

Fundamentals



THE ENVIRON
FOUNDATION

NEWS FROM THE ENVIRON FOUNDATION

SUMMER 2011

Light4Life Dhawa community center renewable energy project



Learning Planet was awarded an ENVIRON Foundation grant for their project, Light4Life: Harnessing clean, sustainable energy for health preservation and rural regeneration in the remote villages of Nepal. Their objective is to overhaul existing rural buildings, transforming them into a sustainable lifeline for the local community.

The Light4Life project is transforming a rural school into a self-sufficient educational

centre and community resource, bringing power and communications to the people of Dhawa, Nepal, for the first time. The renovation included a new 2.2kW solar roof, as well as installation of charge controllers, batteries and super-efficient non-toxic LED lamps. The supply of solar energy will eliminate the need for kerosene lamps and battery-powered lanterns in

place previously, and will power a refrigerator for vaccines and medicines. It will light a new library and class rooms; power up to 15 computers with email capability; and provide charging stations for villagers' electronics (*i.e.*, cell phones). The villagers also plan to open a small photo studio.

The refurbished school and an additional new building will directly aid approximately 500 children, 250 adults (attending classes at the school in the evenings) and countless families who will be able to use the resources there to communicate with family members working outside the country. Learning Planet hopes that the project will provide a model for rural schools throughout the region.

Learning Planet helps remote communities connect with sustainable technology, markets, skills, labour and donors from outside, creating opportunities, products and profits to fund and sustain their own projects. Founded in November 2008 by Dita Chapman and Justin Wickham, with a focus on remote rural communities in South Asia, their mission is to assist local communities to redesign and improve their rural schools and create a market for their own resources—transforming tired communal buildings into self-sufficient educational, civic, social and commercial centres, for the benefit of the whole community.

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The Foundation Announces Awards

This issue of Fundamentals presents an update on ENVIRON Foundation grants awarded to October 2009 and October 2010 grant applicants.

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About the ENVIRON Foundation

In recognition of ENVIRON's longstanding heritage, The ENVIRON Foundation provides financial assistance to endeavors that promote protection of human health and a sustainable global environment, particularly related to the impact of chemicals and the use of the Earth's resources. The Foundation funds relevant education, training, applied research, and direct initiatives by not-for-profit organizations. The Foundation encourages efforts that result in governmental and business decision making that is informed by scientific principles and by public engagement. In this issue we present information about these opportunities, as well as application procedures.

Bren School students solving real-world problems

As a component of their Master's degree program, the [Bren School of Environmental Science & Management](#) requires students to participate in a group project in lieu of producing a thesis. Four to six students staff each project for three quarters and work as a team to solve a real-world environmental problem, with the guidance of a faculty advisor. In 2011 The ENVIRON Foundation awarded funding to six of these projects deemed to be consistent with The Foundation's mission.

Evaluating recommended and reported practices in nanomaterials environmental health and safety

Engineered nanomaterials (ENMs) are designed to exhibit novel or enhanced properties that affect their physical, chemical, and optical behaviors, in effect presenting new opportunities for use in cosmetics, clothing, sports equipment, coatings, and electronics. Currently, there are no specific federal or state governmental regulations addressing EHS and waste management practices for engineered nanomaterials. In 2009 the California Department of Toxic Substances Control (DTSC) began soliciting industry for information that could influence regulation for one type of ENM, carbon nanotubes. The Bren students will use a variety of available sources to synthesize a consensus-based set of recommended practices for carbon nanotubes and assess their associated economic implications.

Spatial planning for sustainable offshore shrimp aquaculture

The Bren school students will support Olazul, a small non-profit NGO, working with partners in the Mexican Gulf of California



to test the feasibility of aquapods and develop a model for sustainable shrimp aquaculture as an alternative livelihood for communities engaged in unsustainable fishing or aquaculture practices. A new offshore aquaculture technology, aquapods show promise for both sustainability and profitability. However, the implementation of aquapods is unprecedented, creating a need for an implementation model that improves resource sustainability and the economic viability of coastal communities. Spatial planning will be a key element of this challenge.

Strategies to control pollution from mercury and other substances

Bren students will support the Bureau of Land Management (BLM) in its efforts to develop improved management plans to protect water quality in Northern California's Cache Basin.

Abandoned mercury mines in the Basin are a major source of mercury pollution in the Sacramento River and the Bay Delta. High background levels of antimony, arsenic and boron are present locally as well. Students will map and model the extent and levels of current and potential future mercury contamination; determine sites that pose the greatest health and environmental risk; and identify strategic sites for a monitoring network to inform land managers and regulators on progress toward attaining program goals.

