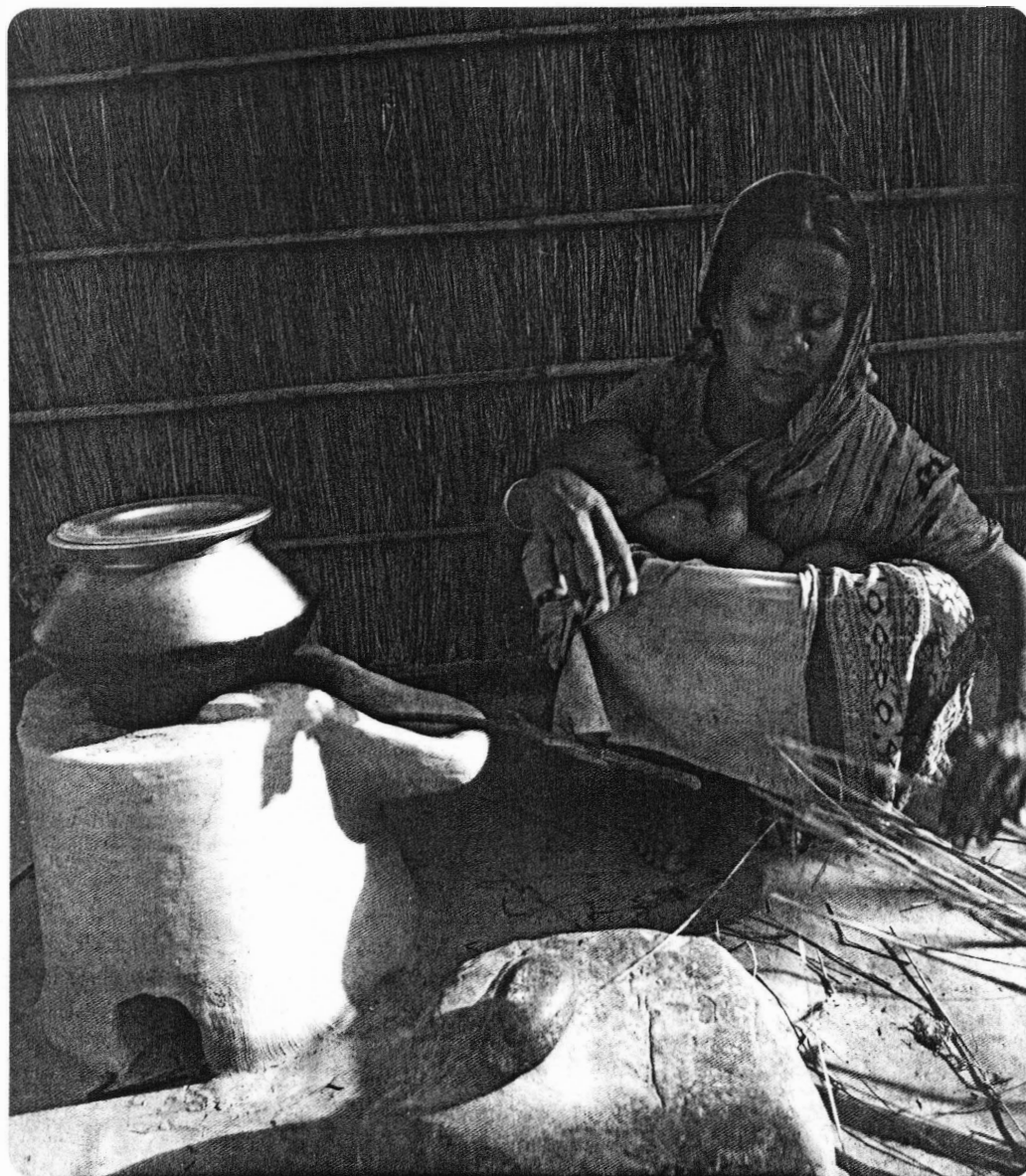


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PRACTICAL ACTION
Technology challenging poverty



Marine conservation and energy efficient stoves?

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Blue Ventures, a UK based marine conservation charity and a not for profit expedition organisation, has this year established a carbon offset programme in Madagascar as Blue Ventures Carbon Offset (BVCO). The first of BVCO's projects are subsidising and distributing energy efficient stoves in partnership with the Association pour le Développement de l'Energie Solaire Suisse-Madagascar (ADES). Both solar-powered and energy efficient stoves are being used to help communities reduce their wood and charcoal fuel use, thus: helping to reduce deforestation; reduce smoke related illnesses; improve cooking safety; reduce CO₂ emissions and reduce monetary and time costs related to cooking fuel use for households.

