



Final Report Project 08

Changing minds and structures:

The growing involvement of the National Agricultural University with rural communities

Daniel Querol,
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appear Project08

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Contractor

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1. Description of Project

In order for the National Agricultural University (UNA) to expand its development of the poor rural communities constituting the backbone of Nicaragua's population, it was necessary to change minds and the university structures in their approach to teaching and research. DEPARTIR's (Desarrollo Participativo Integral Rural) team therefore identified and confronted the underlying causes to the limited link between the rural world and the academic environment.

Academically, students graduating from schools still needing improvement, find themselves at university undergoing a training that would require a more hands-on approach and that should produce skills that go beyond specialization in one career. Furthermore, the university structure prevents them from getting closer to the complexities of rural life, and the academic staff concentrate on theory; however this may now change thanks to the new generation that will replace around half of present professors. However, the process of curricular change has still remained pending over the past ten years.

From an administrative viewpoint the university maintains a rigid structure, adapted to the control of the resources allocated by the state, and therefore not adapted to the dynamic processes of research and production on the farm.

Institutionally, the structure by specialized and autonomous departments with independent teaching and research facilities, generates difficulties in achieving an interdisciplinary approach, all of this complicated by the endemic scarcity of resources for research and development activities.

This situation resulted in three professors working as a research and development team to teach a theoretical and practical course linking the university to the rural population. However, their course was extra-curricular, lacked resources and was not officially part of the UNA. They developed a strategy to ensure long-term continuity of their work while maintaining the flexibility essential for effective field work:

First we contacted and reached an agreement with three professors from BOKU university, willing to provide scientific and technological support, specially in soil analysis, animal husbandry and finally geographic information systems. The goal was to establish a link between academia and the rural area, and simultaneously to provide support in curricular reform and interdisciplinarity. A second alliance was then established with the Casa de los Tres Mundos (C3M), an NGO devoted to culture and development processes, with whom we had been working successfully for three years and who provided support in the analysis and proposals that would optimize the administrative processes. Through their Institute for Interdisciplinary Studies (IEI), they provided follow-up and made proposals to improve the course methodology, particularly in sociological and anthropological areas.



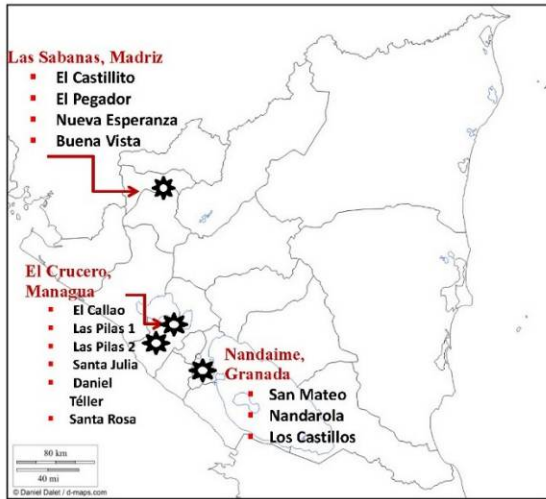
UNA Team with Axel Mentler and Thomas Schuppenlehner from BOKU.

While we were developing the methodology for cooperation, the APPEAR program issued a call with features that corresponded to the goals we had fixed for ourselves. We were therefore able to extend most of our expectations by three and a half years and adapt all our objectives with minimal changes in order to fit into their invitation.

The central objective of the Project was to validate and institutionalize a series of participatory, educational, research and extension tools in the UNA, enhancing the training of future professionals, while responding to the demands and needs of rural families and the urgent challenges they face.

We set three specific objectives:

1. Iterative validation of the participatory diagnosis and development of a methodology with these families and students in the field.
2. Consolidation, systematization and dissemination of the methodology
3. Incorporation of the methodology in the institutional and curricular development



To meet objective one, we organized four courses in different communities (see map) during the project. Based on the methodology we applied during each course, professors from the BOKU and researchers from the IEI accompanied us, to observe, participate and make suggestions to improve the scientific, technical and methodological quality of interventions in the field and their systematization and subsequent use. In parallel, together with the peasant families and students we tested and evaluated new procedures that should enhance the development of students' abilities and generate information that would be useful for the rural families. At the end of each course, at a community meeting with the families, we presented the results of the most

important problems identified in the diagnosis and their possible solutions.

In a democratic process, families prioritized alternative solutions, and based on that outcome a series of specific projects were developed and tackled with the support of the university: students and families working together. Of the more than seventy proposals presented in the communities, the population selected and with our support executed 27 projects, ranging from technology for drilling wells and pumping water, through photovoltaic systems to more traditional processes such as vegetable production in yards and biological management of pests and diseases in basic grains and coffee.

To consolidate, systematize and disseminate the developed methodology we used a number of strategies in parallel:

- [Manuals and technical guides](#) on the procedures and methodologies.
- [Posters and banners](#) to explain and spread some of the experiences in communities.
- [DEPARTIR](#) web page, (including links to Facebook and Twitter), where all documents, reports, manuals, scientific papers and other results were available to the general public. Students, farmers, researchers and extension workers have already downloaded over 25,000 copies of documents from this site.
- Presentation of DEPARTIR activities in [13 videos](#), multiple television presentations and a [YouTube channel](#),
- Finally, we systematized the experiences of the course and procedure in [a book](#) that was published and distributed.

To fulfill the third goal, multiple alternative proposals were drafted, both for the curriculum and for the structure, operation and rules of procedure of DEPARTIR. The University Council, in two separate sessions first approved the [establishment of the Program for Participatory Integrated Rural Development](#) as an Institutional Program and, even though the curricular transformation has not taken place for the whole UNA, approved [the two DEPARTIR courses](#), validating them for all study plans in the 4 faculties.

2. Summary of results

2.1. Narrative summary of results

We present the results strictly following the [logical framework](#) defined at the beginning of the Project. **Expected results as set at the beginning of the project are highlighted in green.** This is a summary of results, provided in more detail in our [annual](#) reports.

1. Local technical results

1.1 A community diagnostic and development plan in 3 communities

Course at Las Sabanas, June to August 2011

During the first course in 2011, 81 farm diagnosis were completed, covering a population of 824 women, men and children in three communities of Las Sabanas parish (El Pegador, Nueva Esperanza y Buena Vista).

We took and analyzed soil samples in 10 farms of these communities. UNA and BOKU cooperated using the results for publication in an international Journal. We conducted preliminary tests to validate the technology for infield biological water analyses for human consumption.

Of the 40 main problems identified in the communities, six were selected in coordination with the peasant families and the university and have been developed into projects which were implemented by students, professors and families. The full report of the course is [Appendix 2.1](#)

Course at El Crucero, 25 June to 3 August 2012

We completed the diagnosis of the communities El Callao, Las Pilas 1 y Las Pilas 2, in the parish of El Crucero, department of Managua. Fifty-four students participated in the course (20 women and 34 men) and three additional students came from the UNAN (National Autonomous Nicaraguan University).



During our work in the communities, 207 families participated actively. Two professors specializing in soil analyses from the faculty of environment and natural resources supported the course in their own area. The soil laboratory allowed us to use their facilities and equipment so that students could analyze the soil samples and deliver the results to the families. The communities agreed to work on four alternatives:

In the El Callao community families decided to work on

- Evaluation of strawberry cultivation
- Study of the viability for the production of organic coffee

In the Las Pilas 1 and Las Pilas 2 communities, the following areas were agreed on:

- Production of organic fertilizer
- Organic production of horticultural crops

In addition, we started a new pilot exchange, which we called "Escuela Juvenil Rural" (Rural Youth School), where professors from the UNA presented subjects of interest for their future work in agriculture to 45 high school students. We developed six subjects (Seeds, water absorption in plants, soil fertility, beneficial insects and harmful insects in the cultivation of coffee and tomato).

The full report of the course is [Appendix 2.2](#).

