

Collaboration with universities to strengthen local resilience in Nicaragua



For the implementation of the Program for Disaster Risk Management in the Face of Climate Change in Nicaragua, Partners for Resilience (PfR) worked with the academic sector in the department of Madriz and in the Northern Caribbean Coast Autonomous Region (RACCN). The involvement of universities was a key factor in being able to offer diploma courses to decision makers and community leaders and for conducting studies related to local development. The Program also contributed to disaster risk reduction (DRR), climate change adaptation (CCA) and ecosystem management and restoration (EMR) being included in the academic curriculum.

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Universities play a fundamental role in generating knowledge and training future decision makers. With updated curricula and lecturers informed on issues related to DRR/CCA/EMR, they also play a role in multiplying and disseminating knowledge. Their permanent presence at the local level also makes them very important actors in terms of the sustainability of actions promoted by the international cooperation and local governments.

Capacity building for decision makers

During the formulation of the PfR Program the need was identified to partner with universities in order to implement academic diploma courses for key actors in the Inalí River and Tapacalí River sub-watersheds located in the municipalities of Somoto, San Lucas, Las Sabanas and San José de Cusmapa in the Nicaraguan department of Madriz and in the municipality of San Marcos de Colón in Honduras. Two higher diploma courses were given, focusing on river watershed management, climate change adaptation, ecosystems and risk management.

One of these courses, on *"Climate Change and Risk Management with a Focus on River Watersheds and Ecosystems"* was given by the National Autonomous University of Nicaragua (UNAN Managua-FAREM Estelí) and technical personnel from CARE. The 28 people trained in this course work in institutions, municipal governments, and nongovernmental and community organizations in the municipalities of San Lucas, Totogalpa, Ciudad Antigua, Yalagüina, Palacagüina, San Fernando and Somoto.



Graduation of the diploma course on
"Climate Change and Risk Management with a Focus
on River Watersheds and Ecosystems."
(Photo: CARE Nicaragua)

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Workshop on drafting the plan for the Tapacalí River sub-watershed in the community of El Espino. (Photo: Nicaraguan Red Cross)

"The higher diploma developed by the Nicaraguan Red Cross with the Central American University has been a great success because it involved us as professionals and as organizations," said Omar Edgardo Jiménez, a technician from the National Union of Farmers and Ranchers (UNAG). *"We participated not only in the diploma course, but also in conducting community assessment workshops that served as contributions to the Tapacalí sub-watershed comprehensive management plan."* He added that the tools applied were very important as they can be replicated in the communities and used in drawing up community plans and projects.

This academic experience was presented at the European and Latin American Academic Conference on Climate Change Management (ELAC3M), where it stood out as one of the region's innovative experiences. The conference, under the slogan "Opportunities and Challenges for the Modernization of Higher Education Institutions," took place in Guatemala on August 29 and 30, 2013.

Eleven research studies were also conducted, which served as a basis for developing land-use planning strategies. The participants conducted final research projects on issues including school safety, the evaluation of hazards and carbon capture. *"This diploma given by CARE-PfR came just at the moment I took over as the departmental delegate of the Ministry of the Environment and Natural Resources (MARENA), where the issues of climate change, risk management and river watersheds are priorities for the ministry,"* commented Pedro Celestino Vázquez.

A higher diploma course on "Comprehensive River Watershed Management in Climate Change Adaptation" was implemented in conjunction with the Central American University (UCA).⁴ It was held in the city of Somoto and attended by 30 representatives from the local governments and organizations in the Nicaraguan municipalities of Somoto, San Lucas, Las Sabanas and San José de Cusmapa, and the Honduran municipality of San Marcos de Colón.

Those taking the course participated in drawing up the Tapacalí River sub-watershed management plan. They also accompanied lecturers from the UCA conducting technical studies to support the plan's development and gave a series of community assessment workshops in 20 communities.



Omar Edgardo Jiménez facilitating an exercise on well- and badly-managed watersheds. (Photo: Nicaraguan Red Cross)



Presentation of the UCA-Nicaraguan Red Cross experience at the ELAC3M conference in Guatemala. (Photo: Nicaraguan Red Cross)

⁴ Video "Graduation - watershed management diplomas - Somoto - on December 13, 2013"





Photo: CARE Nicaragua.