Why?

So, how did a marine conservation charity get involved with energy efficient stoves?

Blue Ventures has had great success in protecting coral reefs and other marine systems over the years, but climate change threatens to undo much of this work and currently represents the biggest threat to coral reefs worldwide.

Our work is a result of the efforts and support of volunteers from all over the world. However, when working with us, volunteers contribute to carbon emissions – and climate change – as a result of their travel to project sites.

Our efforts to address this climate change paradox started by advising volunteers to use offset organisations. However, it was clear that a huge opportunity was being missed to benefit local communities and the environment at our existing conservation sites, whilst also proving a local and visible connection for those offsetting. Thus, we established the Blue Ventures Carbon Offset programme.

What?

Blue Ventures Carbon Offset (BVCO) is open to all: providing a carbon mitigation option for anyone with a passion for protecting threatened marine and terrestrial environments.

The programme is also compulsory for all personnel working with Blue Ventures at overseas research and conservation sites - volunteers, researchers, tourists and recreational visitors - to ensure that all carbon emissions resulting from travel to our projects are offset responsibly in local community initiatives.

Since early 2007 we've been work-

ing with ADES (www.adesolaire.org) to implement a solar & efficient stove programme in the coastal villages of southern Madagascar (See Map in Figure 1). ADES has great experience in producing and introducing solar stoves to Madagascar, and BVCO will provide the finance to expand the programme to remote villages around Blue Ventures' ongoing conservation projects.

Stoves

The stoves that are being used on the project are the portable metal 'Yoyo' stove, the solar oven and the solar parabolic stove. All three have been thoroughly tried and tested by ADES.

The Yoyo stove reduces fuel consumption by 50-60% compared to traditional stoves, and the solar stoves have been shown to reduce fuel use by at least 50%¹, negating the need for wood fuel during the daytime².

ADES studies indicate that the Yoyo stove reduces carbon dioxide emissions by 2 – 3.6 tonnes per year, and that the solar ovens and stoves reduce carbon dioxide emissions by 3 – 4.9 tonnes per year compared to traditional stoves^{3,4}.

These figures are from studies based in Tulear town (160km South of Andavadoaka), where baseline emissions are higher than Andavadoaka. However, trials in Andavadoaka are continuing to confirm our assumptions, and all carbon reductions claimed will be subject to further field monitoring.

For our methodology report, please see www.bvco.org.uk. Along with producing considerably less carbon dioxide, the stoves provide environmental, economic and health benefits.

- Environmental: Stoves require less wood to generate heat, thus reducing wood foraging, deforestation and as-

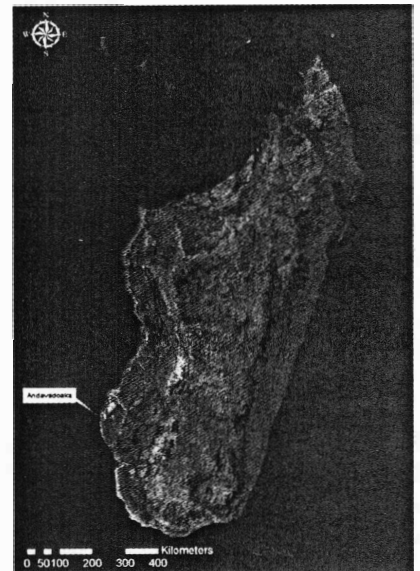


Figure 1 Map of the region

- Economic: The stoves are produced locally, creating employment through manufacturing, distribution and information dissemination, and also reduce expenditure on fuel wood.
- Health: A reduction in smoke production from the stoves and an increase in stove safety will help to reduce cooking-related respiratory infections and other cooking injuries. Recent research indicates that cooking smoke and the resulting indoor air pollution in poorly ventilated homes is responsible for 1.6 million fatalities in developing countries every year. There are also considerable safety benefits inherent in all of the stoves by reducing the likelihood of accidental burns.

