

UC Davis D-Lab Report:

Sharing Knowledge for Rural Development

*“Building Capacities Around Agricultural and Environmental Sustainability
For Rural Farmers In Georgia, A Two-Week Training for Future
Collaborations”*

Summer 2017

UC Davis D-Lab Team:

Dr. Kurt Kornbluth: kkornbluth@ucdavis.edu

Leanne Bolano: lbolano@ucdavis.edu

Sean Maxson: smaxson@ucdavis.edu

Bilkis Bharucha: bbharucha@ucdavis.edu

Tyler Jackson: vwjackson@ucdavis.edu

Program Manager of Environment & Development:

Kakhaber Bakhtadze: kbakhtadze@gmail.com

Institutional Partners:



Introduction

The UC Davis D-Lab Georgia Working Group (GWG) spent Summer 2017 in Georgia for the second consecutive year. The primary purpose of the trip was to conduct a second Satellite training, this time with participating Georgian universities hosted at the Georgia Institute of Public Affairs (GIPA). The GWG is a team of two graduate students and two undergraduate students under the direction of UC Davis D-Lab and Program for International Energy Technologies Founder Dr. Kurt Kornbluth. They worked in country over a span of two months to execute a series of activities related to the Satellite training, follow-up on the first Satellite training in 2016, and explore project continuity and future plans. The GWG traveled to the capital Tbilisi for the training at GIPA, and spent time in the Bediani and Bareti villages in the Tsalka Municipality to facilitate the implementation of recommendations developed by students during the training.

Project Background

The 2017 Satellite held in Tbilisi, Georgia focused on developing project management skills and building student-client relationships on topics in energy, environment, and agriculture. The training was conducted over a period of two weeks (July 24- Aug. 4, 2017) with six students from three universities (Georgian Institute of Public Affairs, Tbilisi State University, and Rustavi Vocational College), two school administrative staff, three project mentors, and three community members who participated as students (see Appendix 3 for participant contact list). Participants worked in cross-disciplinary groups to develop three projects with local Georgian businesses and organizations while learning about technical topics in environment and agriculture, and project design. The three projects were: (1) introducing an electric-taxi system in Tbilisi, Georgia to reduce environmental pollution, (2) evaluating the feasibility of Kona tea production in the village of Bareti (Tsalka Municipality, Georgia), and (3) identifying social enterprises activities for populations affected by the establishment of a national park in the region of Ajara, Georgia.

Project Objectives

This project aimed to facilitate both student and faculty exchange and applied research in projects serving different Georgian communities. These projects hoped to solve issues based in energy, agriculture, and environment. Once the projects were selected for the training, students were matched into groups to apply a research framework and a variety of project analysis tools to the project problem. This pilot course served to test the D-Lab educational model at the university level in Georgia while building a network with students and faculty at multiple Georgian universities.

The following content-based objectives were developed to assess success in student's learning:

After the course, students will be able to:

- O1. Apply a project development model (e.g. value proposition, strategic planning and budgeting) to a client's problem

- O2. Apply the design-thinking approach to develop projects and assess appropriate technologies
- O3. Apply a 4-Lenses approach to analyze projects using different perspectives
- O4. Apply technical topics in agriculture, environmental policy, and energy to develop projects

Project Description

Goal 1: To facilitate student and faculty exchange between UC Davis D-Lab and Georgian universities. The GWG focused on establishing relationships with important partners for continuous and progressive exchange in current and future efforts between UC Davis and Georgia. The team met with the following:

- Ministry of Education and Science
- Georgian Institute of Public Affairs, Rustavi Technical Institute
- U.S. Embassy in Georgia
- Georgia's Innovation and Technology Agency—Technopark

In each meeting, the team reviewed the D-Lab 4 Lens of Sustainability framework and discussed strategies and next steps for deploying similar concepts in vocational colleges in Georgia.

Goal 2: To facilitate applied research at Georgian universities with a focus on project-based learning. The GWG taught a series of topics in the two-week Satellite, covering technical, business development, and project management topics all relevant to their project issues. The topics included:

What is D-Lab?

