



**University of Puerto Rico – Mayaguez
Puerto Rico
Transportation - Ride a Bike and the Seven Green Resolutions**

FELLOW

Axel Omar Ramírez Madera,
October 2009 Fellow
University of Puerto Rico – Mayagüez Alumni 2009
axelramirez@hotmail.com
787-356-2823
27 Paseo San Felipe, Arecibo, PR 00612

SCHOOL

The University of Puerto Rico at Mayagüez (UPRM) Campus is a public university with 4-year programs and approximately 14,000 students located in the west side of the island in Mayagüez, Puerto Rico.

ABSTRACT

The project's main objectives were promoting the use of bicycles as the primary means of transportation and supporting UPRM Campus Verde's goals. These goals (aka resolutions) focus on Transportation, Recycling, Energy, Nature, Infrastructure, Water, Education and Outreach. Working on the bicycles initiative and the resolutions, the on- and off-campus community and the public in general were and continue to be impacted.

GOALS AND OUTCOMES

Goals

1. Ride a Bike Initiative as a way of Greening Transportation

Short Term Goals

- Organize workshops to educate cyclists and drivers
- Bicycle marathon
- Promote the use of bicycles by university security officials
- Request more bike racks throughout the university
- Electronic survey about transportation in campus

Long Term Goals

- Create a student association
- Create a program for bike rentals
- Create bicycle-friendly lanes and routes
- Create a bicycle workshop on-campus for repairing and doing basic maintenance such as an air compressor for inflating tires
- Request the installation of racks near the community college, downtown and shopping malls

2. Reduce, Reuse and Recycle

Short Term Goals

- Change from paper towels to hand dryers in one highly transited building

- Promote the correct way of recycling materials and ask the administration to provide more and larger recycling stations on highly transited areas

Long Term Goals

- Implement hand dryers in all of the building bathrooms on the campus
- Increase recycled materials from 28 percent to at least 50 percent by the end of the year

3. Energy Conservation and Efficiency

Short Term Goals

- Obtain billboard in a frequently transited area of campus
- Fundraising activities to obtain money for paints and supplies to paint billboard
- Meet with the administration to propose new and more efficient lighting installations
- Start kill-an-electric phantom Campaign among students and employees

Long Term Goals

- Continue promoting various campaigns as needed.
- Reduce the electricity bill of UPRM by 10 percent in a year

4. Nature (Planting Trees and Beach Clean-ups)

Short Term Results

- Educate the campus community about the importance of preserving and conserving environment
- Make the campus more aesthetically pleasing
- Prevent trash from entering the ocean, thus reducing deaths of sea animals

Long Term Results

- Reduce energy consumption used for cooling classrooms and offices using tree shades
- Prevent erosion in the riverbed
- Make beach cleanups a university tradition

5. Purchasing recommendations (No Styrofoam and more)

Short Term Results

- Establish meetings with the bookstore and cafeteria administration for implementing new strategies
- Educate students and faculty about the importance of using re-usable bags instead of plastic bags

Long Term Results

- Eliminate the use of Styrofoam in the cafeteria (it will start using reusable plate on Feb 8 2010!)
- Have the cafeteria commit to buying more local products
- Reduce the use of non-recyclable bags in the bookstore by 50 percent by the beginning of next semester
- Give out approximately 1,000 re-usable bags

6. Education and Outreach

Short Term Goals

- Provide training and records of students who give conferences throughout the island
- Begin inviting professionals to offer conference in symposium

Long Term Goals

- Continue organizing symposium yearly and even twice a year
- Continue offering training for students

7. Water Conservation

- Integrate water conservation in all the other activities
- Include water-saving awareness within the Education and Outreach campaigns

Next 2-3 years

- Create bicycles pathways and lanes in campus and nearby communities
- Increase recycling to 50 percent
- Persuade the cafeteria to exchange 50 percent of the Styrofoam into reusable plates
- Do the first Critical Mass in Mayagüez
- Establish student environmental clubs in public and private schools in Mayagüez

Accomplishments and Outcomes

Look for *Table 1* in the Appendix.

