URBAN GREEN INFRASTRUCTURE
An initiative for the US-Mex Border Region

“resiliency and competitiveness for cities in the border between México and the United States”

BORDER ENVIRONMENT COOPERATION COMMISSION

Maria Elena Giner
General Manager
✓ Mexican border population with wastewater treatment from 21% in 1995 to over 90% in 2012.
✓ The elimination of 450 MGD of untreated wastewater flowing into shared water bodies.
✓ Growth of 50% in population while increasing its urban footprint by 4 times, decreasing infiltration, and significantly increasing runoff.
✓ The key issue to water quality is the threat of stormwater and its impacts of flooding.
✓ Stormwater carries sediments and other pollutants that flow into binational rivers contributing to the pollution of potable water sources.

PROBLEMS

FLOODING
PROBLEMS

AIR QUALITY
Provide local border communities with a comprehensive strategic model for the integration of GREEN INFRASTRUCTURE (GI) in their urban planning, as a means to mitigate the environmental, economic, and social impacts of inadequate stormwater management.
How does STORMWATER HARVESTING link with watershed health?
Green infrastructure uses plants, soils, and nature itself to manage stormwater and create healthier urban environments.

Green infrastructure practices can be used to reduce the need for expensive gray infrastructure—pipes, storage facilities, and treatment systems—because plants and soils soak up, store, and use the rainwater.

Communities also can create or preserve existing vegetated areas to maintain a high quality of life for residents through flood protection, cleaner air and water, and more appealing transportation corridors and outdoor spaces.

(EPA, 2015)
Grey Infrastructure  Green Infrastructure

hard engineering

A catch basin is part of a stormwater management system designed to trap debris and sediment before it enters a pipe network.

mechanical

polluted runoff

polluted runoff

pollutants
bacteria
petroleum-based products
sediment
heavy metal
fertilizer

output

input
Grey Infrastructure  Green Infrastructure
**ENVIRONMENTAL benefits**

- Improves **WATER QUALITY** by reducing polluted runoff entering waterways
- Conserves water by **RECYCLING** and using captured rainwater
- Controls stormwater **FLOODING**
- Modulates **URBAN CLIMATE** (heat islands) and reduces **GHG EMISSIONS**
- Improves **AIR QUALITY** and reduces noise pollution
- Recovers **BIODIVERSITY** in urban development

**SOCIAL benefits**

- Enhances community and infrastructure **RESILIENCY**
- Promotes physical and mental **HEALTH**
- Pedestrians and cyclists **COMFORT**
- Natural spaces for **CITIZENS ENCOUNTERS**

**ECONOMIC benefits**

- Strengthens **LOCAL ECONOMY**
- Road maintenance **COSTS REductions**
- **ENERGY** consumption costs reduction
- **LAND VALUE** increase
- Public health and medical **COSTS SAVINGS**
✓ Bottoms up approach
✓ Community involvement - regulation of codes
✓ Composed of three elements: institutional capacity building, technical and legal.
More than 800 participants on 3 Forums: Chihuahua, Arizona and Coahuila

More than 300 people trained on 6 Project implementation workshops
Capacity Building Phase I: Training

- IV Border Green Infrastructure Forum/ Texas – Aug. 2017
- Green Infrastructure Series of events in Sonora, Nuevo León and Tamaulipas / May-Aug 2017
- Rainwater Harvesting Certification by Watershed Management Group
  - 5 municipal staff certified
Training content

FORUMS
- ✔ Technical aspects
  - ✔ Impacts on health and well-being
  - ✔ Impacts on Economic Development

WORKSHOPS
- ✔ GI opportunities identification
- ✔ Stormwater collection basin design
- ✔ Native vegetation
- ✔ Hands-on training

CERTIFICATION PROGRAM
- ✔ Train the trainer
- ✔ Rainwater Harvesting
Capacity Building

BECC is focused on developing and fostering collaborative initiatives and working to identify potential projects.

By strengthening institutional capacity to develop strategic studies on the potential for Green Infrastructure, BECC is working to improve the effectiveness of infrastructure projects.

Border Green Infrastructure Forum III Materials

Arteaga, Coahuila, September 21 and 22, 2016

OBJECTIVE

Build capacities on local authorities, private consultants and professionals’ interest in the strategies, technologies and approaches for Green Infrastructure, with the purpose of incorporating these concepts into the urban development public and private projects.

Agenda

Presentations | Downloadable

Other events

Border Green Infrastructure Forum Materials

Border Green Infrastructure Forum II Materials
Phase II: Project implementation

Blvd. García Morales – Hermosillo, Sonora
Phase II: Project implementation

Blvd. García Morales – Hermosillo, Sonora

After
Construction Process
Hermosillo, Sonora
System Evolution
Ciudad Juárez, Chihuahua
Construction Process and System Evolution
Hermosillo, Sonora
1. **Green Infrastructure Design Guidelines**
   Manual for Border Municipalities

2. **Municipal Codes**
   Revision of municipal codes and introduction Green Infrastructure concepts:
   - Nogales, Sonora
   - Tijuana, Baja California
   - Ciudad Juárez, Chihuahua

3. **State Legislature/ Sonora**
   Introduction of Green Infrastructure concept into the State’s *Ley del Equilibrio Ecológico y la Protección al Ambiente*, as well as onto the *Ley del Ordenamiento Territorial*
   - Promoted by the President of the Energy and Environment Commission from the State Congress
Glossary of terms

1. **Green Infrastructure; definition and development models**

2. **Green Infrastructure relevance in the Urban Context**
   i. Management models examples
   ii. Green infrastructure benefits

3. **Green infrastructure design principles**

4. **Micro-scale green infrastructure**
   i. Design phase
   ii. Construction phase
   iii. Green infrastructure Techniques

5. **Macro-scale green infrastructure (urban level, watershed level)**

6. **Methodology for green infrastructure implementation**
   i. Master plans
   ii. Monitoring and assessment
Proposed reform of construction codes and urban development norms

Introduction of basic GI concepts

Establishment of the mandatory nature of implementing GI elements in Project development

Focuses in private residential development as well as public areas
Shift in paradigm in the development of conventional stormwater infrastructure

Intended to influence public policy at the local level

Replicable and scalable

Resulting in more livable cities, improved water quality, stronger binational environmental health, and the development of innovative public policies
Contact

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