Letter from the Editor

Last semester, we brought you two issues. This semester, we're bringing you one issue that is twice as long! We're very excited that international development at MIT is continuing to grow, and we still have many stories to share.

On a personal note, it's time for me to finish up at MIT and take what I've learned here elsewhere, and I pass on the privilege and joy of working on Komaza to two leaders. Please join me in welcoming Dorothy Curran, Manager, and Sudha Guttikonda, Editor-in-Chief, to head next year's team.

Thank you to the students that I've worked with over past few years, the helpful supporters and affiliates that gave us advice and encouraged our team (even those unnamed – you know who you are), and the design and printing teams that make Komaza a physical reality.

Thank you, reader, for your support – please continue to read Komaza and spread the word about ID at MIT.

Sincerely,

Bina

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Uncovering Childhood Disabilities
by EMILY SUTER

Through a series of interviews, MIT students seek to paint a more complete picture of childhood disabilities in India.

At 8:30 am, Swaraj entered the hostel's dining room, and informed us in his thick accent that it was time to head out. We each downed a last big gulp of chai tea, and tromped outside to the bright yellow bus. The air was cool and foggy, but there was hope for warmth later in the day.

The bus ride was long—a characteristic of all of our travels around Delhi—and Hindi pop played from the phones of the Indian business students who were helping us over the course of our stay. They sang along with such passion that we too would know the words by the end of the week.

Finally, we reached the Shroff Charity Eye Hospital, where we met up with MIT Professor Pawan Sinha of Brain and Cognitive Sciences, the founder of Project Prakash. Project Prakash is an MIT initiative to help address curable blindness in India by implementing a series of traveling clinics and ultimately establishing a new hospital. Additionally, through the use of brain-scanning technologies, Project Prakash hopes to analyze the neural development of patients suffering from blindness.

“Access, in terms of both distance and cost, was the biggest barrier to health care. Public hospitals were free, but this meant wait times were incredibly long, causing patients to return multiple times to even get diagnosed, let alone treated. Private hospitals provided faster care, but such treatment came at a price that was much too high for the average Indian family.”

The fourteen MIT students on the trip had been divided into teams to focus on different aspects of disabilities—governmental regulations, medical institutions, education, and social implications. After a quick lunch of warm naan and a tour of the hospital, my team—Team 2: Hospitals and education, and social implications—set off on our first adventure.

Upon arriving at the Sanjaram Public Hospital, however, we found our doctor to be in the middle of a meeting. After rescheduling for the next day, we headed back to the hostel, a bit disappointed at rescheduling for the next day, we headed back to the hostel, a bit disappointed.

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O n our final day of the project, we again gathered at the Shroff Charity Eye Hospital. As each team stood up and explained their research, we collectively presented a comprehensive view of how the Indian healthcare systems views and approaches disability. But more than that, we presented our own personal growth in our understanding of this unique society and new culture.

Left: Children in the slums of Delhi are primarily treated via traveling clinics.
Right: Waiting rooms are often crowded at substandard hospitals, making wait times long and the likelihood of being treated low.

Many doctors we met treated poor patients for free, effectively reducing their wages by cutting into time they could treat paying customers. Others employed disabled and homeless persons they picked up from the street. Even more led outreach programs in the slums to bring medical care directly to citizens’ homes. Though these individual efforts cannot completely fix the medical system, they exemplify the supportive spirit and sense of family demonstrated by the Indian people we had the honor of meeting.

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Through a series of interviews, MIT students seek to paint a more complete picture of childhood disabilities in India.
Spotlight on: Esther Duflo and J-PAL

by Rebecca Gianotti

Esther Duflo is the Abdul Latif Jameel Professor of Poverty Alleviation and Development Economics in the Department of Economics at MIT. She is also a co-founder and director of the Jameel Poverty Action Lab (J-PAL) and one of Time magazine's top Most Influential People of 2011. Her new book co-authored with Professor Abhijit Banerjee, Poor Economics: A radical rethinking of the way to fight global poverty, was released in April 2011.

We sat down with Professor Duflo to discuss her personal perspectives on international development.

Q: What motivated you to specialize in development economics and to work on questions of poverty alleviation?

My interest in poverty predates everything else – I've been interested in poverty for as long as I can remember. Originally, I wanted to be a historian, not an economist, but I wasn't satisfied with it: I didn't want to just study what had already happened, I wanted to study where things were going. Towards the end of my undergraduate study I met economists – professors at my undergraduate university and also some others – and realized that might be the answer, the way to merge doing something about poverty with being an academic, which I decided I wanted to be.

Q: Since J-PAL was founded in 2003, nearly 250 evaluations of poverty alleviation methods have been conducted or are ongoing. What sort of success are you seeing now, in terms of the work being more widely adopted?