Course at Nandarola, 21 January to 28 February 2013

In Nandarola, Nandaime, department of Granada, fieldwork was carried out in the Nandarola, San Mateo and Los Castillos communities, with 126 families. Thirty students (19 men and 11 women) participated in this course, including one from the UNN (University of Northern Nicaragua) and two from BOKU. The full report of the course is [Appendix 2.3](#).

Course at Santa Julia, 27 January to 28 February 2014

The seventh edition of the 2014 DEPARTIR course was held between January and March in the communities of Santa Julia, Daniel Teller and Santa Rosa, in the municipality of El Crucero, department of Managua.

A team of 27 students from three faculties was involved, as well as a BOKU student. They carried out surveys amongst the 61 families of these communities and produced 29 farm diagnoses and the corresponding reports. Professor Thomas Schuppenlehner from BOKU participated in the training of the students in the field and the introduction and management of the online database for the surveys.

The diagnoses resulted in thirty development proposals for the communities, and the main problem was the difficult access to water. The full report of the course is [Appendix 2.4](#).

A summary of the courses can be seen in the following table:

Year	Communities	Families	Diagnoses	Projects	Population	Students	Teaching staff
2011	El Pegador, Nueva Esperanza y Buena Vista	164	92	4	819	35	4
2012	El Callao, Las Pilas 1 y Las Pilas 2	207	81	7	978	51	8
2013	San Mateo, Nandarola y Los Castillos	127	41	4	550	29	9
2014	Santa Julia, Daniel Teller y Santa Rosa	62	32	12	220	28	5
Total		560	246	27	2567	143	26

1.2 A minimum of 15 alternatives were validated and applied locally in the 3 communities

The methodology involving community participation for the diagnoses, was validated and adjusted in twelve communities, a number larger than had been originally planned.

Also, while only 15 projects had been foreseen originally, 27 research micro-projects involving the techniques and methodologies for improving or modifying a variety of problems in the communities and generating alternatives for the families involved, eventually served to graduate UNA students. The list of these micro-projects is under the heading [contribution to development](#) of this report.

2. Methodological results

2.1 Methods and manuals for training and meta-training for the DEPARTIR intervention in rural communities selected and published.

In order to systematize, consolidate and make the methodology used in the Project known, DEPARTIR recorded all the information pertaining to intervention in the rural communities. Once the team consolidated and analyzed it, information was returned to the families and submitted to the UNA authorities and to the remainder of the university through different events.

The information thus generated was also translated into [videos](#) shown on national television and on DEPARTIR's [webpage](#). DEPARTIR.net also allowed us to spread the results of all our work both nationally and internationally, including the results of the rural diagnoses, the research and techniques used and those implemented with the families in the communities.

Finally, we systematized the methods and process for the course in a book and the techniques and methodologies in a series of [scientific articles](#), [manuals and handbooks](#).

3. Institutional results

3.1 Curricular transformation

Initially the curricular development with our methodology was only used in the Faculty of Agronomy with third and fourth-year students in the careers offered by UNA's four faculties. Our Comprehensive Participative Rural Diagnosis (CPRD) course was also recognized as a pre-professional training stage, worth five credits. At the end of the project, the UNA council agreed on a special reform to the curriculum, [approving the CPRD course for all faculties](#) (divided in two parts because of its 240-hour length), thereby confirming that the development of student skills through the diagnostic process constituted a new attractive educational model for the University.

3.2 Teachers at UNA trained in supervising interdisciplinary Master thesis

BOKU prepared a joint Master thesis program for BOKU and UNA students. Simone Peter, student of BOKU, together with her supervisor, Prof. Maria Wurzinger, elaborated a proposal entitled "Gender Roles on Farms in Nandaime, Nicaragua" to be executed during the DEPARTIR course in 2013. UNA agreed that Cruz Zeneida Peralta do her graduate work supervised by Prof. Marina Ulmos of the Department of Rural Development, who also supported Simone Peter while doing her field research. The students conducted the interviews together, discussed the contents and analysis, but wrote their thesis separately. This joint Master thesis enhanced interdisciplinary learning and teaching, and gave students the opportunity to learn from and to support each other. In fact, Simone Peter received great support from her local student counterpart and was able to benefit from UNA's already existing knowledge of the village and its inhabitants whereas Ms. Peters brought in her experience with qualitative research.

3.3 Institutionalization of an interdisciplinary team of professors

Thanks to the project, we were able to recruit and train two young teachers with a new mentality, who work as a team, use participatory tools and promote innovative development while respecting gender equality and the students' human values. At the same time they are implementing processes to improve the quality and pertinence of higher education. They both underwent training in BOKU during the project and while Felix Nieto is doing his Master's with a SIG scholarship, we are working to obtain a fellowship for a PHD at BOKU for Juan Carlos Moran.

Following an invitation of the BOKU team, Prof. Dennis Salazar, who as Dean of the Faculty of Agronomy from the very beginning had supported the efforts of DEPARTIR, participated in a training course (*Landschaftsökologisches Freilandpraktikum*) organized by BOKU in 2012. Dr. Salazar joined a team of experts in order to determine which methods and approaches used at BOKU were useful for the DEPARTIR interdisciplinary course.

3.4 Management changes in the UNA for the functioning of DEPARTIR

The main achievement has been the acceptance by UNA that the manager of the funds allocated to C3M also administer the funds granted to UNA. For this she was trained in the computer tools used by the university (Universitas XXI, SIGUE-ADO, ANNUAL BUDGET) and authorized to sign financial and administrative documents related to the APPEAR Program. UNA also trained her on financial procedures and administrative rules, and allowed her to manage the project through the various levels of the university administration.

During the project's last year, UNA authorities approved the reform of certain administrative and financial procedures such as the regulations justifying cash advances and the handling of petty cash. This allowed greater flexibility in the administration of project funds and consequently a better functioning of the course.

After a review of present procedures in the UNA management, a [proposal for reviewed Rules and procedures for the Management of External Funds](#) was drafted and duly submitted to the Deanship of FAGRO, but has not yet been discussed with other university officials.

The experience, recommendations and administrative achievements of the DEPARTIR program have been described as novel and interesting by project coordinators and officials of UNA, and have in some cases served as a model to be followed. This is a positive development, because it means that UNA authorities and researchers involved in projects recognize the inflexibility and disadvantages of the existing procedures.

3.5 Students using methodology

As seen in the following table, based on two types of evaluations ¹ by the students, over 95% of the students having taken the courses value the experience with DEPARTIR as one of the highlights of their university training, and consider that they have acquired new tools and skills. They also appreciate the opportunity to put their knowledge and skills into practice in a real context.

Student replies to an anonymous survey on their assessment of the course

Year	N° Students	Male	Female	Faculty	Course Valuation
2011	1	0	1	FARENA	Excellent
2011	8	7	1	FACA	Excellent
2011	11	2	9	FDR	Very good
2011	14	11	3	FAGRO	Excellent
2012	3	0	3	UNAN	Excellent
2012	3	3	0	FACA	Very good
2012	10	3	7	FARENA	Very good
2012	17	10	7	FDR	Excellent
2012	27	20	7	FAGRO	Excellent
2013	1	1	0	UNN	Excellent
2013	2	1	1	FARENA	Very good
2013	2	0	2	BOKU	Very good
2013	6	4	2	FDR	Excellent
2013	17	12	5	FAGRO	Excellent
2014	2	1	1	FARENA	Excellent
2014	8	2	6	FDR	Excellent
2014	15	13	2	FAGRO	Very good

3.6 Teachers at UNA trained in interdisciplinary teaching.

Interdisciplinary teaching and learning were approached both theoretically and practically during the project. Dr. Maria Wurzinger and Dr. Axel Mentler, analyzing how to strengthen interdisciplinary approaches in DEPARTIR, held a workshop at UNA in January 2012 ([Report of the workshop](#)). Members of the DEPARTIR team from UNA as well as C3M participated, as well as 16 professors from the different faculties of UNA. All participants agreed that the participation of several disciplines would add to the learning experience as well as the project's success.

