

Project Team Presentations

10 minutes per presentation, followed by a few minutes of Q&A.

India

Four project initiatives, working with students at partner SLIET

- Water quality testing and filtration
- Community Radio
- Wireless mobile internet
- Pot in Pot and Charcoal briquettes (follow on from previous year's projects)

Water quality: focus on effects of pesticides, in widespread use as result of recent Green Revolution in agriculture. Pesticide testing is harder than e.g. microbial testing; some potential schemes include nanofiltration, microbial and enzymatic degradation, carbon filtration...Presented a long list of goals for work at MIT before leaving, and goals once in India.

Community Radio: feasibility study, design a model specific to the Sangrur area, and design some educational programming on water quality.

Wireless mobile internet: there's an MIT spin-out company in the works (First Mile Solutions) that uses mobile Access Points (installed in trucks, motorcycles) to drive among served villages. Targets delivery of agricultural, e-commerce and social/community/personal communications. Need to investigate what local computer resources exist...do residents have computers?

Pot-in-Pot – further implementation, research to improve performance in high humidity

Briquettes: investigate Rice straw as fuel source.

Brazil

Two sites: Canuana and Tocantins villages, and Rio de Janeiro favelas

Partners (largest private bank in Brazil) want to fund improved school resources. Team had a teleconference with them to discuss needs and projects. Among the potential projects:

- Residents state their biggest problem is effects of flooding and droughts. Thus, projects on roofing, drainage and water storage have high priority.
- Need better food storage. No electricity constrains solutions to date. Pot-in-pot opportunity?

- Microfinance. Has great interest from bank partner, but the targeted community doesn't know about existing financial support, and government programs don't reach them.
- Health: respiratory infections due to flooding, malnutrition and bad hygiene suggest projects on education about hygiene and deploying water purification
- Education: many children don't have opportunity to attend / stay in school, because they need to work in fields. No opportunities for enriching activities. Maybe projects to build playground or create after-school programs.

Comment that community residents may know more about their solutions (e.g. microfinance and education) than initially let on.

Lesotho

Lesotho is about the size of Maryland, mountainous, completely contained within South Africa.

Proposed projects:

- Parabolic solar trough: Use solar energy to generate electricity and cooking. Large scale demonstration in California shows technology has promise. In collaboration with the Bethel Business and Community Development Center, and with MIT course 2.009. Goal of project is to get cost down and make it easier to fabricate.
- Micro Hydro: able to generate 10s of kW to MW. A local organization has a new site they'd like to investigate.
- HIV/AIDS outreach. Possible work with orphans and women (as primary caregivers), create a crisis hotline. Focus on capital city Maseru. Partner: Positive Action.
- Land use: significant problem with topsoil loss, due to agricultural overuse. Creates massive gullies through erosion, hinders transportation. Build on local ways to combat spread of this problem.

Honduras

Two sites, will alternate between them. Centro Tecnico is heavily involved as partner, suggesting projects. (MCA is the 500-family 3,000 resident community created after Hurricane Mitch.)

Projects

- Grey water recycling. Start with survey of current practices and attitudes. Complement (if possible) with a deployed grey water recycling system, need to research possible designs with Centro Tecnico.
- Composting latrines. Team may design latrines appropriate for MCA use and analyze effectiveness of the latrines currently on site.
- Natural fertilizers. They grow palm trees but cannot afford commercial fertilizers. Among locally available resources, are there good candidates for fertilizer?

- Water quality, protecting local stream from cattle wastes. Either develop alternate water source for people, or move the cattle and distribute water to their new location (wind or solar energy powered).

Samoa

Project will be on Savai'i, the larger but less developed island. Has had limited exposure to Western influences, and relies heavily on local water and land for resources

Favored projects:

- Fruit drying. Investigate solar dryer systems and techniques, especially those that work quickly in this high-humidity environment.
- Coconuts. Improved oil extraction process, exploring other by-product uses (husk, shell...).
- Cocoa harvesting and production. Currently very labor intensive; can it be made more efficient without reducing workers' income.
- Taro. Maybe possible to expand market; challenged by transport difficulties.

Partners: Peace Corp and NGO Women in Business (micro-enterprise projects for coconut oil).

Zambia

The largest D-Lab team.

Start in the largest city in Zambia (Lusaka), then move to rural Mwape.

Partners: U of Zambia (UNZA) and DISACARE, chief of Mwape has worked with Kurt in the past.

Projects

- CAD training. Have selected SolidWorks, provide them with laptops they can keep. Turn Disacare into a training center for broader community
- Power of Love Care Center. Design a 12-bed care center for pediatric HIV. Also create a PDA-based case tracking system.
- High School AIDS volunteering clubs. There's great interest among kids there, but don't know where to turn. Start with a survey and other catalyst activities.
- Wheelchair assessment – how are chairs fairing, what are users real needs, in both Lusaka and Mwape
- Maternity care. Not much research done in Zambia...build to rolling out a developed Maternity Care Kit (MCK)?
- Nutrition study. Study Mwape residents, explore connection and possible projects with local agriculture.
- Water testing and treatment. Introduce local residents to the CDC's Safe Water System, involve them in the testing process.
- Village electrification. Currently has only one electrical source. Explore possible needs for and installation of solar installation.

- Micro-enterprise. Explore local goods that could create a market for Zambian goods.

Haiti

Project sites: Petit Anse and Marmelade. A community partner in each.

Projects:

- Briquette press. Improved combustion performance, in collaboration with 2.009 class. Investigate a "screw-extrusion device."
- PV system update (ongoing D-Lab project). A 5-panel rooftop system is already spec'd and partially shipped, may tweak the design (i.e. theft protection, roof mounting schemes).
- IT projects. Teach high school students how to install and maintain laptop computers in a community center (in preparation for working solar panels). Leverage work with an MIT Roof-net project underway to create micro-enterprise internet service business.
- Soil erosion abatement. Explore ground cover cultivation.
- Micro Hydro
- Health survey, in collaboration with the Borgne Health Tech Center. They have various technologies available. Survey general nutrition and illness trends.