There are now lots of people approaching J-PAL and wanting us to work with them on evaluations. Big foundations are also aware of J-PAL and wanting us to work with them on funding for J-PAL, and sometimes into funding for other people doing similar work. It's really worked when it comes to poverty alleviation. They use randomized evaluations (REs) as a method for gathering data on the effectiveness of programs and policies. J-PAL also provides training to other people interested in using REs for program evaluation, and works with governments and non-governmental organizations to support large-scale uptake of particularly effective policies.

Q: What is J-PAL?

J-PAL is a network of researchers trying to determine what really works when it comes to poverty alleviation. They use randomized evaluations (REs) as a method for gathering data on the effectiveness of programs and policies. J-PAL also provides training to other people interested in using REs for program evaluation, and works with governments and non-governmental organizations to support large-scale uptake of particularly effective policies.

Q: What are some of the problems that can arise when conducting randomized evaluations of poverty alleviation programs?

You can have problems at every step of a project. What is true is that I've never seen a project that had no problems! But there are aspects that are more likely to cause problems than others. One thing is not getting a good sample of people taking up the intervention program. People worry that the central group will be upset by not getting the intervention, and usually it's finding enough people to take up the program that's the problem.

Another problem is that partners need to implement things exactly as they said they would, so that you can measure the desired outcome. It's difficult because for these sorts of studies, you need a program that is going to provide a tangible outcome that can be measured for research, but is going to be feasible for the partner to implement, and sometimes things don't go as planned.

Q: In 2010, you received the John Bates Clark medal (awarded by the American Economic Association to the economist under 40 who has made the most significant contribution to economic thought and knowledge). What did this mean to you?

Personally, the award is very nice. You don't do the work for this [reward], but I'm always happy to get reinforcement. Very few academics are in this job for the money, certainly not me, so the peer recognition replaces making a lot of money. Professionally, it's invaluable. When you do work that is not conventional, people ask: is this really economics? Are you doing too much policy? To get recognition by a mainstream [economics] organization means that people are more likely to listen to you. It gives you more freedom with your work.

For more information about J-PAL's work, go to: www.povertyactionlab.org

See the course catalogue for more information on the courses taught by Professor Duflo – 14.73 The Challenge of World Poverty, 14.74 Foundations of Development Policy, and 14.771 Development Economics: Microeconomic Issues and Policy Models.

For more information on J-PAL work, go to: www.povertyactionlab.org

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METHODS

75 schools were divided into three equal groups, which were phased into treatment over 3 years. The different timing of treatment within the three groups allowed for measurement of the treatment's impact over time. Schools with worm prevalence over 50% were mass treated with deworming drugs every 6 months, resulting in treatment for about 35,000 children at a cost of $504 per child per year. In addition to medicine, treatment schools received regular public health lectures, wall charts on worm prevention, and training for one designated leader.

RESULTS AND LESSONS

- Deworming reduced serious worm infections by half amongst children in the treatment group. In addition, children attended school 15 more days per year, while older children attended school 10 more days per year.
- The entire community also benefited from “spillovers” of the treatment: non-treated children get fewer infections because there is less disease transmission within the community as a whole. Non-treated children attended school an additional 3-4 days per year.
- No improvement in test scores was found as a result of the deworming.
- The cost per additional year of school participation is US$3.27, making it the most cost-effective method of reducing primary school absenteeism in Kenya.

HYPOTHESIS

Curing children of intestinal helminths (worms) will improve school attendance and test scores.

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Opposite page: Bina and Neempudit, joined by some cooking fires. She tested alternative to indoor open fires and implemented a possible over IAP. Her project was to find and implement a possible charcoal and sawdust stoves, several ideas including solar cookers, and cow dung charcoal.

Bina Choi ’11 travelled to the pastoral community of Laiboni, Tanzania with her D-Lab: Development team over IAP. Her project was to find and implement a possible alternative to indoor open cooking fires. She tested several ideas including charcoal and sawdust stoves, solar cookers, and cow dung charcoal.

I woke up before everyone else in my tent and caught the sunrise. Our sleeping bags faced east, as soon as I sat up, I could see the rosy sun rising over the horizon, the rays lighting up the sides of the dark green hills.

I was going spend time with one of the women in the village to learn about the Maasai way of life firsthand. I wanted to see the Maasai way of life – I felt as though I belonged in another world, in another time period – but no, I had to remind myself that this was right now; this was Neempudit’s daily life.

My host, Neempudit, met me and led the way into her home, a small circular mud home, covered in traditional Maasai cloth, wore multiple beaded earrings in enlarged holes, and had a shaved head. Her home was dark green hills.

