Esperanza	Mexicali, BC	2,230	BEIF	\$ 0.59
2 Wastewater System Rehabilitation Project	Piedras Negras, COAH	65,000	CAP	0.25
3 Expansion of Water and Wastewater Services to Unserved Areas of the Piedra Angular Colonia	Tecate, BC	644	CAP	0.45
4 Wastewater Treatment Plant Project	Hermosillo, SON	784,342	Loan	31.57
Storm Drainage				
5 Storm Water Project	El Paso, TX	742,062	Loan	53.00
6 Storm Water Infrastructure Project	Santiago, NL	20,000	CAP	0.40
Water Conservation				
7 Water Conservation Improvements in Engelman Irrigation District No. 6	Hidalgo County, TX	-	WCIF	0.48
Clean Energy				
8 Ventika Wind Energy Project	General Bravo, NL	256,328	Loan	68.92
9 Ventika II Wind Energy Project	General Bravo, NL	260,832	Loan	68.68
Total		2,131,438		\$ 224.34

BEIF = EPA-funded Border Environment Infrastructure Fund; CAP = NADB-funded Community Assistance Program; WCIF = NADB-funded Water Conservation Investment Fund

El Paso, Texas

STORM WATER

Loan: US\$53.0 million

Completed: November 2016

In 2006, El Paso County was declared a federal disaster area due to severe flooding, with public and private property damage totaling more than US\$250 million. To prevent future disasters, the City of El Paso developed a comprehensive capital investment program to expand and improve its storm water system. The first phase of the plan was certified in 2009 and covered improvements in the Central, East, Mission Valley, Northeast and Northwest watersheds.

The US\$67.70-million project was partially funded with a US\$53.00-million Build America Bond from NADB and included improvements to the Pershing and Van Buren Dams and construction of the Magnolia Pump Station, as well as the expansion of street inlets, reservoirs, culverts and channels; lining of canals; and construction of storm drains, ponds, force mains and sediment basins. In addition to improved flood controls that will protect human life, property and the environment in benefit of 742,000 residents, system improvements will also help recharge the Hueco Bolson aquifer in this drought-prone area.





Hermosillo, Sonora

WASTEWATER TREATMENT PLANT

Loan: US\$31.6 million

Completed: November 2016

This new state-of-the-art wastewater treatment plant has the capacity to treat up to 57 million gallons a day, which is sufficient to provide 100% wastewater treatment coverage for this city of 784,300 residents. Previously, only about 11% of the wastewater generated by the municipality was treated, while the rest of the raw sewage was either used for irrigation purposes in nearby agricultural areas or discharged to the Sonora River. In addition to the treatment facilities, the project included a cogeneration system that will produce an estimated 60% of the electricity needed to operate the plant, as well as construction of a 1.4-mile collector main to connect the city's wastewater collection system to the new plant. This project is eliminating surface and groundwater contamination from raw sewage discharges and providing a safer source of water for agricultural purposes.



Tecate, Baja California

EXPANSION OF WATER AND WASTEWATER SERVICES TO UNSERVED AREAS OF THE PIEDRA ANGULAR COLONIA

CAP Grant: US\$450,000

Completed: July 2016

The project mainly consisted of the construction of a new sewer system and the installation of approximately 120 residential sewer connections providing first-time wastewater collection and treatment services to the entire neighborhood of approximately 444 residents. Prior to the project, residents used substandard on-site wastewater disposal systems or simply discharged their wastewater directly into the street. Now an estimated 23,448 gallons a day of sewage is being collected and properly treated, reducing the risk of contamination of water resources, including the Tecate River. In addition, 94 septic tanks were decommissioned and 13 households were connected to the water distribution system.