Concerning the actual implementation of interdisciplinary teaching, the CPRD course itself is an example, even though the full participation of professors from other departments at UNA remains a goal still to be achieved: students work on different aspects, specialize in groups (water, soil, etc.), and thus bring in multiple perspectives when it comes to the diagnostic work. During the courses of 2013 and 2014, BOKU professors from 4 different disciplines joined the group for a few days bringing in their views and expertise. Most importantly though, the course is open to students from all faculties, which automatically leads to an interdisciplinary approach and greatly adds to the learning experience.

As another example, two students from different disciplines and different universities supervised by two professors also from different universities and disciplines worked together on one subject, discussed the planning of the fieldwork, conducted interviews together and later discussed them. The [joint Master thesis](#) within the framework of DEPARTIR was not so much a training exercise but an attempt by the DEPARTIR team to include as many perspectives as possible into the research.

¹ The questionnaire had 5 components (Polling, GIS, Awareness Learning experience and Team evaluation), with three questions on each using a Liker scale (1-5). Averages were calculated by year and faculty.

Logical framework

	Intervention logic (as planned)	Indicators of achievement (as planned)	Indicator: actual status at end of project	Verification (as planned)	Verification: actual status at end of project	Deviations & comments	Assumptions	Assumptions (changed)
Overall objective	<p>Validate and institutionalize a series of participatory university education, research and extension tools in the UNA, which enhance the training of future professionals while also responding to the demands and needs of peasant families and the urgent challenges they face.</p>	<ol style="list-style-type: none"> The UNA has the human, methodological and administrative tools and capacities to implement the Integral Participatory rural development (DEPARTIR) The UNA has an academic team responsible for the theoretical and practical, mandatory training of its students in rural communities. Students are competent in applying the tools for participatory diagnostic and planning in rural areas. UNA has the institutional capacity to carry out the courses for students, training for teachers and the management of the process as a whole. 	<ol style="list-style-type: none"> The UNA has gone beyond initial expectations and has established the DEPARTIR programme DEPARTIR/UNA programme has an academic team of 3- fulltime professors and two assistant professors. Evaluations by 143 students show that 95% feel confident to be able to apply the needed tools The institutional capacity of UNA is confirmed by the creation of the DEPARTIR Programme 	<ol style="list-style-type: none"> External final evaluation Monitoring Reports Developed curriculum Administrative Manual-protocol 	<ol style="list-style-type: none"> The University council has established the University wide DEPARTIR programme Full diagnostic report of 246 farms in 9 communities. The Syllabus for two courses (Theoretical introduction and field course) were included in the curriculum by the University council. Programme rules, procedures and operational manual approved by the University council. 	<p><i>The creation of the DEPARTIR programme is beyond our planned structural changes in the UNA.</i></p> <p><i>All activities went according to plan; we were able to give 4 field courses, instead of the 3 planned.</i></p>	<ul style="list-style-type: none"> <i>Willingness to change in the UNA</i> <i>Acceptance of the project in the communities</i> <i>Interest of students in internships and interdisciplinary focus</i> 	<p><i>Even though has the institutional capacity, a limiting factor is that fresh resources are still needed every year for the fieldwork.</i></p>

Specific objectives	<p>1. Iterative validation of the participatory diagnostic and development methodology with peasant families and students in the field.</p>	<p>1. Interventions completed with <i>100 students</i> and 18 professors in at least 3 communities, including feedback from both students and peasant families.</p>	<p>1. Interventions in nine communities, with 143 students and 26 professors, including Nandarola</p>	<p>1. Monitoring Reports</p>	<p>1. 10 professors participated directly in the course, in 9 communities. 119 students have been trained and finished the course</p>		<ul style="list-style-type: none"> • <i>Resistance to change</i> 	<p><i>Even though resistance to change and bureaucracy remain a challenge, support by the UNA authorities has streamlined the evolutionary effort</i></p>
	<p>2. Consolidation, systematization and dissemination of the methodology</p>	<p>2. DEPARTIR methodology in a book, manuals and online, results of evaluations among students, teachers and local communities incorporated.</p>	<p>2. 14 manuals published, book published</p>	<p>2. Published and online information -Number of dissemination workshop held -Number of printed copies distributed</p>	<p>2. - Book printed - 14 manuals printed - 5 different dissemination workshop -Youtube channel -www.departir.net Full reports of 4 communities</p>		<ul style="list-style-type: none"> • <i>Hiring process</i> 	
	<p>3. Incorporation of the methodology in the institutional and curricular development</p>	<p>3. Process incorporated in at least half the curricula of UNA as a requisite for graduation. -Four full-time professors paid by UNA, dedicated to the process -Administrative processes adjusted.</p>	<p>3. DEPARTIR Programme created -Two full time professors hired -Two new professors in training - Administrative changes in the new DEPARTIR Programme</p>	<p>3. External final evaluation - UNA curriculum</p>	<p>3. Course included in UNA curriculum for all faculties</p>		<ul style="list-style-type: none"> • <i>Bureaucracy</i> 	

Expected results	<p>1. Local technical results</p> <p>1.1A community diagnostic and development plan in 3 communities</p> <p>1.2A minimum of 15 alternatives validated and applied locally in the 3 communities</p>	<p>1.1The distribution of 100 farm diagnostics and development plans in 3 communities</p> <p>1.2 Adoption of new alternatives by communities</p>	<p>1.1 246 farm diagnostics in the hands of peasant families</p> <p>1.2 30 Alternatives have been tested in communities</p>	<p>1.1Farm diagnostics and development plans</p> <p>1.2Feedback from local population, as evaluated by C3M</p>	<p>1.1Farm diagnostics and development plans for 246 farms</p> <p>1.2Feedback from local population has been evaluated by C3M and new methodologies have been added</p>	<ul style="list-style-type: none"> • Financial and human resources available • Management process operative
	<p>2. Methodological results</p> <p>2.1Methods and manuals for training and meta-training for the DEPARTIR intervention in rural communities selected and published.</p>	<p>2.1Agreement through consensus on the most adequate method for selection of proposals for changes in the production units</p> <p>- Definition of the best (and most useful) elements and tools for participatory farm planning</p>	<p>2.1Methodologies are being contrasted</p> <p>- New proposals on sociological and gender tools have been incorporated</p> <p>Coursebook published</p>	<p>2.1 Published documents and webpage.</p>	<p>2.1 –Coursebook published</p> <p>- 14 manuals published</p> <p>-Webpage in operation</p> <p>-9 TV programs broadcasted</p>	
<p>3. Institutional results</p> <p>3.1Curricular transformation</p> <p>3.2Institutionalization of an interdisciplinary team of professors</p> <p>3.3Management changes in the UNA for the functioning of DEPARTIR</p> <p>3.4Students using methodology</p> <p>3.5Teachers at UNA trained in interdisciplinary teaching.</p> <p>3.6Teachers at UNA trained in supervising interdisciplinary Master thesis</p>	<p>3.1The definition of a curriculum for the integration of students in rural communities</p> <p>- A new curriculum approved by the UNA Senate</p> <p>3.2A team consolidated and hired from the UNA core budget.</p> <p>3.3Solutions proposed and implemented for the management of financial resources, as proposed by C3M.</p> <p>3.4Completion of the training process by a minimum of 100 students</p> <p>3.5Workshops on interdisciplinary teaching by BOKU for professors from UNA and other universities</p> <p>3.6A BOKU-UNA team operating and supervising interdisciplinary Master dissertations</p>	<p>3.1The DEPARTIR Programme for education and applied research has been approved</p> <p>3.2Two new professors have been added to the DEPARTIR staff</p> <p>3.3A proposal for the UNA administrative process is finished, and will be used in the DEPARTIR Programme.</p> <p>3.4 143 students trained</p> <p>3.5Workshop was held in Managua</p> <p>3.6Team has been established</p>	<p>3.1UNA Senate Minutes</p> <p>3.2Contracts</p> <p>3.3Rules and procedures manual developed and implemented</p> <p>3.4Number of positive exams and successfully competed student work.</p> <p>3.5Reports from workshops</p> <p>3.6Two students in the BOKU-UNA Masters program</p>	<p>3.1UNA Senate agreement</p> <p>3.2 Two new professors in team</p> <p>3.3Rules and procedures manual approved internally</p> <p>3.4 143 positive exams and successfully competed student work.</p> <p>3.5Report from workshop</p> <p>3.6 Two students in the BOKU-UNA Master's program graduated</p>		