After a breakfast with the team, I walked the short distance over to the friend’s home down the path. Neempudit met many neighbors along the way, and she conversed rapidly in the native tongue, Kimaasai. I simply observed – as much as I could, I wanted to be a fly on the wall, as though I were in a bubble. The language, the traditional Maasai clothing, the huts amidst quiet mountains and plains were so foreign – I felt as though I belonged in another world, in another time period – but no, I had to remind myself that this was right now; this was Neempudit’s daily life.

Neempudit and I sat with her friend and her baby, and the two women taught me more Kimaasai words accompanied by many gestures. I responded with the few words I already knew how to say, most of them related to my project: enkaji for home, engend for fire, osait for stone, endd for food.

Her sister came in with a milk jug containing the morning’s milk. Neempudit poured some out into a cracked mug decorated with flowers. She drank some, passed the cup over to her friend, who drank some, and the cup came around to me. Drinking unpasteurized milk in rural Africa probably wasn’t the best idea, but with the two of them looking on expectedly, I took a sip anyway, praying that I wouldn’t get sick later in the evening. It had a slightly smoky flavor that wasn’t bad but was different from the milk I was used to. Later, I learned that the smoky flavor came from the burnt milk jug, and then dumped the ashes out.

The day continued with chores to collect water from a surface water source, taking the cows out to graze, and milking the cows. But in the middle of the day, we joined other women in the shade of a tree with little orange-colored fruit.

“Osingolio Kimaasai!” I said, asking her to teach me a traditional song. With a twinkle in her eye, she began to sing. A few ladies went into their homes and brought out several beaded collars. Neempudit donned one of the collars and began to shout to the beat of the music. The beads on the collar clicked on more beads that she wore around her neck and that hung down from her ears. As the song became more and more passionate, she began to jump and sing simultaneously as I clapped along.

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We asked the experts:
If you had the means to implement any one program in development, what would it address, and how?

“Microbiological contamination from human or animal feces getting into the drinking water is the biggest water quality challenge worldwide. If I had the means to implement any one program, I would implement construction of ceramic pot water filter factories in UNICEF Priority Countries and USAID Maternal and Child Health Priority Countries. In addition to the factories themselves, I would include capacity building for local business, financial and management skills development. Household drinking water treatment and safe storage help to build in resilience into all communities.”

Susan Murcott
Senior Lecturer in Department of Civil and Environmental Engineering

“It is not one programme or another that impels prosperity and engenders dignity in low-income countries, but rather a belief. This belief holds that income is development, that a virtuous economic circle, however small or local, is the way forward. The manifestation of this belief is the thousands of small entrepreneurs doing this all over the world; the proof that it works is called history.”

Geoff Groesbeck
Legatum Center

“The response has to be ‘education for the masses’. But, I believe that there is a pre-requisite that has to be implemented before any other initiative can be successfully operationalized. I am referring to the rule of law. No matter how well intentioned any plan might be, without the capability of enforcing its implementation against powerful individuals and agencies interested in maintaining the status quo, the plans will be unable to take root…I feel that the laxity in implementing rules and procedures, and [in] putting the weight of law behind this implementation, is what dooms many developmental programs to fail.”

Pawan Sinha
Department of Brain and Cognitive Sciences, Founder of Project Prakash

“Creative capacity building (CCB). By giving people in developing countries the tools and confidence to create their own solutions to their problems, it could really revolutionize the way development work is done... I would work on a program that would expose the greater development community to CCB and provide them with tools to understand and teach it, and hopefully inspire them to practice and spread the message themselves.”

Rebecca Smith
D-Lab
Wrong. Such stereotypes are as far from the truth as assuming all Asians are Chinese, math geniuses, or anime-lovers. In fact, not only is the "model minority" myth downright false, but it is also detrimental, masking many of the hardships Asian immigrant families face in the United States. Statistics show that in the 15-24 age group, Asian American girls have the highest rate of suicide when compared to their Black, Hispanic, and White counterparts. Nellie Hsu saw this as a major problem as a graduate student in 2001, leading her to found ASPIRE, a Boston-based non-profit dedicated to developing career and leadership skills for Asian American women. ASPIRE gives local Asian American women the opportunity to meet older Asian women in the workforce who relate to many of the same issues they face, such as familial pressures from home and societal pressures from trying to fit the "model minority" stereotypes.

Mentoring via ASPIRE works in three ways. YLP, the Youth Leadership Program, brings up to 12 high school students together annually to attend leadership workshops, public speaking seminars, and speaker events. In addition, ASPIRE holds an annual Asian American Women in Leadership conference where Asian American women can meet and learn from other leaders. ASPIRE is currently looking for people that have the energy and passion for getting involved with the mentorship of Asian American women, and to start college chapters. To find out how you can get involved, or start a chapter at MIT, visit www.girlsaspire.org.