General Bravo, Nuevo Leon

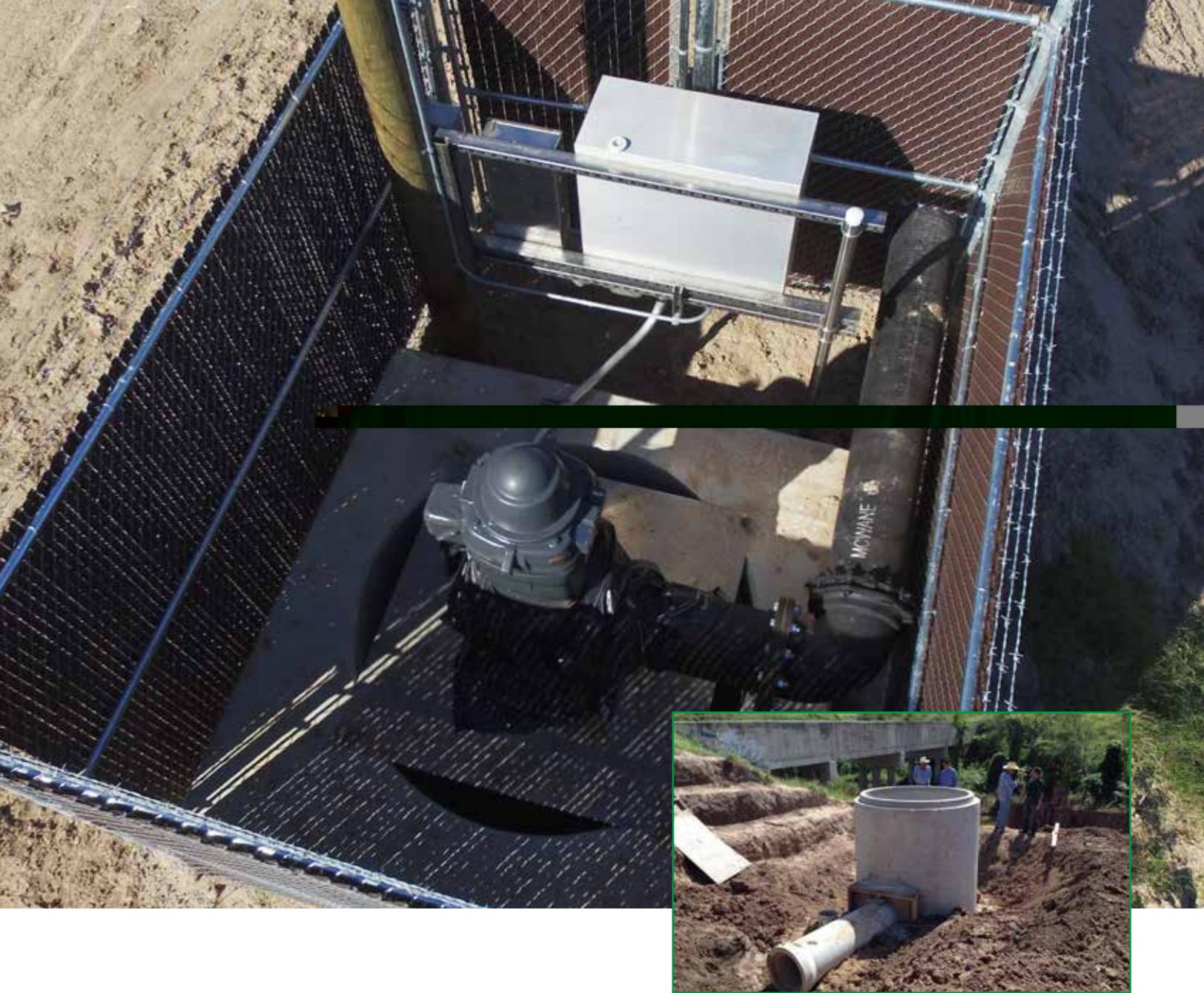
VENTIKA AND VENTIKA II WIND FARMS

Loans: US\$137.6 million

Completed: April 2016

The two contiguous wind farms were built on rural land approximately 25 miles east of the town of General Bravo, Nuevo Leon. Each wind farm has 42 turbines with a total generation capacity of 126 megawatts. Two substations and a transmission line were also constructed for use by both wind farms. The projects were developed by TEG Energía, S.A. de C.V. (a subsidiary of Cemex, S.A. de C.V.), which signed power purchase agreements with several private companies under self-supply schemes. Ventika and Ventika II are expected to generate an average of 512.7 and 521.0 gigawatt-hours of electricity a year, respectively, equivalent to the annual consumption of an estimated 65,725 and 66,880 households, respectively. Together, the two projects are expected to displace approximately 611,900 metric tons/year of carbon dioxide, equivalent to removing about 129,250 vehicles from the roadways.