Taking the university into the field

With the aim of strengthening community resilience and in conjunction with the UCA, the PfR Program organized a “Community Diploma Course on Comprehensive River Watershed Management, Disaster Risk Reduction and Climate Change Adaptation.” A total of 31 community leaders from the Inalí and Tapacalí sub-watersheds graduated from the course. According to Jairo Morales, who coordinated the course alongside the PfR Program technical teams, *“The community diploma course was a challenge in terms of taking the university into the field and ensuring the right to education of the community members that participated in the training sessions who live in the bi-national Tapacalí River sub-watershed and the tri-municipal Inalí River sub-watershed.”*

The design of the community diploma course’s curricular framework centered on fostering an environmental culture and citizenship among the members of the committees of both sub-watersheds and the inhabitants of communities located in the geographical areas involved. The course also reflected on the role and importance that both watershed committees should have.

The methodological approach used in the training meetings was participatory and dynamic, incorporating practical activities. The 12 training meetings were held in natural learning environments in ten communities and two protected areas located in the sub-watershed territories. An exchange visit was also held to learn about the management of the Jucuapa River bi-municipal sub-watershed in Matagalpa.



Jairo Morales teaching a class during the community diploma course. (Photo: Nicaraguan Red Cross)



Community diploma course session in the Somoto Canyon. (Photo: Nicaraguan Red Cross)

Elvín Pérez Sánchez from the community of El Chichicaste in the municipality of San Lucas completed the community diploma course. *“The whole of this process I’ve experienced and have had the chance to share with many people from the communities has helped me grow personally,”* he explained. *“At the same time it has given me more knowledge and experience because as a local inhabitant and a member of the Inalí River Sub-Watershed Committee I have been able to represent the communities. I’ve also empowered myself in community work and for dealings with the organizations and the San Lucas Mayor’s Office. As a member of the watershed committee I talk to my community with the authority to discuss what the National Waters Law says and we take into account the rights and duties we have as citizens. The watershed committees have a very important job to do in relation to the river watersheds, so the knowledge acquired in the community diploma course has helped me develop my work in the community I represent.”*



Elvín Pérez Sánchez from the Inalí River Sub-Watershed Committee. (Photo: CARE Nicaragua)

⁵<http://es.scribd.com/doc/241177503/Innovacion-academica-y-de-investigacion-en-adaptacion-al-cambio-climatico-en-la-subcuenca-binacional-del-rio-Tapacali>

The universities as local development allies

Universities can play an essential role in conducting research that is useful for municipal and community development. UNAN Managua-FAREM Estelí, the UCA, the Catholic University of Dry Tropic Farming and Livestock (UCATSE), the University of the Autonomous Regions of Nicaragua's Caribbean Coast (URACCAN), the Bluefields Indian and Caribbean University (BICU) and the University of Sussex have all conducted research work in support of the PfR Program in the municipalities of Somoto, San Lucas, Las Sabanas, and San José de Cusmapa; the RACCN; and the Honduran municipality of San Marcos de Colón.

UNAN Managua-FAREM Estelí carried out research studies in the communities of Cuyas, Río Arriba and El Chichicaste in the municipality of San Lucas. This involved assessing the impact and efficiency of microprojects developed through the PfR Program that focused on the implementation of climate information systems, the energy efficiency of firewood-saving stoves and the management and restoration of areas with slope instability.

Aware of the problems with the urban drinking water distribution and sewerage system in the municipality of Las Sabanas, Mayor Jalmer Rivera Alvarado asked the UCA for support. In response, students from the UCA designed a system for the municipality's urban area.

"The support we've had from the universities has been very important for us," said Mayor Rivera Alvarado, "as they have specialties in different fields. So in the future we intend to strengthen even further the (academic institutions') relations with the municipal government."

A sanitary landfill that is part of the municipality's comprehensive solid waste management plan was also designed by UCA students. It has now been inaugurated and will provide an answer to one of population's demands.

"The population has also become aware of the need for environmental protection," the mayor explained. "We achieved this thanks to the Red Cross and the universities, as they are supporting the development of municipal management."



Jalmer Rivera Alvarado, the mayor of the municipality of Las Sabanas, proposed various research projects to the UCA. (Photo: Nicaraguan Red Cross)



UCA students gathering information in San José de Cusmapa for the urban area development plan. (Photo: UCA)

In the municipality of San José de Cusmapa, which includes part of the Tapacalí River upper watershed, the sub-watershed management plan developed with the support of the PfR Program identified the need to produce an urban area development plan. The plan, which will contribute to land-use planning, was drawn up by architecture and environmental quality students at the UCA.