After a semester’s worth of work, D-Lab students brought their innovative ideas to Cambodia, where they worked with locals to implement them.
cement, and after demonstrations the locals became receptive to the idea. With the help of Putthy and some locals, the group used the rice husk ash cement to build a latrine for a school in the Angkor Chum area.

Due to their limited Khmer, the group was not able to have substantial conversations with locals and learn their impressions of life and the work being done, but Emily Lo related an incident that demonstrated the difference in cultures.

“There was one point when a woman made a comment that made Putthy laugh. He told us she was incredulous at the fact that a white person, an Asian, and an African (actually Jamaican) could somehow be working together and speaking the same language. It just seemed so strange to her and amusing to us, although it does show how different our perception of culture is.”

The group also demonstrated their work to Habitat for Humanity workers, who are now interested in using the cement for future projects.

The sanitation team partnered with Wat Atwea, a school that serves children in grades 1-6. Using feedback from locals who monitored a rainwater harvesting system installed last year, the group improved the design during the semester and then worked with locals to build it for the school. The system comprises five cisterns, which together hold about 6,000 liters of water, enough to supply the school for about a month and half. The improved system includes piping on the roof that brings water into the cisterns, and includes a ‘first flush’ mechanism, so that the dirtiest water (the first water to run off the roof during a storm picks up all the accumulated dirt) is channeled into a separate pipe. Since the dry season lasts four months, this water will be a valuable resource that the kids can use to irrigate the school’s vegetable garden, as well as for cooking and cleaning. The response to the rainwater harvesting system was enthusiastic, and an NGO located in Cambodia is looking to expand the project and implement the system in other schools.

This page
Above: The group’s translator Putthy Nho stacking soil-cement bricks in the center of the concrete test beam to figure out how much weight the beam will hold until it breaks. This is a standard 3 point bending test to find the strength of the concrete.
Below: The 5 cisterns of the rainwater catchment system were decorated by handprints of the children and everyone who helped build.

Opposite page
Above: The materials group spelling out MIT inside the foundation for their latrine.
Below: Saba Mohsin ‘11 with Cambodian schoolchildren in front of the rainwater harvesting system.

The sanitation team also partnered with the building technology team to build a latrine at another school once the rainwater harvesting system was finished.

While the D-Lab students developed the technology behind these projects, the people they worked with were extremely important in making the projects a success. The educational technology group has had many volunteers provide recordings of lessons and stories in Khmer to add to their database, and all of the other groups received help and advice from locals. The projects implemented during the trip will improve the quality of education for Cambodian school kids, helping them reach their potential.

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Hope for Education
by SUDHA GUTTIKONDA

There is a government primary school in every village in India. That means 94% of India’s more than one billion people are within a kilometer of a primary school. Yet, only 15% of men and 9% of women have completed the equivalent of sixth grade. What are the reasons for such a discrepancy?

Simply building schools is not enough to ensure education. Many of these schools are located in villages where teachers have to travel from neighboring cities, and so they often fail to attend on a regular basis. The caste system, though legally outlawed, has still stratified society and has left the children of the lower strata in a disadvantaged situation. Parents are illiterate, and so any questions that cannot be answered by impatient teachers at school remain unanswered. Not to mention that electricity is unreliable so that children have very dim lighting to study by; by night fall, reading is almost impossible. But perhaps the greatest reason is an integration of all of these disadvantages—the fact that the people themselves have little hope in education, and the educators do not believe that villagers can learn. In the end, no one cares because no one sees the point. Yet there is always that one family that keeps trying… just so they have a chance.

Currently, ASHA’s main programs include Work An Hour, an ASHA-Wide Conference in New York, and an ASHA-India Conference in Bangalore. Work An Hour, or WHH, is a symbolic hour towards working for the education of children by donating an hour’s worth of salary to funding one of ASHA’s projects. The ASHA conferences bring together chapter leaders and groups in both overseas groups and India to evaluate current projects and set goals for the future of ASHA. In addition, each chapter of ASHA carries out different individual projects of their own.

“I would love to have a natural source of clean water, but there is no water. Not even a river, only bare rocks.”