We focused on Education to create awareness about how human activities can affect positively and negatively the Nature. We cleaned several beaches and waterfalls, planted over 100 trees and helped the recycling program considerably. We met with the Cafeteria and as consequence they are inaugurating dishwasher and plates in February 2010, which will save 96,000 Styrofoam plates from going to the trash and harming nature. They also changed to 100 percent recycled napkins. The Book Store is now selling organic shirts after talks with us and using biodegradable bags. That has a big impact on our island since it is so close to the coast and affects sea animals. We also received donations of reusable bags which we gave away at several activities.

Challenges and Responses

Challenges:

- 1) Lack of support from different departments of the administration
- 2) Lack of students commitment and participation
- 3) Several students manifestations (Strikes about some other issues interfered with our activities)
- 4) A lot of schools responsibilities

Responses:

- 1) Building pressure to the administration by gathering signings from the student community
- 2) Being flexible by changing meeting hours
- 3) Constant promotion and education

Changes for future projects:

- 1) Do carbon footprint measurable activities
- 2) Quantify the carbon footprint impact of those activities

Campus Climate Action: Your School's Carbon Footprint

We know for sure that our actions reduced our carbon footprint, but it was not quantified. We did address global warming and the impact on climate change in all of our talks, symposia, etc. The volume of recycling material was increase considerably, this in part because some students/personnel bring recycling materials from their homes to the UPRM recycling stations, if they don't have collecting service there. The amount of greenery collected increased considerably and is used to make compost. The university just submitted a proposal for new chillers which can reduce our electric bill (and its related to carbon emissions) by half. The Cafeteria has decreased its waste volume by 1/3 since we gave them a recycling

station. The amount of paper was reduced in the Campus Center restrooms with the 2 new hand driers that we installed, but this was not quantified.

ENGAGEMENT AND SUPPORT

Leaders and Supporters

- Advisor Sandra Cruz-Pol and Campus Verde Student Organization
- Ride a Bike, a student organization born in this project
- Jorge Iván Vélez Arocho, Former Chancellor
- Roberto Torres, UPRM Campus Recycling Coordinator
- Department of Quality of Life (Calidad de Vida)
- Edgard Pérez, Administrator of UPRM Book Store
- Víctor Sánchez, Director of Campus Cafeteria.
- Other student organizations:
 - IEEE (Electrical and Computer Society)
 - AEHORT
 - Movimiento Ambiental Colegial (MAC)
 - Surfrider Foundation Rincon Chapter
 - BBB (Biology association)
 - NUPA (Nación Unidad Pro-Ambiente)
 - Tau Beta Pi (Engineering Honor Society)
 - AEA (Asociación de Estudiantes Agricultura)
 - PRWEA (Water and Environment CIVIL Engineering Society)
 - Free Culture
 - USGB (Green Building Student Chapter)
 - Unicef UPRM Team
- A lot of people that we don't mention were involved and very helpful

Funding and Resources

The entire project was done thanks to internal and external funding. The internal funding was \$5,500 for 10 recycling stations, \$54,000 for reconstruction of Solar House (space for Campus Verde's office in the future, hopefully will be completed this year), \$13,000 for 4 solar LED light posts, 3-credits (1/4 load) compensation to Dr. Sandra Cruz-Pol to work as coordinator and advisor of Campus Verde activities. The external funding comes from donations from General Electric (CFL light bulbs given at conferences and \$1000 cash for activities), Rock Solid Inc, (400 reusable foldable nylon shopping bags to give to the participants at different activities), Lockheed Martin (pledged \$1000 for activities and gifts to give away at activities), Snapple (10 bottle recycling containers in the shape of a Snapple bottle). All the presents were used to attract more people to our eco-cinemas, symposia, conferences, and other activities that created awareness.

Education and Community Outreach

We had a very strong Education and Outreach component. Examples of those activities are:

- “Sal del Tapón” Campaign (Get out of traffic jam activity): Students riding bikes called the attention of people stuck in a traffic jam by showing a poster with different messages such as 1) Save Gas, Save Money, Ride a Bike, 2) You always find a parking... Ride a Bike, 3) It is good for your health.
- “Bicicletada Pro-Ambiente” (Two Bike Marathons Pro-Environment): Students and employees united in a bike marathon inside the campus.