The solar stoves

The two solar stoves that are being tested in the field are the solar oven (Figure 2), and the solar parabola stove (Fig-

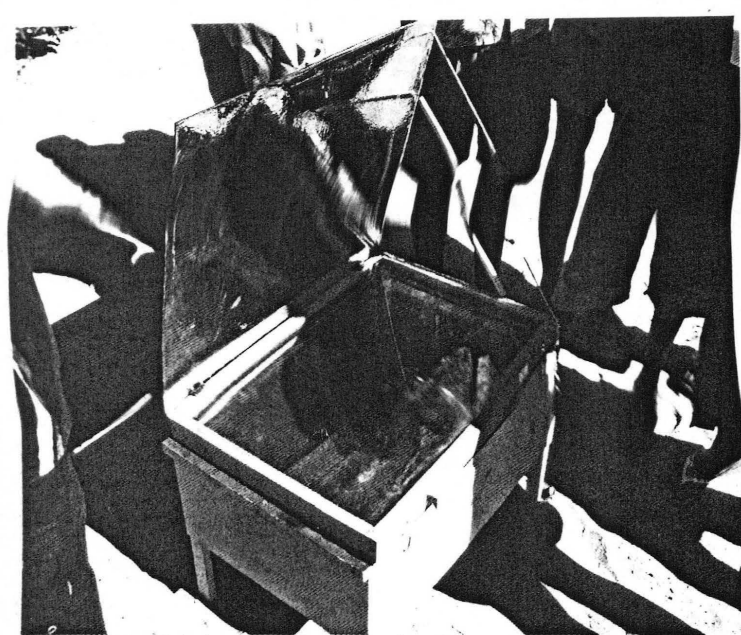


Figure 2 ADES Solar oven (Picture: Blue Ventures)

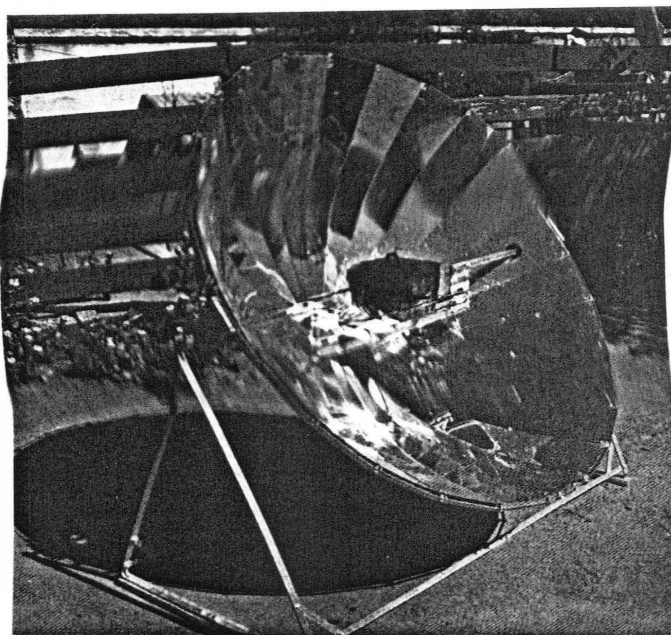


Figure 3 ADES Solar parabola stove (Picture: Blue Ventures)

ure 3). Both these stoves require only the sun to fuel the cooking. However, as they won't work between dusk and dawn, households require an alternative cooking means for these periods. A combination of the solar stoves, solar ovens and the Yoyo stove can achieve the maximum energy and fuel savings. For example, the evening meals can be cooked in the afternoon by a solar stove and kept warm in the solar oven. ADES recommends that the Yoyo stove be used in the early morning and on cloudy and rainy days to get the best energy efficiency. It can be used without or in combination with the solar stove.

The Yoyo stove

The Yoyo stove is a very simple metal portable stove that has been developed by Yoan Miloux and tested by ADES (Figure 4). The stove requires only a small amount of wood to fuel it. Dead wood is suitable, and so no tree cutting is required. The stove is a simple metal construction made from sheet metal taken from barrels or from recycled metallic buckets (see Figure 4). The empty space between the outer and the inner cylindrical part is filled with sand or ash that serves as insulation (6-7 cm thick).

How the project works?

The first phase of this project is running in the community of Andavadoaka. A public consultation with the participation of ADES was held in July that not only demonstrated the stoves, but also showcased the experiences of those that had been trialing the stove for a month previously (Figure 5). To help gener-

ate interest and enthusiasm, we held a stove lottery whereby attendees had the opportunity to win a Yoyo stove. The event raised the profile of the stove project considerably, and brought nominations from attendees for their household to be included in the project.