In many countries, arsenic is naturally present in groundwater in very high concentrations. People drinking that water over a long period of time can develop arsenicosis—a cancer-promoting disease. The most visible signs of arsenicism are usually skin lesions that develop on the palms and soles of the feet. But arsenicism can also lead to cancer of the skin, bladder, kidney and lung, and eventually death. In Bangladesh, where the most intensive monitoring has been done, it’s estimated that up to 6% of the population is at risk of developing arsenicism. But a simple water filter can potentially save lives. Over IAP 2005, Master of Engineering students Claudia Espinosa and Maclyn O’Donnell traveled to Nepal to evaluate the performance of the Kan-cham™ Arsenic Filter (KAF). The KAF was developed in 2002 by a team of researchers led by Senior Lecturer Susan Murcott, former student Tommy Parmar, and the material science group at MIT. The filter is adapted from the biosand filter, a household-scale water filtration system commonly used to remove microbial contamination. Above the sand and gravel that comprise a biosand filter, the KAF has an additional compartment called a diffuser basin, which holds iron nails. When water is poured into the filter and over the nails, oxidized iron from rust binds to arsenic in the water. Particles of the iron-arsenic aggregate flake off and are caught by the sand and gravel. It is a cruel irony that groundwater wells, usually installed to offer an alternative water supply to contaminated surface sources, can sometimes bring illness.

ASHA for Education
Bringing hope through education

Filtering out arsenic in Nepal
by REBECCA GIANOTTI

In many countries, arsenic is naturally present in groundwater in very high concentrations. People drinking that water over a long period of time can develop arsenicism—a cancer-promoting disease. The most visible signs of arsenicism are usually skin lesions that develop on the palms and soles of the feet. But arsenicism can also lead to cancer of the skin, bladder, kidney and lung, and eventually death. In Bangladesh, where the most intensive monitoring has been done, it’s estimated that up to 6% of the population is at risk of developing arsenicism. But a simple water filter can potentially save lives. Over IAP 2005, Master of Engineering students Claudia Espinosa and Maclyn O’Donnell traveled to Nepal to evaluate the performance of the Kan-cham™ Arsenic Filter (KAF). The KAF was developed in 2002 by a team of researchers led by Senior Lecturer Susan Murcott, former student Tommy Parmar, and the material science group at MIT. The filter is adapted from the biosand filter, a household-scale water filtration system commonly used to remove microbial contamination. Above the sand and gravel that comprise a biosand filter, the KAF has an additional compartment called a diffuser basin, which holds iron nails. When water is poured into the filter and over the nails, oxidized iron from rust binds to arsenic in the water. Particles of the iron-arsenic aggregate flake off and are caught by the sand and gravel. It is a cruel irony that groundwater wells, usually installed to offer an alternative water supply to contaminated surface sources, can sometimes bring illness.

The SwayambhuNath Stupa in Kathmandu.

Photo: Courtesy of Maclyn O’Donnell

Another project ASHA: Boston-MIT was able to visit the project from 2005-2010 due to political unrest in Nepal. During that time, ENPHO continued to disseminate the filters but only had limited resources to monitor the performance of the units already in use. With the travel ban to Nepal recently lifted, the project resumed, so Claudia and Maclyn set to work on making the KAF even more effective.

Filtering out arsenic in Nepal

by REBECCA GIANOTTI

In many countries, arsenic is naturally present in groundwater in very high concentrations. People drinking that water over a long period of time can develop arsenicism—a cancer-promoting disease. The most visible signs of arsenicism are usually skin lesions that develop on the palms and soles of the feet. But arsenicism can also lead to cancer of the skin, bladder, kidney and lung, and eventually death. In Bangladesh, where the most intensive monitoring has been done, it’s estimated that up to 6% of the population is at risk of developing arsenicism. But a simple water filter can potentially save lives. Over IAP 2005, Master of Engineering students Claudia Espinosa and Maclyn O’Donnell traveled to Nepal to evaluate the performance of the Kan-cham™ Arsenic Filter (KAF). The KAF was developed in 2002 by a team of researchers led by Senior Lecturer Susan Murcott, former student Tommy Parmar, and the material science group at MIT. The filter is adapted from the biosand filter, a household-scale water filtration system commonly used to remove microbial contamination. Above the sand and gravel that comprise a biosand filter, the KAF has an additional compartment called a diffuser basin, which holds iron nails. When water is poured into the filter and over the nails, oxidized iron from rust binds to arsenic in the water. Particles of the iron-arsenic aggregate flake off and are caught by the sand and gravel. It is a cruel irony that groundwater wells, usually installed to offer an alternative water supply to contaminated surface sources, can sometimes bring illness.

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students worked with a team from ENPHO, who were essential in organizing logistics, locating appropriate villages to work in and identifying households that owned KAFs.

Over 15 days, Claudia and Maclyn conducted a suite of physical and chemical tests on 79 groundwater wells and 100 KAFs. Their objectives were to: 1) see if the filters were being operated and maintained correctly after several years in operation, 2) determine how well the filters worked with different groundwater conditions, and 3) try to answer the question of why some filters seem to be ineffective, while others right next door can work perfectly well.