2.2. Enumeration of results

1. Systematization and [publication of the methodology](#) for the Comprehensive Participative Rural Diagnosis (CPRD) course.
2. Training of human resources required to implement the CPRD course.
3. Establishment of the DEPARTIR University-wide Program by [agreement](#) of UNA`s University Council.
4. Validation as credit courses for all UNA careers of the optional courses DEPARTIR I: Methodology for CPRD and of the DEPARTIR II: CPRD practical module, by [agreement](#) of UNA`s University Council.
5. Successful participation of 143 students from UNA`s four faculties in four CPRD courses.
6. Positive acceptance of the academic activities of UNA students and instructors on the part of the rural communities.
7. [Twenty-seven options agreed on with the population and implemented](#) in the areas of agronomy, engineering and irrigation facing climate change, renewable energy and rural development in general.
8. Build-up of a solid base for complementary work with other university sectors including the laboratories for soils and microbiology, the public information department and the offices for information and communication technologies.
9. Successful transfer and installation of soil laboratory equipment from BOKU to UNA and subsequent training.
10. Establishment of the technical base for the use of [renewable energy](#) and water harvesting and management for the development of a sustainable agriculture.
11. Definition and construction of an operational [online geographical information system](#).
12. Availability of [equipment](#) required for the development of the course and support of the pertinent research.
13. Development and publication of [eight technical guides and nine manuals](#).
14. [Ten Theses](#) within the framework of the project, including two masters Theses.
15. Publication of [nine scientific articles](#) and production of [thirteen videos for television](#).
16. Development of a [web page](#) and DEPARTIR [YouTube channel](#).
17. Production of a Dossier on [development concepts and theories](#).
18. Completed [institutional gender diagnosis of UNA](#).

Additional results of the project include:

- Three annual DEPARTIR [field days](#) on the central campus of UNA, in cooperation with C3M, with over 300 participants.
- Participation of 4 BOKU students in CPRD training courses (Christoph Wolber, Simone Peter, Theresa Stöckl and Johannes Hering)
- Successful implementation of the concept of a joint master thesis between a UNA and a BOKU student
- Elaboration of an [instruction video on Soil Monoliths](#) in Spanish
- Training of Prof. Juan Carlos Moran Centeno ([2013](#), [2014](#)) and Prof. Felix Humberto Nieto Reyes ([2014](#)) at BOKU, Vienna.
- Building lasting cooperation possibilities between the universities and with the Casa de los Tres Mundos.

2.3. Failed objectives

Specific goal 3 demanded a change in the university`s overall curriculum which could not be fully implementend due to the burdensome and minimally flexible organization and administration of UNA resulting from the 1990 Autonomy Act of Nicaragua`s public universities. Steps were taken with multiple university authorities and members in an effort to reach agreement for the integration of our course as a common academic activity to all the specialties. In 2012 the University Council agreed that any curricular changes would be examined by UNA at a date after the conclusion of the APPEAR project.

However, as an exceptional option, the University Council`s regular session # 589 of 31 July 2014 analyzed and approved by [Agreement # 2440](#) the DEPARTIR program`s proposal to include

the optional course and field work in the curriculum. As a result, these courses provisionally named *DEPARTIR I: Methodology for Comprehensive Participative Rural Diagnosis (CPRD)* and *DEPARTIR II: CPRD practical module* can be taken within all UNA careers. The courses already have a syllabus, subject to review, possible adjustments and final approval

In a meeting with Eng. Gregorio Varela, the new dean, it was agreed to invite various staff members, in order to better consolidate our proposals and assess the necessary duration, teaching personnel, logistics and financial aspects for future CPRD courses.

3. Assessment of the quality of the cooperation

Throughout the Project's three-and-a-half year duration, cooperation was fluid: The UNA-team meets every Monday to evaluate progress and plan the week's activities. At least once a month UNA meets with the Casa de los Tres Mundos. In spite of distances and the cost of travel, we organized one main yearly meeting of the three partners. We met in Granada (May 2011), Managua (February 2012) and again in Granada (January 2013). During these meetings, we reviewed the activities and results of the previous year and planned the following. We also had a meeting (BOKU-UNA) in May 2012 in Vienna. There were a number of video-conferences, and more than a dozen visits to workshops and courses both in Vienna and Managua.

Apart from the knowledge exchange and practical work, the meetings served for planning as they gave all members a chance to sit at one table, share their views and discuss the next months or years. It might be believed that this could easily be done via Skype or video conferences, but the team has found that the personal meetings were much more successful than the attempts to plan and exchange knowledge via video conferences. Technical problems, communication problems, the time difference and language issues generated severe misunderstandings that had to be sorted out after a video conference. This shows how much can get lost when poor sound quality and a small screen limit the possibilities of communication.

Co-operation between the three institutions has been ongoing and during our trips to Vienna, we established new areas of collaboration, including Geographic Information Systems and invited a Master's degree student, who came in January 2013 to study gender aspects in the communities within the DEPARTIR course.

Co-operation between C3M and UNA has been constant in the areas of management, strategic planning, and even financial matters (due to the late arrival of the funding for the second year, C3M advanced \$5000 from its core funding for the preparation of the course and also advanced the \$15,000 needed for the final report).

The project team at BOKU met on a regular basis to study the specific project activities. As DEPARTIR/BOKU was embedded into the Centre for Development Research, a close cooperation and debate between the project coordinators of different APPEAR projects was assured.

Coordination of field activities has been streamlined, including visits to the communities and dialogue with the local leaders at least 4 months before a course. After initial coordination, a meeting with the whole community prepares a work plan and defines which families will be receiving students.

For the team, one of the aims of the past years was to continue strengthening existing cooperation lines, to increase the efforts for public relations, to involve more people - professors as well as students - into the project and to focus on joint publications.

The idea of promoting student exchanges with DEPARTIR emerged due to both universities' interest in a long lasting partnership and cooperation. Student cooperation, besides being a great learning opportunity for both sides, can help to achieve this, so all project partners agreed to continue promoting the participation of BOKU students in the CPRD course, with special emphasis on joint Master's theses.

Every visit of the BOKU team at UNA and vice versa added new drive, motivation and ideas to the project. Although a good part of the communication between partners was achieved via internet, phone, Skype or video conferences, the meetings were an indispensable part of the cooperation and therefore all project members considered one each year as the minimum. As the

BOKU team was new to the project, whereas UNA had developed the idea and had been organizing the courses for several years, an introduction to DEPARTIR at the beginning of the project was useful for the BOKU team to gain more insight into the project, the processes, the situation at UNA and, most importantly, to get to know the project members themselves. Still, that first short meeting only transmitted a very basic idea of DEPARTIR, its history and its ambitions. Over time, the meetings became more specific; BOKU visited communities that had hosted the training course, were able to talk to farmers, to students, to other professors. The team identified soil as a topic of possible contribution, highlighted the importance of making the work of DEPARTIR more visible through scientific publications, and we decided to train and support of young members of DEPARTIR. Later on, actual practical work in the field, at UNA's soil laboratory, or in the classrooms of UNA became an important and finally the main part of the meetings. Prof. Axel Mentler identified the need of additional equipment for UNA's soil lab and was able to transfer unused equipment from the BOKU labs to UNA as a donation.