- Global Warming Conferences and Two Symposia where invited speakers talked about Green Buildings, Renewable Energy, Sustainable Agriculture and many more, see complete agendas in previous reports.

Our activities were so creative and unique that the local community showed great interest. When riding a bike and transmitting a message, people smiled and agreed with us. On the Global Warming Conferences, we received so many requests for talks that we had to train 60 students so that they can go all around the island giving that conference.

National Wildlife Federation's Campus Ecology Program

The Campus Ecology Program was crucial in us achieving our goals. It gave us the motivation and guidelines to set milestones and work toward achieving them. It help us become a group, help many people to work as a team, to get involved and be part of the 'greening' of our campus and outside of it. In addition, the money served us as seed money to continue some activities and to create new activities and continue by improving them. It also gave us a stand point before the university administration, a formal sense that we were a group that could achieve these goals. And we did! We already have the infrastructure to keep working on these initiatives and set new goals. We will always be very thankful to NWF's Campus Ecology Program!

The most helpful resource was the training in Washington, D.C. At the training the group met, learned and supported each other from the experiences and difficulties. A fruitful network and valuable friendships were created with the other fellows. Other resources used were consulting the staff in D.C., especially Courtney Cochran, who was very kind, patience and understanding. Another resource was the fellowship, which was the principal monetary resource that supported our work. The conference calls were helpful, but sometimes difficult to participate on one with the entire group.

CONTACT INFORMATION

Dra. Sandra Cruz-Pol, Ph.D.
Project Advisor
UPRM Professor
CruzPol@ece.uprm.edu
787-832-4040 x 2444

Cesar Rivera
Ride A Bike President
UPRM undergraduate student
rasec04@yahoo.com,
787-455-4779

Agro. Axel O. Ramírez-Madera, M.Sc.
NWF Campus Ecology Fellow 2009
Founder of Ride a Bike
UPRM Grad School Alumni 2009
axelramirez@hotmail.com
787-356-2823

Jorge Bencosme
Ride a Bike Advisor
UPRM Employee
jorge@uprm.edu
787-546-4130

Roberto Torres
UPRM Recycling Program Coordinator
Roberto.Torres8@upr.edu
787-832-4040 x 3506, 3221

Loyda Garcia
Campus Verde President
UPRM Undergraduate Student
garcia.loyda@gmail.com
787-903-0982

MORE ABOUT YOUR SCHOOL

Campus Sustainability History

When we obtained this fellowship, we had just started the Recycling Program and the Green Campus (Campus Verde) Initiative. In fact, Campus Verde coordinator was the one who called on students to submit the proposal. This project has been fundamental in supporting Campus Verde initiative and has been crucial in giving support to realize all the activities we had and to obtain more support from the university. It has provided the students with enthusiasm to work and learn about this issues that are so important today to any field of study. It is very important to point out that the people involved in this project were volunteers. The students that helped me carry out these activities were collaborating with Campus Verde. They have developed leadership skills and some of them are pursuing a Master's degree in a related field such as: Renewable Energy, Environmental Engineering and others.

Sustainability program:

Campus Verde:

<http://www.uprm.edu/campusverde/>

Recycling Office:

<http://campusverde.uprm.edu/ReciclajeRUM.htm>

Commentary and Reflection

From this experience I can share one word that can help anyone deciding to work on a project: Perseverance. You have to stay strong on what you believe, stay focus and be positive.

Participating in this program gave me the opportunity to know and work with people from different study areas such as: Engineering, Biology, Business Management, and Agricultural Sciences. It helped me to see things from other perspectives and collaborate in a similar cause. The fellowship gave the encouragement and motivation to do so many activities that would not have been possible without this support.

ADDITIONAL MATERIALS

Photos:

See our PHOTO ALBUM at: <http://campusverde.uprm.edu/album.html>

Final Budget:

Look for *Table 2* in the Appendix.

APPENDIX

Table 1. Accomplishments and Outcomes.