Hidalgo County, Texas

WATER CONSERVATION IMPROVEMENTS IN ENGELMAN IRRIGATION DISTRICT NO. 6

WCIF Grant: US\$475,000

Completed: May 2016

A new pump station with a vertical reclaim water pump was constructed that will divert up to 25 cubic feet/second of storm water into the irrigation system, allowing the District to utilize a source of water that is usually lost. The pump station is improving the operational efficiency of the water delivery system, which is expected to reduce energy consumption. The project certified in 2007 also included the replacement of 16,795 ft. of leaking pipelines, which was completed in March 2012, and the lining of a reservoir, which is still pending. Due to increased costs for the pump station and pipe installation, the District has postponed the last project component indefinitely.

Piedras Negras, Coahuila

WASTEWATER SYSTEM REHABILITATION PROJECT

CAP Grant: US\$250,000

Completed: April 2016

The project to repair flood damage to the wastewater collection system included replacing two sections of the Rio Bravo Collector, which had collapsed, interrupting wastewater conveyance to the treatment plant and causing approximately 2.3 million gallons a day of raw sewage to be discharged into the Rio Grande. In addition, the gravity sewer main near El Soldado Creek was replaced in the Santa Maria subdivision, and repairs were made to Lift Station No. 4 and 154 manholes. The project is preventing environmental and health hazards associated with untreated wastewater discharges, thus providing a cleaner, healthier environment for local residents, as well as for communities downstream that depend on the river for their water supply.



REHABILITATION OF THE WASTEWATER COLLECTION SYSTEM IN COLONIAS LOMA LINDA AND ESPERANZA

BEIF Grant: US\$593,990

Completed: January 2016

The replacement of approximately 4.7 miles of deteriorated sewer lines in the Esperanza and Loma Linda subdivisions was completed in November 2015 and January 2016, respectively. The wastewater collection system in both subdivisions was constructed 45 years ago with concrete and clay pipes, which had begun suffering frequent collapses. The new sewer lines are eliminating the risk of water pollution and waterborne diseases from sewage spills and leaks, directly benefitting an estimated 2,230 residents, as well as preventing the possible contamination of shared water bodies, such as the New River. Specifically, an estimated 134,680 gallons a day of wastewater is being safely collected and conveyed to the wastewater treatment plant.

STORM WATER INFRASTRUCTURE PROJECT

CAP Grant: US\$398,000

Completed: September 2016

A new storm water collection main was constructed along Benito Juarez Street and Tamaulipas Street in the community of Los Fierros in an area experiencing frequent flooding during the rainy season. The new storm water main interconnects with the regional system, which channels storm water flows to natural water bodies, thereby conserving this natural resource and creating opportunities for its beneficial use. More importantly, adequate storm water management will prevent future flooding and unsanitary conditions related to stagnant water, which creates a habitat for disease transmitting insects, such as mosquitos. An estimated 20,000 residents in Los Fierros are benefitting from the project.



Mexican Border Region

BORDER-WIDE PROGRAM FOR THE PURCHASE OF LOW-EMISSION VEHICLES IN MEXICO

Revolving Loan: US\$26.25 million

Launched: September 2016

Following on the success of the first bus program, Mercader Financial, S.A. SOFOM, obtained a second revolving line of credit for \$500.0 million pesos in September 2016 and had drawn down the full amount by the end of November to finance 285 buses in eight communities. However, given the revolving nature of the line of credit, Mercader can make monthly payments and have those funds available to finance additional buses throughout its ten-year disbursement period.

