# Peru Project
# IPRO 325

Throughout the course of multiple trips to Peru, various groups have identified other concerns to be addressed in order to help promote a healthier lifestyle for Peruvians.

-As of 2008, about 39% of the population in Peru live below the poverty line.

-An estimated 2.7 million people die prematurely each year due to smoke and toxic emissions from wood burning.

-Around 3.1 million people died in 2002 as a result of diarrhea related diseases which are contracted from polluted water; 90% of whom were children.

-Out of 792 million people suffering from malnutrition, 5 million children die each year. 4 out of 5 of these 792 million people do not have access to needed fruits and vegetables.

**-Andean children die along with crops and vegetation due to cold southern winds and inadequate shelter to protect them from the elements**



Statement of Problem

# Peru 1.0

**August Sylvain** — 4th Yr Biology Student

**Jacob Williams** — 4th Yr Architecture Student

**Livia Lay** — 4th Yr Architecture Student

**Luis Adrianzen** — 3rd Yr Electrical Engineer

# Peru 2.0

**Guadalupe Cortes** — 3rd Yr Architectural Engineer

**Steven Kwon** — 3rd Yr Architectural Engineer

**Justin Lim** — 4th Yr Architecture Student

**Katrina Ongchangco** — 4th Yr Architecture Student

IPRO 325 Peru Project Team

# IPRO 325 Fall 2008

Two projects implemented in Sincape, Peru:

Evaporative Cooler System

• Purpose: to help in the conservation of foods

• Pros: affordable and easy to maintain

• Cons: feedback not yet received



Rocket Stove

• Purpose: to eliminate toxic emissions

• Pros: shorter cooking times and elimination of smoke

• Cons: expensive and hard to maintain



Past Projects

# Overarching Principle

Develop affordable and sustainable solutions for the world's rural poor

# Peru Project Goals

Identify project:  Energy Efficient
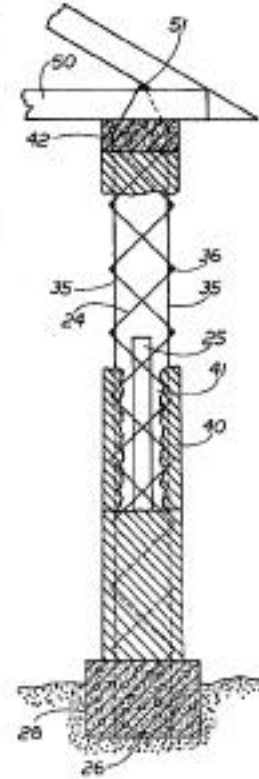                   Housing for Andeans

- Deliverables
  - Schematic Drawings of Design
  - Scaled models of Sections and Details
  - Budget Plan for Building Improvements
  - Report and Analysis of Building Improvements

- Implementation
  - Send Group to Peru
    - Make Improvements on an Existing Adobe House
    - Make Instructions and Educate Locals of Improvements

Goals

# Research

- Adobe Construction and Properties
- Weather/Climate
- Natural Resources/Materials
- Efficient designs
  - Stove heated floor







Progress Toward Goals

# Current Contacts

- Marisela Perez
  - IIT-Sincape coordinator

- Professor Duffy
  UMass Lowell Professor
  Expertise: Mechanical engineering, control systems science, solar engineering, environmental engineering, education, statistics and manufacturing systems

- Manuel Heredia
  UMass Lowell Student
  PhD candidate in mechanical engineering

- Professor Blake Davis
  IIT Professor & Director of Community Affairs – College of Architecture
  Expertise: City and Regional Planning

# Contacts to Pursue

- Ursula Harman
  - GRUPO (Grupo de Apoyo al Sector Rural) at the Catholic University of Peru in Lima
  - Her Students Participate in rural community relief programs

- Lupita Montoya
  - Professor of engineering in Troy, NY
  - She and her student do work in Langui Peru and Andean Town

Contacts

# Timeline

| | | |
|---|---|---|
| **Week 9:** | March 24 | Compile Data/Research + Finalize Solution |
| | March 26 | Schematic Design |
| **Week 10:** | March 31 & April 2 | Prototype Creation: Drawings |
| **Week 11:** | April 7 & 9 | Prototype Creation: Models |
| **Week 12:** | April 14 & 16 | Prototype Creation: Models |
| **Week 13:** | April 21 | Prototype Analysis/Evaluation/Refinement |
| | April 23 | Budget Plan + Manual |
| **Week 14:** | April 28 | Project Plan Update |
| | May 1 | IPRO DAY/Final Presentation: |
| | | Project Plan, Prototype: Drawings+Models, Manual, Report |

# Progress Toward Goals

-Difficult reaching Peruvian contacts in Sincape to track previous projects

-Communication between Prof. John Duffy and Manuel Heredia is strictly through email

-No current contacts with Andeans at the target site

-Cultural differences

Major Obstacles

-Difficulty of the Andean terrain

-Building a trusting relationship with community leaders in the targeted villages

-Cost analysis

-Cultural differences

Anticipated Challenges

Questions?

the end.