<i>Goals</i>	<i>Ride a Bike & 7 Green Resolutions</i>	<i>Done</i>	<i>Additional Comments</i>
1	Ride a Bike (New Transportation Initiative)		
<i>Goals</i>	<input type="checkbox"/> Organize workshops to educate cyclists (protection, awareness of drivers) and drivers (courtesy, awareness of cyclists)	X	
	<input type="checkbox"/> Bicycle marathon and exhibition	X	
	<input type="checkbox"/> Promote the use of bicycles by university security officials	X	
	<input type="checkbox"/> Request more bike racks throughout the university	X	No rack was bought because there were enough on-campus. A study showed us that the racks were misplaced.
	<input type="checkbox"/> Ride a Bike (RAB) Student Association	X	Very difficult due to students lack of commitment
2	Reduce, Reuse and Recycle		
<i>Goals</i>	<input type="checkbox"/> Change from paper towels to hand dryers in one highly transited building	X	Student Center Building: The impact of this task has not been quantified
	<input type="checkbox"/> Reduce the amount of waste generated	X	Recycling has been raised to over 30% (~50% if taking into consideration green waste for composting). Cafeteria waste has been reduced by half. The recycled volume has increased considerably, but percentage has stayed the same because people bring recycling materials from their homes.
3	Energy Conservation and Efficiency		
<i>Goals</i>	<input type="checkbox"/> Obtain billboard in a frequently transited area of campus	X	Student Center LCD's
	<input type="checkbox"/> Fundraising activities to obtain money for paints and supplies to paint billboard	X	Raffles, T-shirt and Reusable Cups sales
	<input type="checkbox"/> Create posters, slogans, and other propaganda to promote campaign	X	

	<input type="checkbox"/> Meet with the administration to propose new lighting installations	X	Administration is currently writing proposal for new outdoor lightning and for new chillers which will save a lot of emissions!
4	Nature		
Goals	<input type="checkbox"/> Educate the campus community about the importance of planting and nature and its effects on the environment	X	Several tree-planting activities
	<input type="checkbox"/> Make the campus more aesthetically pleasing	X	Some across campus
	<input type="checkbox"/> Prevent trash from entering the ocean, thus reducing deaths of sea animals from the ingestion of trash	X	
	<input type="checkbox"/> Trash removal from the river so that it never reaches the oceans and other bodies of water	X	Five (5) beach clean-up activities and a waterfall clean up.
5	Purchasing recommendations		
Goals	<input type="checkbox"/> Establish meetings with the bookstore and cafeteria administration	X	Reduce Styrofoam and installed dishwasher machine
	<input type="checkbox"/> Educate students and faculty about the importance of using re-usable bags instead of plastic bags	X	Bookstore now using biodegradable bags, promoting use of cloth bags, selling organic T-shirts and more.
6	Education and Outreach		
Goals	<input type="checkbox"/> Reserve dates and location for symposium	X	Two Symposiums and several workshops. Two surveys about 1) Ride a Bike and 2) General knowledge of Living Green http://campusverde.uprm.edu/ContestacionEncuesta.html
	<input type="checkbox"/> Begin inviting professionals to offer conference in symposium	X	A total of 12 professionals gave talks in their fields
	<input type="checkbox"/> Provide training and records of students who give conferences throughout the island	X	Two trainings for 60+ students who now visit many schools and civic groups providing information to over 1,000 people in a year about how to recycle or 'green' their lives.
7	Infrastructure and water conservation		
Goal	<input type="checkbox"/> Work with the administration to support green initiatives	X	Meetings on the solar house and lights.

Table 2. Final Budget.

Item	Quantity	Unit cost	subtotal
Hand Dryers	4		\$1,150
Materials for outreach activities (recycled paper, fliers, stickers, posters, banners, etc)	10		\$3,500
Symposiums, workshops and other activities materials	7		\$1,480
Recycling stations	4	550	\$2,200
Equipment (light automatic sensors, shovels for planting, etc)			\$120
Reusable bags with logo of NWF and UPRM	1100	\$1.50	\$1,650
Trees	1000	Provided by Natural Resources	\$0
Racks		provided by UPRM	
		TOTAL	\$10,000 [\$5,000 NWF \$5,000 UPRM matching]