

## Section I

### a. Davis Projects for Peace Final Report

BioD: Clean Energy Solutions, Building Blocks for Peace

Madagascar

International House NYC

Stephanie Ullrich, USA, University of California, Berkeley

Rahul Mitra, Bangladesh, Georgetown University

Biodenergy.org

b. This project aimed to directly contribute to long-term peace in Madagascar by providing Malagasy people an alternative to firewood that will ultimately save people time and money while also reducing the rate of deforestation and conflict over natural resources. In addition, this intervention aimed to reduce air pollution that is responsible for the high rate of respiratory ailments among the rural inhabitants of Madagascar, contributing to health benefits and the long-term wellbeing of communities in Madagascar.

c. Other fundraising efforts contributed to this project. These funds came in the form of a partnership donation from the NGO Catholic Relief Services (CRS) for \$5,000, and from Madagascar Oil for \$500.

d. Through this project, we aimed to provide a sustainable solution to resource-driven conflict, mass deforestation, and chronic poverty in Madagascar. Our project planned to implement 30 pilot BioD biodigesters that convert animal waste into clean energy in the Commune of Miary in Southwest Madagascar in Tulear. Over the course of five planning months, we decided with our in-country partners that 10 biodigesters in Tulear was a more realistic goal, given the unexpected increase in the price per unit and available funds. This was in addition to building two other BioD units in communities (a community-owned unit used for fruit drying in Ambohitrambo and a household unit in Alasora). The remaining funds were channeled instead into tools that helped us to measure our current impact with BioD units in communities throughout Madagascar and to build more partnerships for future expansion.

Our Malagasy project partners who speak fluent French and Malagasy were able to support us throughout the whole trip with translations. We specifically partnered with CRS and Conseil Decesain de Developpment (CDD) in Tulear because they are organizations that are already established in this region, that know the target communities well, and that speak the regional dialect.

We did research into cultural taboos about waste, waste collection, and waste for energy use, but found that the communities we worked in were receptive to the biogas technology and that no taboos existed in this regard. For the BioD technology to be used in the most optimal way, animal waste and water (inputs to the technology) need to be accessible. Therefore the best households to receive BioD units are those that both own livestock (valuable zebu, cattle, chickens, or pigs) and have consistent access to a water source. This criteria creates a natural selection bias, whereby the wealthiest households (those that have zebu as livestock) are the ones that are best suited for BioD units. We worried that this may cause extra tensions in the community. To mitigate this, we had the community vote on which households they thought should first get the pilot BioD units in Miary. This resulted in a feeling of ownership and empowerment within the community, while still complying with the necessary waste and water requirements for the BioD units.

There was an unexpected issue area that we had to take into account: the “zebu mafia”. This issue came up over and over again to the point that we couldn’t ignore it. Many people (local people in the recipient communities, our CRS and CDD partners, research institutes, and more) explained to us that gangs of people have been robbing rural communities of their zebu at gun/knife-point, then they slaughter or ship the living animals abroad through an organized criminal network. Many worry that communities in the southwest someday will not have any zebu left; this could pose a sustainability challenge to BioD’s work in this region of Madagascar.

Because of our time constraints in-country (only two weeks!) we planned and worked a lot remotely before the trip, and focused on maximizing partnership and community meetings while we were in-country. This worked extremely well, as we were able to meet with and develop new potential partnerships with entities such as PeaceCorps, the United Nations Development Programme, WaterAid,

and the Ministry of Energy.

We also had a successful partnership meeting with the University of Antananarivo, where we learned that the BioD technology's patent is almost processed (meaning Rahul will jointly "own" the technology with two PhD students and a professor), and where we also discussed the future involvement of more Masters students as volunteers and interns with the BioD organization. In addition, we hosted a "social innovation" discussion where we introduced the concept of a social enterprise and we discussed BioD's work. Over 25 university students attended and we managed to gather nearly all of their information as interested volunteers to support BioD's work after we left the country.

During our project, 12 households (approximately 60 people) – including 10 in the poorest region of Madagascar- directly benefited from new BioD units that reduce the need for wood and charcoal as fuel, protect health, and save time and money. An additional 200 or so people in these communities learned about the causes of environmental degradation and how indoor cooking can be harmful to health, 40 new university students have learned about social enterprise and have become involved with BioD, and 150 people have been trained/ will be trained in the installation and maintenance of the BioD technology. The long-term impact of this project will hopefully be the continual health benefits and the long-term wellbeing of communities in Madagascar.

The project's activities will be sustained through the groundwork laid down from this project. In the coming months, our Malagasy partners will finish the installation of the 10 BioD pilot units in Tulear, we will complete the paperwork to form BioD as an official Malagasy NGO, and the fruit drying business in Ambohitrambo will hopefully generate enough income for the community so that they can purchase additional BioD units. The BioD unit in Alasora is in the pilot phase now, so if this unit is a success after 6 months, then our partner Madagascar Oil plans to invest more and scale up in this community so additional households can benefit from BioD. They also are considering donating oil barrels for the continued sustainability of the BioD cost per unit. Overall, the project was an incredible success and it laid the groundwork for much more work to be done in the future!

## **Section II**

**a.** We define peace as the absence of violence (both direct and structural), but we also only think peace is possible with strong, inclusive, and equitable societies. To us, peace means that people have human security, and can enjoy basic human rights like quality food, safe housing, and access to clean water and energy, so that they can then become self-empowered and work towards building peaceful societies.

A biogas digester is a holistic approach to tackling issues of peace and insecurity because it provides multiple benefits at the household, local, national, and global levels; these benefits have positive impacts on poverty, gender, health, and the environment, all areas that form the building blocks to sustainable peace. In the short term, this project contributed to rural Malagasy peoples' economic prosperity, health, and environmental awareness. In the long term, this project will create sustainable peace through resource management in Madagascar that secures multiple environmental and socio-economic benefits, including reduced CO<sub>2</sub> emissions from wood fuel and coal consumption, reduced deforestation rates, and improved opportunities for community empowerment.

Our project has changed the way we think about the world by showing us the true value of partnerships and how crucial they are towards achieving peace outcomes. Without partnerships, we believe change is not possible. The project has made us want to continue to invest in local solutions for sustainable peace and equitable natural resource use.

**b.** "The people of Madagascar face many challenges in order to preserve their unique biodiversity and build lasting peace, free of resource-driven conflict and chronic poverty. From the first conversation we had to the last before we left this beautiful country, the Malagasy people leave the impression of hope for a more peaceful and sustainable future. There is so much potential on this 'eighth continent', but not without a serious focus to halt and reverse extreme deforestation. This project was invaluable to starting much-needed conversations about sustainable resource use, the importance of conservation to peaceful societies, and political stability driven by societies that have equitable access to clean energy for all. I learned that no matter the challenges to peace, strong partnerships, inclusive communities, and a clear vision can propel us towards lasting peace and a sustainable future." - Stephanie Ullrich

Davis Projects for Peace Final Report: PICTURES  
BioD: Clean Energy Solutions, Building Blocks for Peace  
Madagascar  
International House NYC  
Stephanie Ullrich, USA, University of California, Berkeley  
Rahul Mitra, Bangladesh, Georgetown University  
Biodenergy.org