Since the day of the demonstration, households have been nominating themselves for a stove of their choice. The stoves are sold to the population at an affordable price subsidised by Blue Ventures and ADES. One member of all households is required to attend training on correct usage of the stoves, and training sessions occur once a month corresponding with the deliveries of new stoves. Fuel use is recorded before the stove is put in place, and afterwards households are required to record their fuel usage.

Local BV staff collect the fuel use data on a monthly basis. This also ensures that stoves in need of repair are serviced, and that disused stoves are relocated to an alternative household. The staff's work on this programme is funded through the BVCO.

The future of the project

BVCO and ADES expect to replicate the energy efficient stove project demonstrated in Andavadoaka throughout the region. However, this will depend upon the amount of finance generated through BVCO, but is hoped to continue through the existing collaborative partnership with ADES and in doing so distribute stoves to more people over a wider geographical area. This will be conducted alongside field tests to con-

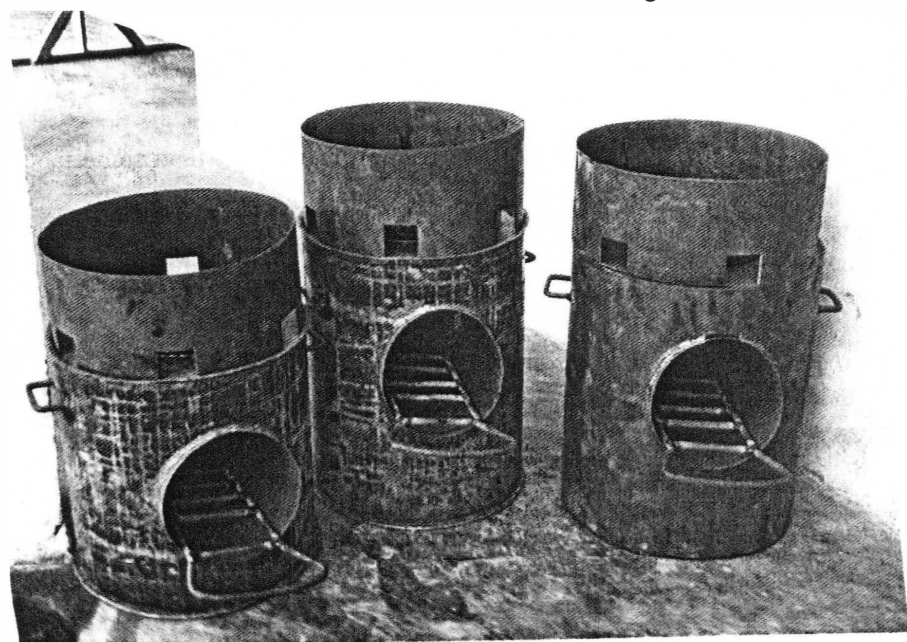


Figure 4: Yoyo Stoves (Made from sheet metal from barrels (left and middle), & made from thicker metal sheet (right)) (Picture: ADES)