In the community of El Guayabo in the municipality of Somoto, civil engineering students produced construction plans for a suspension bridge over the Coco River in an area with a high risk of flooding. Arrangements are currently being made to fund the project.

“The collaboration between the Nicaraguan Red Cross and the UCA through the PfR Program started two years ago with the production of the proposal for the Tapacalí management plan. But then other issues emerged that we had the chance to work on together. For example, there were many environmental sanitation and water deficit problems in the Tapacalí River sub-watershed. So we saw an opportunity to get students involved there, working on thesis subjects or doing professional practice.” María José Zamorio, coordinator of the Environmental Quality Engineering course at the Central American University.



María José Zamorio at the 6th National Climate Change Forum. (Photo: Nicaraguan Red Cross)

With UCATSE and the Social Development Association of Nicaragua (ASDENIC), the PfR Program initiated the establishment of a climate monitoring network in the Tapacalí River sub-watershed. With support from UCATSE students, a student from the University of Sussex in the United Kingdom produced a thesis on the perception of climate risks linked to the El Niño phenomenon and the climate information needs of farmers in the Tapacalí River sub-watershed. The climate monitoring network will provide the university with more precise precipitation and temperature data for its research on climate change adaptation measures.

UCATSE students also worked on a thesis to improve the food and nutritional security of children under the age of five in two communities of the municipality of San José de Cusmapa, in coordination with the Ministry of Health. During this process, they trained 60 male and female farmers on the management of family vegetable plots.

Meanwhile, the Program collaborated with the URACCAN and BICU universities from the Caribbean Coast on compiling indigenous knowledge for risk management, a thesis on the safe acquisition of drinking water for children, and an awareness-building campaign.

Mainstreaming DRR/CCA/EMR⁶

Since 2009, UNAN Managua-FAREM Estelí has been mainstreaming the issues of disaster risk reduction, climate change adaptation and ecosystem management and restoration in 96 subjects and has created a climate change document center. In 2014, it held the second diploma course on “Climate Change and Risk Management with a Focus on River Watersheds and Ecosystems”, which was funded by the United Nations Development Program (UNDP).

The UCA is mainstreaming DRR and CCA in all the courses it offers. Teachers, students and administrative staff have participated in a training process, incorporating disaster risk management and climate change adaptation into the architecture, civil engineering and environmental quality engineering courses.

This is being done with support from Swiss cooperation, taking up aspects from the experiences in the Tapacalí sub-watershed and also using training materials such as the Nicaraguan Red Cross’ popular guide to climate change, the International Federation of the Red Cross’ protected schools methodology, and information on ecosystem management and restoration that will be given by Wetlands International.

September 2014 saw the start of a Central American master’s course on pedagogy applied to DRR and CCA for teachers from universities in the National Council of Universities; risk management, natural resource management and education institutions; universities of the Society of Jesus; and Fe y Alegría schools.⁷

⁶Mainstreaming is understood as the integration of the issues of disaster risk reduction, climate change adaptation and ecosystem management and restoration into the university’s courses curriculum and extracurricular extension activities.

⁷The master’s degree, which involves a total of 1,323 hours and 47 credits, will be given to 33 participants as an online course.

The UCA was also the venue for the 5th and 6th National Climate Change Forums, promoted by the Nicaraguan Red Cross. These forums encouraged an exchange of knowledge and experiences among state institutions, universities, the private sector, international cooperation, civil society organizations and United Nations agencies in relation to climate change adaptation.⁸

UCATSE is responsible for training most of the professionals in northern Nicaragua that choose to dedicate themselves to agricultural sciences, which is why it is extremely important for its different courses to offer students information about climate change and climate variability (the El Niño phenomenon), drought risk management and good environmental management.

This university has participated in many Program activities,⁹ including a training workshop on DRR, CCA and EMR for 30 students, conferences with the participation of 126 students and the training of a team of students to act as a reference point on the subject of climate change and risk management. It has also shown great interest in including this subject in its work and is planning a climate change diploma course that will include aspects related to DRR and EMR.



Opening of the 5th National Climate Change Forum in Managua.
(Photo: Nicaraguan Red Cross)



A conference for UCATSE students, August 2013.
(Photo: Nicaraguan Red Cross)

"The Catholic University of Dry Tropic Farming and Livestock has been developing activities in coordination with the Nicaraguan Red Cross (theses, internships, teacher training workshops, student forums, participation in the higher diploma, early warning system workshops, and the national forum). It will include the subject of CCA in its curriculum as a result of the working relationship that has been developed and will hold a diploma course in 2014 that will include the topics of climate change adaptation, disaster risk reduction and ecosystem management and restoration." Claudia Quiroz, Dean of the Faculty of Agricultural Sciences.