Development of biosecurity plan of invasive plants and animals on Santa Cruz Island, CA

The Nature Conservancy (TNC) has undertaken an ambitious restoration project to promote ecosystem health and function and to restore the viability of threatened and endangered species on Santa Cruz Island, the largest and most biodiverse of the Channel Islands. Bren students will support

the development of a biosecurity plan to prevent invasions and establishment of novel invasive organisms—a key element to ongoing and lasting protection. The project will entail identifying pathways and vectors of potential invasive organisms; compiling vector-specific biosecurity protocols and implementation plans; researching the most effective messaging for a wide range of island visitors and users to support education and outreach; and determining the potential for biological and economical losses if a biosecurity plan is not implemented.

Boats, whales, & the Santa Barbara Channel

In late 2007 at least four blue whales were struck and killed by marine vessels in the Santa Barbara Channel. NOAA's National Marine Fisheries Service (NMFS) declared this an Unusual Mortality Event and called for an immediate response, including recommendations that commercial vessels voluntarily reduce speed while traveling through the Channel to reduce the risk of striking and killing a whale. Vessel monitoring data suggests that ships have not complied. The



Channel Islands National Marine Sanctuary (CINMS) has prioritized the development of long-term management measures to reduce ship strikes to endangered whales in the Channel region. The Bren School will be integral to the decision-making process by providing NMFS and CINMS with analyses of the economic implications of proposed management options that best meet the agencies' goals and mandates.

Santa Ynez Chumash indian nation climate action and energy management plan

Federally recognized Indian Tribes are sovereign entities responsible for developing their own laws, policies and programs to address environmental concerns. Yet most Tribal communities have been unable to develop strategies and mechanisms to address energy and climate change, often due to a lack of resources, understanding and technical capabilities. On behalf of the Santa Ynez Chumash Indian Nation, Bren students will identify baseline energy consumption and GHG emissions for commercial, governmental and residential sectors; develop a climate action plan that includes achievable strategies and goals for reducing GHG in each sector; and initiate the implementation of energy management strategies, laws and policies.

From waste to resource: Sustainable pig farming on St. Lucia

St. Lucia, which is centrally located in the eastern Caribbean and widely regarded as a tourist destination, faces enormous water-quality issues. The second largest watershed and the largest banana-producing area on the island of St. Lucia, the Mabouya Valley has recently become the largest



pork-producing valley in the country, with more than 30 pig farms on the river. The farmers are cash poor, and pig farming is expanding rapidly to keep pace with the rising popularity of pork. The growing stream of pig waste being flushed into the rivers of St. Lucia is adversely affecting human health and limiting vegetable farming in the rich agricultural valley.

The ENVIRON Foundation is funding a program of the not-for-profit [Caribbean Student Environmental Alliance](#) focused on alleviating the growing stream of pig waste in the valley. Pollution-reduction initiatives in the area tend to be abandoned as soon as an engineered solution breaks down or requires maintenance. Caribbean-SEA will therefore enhance the sustainability of their simple engineered solutions through economic incentives to the farmers to keep their waste out of the water—by changing the perception of pig waste from waste to resource. To accomplish this, the program will utilize and improve the research skills of the agriculture and engineering departments of on-island Sir Arthur Lewis Community College to provide simple electricity production for the farmers from pig waste biogas production on their farms and composting resources for banana farmers adjacent to the pig farms.

If the farmers compost their waste through a biodigester system, they can produce not only methane fuel for cooking and gas lights, they could also produce electricity. The students will learn the economics of composting from a successful program in neighboring Dominica. They will evaluate the biogas digester technology to find the best electricity generator possible or simply utilize the gas directly for lighting and cooking fuel. If the farmers are able to produce their own electricity, they will be more likely to maintain the digesters and to fix them when they break down. Electricity costs about \$0.32 US per kwh in St Lucia (depending on the fuel surcharge), making it relatively inaccessible to many farmers. Making their own power would be a fabulous incentive for them to harness and manage their pig waste.

Putting GeoCorps America interns to work

GeoCorps America is a program of the [Geological Society of America](#) that places geoscientists in temporary summer positions with the National Parks Service, Bureau of Land Management and the USDA Forest Service. The ENVIRON Foundation has awarded funding to GeoCorps for a number of positions the past couple of years. We highlight here those funded during the 2010 application cycle.

Geologist, Sierra National Forest , CA

Naturally Occurring Asbestos (NOA) Geologic Hazard Site Assessments will be conducted across the Southern Sierra Province to determine the presence and amount of NOA on forest service facilities,



including roads, trails, campgrounds and other administrative sites. The assessments will include evaluating roads and areas proposed for disturbance using logging equipment and other ground-disturbing equipment. Preliminary GIS analysis of the project area has identified geologic rock types that have the potential for containing NOA, which can be hazardous to the public and employees. The GeoCorps participant will be responsible for completing the report and reporting findings to the responsible land manager, and may also conduct well tests (water yield and water quality) on a park well and monitoring of a rockslide that threatens park access roads.