Dr. Mentler, Dr. Murillo and the functioning Gas chromatograph in Managua.

During the first half of the project, the visits of UNA team members in Vienna mainly had a strategic focus: UNA team members were eager to meet other professionals at BOKU for possible support to DEPARTIR and future cooperation. The cooperation with Dr. Schauppenlehner – which had not been planned – started because of such a meeting. This cooperation has proven to be very successful and will continue in the future (a proposal was written for a new project involving Dr. Schauppenlehner). This contact was established through UNA's presence at BOKU and the possibilities it offered for spontaneous and unexpected encounters.

In the second half of the project, we agreed that young members of the team receive training at BOKU facilities in methods of soil analysis as well as Geographical Information Systems. Although costly, the team decided the best sustainable way to invest money was in those likely to be the future coordinators of DEPARTIR. As the trainers, Dr. Mentler and Dr. Schauppenlehner could not easily leave their obligations at BOKU for more than a week or two, the most suitable way to do the training was to do it at BOKU. Especially the second training, where both Mr. Moran Centeno and Mr. Nieto Reyes were invited, we are convinced that the outcome was more than just gained knowledge on soil labs or online-GIS systems: The experience of working in a different environment, handling communication problems, new contacts and ideas – all this is a preparation for future international cooperation.

Throughout the whole project, there was very close communication between the teams in UNA, BOKU and C3M, and many suggestions and support actions contributed significantly to the enhancement of the methodology. We established an *inter-pares*, participatory planning, follow-up and assessment process fully consistent with the academic model proposed to UNA.

In addition, administrative and financial issues were taken over by three very experienced project managers, Lic. Glenda Martínez, Mag. Verena Pflug and Lic. María Cantarero.

APPEAR, the entity responsible for the facilitation and monitoring of the financial resources, implemented a flexible and dynamic work structure with good communication channels, disbursements made on time by the responsible staff, and timely assessment of reports. Those of us who were executing the project received all the support we required.

4. Contribution to development

DEPARTIR has contributed to development at three levels:

1. Specific contributions to local development
2. Development of UNA`s scientific and technical capacity
3. Changes of the minds and structures in UNA, BOKU and C3M

Specific contributions to local development

The 246 farm diagnoses and the four community reports have been a watershed for many peasant families towards a more sustainable approach to their farming system. The satellite image map, the soil characteristics and the description of the weaknesses and potential of their farms are among the preferred results. However, it is in the follow-up interventions that concrete productive results can be seen. In the next table, we present a listing of 38 proposals drafted by UNA students and professors, 27 of which we fully implemented in the field.

Local development alternatives.

	Proposals	Executed	No
I.	EL PEGADOR, NUEVA ESPERANZA, BUENA VISTA		
1	Caracterización y canal de comercialización de Jocote Corona (<i>Spondia spp.</i>).		X
2	Niveles de Fertilización en maíz (<i>Zea mays L.</i>) y frijol (<i>Phaseolus vulgaris L.</i>).		X
3	Fertilización de café con humus de lombriz.		X
4	Gestión e instalación de molino eléctrico.	X	
5	Alimentos siempre en casa.	X	
6	Manejo agronómico del cultivo de fresa (<i>Fragaria spp.</i>)	X	
7	Manejo agronómico del cultivo de papa (<i>Solanum tuberosum</i>).		X
8	Mejoramiento de alimentación de ganado menor y mayor en época seca.	X	
II.	EL CALLAO, LAS PILAS 1, LAS PILAS 2		
1	Evaluación del cultivo de fresa	X	
3	Enfermedades en Musáceas		X
4	Elaboración de Abonos Orgánicos		X
6	Huertos familiares y Capacitación sobre dietas alimenticias	X	
7	Elaboración de Abonos Orgánicos		X
8	Manejo de plagas y enfermedades en tomate y café		X
9	Análisis de suelo	X	
10	Obras de conservación de suelos	X	
11	Análisis de calidad y manejo de semilla	X	
12	Fisiología de la planta	X	
13	Identificación de insectos benéficos y perjudiciales	X	
III.	SAN MATEO, NANDAROLA, LOS CASTILLOS		
1	Cultivos de hortalizas	X	
2	Establecimiento del cultivo de tonkuá	X	
3	Elaboración de filtros artesanales para el consumo de agua.	X	
4	Caracterización de biodiversidad en el riberas del río de San Mateo	X	
IV.	SANTA JULIA, DANIEL TELLER, SANTA ROSA		
1	Diseño de un sistema de conducción de agua en la comunidad de Santa Julia	X	
2	Plan de manejo de los recursos naturales en las comunidades de Santa Julia y Daniel Teller.	X	
3	Comparación de diferentes obras de conservación de suelo en las	X	

	comunidades de Santa Julia y Daniel Teller		
4	Manejo de aves de patio utilizando recursos propios de las fincas en las comunidades de Santa Julia y Daniel Teller.	X	
5	Plan de alimentación del ganado en época seca en la comunidad de Daniel Teller.	X	
6	Implementación de sistemas de cosecha de agua en las comunidades de Santa Julia y Daniel Teller.	X	
8	Evaluación de 8 especies de hortalizas en pequeños sistemas de producción, manejado por mujeres en la comunidad de Santa Julia	X	
9	Control del Cogollero (<i>Spodoptera frugiperda</i>) en el cultivo de maíz (<i>Zea mays</i>), en las comunidades de Santa Julia y Daniel Teller	X	
10	Manejo de broca (<i>Hypothenemus hampei</i> Ferrari) y roya, en el cultivo de café (<i>Coffea sp</i>), en las comunidades de Santa Julia y Daniel Teller	X	
11	Control de diabrotica (<i>Diabrotica balteata</i>), en el cultivo del frijol (<i>Phaseolus vulgaris</i>), en las comunidades de Santa Julia y Daniel Teller	X	
14	Evaluación de caldos y biofertilizantes en el cultivo del café en las comunidades de Santa Julia y Daniel Teller	X	
15	Implementación de Papalotes para fotografía aérea	X	
	Total	27	11

The last column indicates proposals abandoned before completion. Further information on these projects is in appendix xxxx

Contribution to capacity building at the Southern organizations and Austria ***Development of scientific and technical capacity***

As mentioned above, BOKU transferred equipment to UNA, improving the capacities of UNA's soil laboratory. Specifically, a Photo Spectrometer, an Atomic Absorption Spectrometer and a Gas Chromatograph were installed in cooperation with the staff of the soils lab. We organized 4 training workshops by Dr. Axel Mentler in the calibration, use and maintenance (with the pro-bono support of Willy Reitschmidt, a retired HP specialist) of the equipment donated by BOKU and a conference (backed up by a [training video](#)), on the use in teaching and research of Soil monoliths, with participants from 4 universities.



Willy Reitschmidt repairing a Spectrophotometer in Managua, while Dieter Stadler watches.

In the GIS area, Prof. Thomas Schauppenlehner, of the Institute of Landscape Development, Recreation and Conservation Planning (ILEN) at BOKU was invited for workshops on knowledge transfer during the courses in Managua in February 2013 and January 2014. During his stays, he trained the DEPARTIR team in the development of a geographic information system (GIS) and database environment for managing, analyzing and mapping of survey data and geographic information. A common concept and data model was also developed based on the experience of previous courses. Short lectures introduced the new software tools and methods.

Change of minds and structures in UNA, BOKU and C3M

As part of the goal of changing minds and structures, DEPARTIR has encouraged collaborative teamwork amongst the students and professors, and enjoined them to appreciate the results to be achieved through interdisciplinary practical efforts. Even though there are difficulties in integrating our approach to the old UNA, it is evident that the results have permeated the perception of both the authorities and the academic personnel. Only this can explain their proposal to launch DEPARTIR as the core of the first education and applied research programme in UNA.