Of the 285 buses financed to date, 178 are new diesel buses that at a minimum comply with EPA 2004 standards and 107 are compressed natural gas (CNG) fueled vehicles that comply with EPA 2013 emission standards. Use of new diesel buses will lower nitrogen oxides and hydrocarbons emissions by about 50% and will achieve nearly 24% lower carbon dioxide emissions. The reduction in criteria pollutant emissions is even higher for CNG-fueled vehicles.

Buses Financed			
Community	Diesel	CNG	Total
Cd. Juárez, CHIH	37	35	72
Hermosillo, SON	40	–	40
Monterrey, NL	2	12	14
García, NL	–	9	9
Guadalupe, NL	3	44	47
Apodaca, NL	10	7	17
Escobedo, NL	13	–	13
Tijuana, BC	73	–	73
Total	178	107	285

TECHNICAL ASSISTANCE AND INSTITUTIONAL STRENGTHENING

To support project sponsors and border communities in the development of sustainable projects for certification and financing, NADB and BECC provide technical assistance in three categories: project development, institutional capacity-building and sector studies to identify needs and generate knowledge about a new sector or technology.

During 2016, the joint Technical Assistance Committee approved a total of US\$971,676 to support 22 studies, training seminars and other development activities. The project development studies are mainly related to four storm drainage improvement projects and three wastewater system expansion or rehabilitation projects. The sector studies included support for the development of technical guidelines for incorporating green infrastructure design into public works for Mexican municipalities, as well as implementation of the Inter-American Development Bank's Emerging and Sustainable Cities program in Hermosillo, Sonora. Support was also provided for 10 seminars and forums mainly related to water utility management, adapting to new weather patterns and its implications for water resources, and low-impact development techniques, all of which were presented during the year.

BECC-NADB Technical Assistance Approved in 2016

(us\$ Millions)

Category	No. of projects	Amount
Project development	9	\$ 0.31
Sector studies	3	0.34
Capacity building	10	0.32
Total	22	\$ 0.97

PROJECT DEVELOPMENT ASSISTANCE PROGRAM (PDAP)

BECC administers this program funded by EPA for the development and design of water and wastewater projects. During 2016, grants totaling US\$788,508 were approved to support 10 projects: six in the U.S. and four in Mexico.

U.S.-MEXICO BORDER 2020 PROGRAM

BECC actively participates in this program, a collaborative effort developed by EPA and the Mexican Ministry of Environment and Natural Resources (SEMARNAT) aimed at jointly addressing existing environmental and public health needs along the border. In 2016, EPA approved US\$761,383 in grants to support 19 initiatives, mainly in various areas of waste management (municipal, electronic and hazardous), as well as air quality and binational emergency response.



Joint HAZMAT training for first responders in Ojinaga, CHIH and Presidio, TX.

Cultivating Sustainability in Urban Development

HERMOSILLO, SONORA

The Inter-American Development Bank (IDB) Emerging and Sustainable Cities (ESC) Initiative directly supports governments in the development and implementation of urban sustainability plans and uses a comprehensive, multidisciplinary approach to identify, organize and prioritize urban actions to tackle the main roadblocks preventing the sustainable growth of emerging cities in Latin America. In 2016, NADB teamed up with IDB to introduce the program to Mexican border communities and selected Hermosillo as the first candidate. Once the program is successfully implemented there, NADB and BECC plan to replicate it in other communities throughout the border region.

The border research institute, *Colegio de la Frontera Norte (COLEF)*, was tapped to oversee the implementation of the two-stage, five-phase ESC methodology. The kickoff meeting in August was attended by 97 government, academic and community stakeholders, to gather information on the main challenges and opportunities facing the City in a wide array of sectors, as well as the plans, programs and projects the City is considering to address those issues. Based on the results, 127 indicators were identified, ranging from water services, waste management and vulnerabilities to natural disasters to social services, economic development and municipal finances, among many others. After determining the current value of the city's indicators and ranking them in terms of the benchmarks, the findings were presented to the same group in a second meeting in December. The next step will be to send out a general survey to determine the infrastructure priorities of the community. The entire project is expected to be completed in June 2017.