- The 4 Lens Analytical Framework
- D-Lab history and sample projects

Team building:

- Activity: Maize Raise

Focus Group Projects

- Presenting the projects
- How do you frame a project?

Technical topics:

- Post-harvest
- Regenerative agriculture
- Policy identification

Understanding the market:

- Customer development
- Value proposition
- Market analysis

Project Articulation:

- Elevator pitch

- What's in a presentation?

Stakeholders analysis:

- What is it?
- Activity: Wheelchairs for the World

Project management:

- Strategic planning
- Budgeting

Curriculum

Syllabus:

Please see the full training Syllabus in “Appendix 1-Training Syllabus”.

Project Descriptions:

For this training, three projects were selected to participate in the project framing process. A total of 3-4 student participants were matched to these projects, allowing them to work in a team to apply training lecture topics to their final project presentations. These projects included:

1. “Enhancing Capacity of the Protected Areas Friends Association in Ajara, Georgia”

This project, initiated by UNDP and the Georgian government, is designed to enhance the management effectiveness, biogeographical coverage and connectivity of protected areas of the Ajara Autonomous Republic of Georgia, including Mtirala and Machakhela National Parks, in order to better conserve the Colchic Forests. The project goal is to identify social enterprise activities and management arrangements to help the Friends Association develop a strategy and sustainability plan for long term conservation and biodiversity protection while meeting the development needs of local communities.

2. “Green Taxi System in Tbilisi”

The proposed project envisages the introduction of an electric taxi system as a response to environmental pollution in Tbilisi, and to decrease fuel expenditures for taxi drivers, which should increase local incomes. Currently there are only a few electric cars operating as taxis. The only electric car model on the market in Georgia is the Nissan Leaf imported from Japan or the U.S. The main limiting factor for the introduction of electric cars on the taxi market is the lack of car driving capacity (100-120) km for one charge (requiring 4-5 hours) and the lack of fast charging stations around the city.

3. “Strategic Plan for Baretí Biodynamic Farm”

In the fall of 2015 the Bediani Children's Center (BCC) and partners purchased 30 hectares of land in Baretí Village in the Tsalka municipality. This was purchased to develop a farm which will generate income for BCC and other land co-owners. Upon acquiring the land, landowners conducted a soil analysis to determine the quality of the soil. The results came back promising, but due to the poor maintenance several quality characteristics were low. Due to the lack of

knowledge and experience in agriculture, BCC would like assess the feasibility of growing different vegetables and fruits based on the preliminary report. Currently, Kona Tea Production is interested in partnering with the BCC to potentially source high quality herbs and tea ingredients. Key problems for this project are lack of information of market requirements and unqualified workers.

Final Presentations:

Student participants in the training were assigned to do a 12-15 minute final presentation on their new project frames at the end of the two weeks of instruction and mentoring. The presentations were given to the whole class and evaluated by:

- Dr. Kurt Kornbluth, Founder and Director of the UC Davis D-Lab
- Mr. Kakhaber Bakhtadze, Program Manager of Environment & Development
- Ms. Natalya Partskhaladze, Coordinator of the GIPA Environmental Management and Policy Graduate Program
- Mr. David Akhvlediani, Coordinator of the GIPA Public Administration Program

Students followed this format for their presentations:

1. Project title + team members
2. Background
3. Problem Statement
4. Project analysis
5. Next steps + recommendations

Please see copies of the students' presentations in "Appendix 2-Final Presentations"

Summary of Evaluations

Student self-reports, instructor feedback, project evaluations and mentor feedback were used to assess how well course objectives and student expectations were met, curriculum content and usefulness to students, overall course design and content delivery, and project assessments. A follow-up report in September will provide an evaluation of student engagement with projects after one month.