A third party study conducted in 2008 found that about 5% of the KAFs distributed in Nepal were not working properly, most of which were located in Nawalparasi. Part of the problem is attributable to users, but the issue is complicated by the natural variability of groundwater conditions. Arsenic is distributed unevenly through aquifers and concentrations vary throughout the year with the rains, so a well can switch from safe to dangerous within a single season.

From their work over January, Claudia and Maclyn have determined that the amount of dissolved iron, measured in the water draining out of the diffuser basin, is critical to the performance of the filter. But the students are still evaluating the impact of naturally-occurring iron in the groundwater. Arsenic removal process. From their work over January, Claudia and Maclyn have determined that the amount of dissolved iron, measured in the water draining out of the diffuser basin, is critical to the performance of the filter. But the students are still evaluating the impact of naturally-occurring iron in the groundwater. Arsenic is distributed unevenly through aquifers and concentrations vary throughout the year with the rains, so a well can switch from safe to dangerous within a single season.

In addition, the students observed a number of user issues. Poor maintenance regimes are common and likely to be related to a lack of knowledge about how the device works. For example, to increase the flow rate when the filters slowed down, Claudia and Maclyn observed some people removing sand from the filter, which limits its ability to remove contamination. In one case, the diffuser basin and nails were removed, rendering the KAF ineffective.

The students also observed that the use of KAFs depends strongly on the presence of arsenicosis—households suffering from visible symptoms made more effort to use and maintain the filters properly. But people who didn’t have visible symptoms were less likely to use the filters, particularly if the units were distributed for free and not purchased by the household.

Another unexpected complication was that filter use declines in the winter, because the groundwater is extracted at a near constant temperature of about 65°F, while air temperatures are below freezing. Putting the groundwater through the filter and exposing it to the air cools it down considerably, so untreated water is far more attractive to drink in the cold months.

Claudia and Maclyn hope to complete their analysis in the next couple of months and provide recommendations to the KAF project partners on ways to improve the effectiveness of the unit. For more information on this project, contact Susan Murcott or go to: http://web.mit.edu/watsan/world-bank_summary.html
Little Town, Big Impact
by EMILY SUTER

The team began greenhouse construction with the help of community members.

Most of the women worked to earn money to send their children to high school. Including transportation, average high school fees are about US$600 per year, so even women with young children began working in the business in order to save enough money by the time their children were of school age. Because of this, the children were often recruited to help, and they were eager to offer their creative ideas. Ultimately, the creative ideas became actual crafts, which were then sold 2 hours away in Mexico City.

Unfortunately, the biodigester construction was not as smooth and successful as the greenhouse project. After rats chewed through a portion of the giant plastic bags, holes decreased the efficacy of the digester system. Furthermore, the rocky ground forced the team to build the digester in a raised trough of soil, which provided less warm and less optimal conditions. However, the people of the town still hope to use the system as much as possible and the team is making plans to deliver more (unchewed!) plastic to the villagers.

1/16/2011
Tamale, Ghana
6am
by MITCH WESTWOOD

Even after sleeping through the 4:30am-or-so Adhan, or Muslim call to prayer, I find myself awake at 6 this morning. I’ve been waking consistently early, but that only gives me extra time to relax, reflect, and listen to the morning birds of all kinds. I won’t complain.

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The last two weeks here have been more than I could have hoped for, and I wish we were staying for more than IAP. I have been working with Prof. Susan Murcott of Course 1, and her graduate students Shanti, Sam, Josh, Jonathan, and Joanna. Our goal is to finish construction of a ceramic water filter factory operated by Pure Home Water, a NGO started by Susan in Tamale, Ghana. We have been making rammed-earth blocks for construction, designing and building a block-making facility, improving a press for the making of the filters, helping the grad students with their many projects (an underground water storage tank, composting, and testing, and others), and generally getting the factory ready for filter production. It’s an exciting time to be here – factory construction has been happening for a while, but PHW needs to start making filters this spring. Our visit here should finally get it ready to meet that goal.

This being my first international service trip, I prepared for the worst of everyone’s warnings. Tales of malaria, sunburns, and traveler’s sickness had me a bit on edge. However, we’ve been just fine. Sure, the Harmattan wind blows dust from the Sahara to Ghana from November to March, the dry season, creating a thin layer of dust on every surface (including our lungs). And sure, the risk of malaria means we need to sleep with bed nets. And yes, we filter our water with a few of our ceramic filters. But these things mean nothing compared to what the average Ghanaian faces every day. We have safe food and water, electricity most of the time, and can afford malaria medication. Our trip has forever changed the way I think about a lot of things.