When analyzing the impact this APPEAR- supported proposal will have on higher education, we believe that it is one of the pertinent paths in the training of professional human resources whilst putting them in contact with (one of the) aspects of reality in their society.

- One Master's student and four undergraduate students have finished their thesis linked to specific development needs in communities.
- We have developed a manual of rules and procedures for the presentation of small projects for community development.

Development of the Project has contributed to new skills in UNA and an alternative teaching process that takes into account another national reality while strengthening interdisciplinary work within the university. It has also reinforced the university's capacity to impart and share knowledge with families in rural communities, while simultaneously bringing together the vision of professionals from different cultures with a view to achieving common goals for the benefit of the most vulnerable segments of society.

We are convinced that this Project also served to promote greater interaction between higher education institutions of Austria and Nicaragua and this may in the future lead to the development of larger projects in areas of education and research.

Certainly, three and a half years of cooperation have caused some change of minds among the BOKU project team. Every international and thus intercultural cooperation brings new inputs and ideas, and we consider DEPARTIR especially valuable in this regard. DEPARTIR is a project coordinated by the Southern Partner, and it was also developed by the Southern Partner responding to specific needs. BOKU joined the project when DEPARTIR was already an established and running project within UNA. For all these reasons, the BOKU team had to begin by learning and understanding how and under what conditions DEPARTIR worked, and could only then start to define what kind of role BOKU would have within the project.



The team during a break in the 2012 meeting in Granada.

Especially concerning their priorities, BOKU soon noticed differences and had to deal and cope with them. It soon became clear for example, that the significance of 'outreach' varied greatly between the two universities. In Nicaragua, the university's function as a service institution for citizens is as important as teaching and research. In Austria, research is clearly number one. This difference in priorities caused some conflict, as BOKU's aim was more focused on scientific output whereas UNA's main concern was a lasting cooperation with the rural communities and the implementation of improvement and change. This realization as such has already changed minds and helped to understand and prevent conflicts.

5. Gender perspective

The gender perspective has been incorporated as often as possible into the Project, while we realized our limitations grappling with this subject. DEPARTIR's teaching staff made a special effort to ensure a greater participation of female students in the course and used various mechanisms to increase the participation of women and children in the development of the community diagnoses.

The participation of women has been lower than that of men in all courses (which partly relates to the inherent difficulties of fieldwork when having small children, and to an unbalanced student gender distribution), so we decided to look for new approaches by DEPARTIR to tackle the gender problems in UNA and in the communities:

- We executed an [institutional gender diagnosis of UNA](#), coordinated by a female professor in the university, officially delegated by the Rector, with the scientific leadership of IEI, through focus groups, interviews and surveys, including an analysis of the attitudes of students, professors and administrative personnel. The study was completed in March 2013 and its results presented to the university authorities, in order to define actions needed to promote gender equality. IEI is planning its publication.
- A gender survey is taking place at the end of every course in order to analyze aspects to consider in future courses to facilitate greater participation of women. The results can be seen in the student evaluations and in the general reports on every course.
- The best female students from each course are hired as assistants for the next semester. In addition, priority is given to proposals of community work presented by female students or women in the community.
- In the rural communities, payment for the lodging and meals of students is exclusively handed out to women, to ensure that they will be able to control this income and project proposals from female producers are given priority.
- The diagnosis also included a study of childcare in the community school and their nutritional condition even though we lacked experienced staff in these areas.
- We are also providing support to two female professors working on the development of ecotourism alternatives in Apacunca and another professor studying the agronomy and botany of Tonkua (*Benincasa hispida*).
- As has been mentioned in another context, during the January 2013 course Simone Peter, Masters Student from BOKU and Cruz Peralta from UNA studied gender roles in decision taken in the farms. Ms. Peter successfully presented her dissertation in April 2014.

Generally, we observed that when it comes to discussing gender, we mean women, so, many measures were taken to include, motivate and support them. This is of course important in order to achieve equality at least in numbers of participants, graduations, etc. but it does not do justice to the term gender, which includes more than just the advancement of women and equality in numbers. Team members, in workshops and project meetings often discussed this problem but it was hard to find a way of incorporating a discussion about gender into the daily project work. It seemed that gender was relevant on many levels: at university level, in the communities, within the project team, and in research. The idea of discussing gender in a master thesis came up because of these discussions and difficulties; it was necessary to look at the topic from a theoretical point of view and at the same time, it opened up a space for discussing gender both in the individual farm and in the communities.

We cannot integrate a gender perspective by simply designing a work package; it must be a part of every project activity and must happen on every project level. By carrying out a survey, supervising a joint master thesis on gender and trying to obtain data on gender in the communities, DEPARTIR was including the gender perspective in as many contexts as possible and moving beyond merely implementing measures that aim at reaching equality in numbers.

6. Difficulties and deviations

One of the main difficulties encountered in the development of the Project was the incorporation of the course into the curricula of the different university careers. So even though this has been approved by the University Council, there is still a long way to go before the academic bureaucracy makes this a fact.

Confronting gender injustice is clearly another pending task. DEPARTIR was unable to find a single female professor who could be charged with this subject matter. We were however able to develop strategies to ensure that academic activities taking place within the framework of our project would guarantee female students a greater participation and the same principle was applied in the communities through the development of appropriate mechanisms for equal or greater involvement of women, young adults and children.

The administrative difficulties mainly involved the need for truly dynamic management of the funds available to UNA, since, due to the complex administrative and financial procedures in place, there is a great deal of rigidity in making funds available at a given moment. Additional difficulties were:

- Scattered administrative procedures in UNA.

- The Administrative Delegate who administered the Project`s funds within UNA was simultaneously FAGRO`s Administrative assistant and was charged with the budgetary implementation of twelve other projects.

- The lack of expertise in the management of computer tools on the part of the administrative staff sometimes resulted in delays. Ultimately a [complete report on the administrative problems and possible solutions](#) was submitted to UNA.

7. Dissemination

The results of our courses were systematized via print and electronic documents, and were distributed to the institutions working with the participating communities, such as municipal offices, NGOs, etc. Electronic documents are available through DEPARTIR`s webpage. In most of the courses we were also accompanied by a media team from the UNA`s Information office, who then prepared 13 [videos](#) for transmission on national television channels. As part of our contribution to long-term solutions, we edited and distributed 17 [manuals and guides](#) on potential alternatives. These are also available on the [DEPARTIR webpage](#), which has registered over 25,000 downloads in the last three years.

Publications and other scientific outlets

We published a [book](#) describing the philosophy, structure and coursework of DEPARTIR. A list of publications is in the [Bibliography](#) and, as described in the next table, we presented the results of our work at various conferences and other events.

DEPARTIR presentations at conferences and other events.