1. **Mentor Experience:** Two out of four mentors responded to a survey on the usefulness of the training and suggestions for improvement. All mentors were satisfied with the time commitment and level of involvement expected of them and indicated that they would participate in a similar program again. They were satisfied with the final recommendations from students and found them useful. However, one mentor indicated that if their group had more time, their results and recommendations could have been more specific. Another suggested that it would be helpful to prepare clients/mentors on how to work with students (and vice versa) prior to the training because the mentor did not feel appropriately utilized by their group and students were not actively engaged in communication. They also indicated that it would have been helpful to know more about

the background and interest of students and their willingness to work on future projects, prior to the training.

Please refer to Appendix 3 for the Mentor Evaluation Survey.

Participant Evaluations and Survey Results: A 9-question post-training self-assessment was administered to students on their confidence level (Likert-scale; score range 1-4; 1= Not confident and 4= Very Confident) on course content prior to (retrospective) and after the training. Full survey methodology and the survey instrument are available [here](#). Each question was assigned to one of four course objectives. A statistical test for non-normally distributed data (related samples Wilcoxon Signed Rank Test) indicated that the difference in median scores was significantly different from zero ($\alpha= 0.05$) for all objectives. Additionally, a comparison of mean scores (grouped by objective) indicated an improvement of greater than 30% from the retrospective score baseline for three of the four objectives (O2, O3, O4), as well as the average improvement for all objectives overall. (see Appendix 5 Figure 1 for more details)

In order to assess course usefulness and relevance, participants were asked to identify the most and least helpful tools of the training from a comprehensive list of 12 items. The results indicate that students valued tools that were immediately helpful to their projects (e.g. SWOT analysis, stakeholder analysis) more than tools that were intended for future use (e.g. Gantt Chart). Concept-mapping tools that are typically used during initial stages of project ideation (e.g. empathy map, problem tree) were least helpful while content analysis tools were highly valued. This may be because the project outlines had already attempted to define the problem. (see Appendix 5 Figure 2 for more details)

Participants also rated the usefulness of each topic and activity covered in the curriculum, rated on a scale of not useful (1) to very useful (4). The results indicate that on average, project development topics were most useful while technical topics (e.g. postharvest, climate change) were least useful to participants. An interactive team-management exercise (Wheelchairs) was also positively received. (see Appendix 5 Figure 3 for more details)

A key problem in the training identified by the instructors/trainers was lack of English fluency among participants. While students generally understood the modules, there was a lack of sophisticated questions that would normally be expected from graduate students. The instructors feel that experience could have been improved for several students if consistent translation was provided in an appropriate manner, or if the class was taught in Georgian.

A key problem in the training identified by the students was that there not enough time to fully understand the topics covered. One student provided the following feedback:
*“2 weeks is not enough time to meaningfully apply all the tools to our project. Some tools seemed irrelevant to our project and took time away from the actual work needed to be done. *Maybe include greater mentorship with trainers.”*

Instructors recognized this problem during the training and reduced the time allotted for technical topics during the second week in order to provide more time for project development. Full application of the tools learned during the course will be applied over the next month, where students will have further opportunity to provide feedback on their experience.

Training Conclusions

All students indicated that the course met their expectations, that the training adequately prepared them for their project presentation, the course instructors were effective in content delivery, and that the course was valuable and that they would recommend it. This is how some participants described their expectations prior to the training, and if the course met those expectations:

Pre-Training (Student Expectations)	Post-Training (Student satisfaction)
“Learn about rural development and agriculture.”	“The course was so interesting that I would be happy to [participate] again.”
“Learn technical aspects of agriculture development and practical experience solving a problem.”	“The course met my expectations in that I learned new tools and strategies.”
“Get knowledge on planning, budgeting and technological information in the field of agriculture.”	“Course met my expectations perfectly.”
“Develop basic useful skills in agriculture, energy and environmental development topics to help me and my country get new opportunities.”	“Great teachers, trainers, mentors! Thanks a lot.”

All participants indicated that their assigned project was relevant and interesting, that the project reading material and mentor feedback was helpful and that their final plan (presentation) lead to practical next steps (see Appendix 8 for evaluator feedback on student projects). Furthermore, all participants from the Ajara and Kona teams (n=6) indicated that would like to continue working on their projects over the next month, with availability from 6-20 hours/week. Project mentors for these teams are also interested in continuing to work with the students. D-Lab will continue to support one month of project follow-up with students as they begin to fully apply the tools learned during the training.