E6 PLANO DE USO, RESERVAS Y DESTINOS DE SUELO



Energy Audit Fuels Investment in Efficiency

PIEDRAS NEGRAS, COAHUILA

In 2013, BECC hired consultants to develop energy audits to identify potential cost-effective conservation measures for several water utilities. The audit for the Piedras Negras utility (SIMAS), which was funded through an EPA Border 2020 grant, reviewed the physical condition and operation of the facilities and identified potential savings of up to \$10.5 million pesos (US\$506,581) a year with an investment of \$13.1 million pesos (US\$632,020) to replace equipment and make improvements in its processes. In 2014 and 2015, with support from the municipal government, SIMAS implemented the first phase of recommendations, investing \$7.1 million pesos (US\$342,545) to purchase and install two submersible pumps, two transformers and a centralized pump control system. An additional \$1 million pesos (US\$48,246) was invested in electrical improvements, which enabled the utility to move to a lower rate tier with the electricity company. In 2016, after a full year in operation, the utility reported annual energy savings of \$11.6 million pesos (US\$559,651).

Galvanized by the success of these preliminary efficiency measures, SIMAS is moving forward with the next phase to implement the recommended process improvements, which are estimated to cost \$5.1 million pesos (US\$246,053) and expected to increase annual energy savings by \$5.9 million (US\$284,650). With technical assistance from NADB and BECC, the final designs for these process modifications were completed in 2015, and work began the following year. Moreover, in 2016, with additional support from NADB and BECC, SIMAS developed the Investment Efficiency Management and Improvement Plan (2016-2050), which identifies specific infrastructure and efficiency improvement projects to be implemented over the next 35 years through a stepped approach that will increase efficiency and lower operating costs as investments are made.

Building Resiliency through Natural Systems

MEXICAN COMMUNITIES

BECC and NADB continued to support border communities in building resiliency through Low-impact Development (LID) design tools and techniques using natural systems for managing storm water runoff and making the best possible use of rainwater in urban areas. In addition to the third annual border-wide forum on the topic attended by more than 200 participants in Arteaga, Coahuila, hands-on training workshops were sponsored for state and local officials responsible for urban planning, as well as local development associations and construction industry entrepreneurs in Monterrey, Nuevo Leon and Hermosillo, Sonora. The workshops focused on demonstrating that these development techniques are cost-effective and sustainable, and provide an array of socioeconomic benefits including water conservation, erosion prevention, reduced water pollution and improved recreation areas, among others.

Moreover, as part of the strategic planning model, BECC and NADB provided support for four Mexican municipalities to amend their legal framework and incorporate LID concepts into their building codes and ordinances. A Manual of Design Guidelines covering LID concepts and implementation techniques, methodologies and strategies was also developed to support Mexican border communities in the planning and development of urban projects.



PROJECT CLOSEOUT

The final stage of project implementation is the closeout process, which serves to assess project performance one-year after completion, providing important feedback on lessons learned and best practices to be applied to future projects. Through this process, BECC and NADB confirm the achievement of the fundamental objective(s) of the project related to its inputs (resources invested), outputs (infrastructure built or services provided) and intended outcomes, through project records, field visits and interviews with the sponsor and operating personnel.

To date, closeout reports have been completed for 60 projects: 48 in the water and wastewater sector, seven in solid waste, two in air quality through street paving, two in clean energy, and one for water conservation. In 2016, the first aggregate report on project closeout results was compiled and analyzed, providing a comprehensive view of the indicators for each infrastructure sector. The table below highlights a few of the most important indicators. The full report, *Results Measurements: First Aggregated Report*, is available on the BECC website, along with the individual closeout report for each project.