Claudia Quiroz, UCATSE. (Photo: Nicaraguan Red Cross)



⁸ Video of the "5th National Climate Change Forum in Nicaragua": <http://youtu.be/w9IEp-dB72Y>

⁹ Video on "Synergies with universities: collaboration with UCATSE in 2013" (in Spanish): <http://youtu.be/-DF4X98Ovk>

In conjunction with UNAN Managua-FAREM Estelí and UCATSE, the National Engineering University's northern campus in the city of Estelí participated in the organization of a Regional Forum on Climate Change Adaptation Technologies, Food Sovereignty and Security, and Agroindustry. The Forum included the presentation of research studies, the dissemination of technologies to mitigate the risk of drought and the proposal of environmental adaptation actions.

Finally, in the framework of its collaboration agreement with CARE, the National Autonomous University of Nicaragua in León has implemented actions with the Somoto rosquilla value chain committee through the university's Food Technology Faculty.

Results

Universities demonstrated great interest in collaborating with and supporting the Program, promoting joint risk reduction, climate change adaptation and ecosystem management and restoration actions.

The three diploma courses the Program promoted allowed the technical capacity-building of 89 key actors from the Inalí and Tapacalí sub-watersheds. This has had a multiplying effect because those who completed the courses subsequently promoted what they learned in their institution or organization. The participants also established relationships that could be useful in their professional work and in the coordination of activities between the upper/middle and lower parts of the sub-watersheds where they work.

In the framework of the Program's support for the municipalities and communities, contributions have been made to the search for specific solutions to problems such as solid waste management, land-use planning, food and nutritional security, and comprehensive river watershed management. The information generated and the proposals formulated with the help of the universities supported community and municipal decision making and management.

Universities are incorporating the subjects of disaster risk reduction, climate change adaptation and ecosystem management and restoration into their undergraduate and post-graduate curricula. Other programs and donors have also contributed to this mainstreaming effort, thus supporting the sustainability of these initiatives.

Lessons learned

The inclusion in a comprehensive training process of key actors that intervene in a watershed has a multiplying effect in terms of that watershed's management, as it provides them with tools that allow them to better manage the water resources.

The link between study centers and the countryside is very important and of mutual benefit. Studies on risk management, the sustainable management of the environment and climate change adaptation allow the students to apply theoretical knowledge and methodological instruments in a concrete way at the community, municipal or sub-watershed levels.



Delia Moreno of UNAN Managua-FAREM Estelí at the Regional Forum on Climate Change Adaptation Technologies, Food Sovereignty and Security, and Agroindustry in October 2014. (Photo: Nicaraguan Red Cross)



Graduation ceremony for the diploma courses held at the UCA, December 2013, Somoto. (Photo: Nicaraguan Red Cross)

"The cooperation with the Nicaraguan Red Cross has really influenced the relationship the students have with the country's needs and their interaction with the people. And that is a very difficult step – teaching something in the classroom and then putting it into practice. That is one of the things that's had the biggest impact on us. We had never done something like that before. Since we began working with the Red Cross, this has changed and it's been something unique. It's satisfying to see all the products resulting from this cooperation. They are products that are not going to sit on a shelf gathering dust; they are products for the community." María José Zamorio, coordinator of the Environmental Quality Engineering course at the UCA.

UCA students collaborating with the Las Sabanas environmental, water and sanitation unit technician. (Photo: UCA)



At the same time, working with universities allows communities and municipalities to carry out quality research studies at an affordable price, while university students learn and develop skills and the universities keep up to date with the situation in the field.

In this relationship between communities, municipalities and the academic world, cooperation can play a key role in generating opportunities and identifying needs for research, as well as facilitating contacts and processes.

Conclusion

The program has recognized the leading role universities play in helping facilitate development processes and their capacity to generate change. The issues covered by the program (DRR/CCA/EMR) and its close relations with the day-to-day reality in the communities have sparked the interest of universities in developing research projects in the framework of their particular curricula. The research and studies conducted have made a difference in the community-level work and municipal advocacy.

Universities have been strategic allies and have to be considered when it comes to thinking about replicating the Program's actions, due to their capacity to mobilize highly-trained human resources.

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