We’ve made some wonderful friends at the factory site. Everything said about the Ghanaian people is true: they’re friendly, welcoming, and a whole lot of fun. If you give any stranger a smile and a greeting, they’ll return the hello with a big grin. Our co-workers at the site enjoy giving us lessons in Dagbani, the local language and one of Ghana’s many different languages. We’ve also shared many kinds of local foods, from fufu and banku to wachee and ground nut soup. I’ll miss these people when I’m back in Boston.

My trip to Ghana has been eye-opening and moving beyond description. I’m looking forward to returning to the people who have taught me more about living than I ever could have expected.
We were staying in San Juan Nepomuceno, approximately 150 miles from Paraguay’s capital of Asuncion, and rose early in the morning to head out to Laureano Boveda’s farm. In San Juan, around the corner from the inn where we were staying, our team met the staff from NGO Action Against Hunger, including our kind guide Nelson Benavente, and technician Rosque Gonzalez from the local farming cooperative Capiibary.

Our team piled into two pickup trucks to make the trip out to Laureano’s. Five minutes outside of town we hit a very bumpy, unpaved road and spent an hour traveling about 35 dusty miles through Paraguay’s beautifully green countryside. Rolling hills packed with soy plantations surrounded the road, small patches of trees and burnt out stubs were sad reminders of what was once the second most biodiverse forest on earth. Much of the region has been deforested in the last 30 years to accommodate growing agribusiness pressure from Brazil and global demand for soy. Paraguay’s beautifully green countryside.

We arrived at Laureano’s rustic, four-room home to be greeted by six other farmers and a handful of chickens. When we sat down for introductions, the farmers spoke amongst themselves and with Nelson and Rosque in Guarani, Paraguay’s national language. Laureano, the coordinator of the group, welcomed us in Spanish to Para-
guay and to his home. He explained that the farmers are members of Cooperative Capiibary, and amongst a sub-committee of twelve they market their produce collectively, share farm tools, and coordinate transport among two trucks.

When I asked why the committee was important, Laureano told us that, “as individuals we cannot do anything – the [fruit] buyers take advantage of us. We can’t complain about the price or anything else.” He said that what the farmers lacked was a plan to coordinate fruit production. Three years ago when they agreed with Cooperative Capiibary to begin growing citrus and passionfruit, they collectively planned how many hectares each farmer would grow, so that they could command a higher price from committed buyers.

The results of this collective sale have been promising for the farmers. Within just three years, Laureano has increased his income enough to supplement his subsis-
tence crops with nutritious food that he can purchase for his children. He buys extra clothes for school, and bashfully he shared that he also purchased a cell phone. With the cell phone, he explained, he was able to organize our meeting within a matter of minutes, whereas in the past he would have spent a day visiting his neighbors’ farms to alert them to our visit. He can also coordinate directly with fruit buyers on behalf of the committee. In short, he has gained precious time for his business.

It was the heat of summer in Para-
guay and extremely hot. As we listened to Laureano’s story, the farmers were leisurely sipping terere, an ice cold herbal tea. We sat in a circle and sipped the tea out of one common glass, passing it around the circle and sharing the refreshment.

Before visiting the passionfruit and citrus plots, another farmer in the group, Don Roberto, added, “I feel a little better now – I have more income now that I sell passionfruit, and the income is spread over six months.” The passionfruit harvest has allowed Don Roberto to earn an income not just during the three-month bean and corn harvest, but also during the fall months when the vines are bearing fruit. Another farmer grinned and told us that his citrus trees, anticipated to give fruit for 30 years, are his retirement fund. When he can no longer visit his fields to harvest his other crops, he will be able to pick oranges from his trees.

We left the field visit with a renewed sense of purpose and contribution to the plight of Laureano, Don Roberto, and the other business-savvy farmers we visited that day. Laureano earns $3 a day on average and lives in poverty. Often seen as powerless peasants waiting for a handout from the government or a generous NGO, the members of Capiibary are, on the contrary, incredible stewards of the Paraguayan countryside. They were able to tell us exactly which tools would facilitate their trade: access to better transportation, an efficient use of their cell phones for business transactions, and perhaps some way to add value to their fruit, through pro-
cessing into jams or other applications. The Cooperative Capiibary, as well as other cooperatives and farmers whom we visited, tasked us with some research once we got back to MIT. We’ve since been working with a team of eight MIT students as Supply Change. We have focused our efforts on an SMS tool for supply aggregation as well as a deeper understanding of the costs of processing.

We’ll complete a prototype mobile application in June that will allow farmers like Laureano to send crop information to Cooperative Capiibary via an SMS text. This will allow the cooperative to make better business decisions on behalf of its members. We are also conducting research on small-scale fruit processing units so that fruit cooperatives and collectives of farmers are aware of the costs of processing, the equipment on the market, and can innovate to adapt these technologies to their own needs.