Appendices:

Appendix 1—Training Syllabus

Syllabus

Summer 2017

D-Lab Satellite II: Sharing Knowledge for Rural Development in Georgia

Dates: July 23, 2017 to August 4, 2017

Meetings: 4 hours/weekday: Monday-Friday, 10am-2pm

Instructor: Dr. Kurt Kornbluth, Sean Maxon, Bilkis Bharucha, Leanne Bolano

Location: Georgian Institute of Public Affairs Environmental Research and Development Policy Analysis Center

Email: kbakhtadze@gmail.com

This is an intensive, two-week course for graduate students and faculty advisors interested in agricultural, energy, environmental issues pertaining to rural Georgia. This course focuses on strategies and available tools that identify community needs and evaluate potential solutions. Participants will apply basic engineering, social science, and economics to evaluate real-world problems faced by rural communities. Dissemination strategies and project based learning will be provided through case studies, group projects, and technical lectures.

Students are encouraged to bring their own projects and ideas oriented to poverty alleviation through project development on rural issues. Students will be guided through the process of completing a series of deliverables in conjunction with the University of California (UC), Davis D-Lab 4 Lenses of Sustainability. If they do not have their own projects, students will be matched with a project partner that is working on a local issue to complete the deliverables and ultimately establish a partnership for future work. The final output of the course will be a presentation and an assignment packet.

Each weekday, students will meet from 10am to 2pm at Georgian Institute of Public Affairs Environmental Research and Development Policy Analysis Center.

About the UC Davis D-Lab: [The UC Davis D-Lab](#) under the Program for International Energy Technologies hosts a series of classes throughout the academic year for undergraduate and graduate students. All classes are rooted in the D-Lab methodology as developed by D-Lab founder and director, Dr. Kurt Kornbluth--project-based, design-thinking, client-focused.

Assignments:

In-class assignments: Students will be given in-class activities to help them with their final presentation. All handouts will be reviewed at the end of Week One (Friday, July 28).

Presentations: Each student team will give a 12-15 minute presentation to the class on their proposed project according to an outline given in class.

Course Objectives:

Content-based outcomes:

- Apply project planning principles(customer development, value proposition, strategic planning, budgeting and stakeholder analysis) to frame and develop community-based, client-oriented projects
- Apply technical topics in agriculture, environmental policy, and renewable energy to develop projects
- Define key problems and proposed solutions to projects using the design-thinking approach and D-Lab's 4 lenses of sustainability framework

Personal transferable skills:

- Successfully build and participate in a cross-disciplinary team for project management
- Develop professional interpersonal communication skills for project management
- Understand client needs from a management perspective
- Cultivate professional relationships with existing community-based organizations and businesses in Georgia

Syllabus:

WEEK ONE: Environmental Lens + Financial Lens

Day 1 (7/24)

10am-1pm

- Introductions
- D-Lab approach
- Project framing-4 Lenses
- Overview of deliverables and objectives

1pm-2pm

- Activity: Maize Raise

Day 2 (7/25)

10am-11am

- Customer Development

11am-12pm

- Value proposition

12pm-1pm

- Post harvest

1pm-2pm

- Mentoring

Day 3 (7/26)

10am-11am

- Strategic planning

11am-1pm

- Regenerative agriculture

1pm-2pm

- Mentoring

Day 4 (7/27)

10am-12pm

- Budgeting

12pm-1pm

- Market analysis

1pm-2pm

- Mentoring

Day 5 (7/28)

10am-12pm

- 4 Lenses Recap, Introduce Presentation, Elevator Pitch

12pm-2pm

- Mentoring on Final Presentations

End Deliverable:
Completed handouts.

WEEK TWO: Technical Lens + Social Lens

Day 1 (7/31)

2pm-3pm

- Introductions
- D-Lab recap: starting, current projects, etc.