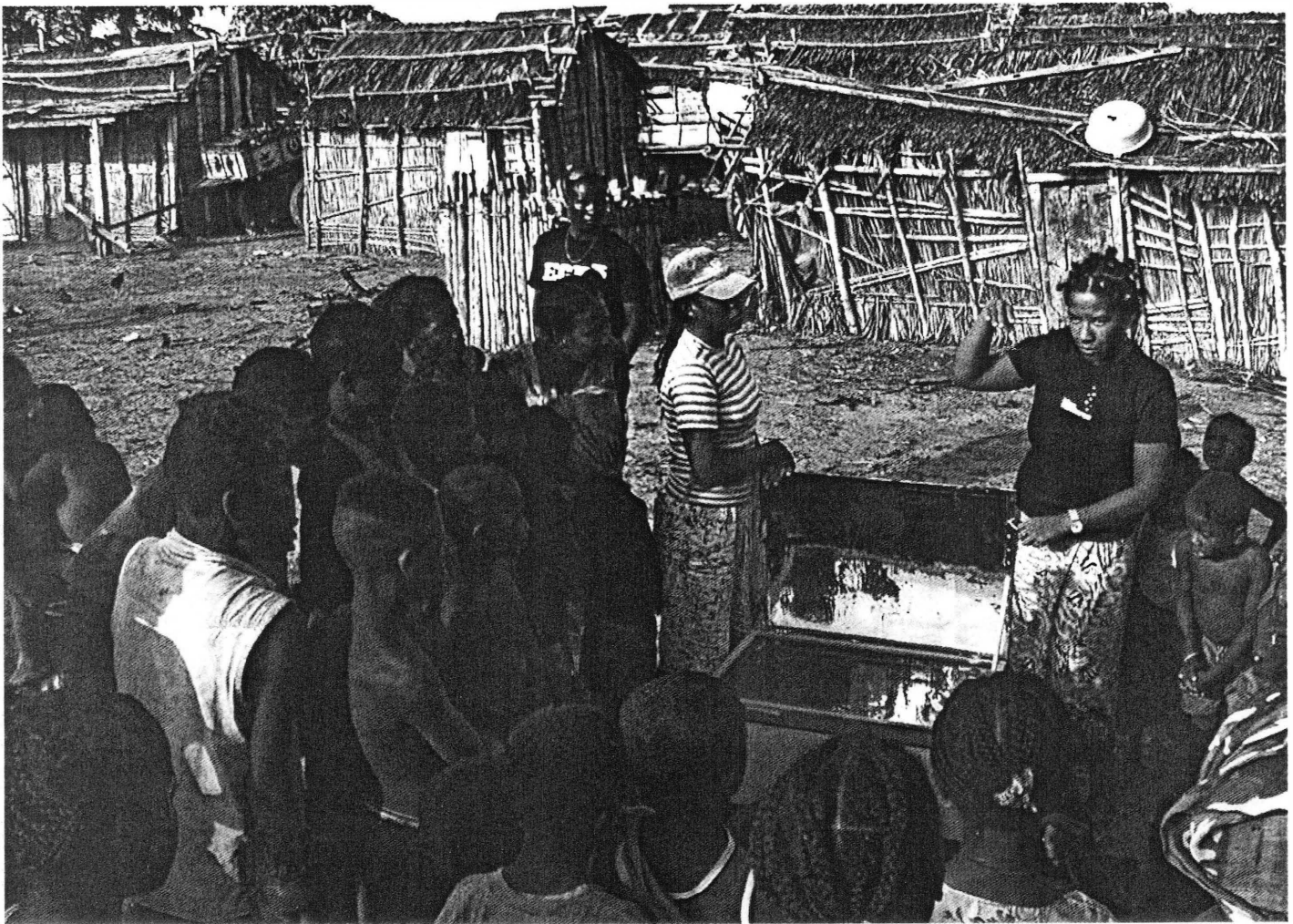


Figure 5: Public consultation (Picture: Blue Ventures)

tinually assess the effectiveness of the stoves, and to produce future reports on their efficiency and emissions to all.

The BVCO programme also aims to look at other carbon mitigation projects that can also reduce carbon emissions and benefit communities in Madagascar, and are currently looking at other renewable energy sources, carbon sequestration and mangrove protection projects that could eventually be funded through BVCO.

BVCO aims to stay small to reduce overhead costs and direct as much of the funds into the projects themselves, and keep it's 'not for profit' status. All future projects will be small scale, and continually monitored to ensure both

the expect carbon reduction is being made, and that the community continues to benefit.

Quality assurance is a high priority, and so all of our methodology documents and annual reports are being reviewed by a third party. BVCO are working towards Gold Standard accreditation, and hope to achieve this within the next year.

It is early days, but the potential of carbon finance can fund some fantastic community projects for the benefit of the Malagasy people, whilst also helping to combat climate change by reducing carbon dioxide. This is what BVCO strives to achieve.

Profile of the authors

Ellie manages the Blue Ventures Carbon Offset programme and has been working with Blue Ventures on their project in Andavadoaka since 2003.

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ADES is an NGO and a non-profit organization that produces solar cookers in Madagascar and supports the use of renewable energy sources. It started in Tuléar in the south of Madagascar in 2001. Local production by local people with local material is part of the ADES philosophy.

www.hedon.info/ADESSwitzerland

Dr. Heinz Vetter is a member of the managing honorary committee of ADES in Switzerland since 2004 and the Co-President since June 2006, with Regula Ochsner, the initiator of ADES. He is convinced that the unique biodiversity of Madagascar has to be preserved and that deforestation and poverty there have to be stopped. The solar cooker is a contribution to that.

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Notes and References

1. When used in conjunction with traditional stoves
2. ADES field studies
3. Based on ADES studies and calculations. The fuel type that is being replaced by the new stove achieves different carbon savings and determines the emissions' range; the lower figure corresponds to the replacement of fuel-wood, the upper figure to charcoal.
4. These values differ from that of the BVCO Newsletter 1. These initial estimates were highly conservative estimates referring to Andavadoaka