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Supplying Change in Paraguay
by SHAYNA HARRIS

Shayna Harris, current Legatum Fellow and second year student in the Sloan School of Management’s MBA program, traveled to Paraguay over IAP 2011 to lay the groundwork for her company, Supply Change. Shayna and two business partners started Supply Change to help farmers in developing countries increase their incomes from sustainable agriculture. Working with fellow Sloan students Adah Chan (MBA ’11) and Erica Dhawan (MBA/HKS ’12), Shayna wanted to understand existing bottlenecks in the fruit supply chains.
The Right to Fight
by EMILY SUTER

An MIT graduate student helps a labor rights organization fight for the rights of workers in Guadalajara, Mexico.

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nternational development is a diverse and complex field that requires one to consider all different aspects of a society. New technologies are frequently required for a people to become more efficient, and many MIT classes and initiatives focus on developing and disseminating innovative tools for these communities. Yet simply giving a community a new tool is not always sufficient. More often than not, developing communities also must create new mindsets and methods for using the tools they have been given.

For the past ten years, CEREAL has documented over 2,000 cases of labor violations in the electronics manufacturing industry, including poor factory conditions, long hours, and low pay. Hector’s challenge has been to help the organization systemize these cases to facilitate their review. Through a knowledge management software tool that he co-developed with CEREAL, Hector has established a means of tracking how and when these cases were processed. Additionally, the tool provides a better way of documenting and tracking future violations.

Through this program, Hector hopes to create a better way to identify and prosecute labor rights violations. With a more efficient tracking system in place, CEREAL can more effectively protect the rights of workers across Guadalajara and for all industries, not just electronics manufacturing. By expediting case processing, this new system will increase the impact that CEREAL can have and ultimately improve the employment outlook for workers throughout the country.

Africa 2.0
by REBECCA GIANOTTI

“People know I’m an optimist about Africa. That does not mean that you don’t recognize all the challenges that exist. But I feel that there’s another Africa, one with opportunity, that doesn’t often get spoken about. That is what I want to focus on today.”

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r. Ngoko Okonjo-Iweala, a Manager Director of the World Bank, opened the Africa 2.0: Achieving Growth Through Innovation Conference in April with optimism. Organized by the MIT Africa Business Club and held in the new Media Lab, the conference was the first held by the Sloan School to focus on Africa. As Dean David Schmittlein said in his opening remarks, the conference was “an idea whose time had come”.

This optimism about Africa was echoed throughout the day by the nearly 300 conference participants—students and professors, entrepreneurs and consultants, inventors and investors. The break-out panel discussions and keynote addresses highlighted sectors where technological innovation holds particular promise for fueling growth in Africa: energy, agriculture, information and communications technology (ICT), education, finance and entrepreneurship.

Given the event’s setting, the role of technology in improving university education was pertinent. In her opening address, Dr. Okonjo-Iweala stated that African universities need to collaborate more with each other and with foreign universities to build their teaching capacity. Nemo Semret, a software engineer from Google and a member of the Technology panel, illustrated specific ways that this might be achieved.

For example, Google is providing free online storage space and internet access to universities that don’t have the money to purchase it themselves. The company is also facilitating curriculum support for computer science studies, by sharing course materials, book chapters and homework sets contributed by faculty at MIT, Stanford and Columbia University.

The conference also hosted the final round of the AFRICA Innovate Business Plan pitch competition, which showcased some of the work at MIT that combines technology with small businesses. Four finalists – MaaBara, Sulico, Invesociety and Sanergy – had two minutes to pitch their idea to a panel of judges, who could ask questions and awarded prizes.

All finalists put in a strong performance and impressed the audience, but there could only be one winner. First prize was awarded to the team from Sulico for their plan to provide community-centric solar energy production and distribution. Amidst the exciting opportunities for business and innovation, conference participants also discussed the very real challenges facing growth in Africa. The penetration of technology into rural areas was considered an especially critical issue, since the majority of African people don’t live in urban centers. For example, the rapid increase in mobile phone users has unleashed a wave of new business potential, but uptake of ICT in rural areas is still well below the world average.

The Energy panel also discussed the problem of lack of rural infrastructure. One panelist suggested that “small-scale energy generation has the potential to revolutionize access to energy for many Africans,” referring to off-grid, independent power stations generating energy on the order of 2.5 MW.

At the conclusion of the conference, participants enjoyed music and lounge entertainment at a networking reception late into the night. After such a successful premiere, the Africa Business Club is already looking forward to organizing the conference again next spring.

More information about the conference speakers and events can be found at: web. mit.edu/sloanafrica/africacconference.html

Above: Conference attendees enjoy a presentation. Below: Dr. Okonjo-Iweala talks with Sloan students and other counselors about Africa’s future.