3pm-5pm

- Smart Light: Case study→ trials, successes, partners, financing, technicalities, results

5pm-6pm

- Mentoring

Day 2 (8/1)

10am-11am

- Stakeholders

11am-12pm

- Activity: Wheelchairs of the World

1pm-2pm

- Mentoring

Day 3 (8/2)

10am-12pm

- Community Mapping

12pm-2pm

- Mentoring

Day 4 (8/3)

10am-11am

- Policy

11am-2pm

- Mentoring

Day 5 (8/4)

12pm-1:30pm

- Presentation preparation

1:30-3pm

- Group presentations + critiques

3pm-3:30pm

- Evaluations

3:30pm-4pm

- Certificate ceremony

End Deliverable:
Group Presentation slides

Appendix 2-Final Presentations

Please follow the links to view the student deliverables.

1. [Enhancing Capacity of the Protected Areas Friends Association in Adjara, Georgia](#)
2. [Green Taxi System in Tbilisi](#)
3. [Strategic Plan for Baretí Biodynamic Farm](#)

Appendix 3—Participant Contact List

Course Participants	School	Email	Project	Mentor
Tornike Gablishvili (Toko)	GIPA	tornike.gablishvili@gipa.ge	Ajara	Kakha
Vazha Sultanovi (Misha)	TSU	vazha.sultanovi@gmail.com		
Eka Basiashvili	Rustavi	ekabasiashvili@mail.ru		
Irakli Nozadze	Rustavi	irakli.nozadze.98@gmail.com	E-Taxi	David
Tina Koberidze	Rustavi	tinatinikoberidze@gmail.com		
Tedo Sanikidze	GIPA	tedo.sanikidze@gipa.ge		
Tinatin Ugulava	--	tiko.ugulava@gmail.com	Kona	Natalia
Shalva Iosava	--	shakoiosava@gmail.com		
Matthew Ridgeway	--	matthew.daniel.ridgeway@gmail.com		
Mentors/ Other				
Ana Javakhishvili	Rustavi	anna_javakhishvili@yahoo.com		
Zviad Khapava	--	zviadapava@bediani.ge		
David Mizandari	--	dmizandari@gmail.com		
Natalia Pastskhaladze	GIPA	natalia@kona.bio		
Kakha Bakhtadze	--	kbakhtadze@gmail.com		



Appendix 4: Mentor Evaluation Survey

University of California, Davis

D-Lab in Georgia, Summer 2017

Mentor Feedback

	Yes	Not Sure	No
Were the final presentation and recommendations for your project useful to you?			
Was the process of mentoring students useful for project development?			
Did you have enough class time to mentor the students working on your project?			
Were you adequately prepared for the training and mentoring?			
Would you participate in a similar program again?			

1. How useful is the end deliverable (final presentation) from students? What do you think would have improved the performance of your group?
2. Did you feel utilized as a mentor? Was your time appropriately used by students to develop their projects?
3. What information would have been helpful to know before beginning to work with the students?
4. Did the time and level of involvement required from you meet your expectations?
5. Do you have any other comments to help us improve the experience of project mentors?

Thank you very much!

Appendix 5: Participants' Evaluation Survey Results:

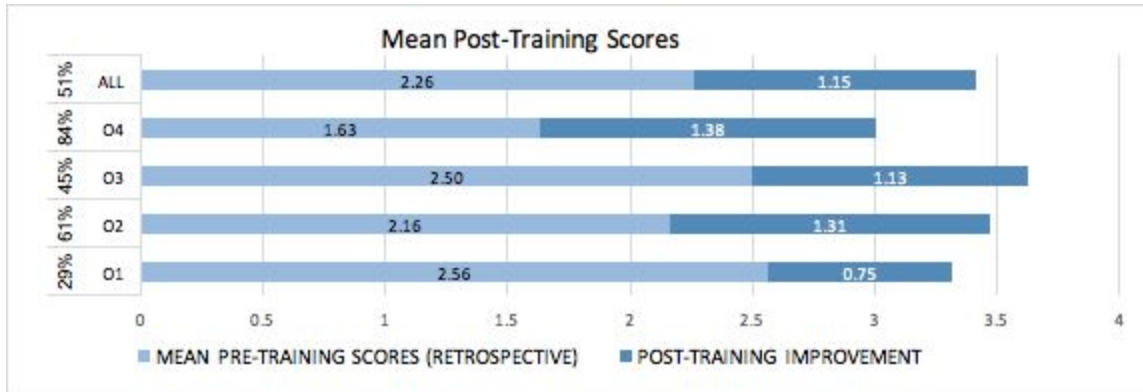


Figure 1: Improvement in student confidence level overall and by course objective