Presentation	Title	Month	Year	Place
Field day	Resultados DEPARTIR/APPEAR (2011-2013)	August	2014	UNA
59 Reunión Anual. PCCMCA	Análisis numérico de características básicas de Unidades Familiares productivas (UFP) en 15 comunidades rurales de 5 municipios de Nicaragua	April	2014	Montelimar
Renewable Energy Stand	Sistemas de iluminación con energía solar de bajo costo	March	2014	UNA
Consejo Universitario	Cambiando mentes y estructuras: Una aproximación de la Universidad Nacional Agraria a las comunidades rurales	December	2013	UNA
XV Jornada Universitaria de Desarrollo Científico	Características básicas de Unidades Familiares Productivas (UFP) en nueve comunidades rurales de Nicaragua	October	2013	UNA
X Reunión Científica de Docentes Investigadores	Variables climáticas en el cultivo orgánico de fresa (<i>Fragaria</i> spp.) en El Castillito, Las Sabanas	September	2013	UNA
EXPOCIENCIA 2013	Integración de la UNA en comunidades Rurales de Nicaragua. Experiencias 2013-2007	August	2013	Crowne Managua
IX Conferencia Científica. CNU-CONICYT	Integración de la UNA en comunidades Rurales de Nicaragua. Experiencias 2013-2007	August	2013	Vicepresidencia
Appear in practice_2	Fachdiskurs jenseits von "Entwicklungsrhetorik". Der interkulturelle Theorie-Praxis-Austausch in der Projektpartnerschaft mit El Salvador und Nicaragua.	May	2013	LAI, Vienna
Congreso Nacional de Universidades 2012	Diagnósticos participativos en 11 comunidades rurales de Nicaragua. Experiencias de DEPARTIR 2012-2006	November	2012	UCATSE, Estelí
XIV Jornada Universitaria de Desarrollo Científico	Evaluación de compuestos no convencionales en cultivo del pipián (<i>Cucurbita</i> spp.) para el control de cenicilla (<i>Eryciphes</i> spp)	October	2012	UNA
Welt im ohr	'Respektvoll plaudern'	September	2012	Radio, Vienna
Field day	Avances del DEPARTIR	September	2012	UNA
Consejo Universitario	Integración de la UNA en comunidades Rurales de Nicaragua. Experiencias 2012-2006	September	2012	UNA
IX Reunión Científica de Docentes Investigadores	Integración de la UNA en comunidades Rurales de Nicaragua. Experiencias 2012-2006	August	2012	UNA
IX Reunión Científica de Docentes Investigadores	Evaluación <i>ex situ</i> y potencial forrajero del teocintle (<i>Zea nicaraguensis</i> ILTIS & BENZ).	August	2012	UNA
IX Reunión Científica de Docentes Investigadores	Riego artesanal por goteo y aplicación de biofertilizante en fresa (<i>Fragaria</i> spp) y tomate silvestre (<i>Lycopersicum</i> spp).	August	2012	UNA
"Internationalisation of Higher Education and Its Relevance for Development Symposium	"Co-operations for Enhancing Teaching at Universities in Latin America"	April	2012	
Congreso Nacional	I Congreso Nacional del teocintle (<i>Zea nicaraguensis</i> Ilitis & Benz)	Noviembre	2011	UNA
XII Reunión Científica de Docentes Investigadores	Evaluación de normas de riego y dosis de biofertilizante foliar en el cultivo orgánico de fresa (<i>Fragaria</i> spp.) variedad Festival en la Comunidad El Castillito, Las sabanas, Madriz	Agosto	2011	UNA
XIII Jornada Universitaria de Desarrollo Científico	Evaluación de riego y biofertilizante sobre seis poblaciones de tomate silvestre (<i>Lycopersicum</i> spp.), colectado en la Reserva de Recursos Genéticos de Apacunca (RRGA), Somotillo, Chinandega	Octubre	2011	UNA

8. Sustainability and outlook

It is a challenge to achieve sustainable changes within a three-year project. Still, some characteristics of the DEPARTIR program are likely to work in its favor as a sustainable project:

Firstly, the project was not designed for a donor, but was already work in progress when APPEAR became an option; APPEAR added more possibilities and new collaborators to an already existing, very ambitious project. The team knew how to work with limited resources and there was a strong commitment among all team members. The structures and experience were there, which gave DEPARTIR a head start and makes it less likely to disappear when the funding period ends.

Secondly, the international cooperation strengthened the status of DEPARTIR at UNA as well as adding to the knowledge and capacities of the project members. DEPARTIR will continue to exist at UNA and will have a more stable position and better recognition.

Thirdly, the partnership between the participants was not completely new. There had been collaborations before and those personal contacts that existed for years led to the idea of cooperation within APPEAR. These relations have been strengthened throughout the project and new contacts were made. It is certain that cooperation between the three partners will continue even when the cooperation within APPEAR ends. Knowing that *personal* relationships are important for a lasting cooperation, creating linkages between the *institutions* was one of the project's goals: the participation of students from BOKU at UNA was encouraged and supported, personal encounters with members of other departments were organized and joint investigation projects conducted. The project team created options for further cooperation and lasting links.

Finally, we have been active in the support and training of young members of the team who will extend DEPARTIR's ambitions and, as teachers, be multipliers of knowledge, hopefully working for the sustainability of DEPARTIR.

We should approach the sustainability question from three angles:

- As UNA incorporated two DEPARTIR courses into all career study plans of permanent students, this possibility opens access to the core 6% funding, which the Nicaraguan state transfers to public universities.
- Professors and students will have to elaborate applied research projects to attack the problems in communities, and will have to search for funding with national or international organizations interested in rural development. (We consider that a competitive fund should be established within the university, as the direct cost of such small projects rarely goes beyond 2000 US.)
- Another option to reach sustainability is to offer, in collaborative efforts with national and foreign higher education institutions, courses and post-graduate seminars for sectors requesting training in our areas of expertise.

The most adequate solution for sustainability will certainly be a combination of all the above mentioned. However, with a direct cost of USD250 per student, the resources of the university are not sufficient to broaden the participation of all UNA students in the course. Furthermore, the implementation of the alternatives in the communities involves an investment of approximately USD2000 per micro-project / thesis, which must be obtained from external sources.

Regarding the development of future cooperation between the project partners, professors from BOKU and UNA have already submitted a small project in the area of Geographic Information Systems, and the three partners are seeking new sources of funding in the short and medium term.

We think that the sustainability of the project rests on the excellent reception that DEPARTIR has had in rural communities and with the student body. The approval of the DEPARTIR Program by the University Council promises a potential budgetary support that can count on the availability of human resources, tools and equipment developed by DEPARTIR. Our [outlook](#) was sketched during a brainstorming session on an island in Granada.

One of the central agreements in order to strengthen the new DEPARTIR Program is that all three institutions are interested and willing to look for new funding, if possible within the APPEAR framework because of our successful initial cooperation.

9. Publications

Articles

Lorenz Probst/Verena Pflug/Axel Mentler/Thomas Guggenberger/Christiane Brandenburg/Maria Wurzinger; "Balancing Bologna - – opportunities for university teaching that integrates academic and practical learning outcomes", European Geosciences Union, Vienna 2014; Work in progress

Thomas Schauppenlehner/Axel Mentler/ Franz Ottner Johannes Reitingner; Renewed paper on agroforestry systems. – in cooperation with Makerere University: developing test methods for tropical soils; Work in progress

Daniel Querol, Félix Nieto, Rubén Valiente y Reinaldo Erlach; Optimization of the components of a solar powered pumping system for rural communities; Accepted for publication. La Calera, UNA.

Querol L. D., A. Benavides González, J. Cisne Contreras, J. Morán C., F. Nieto R. T. Schauppenlehner, F. Yepes; Cambiando Mentes y Estructuras: manual del Curso Diagnóstico Participativo Integral Rural. 1ª. Edición. Universidad Nacional Agraria. Managua, Nicaragua. 200 p.; 2014

Thomas Guggenberger/Verena Pflug; „Brückenschlag zwischen Theorie und Praxis – die Beiträge des Projekts DEPARTIR zum Austausch von Universität und Landwirtschaft“, in BOKU/Nicaragua Nachrichten; 2013

Axel Mentler/Franz Ottner; Geomorphological Impact on Agroforestry Systems in the Interior Highlands of Nicaragua, Central America", Poster at the European Geosciences Union, Vienna, 2013.