Aggregate Indicators Highlighted		
Infrastructure Sector	Result	Objective Achievement
Drinking Water		
↳ New residential water connections	13,414	84%
↳ Improved treatment	21.46 mgd	100%
Wastewater		
↳ New residential sewer connections	319,035	89%
↳ Reduction in untreated wastewater discharges	133.85 mgd	94%
Solid Waste		
↳ Increased capacity in new sanitary landfills	275,745 MT	100%
↳ Improved waste disposal management	963 MT	97.3%
↳ Six illegal open-air dumpsites closed	1.9 acres	100%
Street Paving		
↳ Urban streets and roads paved	746,644 m ²	105%
↳ Particulate matter (PM ₁₀) emissions avoided	695 MT/yr.	106%

mgd = millions of gallons a day; MT = metric tons



IMPACT ASSESSMENTS

For NADB and BECC, it is important to know that the projects they certify and finance are not only completed as designed, but also perform as intended to improve the environment and related health conditions for border residents. Due to cost and resource limitations, an impact assessment is performed on select projects where baseline data is available for comparison purposes and after at least a year in operation, although the length of time it takes for benefits to emerge varies from project to project. It is an essential tool for communicating results and identifying opportunities for improvement and requires the collaboration of many partners.

Two impact assessments have been completed to date. The first focused on the wastewater projects implemented in four communities in the Juarez Valley in Chihuahua and was published in 2015. The second covered several wastewater projects in Baja California and was published in May 2016. During 2016, a third assessment of a wastewater project benefiting two communities in the Lower Valley region of El Paso County, Texas, was initiated and is expected to be completed and published in 2017.

WASTEWATER PROJECTS IN BAJA CALIFORNIA

This regional impact assessment covered 20 wastewater collection and treatment projects certified between 1997-2012 and completed between 2002-2014 in four of the five municipalities in Baja California, which represented a total investment of US\$251 million. The technical information provided by the local utilities, as well as the information generated in the BECC-NADB project closeout process, was classified, georeferenced and analyzed; and thematic maps with overlapping layers of demographic, epidemiological and service coverage data were developed. More than 3,400 households were surveyed in the urban areas benefitted by the projects in Tijuana, Playas de Rosarito, Tecate and Mexicali.

The final report was submitted to the Pan American Health Organization (PAHO) for peer review. Its public health specialists found the study to be satisfactory and the results valid. Their only recommendation was to delve deeper into the social impacts of projects in future studies. The final report of the Baja California impact assessment is available in Spanish on the BECC website. A summary of the results of both the Baja California and Juarez Valley impact assessments is also available in English.

Baja California Impact Assessment Results

- ✧ Wastewater collection and treatment coverage in the impacted areas increased an average of 75% to an average of 90% between 2000 and 2010.
- ✧ Between 79% and 98% of the households in the impacted areas of the four cities were connected to the sewer system and eliminated their cesspools and latrines.
- ✧ The incidence of gastrointestinal diseases decreased between 16% and 33% in three of the four cities.
- ✧ Over 90% of those surveyed indicated a high degree of satisfaction with the operation of the wastewater systems, as well as a sense of well-being associated with one or more of the projects.



SUMMARY OF ANNUAL PROJECT ACTIVITY 2012-2016

(us\$ Millions)