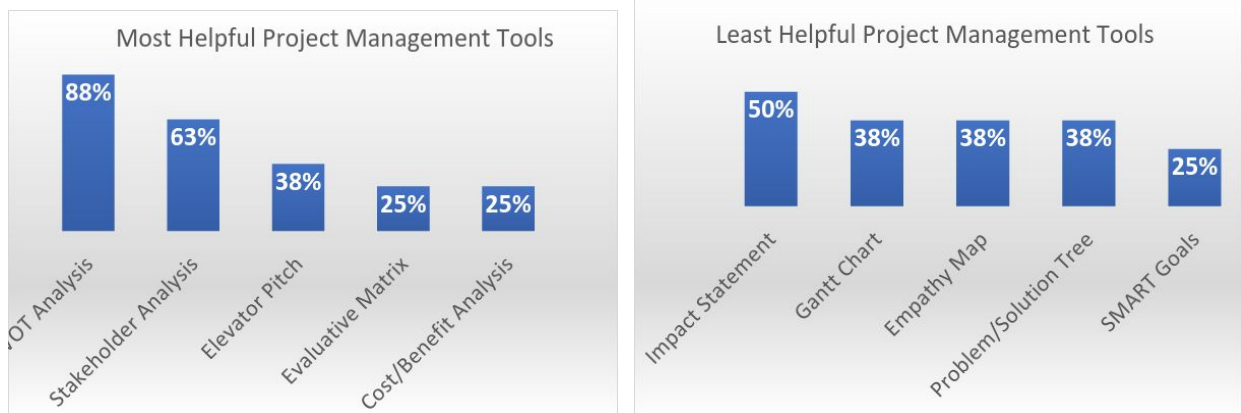


Figure 2: Percent of students who found each tool most and least helpful

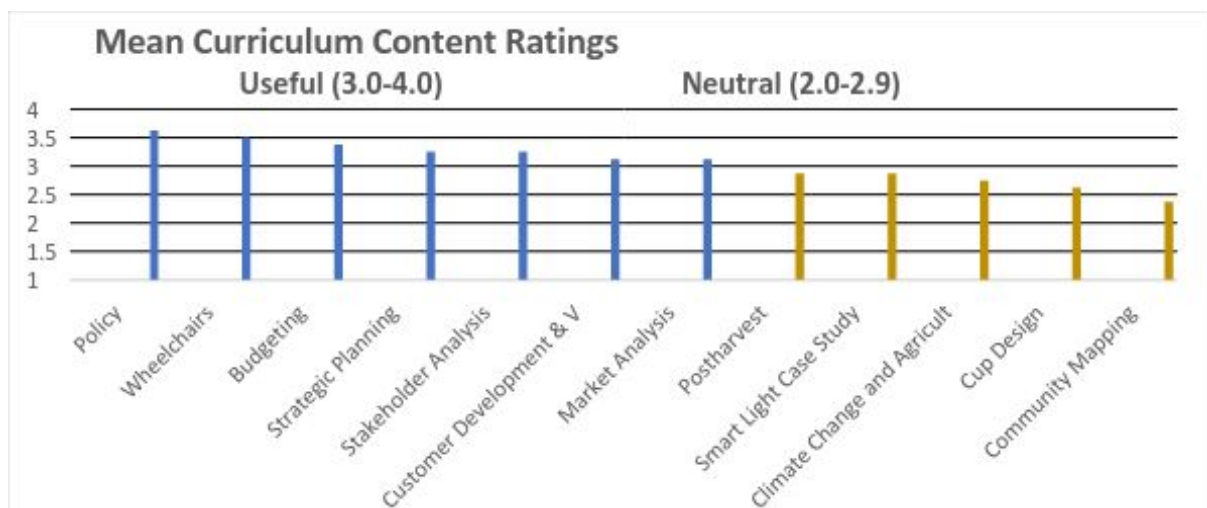


Figure 3: Mean curriculum content (topics and activities) ratings

Appendix 6: Link to Pictures:

<https://drive.google.com/drive/folders/0B-pbnTCRxsDiUWZyeDRhWlpBTUU>

Appendix 7: Draft blog post by Bilkis Bharucha for the Research and Innovation Fellowship for Agriculture (RIFA)

“Sharing Knowledge for Rural Development in the Republic of Georgia”

Upon arriving in the Republic of Georgia, I spent my first week in the village of Bediani (the name means “Lucky Village” in Georgian). Bediani is a fairy-tale village nestled deep in the mountains (elevation 850m), flanked by a clear mountain stream (the Khrami River), home to 150 residents, a psychiatric hospital, and a 7th-century nunnery. I stayed in a home provided by the Bediani Children's Center, a small orphanage/foster home.

The community of Bediani regularly hosts international guests, including former UC Davis students who first visited the village in summer 2016 for a D-Lab satellite training program established to activate ideas on agricultural entrepreneurship such as fishing, beekeeping, and cut-rose production. During my stay in Bediani, I was able to learn more about local interests in continuing to develop these small-scale projects, as well as to visit a nearby plot of land (70 acres) in Baret, slated for agricultural activities later this year.



Figure 1 Rancher in Baret

The remainder of my time has been spent in Tbilisi with the D-Lab team, where we worked with local graduate students and community members on project management training and building student-client relationships on topics in energy, environment, and agriculture. The training was conducted over a period of two weeks (July 24- Aug. 4) with students from three universities (Georgian Institute of Public Affairs, Tbilisi State University, and Rustavi Vocational College), school administrative staff, and local clients and community members, with a total of fourteen participants.

Students have been working on three projects with their clients and mentors: introducing an electric-taxi system to reduce environmental pollution, evaluating the feasibility of tea

production in Bareti, and identifying social enterprises activities for populations affected by the establishment of a national park. Over the next month, I will continue to support project development with each group of students as they implement their findings, such as doing community mapping in Bareti, researching prior art in social enterprises for Ajara, and doing a cost/benefit analysis for Bareti to produce tea ingredients. Engaging in capacity building activities with local students has been a valuable experience and promises strong local ownership of projects.



Figure 2 Students in D-Lab- Georgia Satellite Training II

Appendix 8: Evaluator Feedback on Student Final Presentations:

Three final project evaluators provided the following critical feedback to each group:

- Ajara (Total score = 63%).
 - Methodology was expressed clearly
 - Graphic is hard to read. No 4-Lens background; Prior art?; Develop policy incentives as an opportunity in SWOT; Be more specific
 - Problem statement is vague as well as the solutions. Results were vague. Why is UNDP a strong factor? Policy section was not well presented. No examples were used
 - Where is the problem statement? Stakeholders are not well defined.
- Kona (Total score = 93%)
 - Well stated methodology and well organized; Good problem statement, well selected methodology
 - What is the cost/benefit analysis based on? What Policy/incentives can be leveraged? What are the risks (develop vision statement)
 - Problem is not well stated; what is market for scaling up?
 - Not well reviewed baseline information
- E-Taxi (Total score = 77%)

- Good SWOT; Well organized but missing crucial parts; Good review of materials
- *Taxis are not carbon neutral. Cost of gas and maintenance is unknown (use prior art). How many EV's in Georgia?
- Need to establish need for e-taxis (e.g. are taxis the biggest contributor to pollution in the city?); no economic justification is provided;
- Problem statement is not clear