Benavides G. A., J. C. Morán Centeno, Nieto, F; Análisis numérico de características básicas de Unidades Familiares Productivas (UFP) en nueve comunidades rurales de Nicaragua. Universidad Nacional Agraria. No. 21-Diciembre-2013. p. 101-109. ; 2013

Mentler A., K. Wriessnig, F. Ottner, J. Schomakers J, A. Benavides González, J. Cisne Contreras, D. Querol L; Geomorphological impact on agroforestry systems in the interior highlands of Nicaragua, Central America. Vol. 15, EGU2013-10720-1. ; 2013

Mentler A, Thomas Guggenberger/Verena Pflug, Maria Wurzinger; The DEPARTIR-BOKU team designed a poster focusing on student centered teaching and learning during the Bologna day in St. Pölten in March 2012; 2012

Guides and Manuals published

Author	Title	Year
Querol, D; Benavides González, AN; Cisne, JD	Guía N° 1. Integración de la UNA en el desarrollo rural de Nicaragua	2011
Benavides González, AN; Cisne, JD	Guía N° 2. Producción orgánica de Fresa en Nicaragua	2011
Bismark Centeno	Guía N° 3. Manejo de Suelos utilizando indicadores de calidad de suelo	2011
Montano, W. IEI	Guía N° 4. INTRODUCCIÓN A LA ESTADÍSTICA Y SPSS	2012
Detrinidad, E. IEI	Guía N° 5. ANÁLISIS FODA	2012
Ariel Téllez	Guía N° 6. Gallinas de patio	2012
Ramírez, V. HR; Moran Centeno, JC; Cisne, JD	Guía N° 7. Caracterización Botánica y agronómica del cultivo de Tonkua (<i>Benincasa hispida</i>), en la comunidad de Aquespalapa, Villa Nueva, Chinandega.	2014
Daniel Querol; Nieto, F; Valiente, R. y Erlach, R.	Guía N° 8. Optimización de los componentes de un sistema de bombeo para comunidades rurales impulsado con energía solar	2013
Benavides González, AN; Cisne, JD	Manual N° 1. Fresa Orgánica en Nicaragua	2011
Nicolas Valle, Moran Centeno, JC	Manual N° 2. Producción de cucúrbitas.	2011

Moran Centeno, JC; García, L	Manual N° 3. Análisis básico de propiedades químicas de suelo	2012
Moran Centeno, JC, Guevara, T; V	Manual N° 4. Calidad de Agua	2012
Querol, D; Calderon, V; Nieto, F	Manual N° 5. Perforación de pozos	2012
Barrera R, Y	Manual N° 6. Sistema Fotovoltaico aislado	2012
Félix Nieto	Manual N° 7. Análisis bacteriológico de agua en campo	2014
Nieto, F; Querol, D	Manual N° 8 Elaboración de Mapas a partir de un DEM (Modelo de Elevación Digital)	2014
Moran Centeno, JC	Manual N° 9 Tutorial para el uso del cromatógrafo de gases hp 5890 serie II, para determinar pesticidas organoclorados en suelo	2014

List of Theses arising from the project

Author	Advisors	Title	Remarks
Velásquez Rivera, A.R	Nicolas Valle y Cisne, J.D.	Evaluación de bicarbonato de sodio, caldo vizosa y caldo bordelés en el control de la cenicilla (<i>Erysiphe cichoracearum</i> DC) en el cultivo de pipián (<i>Cucurbita pepo</i> L.) en Apacunca, Chinandega.	2013
Enrique Cruz, G	Morán Centeno, J.C y Benavides G. A.	Niveles de Fertilización y su efecto en el crecimiento de Teca (<i>Tectona grandis</i> Linn FEM), en plantaciones comerciales de Siuna, RAAN	Defense September 2014
Cruz Peralta Lovo	Marina Ulmos	Rol de género y control de los recursos físicos, en la Unidad de Produccion Agropecuaria, municipio de Nandaime, Nandarola.	Defense October 2014
Calero Chavarría, E.R	Tapia Lorío, E. , Morán Centeno, J.C. y Benavides G. A.	Evaluar el estado de la diversidad vegetal y animal de Nueva Esperanza y Buena Vista, comunidades del área protegida <i>Tepec-Xomolth La Patasta</i> , Las Sabanas, Madriz	Defense October, 2014
Guzmán Siles, A. J. y Sujo Manzanar es, W.R	Tapia Lorío, E. y Serrano, E.A.	Estado actual de bosque de galería existente en el río Ochomogo, en las comunidades de Nandarola y San Mateo, Nandaime, Granada	Defense January 2015
Nororí, Mendoza, A	Morán Centeno, J.C y García Centeno, L	Análisis del estado nutricional de los suelos de la comunidad de Santa Julia y Daniel Teller, en los Sistemas productivos de Café (<i>Coffea</i> sp) Maíz (<i>Zea mays</i>) y Frijol (<i>Phaseolus vulgaris</i>), El Crucero, Managua.	Defense January 2015
Johannes Reitinger	Axel Mentler	Vergleich der Genauigkeit und Praktikabilität zweier ‚Bodenkoffer‘ im Kontext studentischer Feldforschung auf bäuerlichen Kleinbetrieben in Nicaragua	BOKU Bachelor-Thesis, 2013.
Lina Cederlof	Margarita Cuadra	Two Swedish' students analyzed the value chain of strawberry production in Las Sabanas.	Swedish Agriculture University
Masters			
Morán Centeno, J.C	Benavides G. A.	Caracterización Morfológica y potencial Forrajero del teocintle anual de Nicaragua (<i>Zea nicaraguensis</i> ILTIS & BENZ) colectado en la reserva de Recursos genéticos de Apacunca, Chinandega, Nicaragua.	2012
Simone Peter	Maria Würzinger	Zwischen Stillstand und Aufbruch – Geschlechterverhältnisse in landwirtschaftlichen Familienbetrieben in Nicaragua	BOKU Thesis, 2014

10. Appendices to final report

Appendices are included in digital form, due to their large size and format.

1. Project reports

[APP01_1 Project08 Timeline.pdf](#)

[APP01_2 Project8 DEPARTIR 1 Annual Report DEPARTIR 2012 .docx](#)

[APP01_3 Project8 DEPARTIR 2 Annual Report DEPARTIR 2013 english.docx](#)

[APP01_4 Project8 DEPARTIR 3 Annual Report DEPARTIR 2014 .docx](#)

2. Course reports

[APP02_1 Report of DEPARTIR course in Las Sabanas 2011\](#)

[APP02_2 Report of DEPARTIR course in El Callao 2012\](#)

[APP02_3 Report of DEPARTIR course in Nandarola 2013\](#)

[APP02_4 Report of DEPARTIR course in Santa Julia 2014\](#)

3. Other reports and Thesis

[APP03_1 protocolo taller ensenanza interdisciplinaria.pdf](#)

[APP03_2 Informe Viaje a Viena 29 de Junio 2013.docx](#)

[APP03_3 Diplomarbeit Simone Peter.pdf](#)

[APP03_4 Tesis Pipián.pdf](#)

[APP03_5 Thesis Sweden.pdf](#)

[APP03_6 Informe BOKU JCMC.docx](#)

[APP03_7 Informe BOKU-FN.docx](#)

[APP03_8 Tesis Maestría Teocintle.pdf](#)

[APP03_9 Proyectos desarrollados por DEPARTIR 2011-2014](#)

4. Guides and Manuals\

5. Special publications

[APP05_1 Libro Ideas para el desarrollo vred.pdf](#)

[APP05_2 IEI Dossier Desarrollo 01052012.pdf](#)

[APP05_3 Genero final corregido Con Resumen ejecutivo.pdf](#)

[APP05_4 Input metodológico periodo 2012.pdf](#)

6. Posters and Banners\

7. Videos and TV programmes\

8. Administrative support

[APP08_1 Projektverlängerung 20140731.pdf](#)

[APP08_2 Acuerdo Consejo Universitario 2344 DEPARTIR.jpg](#)

[APP08_3 Acuerdos CU-UNA No 589.pdf](#)

[APP08_4 Manual funcionamiento Programa DEPARTIR ver 9.docx](#)

[APP08_5 NORMATIVAS 2013 VERSION FINAL.docx](#)

[APP08_6 Equipment inventory from APPEAR Funding.pdf](#)

9. Curricular information

[APP09_1 Programa de clase DEPARTIR.doc](#)

[APP09_2 Silabo-Departir 22-05-14.docx](#)

[APP09_3 Modulo practico DEPARTIR.docx](#)