Physical scientist/GIS technician, Arapaho & Roosevelt National Forests and Pawnee National Grassland, Colorado

The Arapaho & Roosevelt National Forest Abandoned Mine Lands (AML) program is responsible for removing safety hazards created by hard rock mining during the late 1800s and early 1900s. Mine sites were abandoned leaving unsafe features such as open shafts, adits, deteriorating struc-



tures and mining equipment, which pose physical hazards to the public and wildlife. The GeoCorps participant will create a GIS database from various inventories of abandoned mines in order to integrate data on environmental characteristics, physical hazards and mining features from the Arapaho & Roosevelt National Forests and the Colorado Division of Reclamation, Mining and Safety into a collective GIS database.

Soil scientist, Bureau of Land Management Fairbanks district office, Alaska

This GeoCorps participant will develop and conduct soil sampling and monitoring during the summer field season that will inform management decisions regarding location of transportation corridors and development of Best Management Practices (BMPs) for OHV trail construction. The participant will conduct soil surveys to characterize soil in several project areas; conduct trail condition surveys, including determining soil cover and assessing impacts of cross-country motorized vehicle use on soil erosion and compaction in select areas; and conduct inventories of existing ATV routes.

Reducing injury & environmental damage from the use of agrochemicals by subsistence farmers in Ghana

UK-based [Powerful Information](#) and the grass-roots Network of Rice Farming Associations (NETRICE) in Ghana are joining forces to reduce the incidence of injury and death from the misuse of agro-chemicals and encourage more profitable and sustainable



farming practice for subsistence farmers in the Volta Region of eastern Ghana. The last decade has seen a dramatic increase in the use of fertilizers, herbicides and insecticides in the region. While this has increased agricultural yields, it has also caused a rise in deaths and incapacitation as a result of the misapplication of these agrochemicals. Many farmers have had little or no education, and they use powerful chemicals without knowing the dangers or

taking proper precautions. The problems are compounded by the chemical sellers, who repackage pesticides and herbicides and sell them without labels or instructions. Reliable figures are hard to come by, but PI asserts that 35 rice farmers (including 32 women) died in the Hohoe District alone in 2005, and 45 in 2006 (43 women). Many more farmers were incapacitated during the same period. Misuse of agrochemicals has also resulted in serious water pollution.

The program will entail:

- training 500 local farmers in integrated pest management and the safe use of agrochemicals and 150 chemical sellers in the basic principles of using sprays and powders.
- giving talks to 50 schools (2,500 students) on the importance of treating chemicals with respect/care and understanding the dangers.
- producing and distributing 200 posters to schools, chemical sellers and farmers' associations in the region.
- organizing 10 radio broadcasts.
- establishing a small farmers' resource and information centre in Hohoe with internet access and a library of basic reference materials on good agricultural practice and the safe handling and disposal of agro-chemicals.

Powerful Information will provide coaching for NETRICE's Executive and key Associate Members in computing, information management, and proposal- and report-writing.

Reducing the risk to public health from heavy metal pollution in Albania

UK-based [Powerful Information](#) is collaborating with local partners in Uznova in Berat, one of Albania's top environmental *hot spots* contaminated with heavy metals. Circumstantial evidence suggests serious public health effects resulting from the pollution—which comes from a wet blue tannery, an abandoned lead smelter and a battery factory. However, the extent of contamination is not fully known, and there are no recent statistics on public health. The

primary goal of this project is to change the understanding, attitude and behavior of people living in Uznova, in order to reduce both public anxiety and the health risk from heavy-metal pollution. Specifically, the project will:

- clarify what is known about pollution and public health in Uznova (where necessary taking action under the Aarhus Convention to get access to unpublished studies).
- determine how local lifestyles, attitudes and behavior (including growing food and the use of ground water) may affect the exposure levels of local people.
- raise awareness of the findings within the community and highlight potentially dangerous activities to mitigate behavior patterns that put people's health at risk by talking with local

residents (house-to-house calling); coordinating activities through the office of the Head of the Commune of Uznova and schools; generating media interest/attention and air time on local TV stations; and displaying information on public notice boards in schools, the local health center, cafés and shops.

Powerful Information also intends to write up the findings of the Uznova experience as a case study, which will be circulated widely through meetings and local workshops (including 10 other environmental hot spots in Albania).

To support this program, ENVIRON will undertake a *pro bono* technical assessment of the tannery to develop a more robust waste treatment plant to remove chromium and other noxious materials from its effluent.



IN TOUCH

The ENVIRON Foundation accepts applications for funding once per year in October through our on-line application system. (See link below.)

The submission deadline this year is: Monday, October 3rd at 11:59 p.m. PDT.

Please get the word out that The Foundation is ready to fund projects and programs that align with its articulated mission. Thank you for your help.

[Click here to apply.](#)

Please contact a member of the Foundation Committee with your recommendations or questions:

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