	2016	2015	2014	2013	2012
Project Development					
Total projects certified	15	14	16	19	19
Water ¹	7	7	10	8	8
Solid waste management	5	-	-	-	1
Air quality ²	1	1	1	1	1
Basic urban infrastructure ³	-	1	1	1	1
Clean and efficient energy ⁴	2	5	4	9	8
Estimated population to benefit (millions)	0.83	1.05	1.55	1.31	2.80
Total estimated cost	\$ 176.5	\$ 833.6	\$ 1,312.8	\$ 709.9	\$ 1,797.4
No. of public meetings held	7	8	10	12	14
Project Implementation					
Implementation completed	9	12	20	12	12
Implementation start-up	2	11	11	17	5
Projects in construction at year-end	31	40	38	41	39
Project Financing					
Total disbursements	\$ 146.92	\$ 261.78	\$ 270.03	\$ 232.88	\$ 514.98
NADB loans	136.25	249.56	254.16	214.96	501.50
NADB grants ⁵	0.44	3.52	1.20	0.46	1.75
Border Environment Infrastructure Fund ⁶	10.23	8.70	14.67	17.46	11.74
Technical Assistance					
NADB/BECC					
No. of studies/seminars approved	22	35	15	15	11
Funding approved	\$ 0.97	\$ 1.93	\$ 0.84	\$ 0.92	\$ 0.89
Project Development Assistance Program⁶					
No. of studies approved	10	8	19	15	11
Funding approved	\$ 0.79	\$ 1.03	\$ 1.69	\$ 2.36	\$ 1.08
Border 2012/2020^{6,7}					
No. of studies approved	19	14	29	-	9
Funding approved	\$ 0.76	\$ 0.71	\$ 1.49	\$ -	\$ 0.44

¹ Includes drinking water, wastewater, storm drainage and water conservation projects.

² Includes street paving and other roadway improvements, public transportation and industrial emissions.

³ These projects consist of a mix of works from different sectors, such as roadway improvements, water and wastewater lines, storm drainage and public lighting.

⁴ Includes solar, wind and biogas projects, as well as improvements to reduce consumption.

⁵ Grant financing funded from NADB's retained earnings (excludes supervision for CAP-funded projects).

⁶ Programs fully funded by the U.S. Environmental Protection Agency (EPA) and administered by NADB or BECC.

⁷ Program runs on a two-year grant cycle with grants awarded in 2011 and 2014.

INSTITUTIONAL PROFILE

BECC and NADB were established by the U.S. and Mexican Governments for the purpose of helping develop and finance environmental infrastructure projects to preserve, protect and enhance the quality of life of people living along the U.S.-Mexico border. As part of this effort, both entities also offer technical assistance to build institutional capacity and support the long-term sustainability of projects.

Under their mandate, NADB and BECC support Infrastructure projects related to water, waste management, air quality, clean energy and energy efficiency, among others, located within 100 km north of the international boundary in the four U.S. states of Texas, New Mexico, Arizona and California and within 300 km south of the border in the six Mexican states of Tamaulipas, Nuevo Leon, Coahuila, Chihuahua, Sonora, and Baja California.

In December 2014, the Board of Directors approved a resolution recommending that the two governments integrate BECC and NADB into a single entity to streamline their processes and improve coordination of their respective activities, which will maximize the services provided to border communities and make more efficient use of available resources. Under the integration, the mission, purposes and functions of the institutions will be preserved, and the geographic jurisdiction and environmental mandate will remain unchanged.

For the annual reports and audited financial statements of the institutions, visit their respective websites.

BECC-NADB Board of Directors	
United States	
Secretary of the Treasury*	
Secretary of State	
Administrator of the Environmental Protection Agency (EPA)	
U.S. border state representative	
U.S. border resident representative	
Mexico	
Secretary of Finance and Public Credit (SHCP)	
Secretary of Foreign Relations (SRE)	
Secretary of Environment and Natural Resources (SEMARNAT)	
Mexican border state representative	
Mexican border resident representative	
* Board Chair, 2016	



CREDITS

A joint NADB-BECC publication

Photography:

Page 1 (right): Jonathan Alonso for NADB

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Page 3 (3rd photo from top): Courtesy of Fitch Ratings México

Page 8: Courtesy of El Paso Water Utility

Page 10: Courtesy of the local water utility, *Comisión Estatal de Servicios Públicos de Tecate* (CESPTE) in Tecate, Baja California

Page 12 (large photo): Courtesy of Mike Hernandez, Melden & Hunt, Inc.

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Page 14: Courtesy of the local water utility, *Comisión Estatal de Servicios Públicos de Mexicali* (CESPM) in Mexicali, Baja California

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NORTH AMERICAN DEVELOPMENT BANK & BORDER ENVIRONMENT COOPERATION COMMISSION 2016 YEAR IN REVIEW

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