AUSTRALIAN CONSULATE-GENERAL, BALI
DIRECT AID PROGRAM (DAP)

Application Form

A. COVER SHEET

Applicant Details

Organisation/group: Biosphere Foundation (a USA 501 (c) (3)

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Position of contact person: CFO, Director of Agriculture and Forestry
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Proposed Project

Project title: The research and demonstration of sustainable dry land farming in N.W. Bali.

Project type: Sustainable Agriculture

Project location:Pejarakan village , Buleleng
Is this an existing or new project? existing
Is an NGO involved in administering this project? YES
If yes, please provide the NGO name and contact details:

Biosphere Foundation: P.O. Box 201 Pacific Palisades, California 90272
www.biospherefoundation.org

Has this group or NGO received DAP or AusAID funding previously?NO
If yes, please provide the project details and when was it completed:

B. PROJECT DETAILS

Describe the key objectivesofthe project:

To increase agricultural earning potential of the farmers in villages surrounding the Bali Barat National Park by:

1)**Researching and promoting new staple and cash crops:** BF will research and promote cash crops that offer alternative income besides the raising of cows for beef. This is currently the most stable form of income for farmers and its increase is one of the chief causes of forest encroachment by humans.

2) **Researching and promoting dry land farming techniques:**Unlike the rice terraces on the rest of Bali where complex irrigation systems have been in operation for thousands of years, water irrigation systems in the villages are very limited and the supply of fresh water for most of households comes from springs in the forest (5 km from village) and is transported by water pipe. During dry season most farming activity ceases due to lack of water. Water conservation andmanagement of existing water resources is key

3) **Researching demonstrating and promoting sustainable growing techniques**Although Bali once had an exquisite sustainable agriculture system, most of the island's farms now incorporate chemical pesticide and chemical fertilizer. This results in soil degradation, chemical pollution and poses a health threat to the farmers who rarely use protective equipment. Farmers become dependent on these methods, which are costly.

Provide details of the project, including the activities planned to achieve the key objectives. If this is an existing project, outline what work has been done already and by whom.

Planned activities:

- Establish research and demonstration plots on farms using a system of "participatory research" with the farmers so that they are involved with the entire process,
- Research potential markets for specialty crops with the aim of setting up village scale production, processing and marketing initiatives that will fully benefit the farmers and
- Test drought resistant grasses and suitable trees for food, fuel and fodder as part of an overall agroforestry system,
- Work with local farmers to research and develop drought resistant staple food crops, cash crops and fodder crops,
- Demonstrate and promote water conserving farming techniques
- Research and demonstrate the most efficient organic pesticides for the area favoring those that can be made cheaply with locally available ingredients,
- Research and demonstrate the production and use of green cropping and organic fertilizers. This effort will eventually tie into a planned trash management scenario as organic waste can be composted for fertilizer
- Promote the use of open pollinated seed.

Activities to date:

- In 2012 BF, working with YDAS, LIPI and staff at the ScientificEducation and Research Center (SERC) (see below for information on these institutions) established 8, 1 are (100 m^2) demonstration plots to test and demonstrate the use of a simple, low cost, water conserving drip irrigation system originally developed by Chapin Water Systems for use in drought affected areas of Africa. The tests went well and enabled the farmers using them to grow a second crop into the dry season when farming generally ceases. Thirty more farmers have now signed up to purchase the systems at cost and incoming cash will be used by the farmers' groups as a funding pool to finance further farm improvements using sustainable farming methods.

- Using the 4 demonstration plots, drought resistant grain crops, and green manure crops were tested to find candidates suitable for the area.

- A small agroforestry nursery was set up to grow tree seedling for the agroforestry plot.

- A 2,000 m^2 research and demonstration plot was implemented to test maximum production capabilities for fodder grasses and food crops. This is approximately the size of many small farm holdings in the area. The plot was planted with an outer perimeter of fodder grasses, separated from an inner crop area of trees for fodder and food.

- In the outer fodder area, two new types of drought resistant fodder grass are being tested. The production of these grasses will be measured over a year through all seasons and compared with the local elephant grass.

- The perimeter fence was planted with a variety of trees for food and wood production. In the December/ January growing season the inner crop growing area (810m2) was used to block test three new varieties of open pollinated corn obtained from Bogor Agricultural University to see if these would perform better than local corn. All plants were fertilized in the traditional way with cow manure and no pesticides were used.

- Four organic pesticide recipes were tested for effectiveness on commonly grown crops.

- Two workshops were held with local farmers' groups to demonstrate the installation of the drip irrigation systems and stress the importance of mulching as a water conservation technique.

Provide background information about the project. What are the circumstances that make this project important and necessary for the community?

The project works with farming communities surrounding the West Bali Barat National Park (BBNP) which protects an area of 15,587 Ha of terrestrial ecosystem containing a wide variety of habitats including a savanna, mangroves, mountain and mixed-monsoon forests. The park provides habitat for 105 species of birds including the critically endangered Bali Starling. BBNP's natural land and marine resources have been severely over utilized by fishing for food and encroachment into the forest. Agricultural production in the surrounding

areas is limited by the short rains of the monsoon seasons and there is much foraging for animal fodder in the areas technically protected as part of the BBNP territory. Many attempts to introduce cash crops into the area either fail to incorporate sustainable farming practice, or leave the local farmer at the mercy of poor marketing strategies and middle-men. The area consists mainly of small farming villages. The income per capita is low and many of them rely on rain fed farming for their daily livelihood. Land ownership among the farmers is on average only 0.25 ha per family, and although this is common Indonesia, lack of water supply and the short rainy season make most of the land very low in productivity.

In 2012 BF initiated a program to create demonstration plots to research and model the most effective, sustainable dry land farming techniques for an area affected by drought for 6 months of the year.

Provide information about who wouldbenefit directly from the project, including how many people andfrom which community.

The target population for this project consists primarily of 4 farming districts bordering the national park – Pejaraken, Goris Pahlengkong and Banyuwedang.To carry out this project BF works closely with the staff of SERC who have established four farmers' groups in the area. The total of 100 farmers belong to these groups and meet regularly to exchange ideas and information. There are an estimated 700 farming families in the area who could potentially benefit from this project.

The ultimate aim of the foundation is to reduce encroachment on the natural resources of the surrounding National Park, both terrestrial and marine. These resources are of primary importance both ecologically and economically to the district of Buleleng. They are the main attraction to visitors who come to the area

Provide background information about the people and organisations involved in this project. What experience and skills do they have to ensure the project would be successful?

Biosphere Foundation (BF) works on this project with several Indonesian groups:

Sustainable Management Group (SMG)
P.T. Trimbawan Swastama Sejati (TSS)
Yayasan Dwi Asih Sejahtera (YDAS) (the non – profit arm of SMG)
The Indonesian Institute of Science. (LIPI)

Sustainable Management group is a Jakarta based company with the following mission:

• To build networks to share knowledge and expertise in sustainable development
• To deliver education and training that will engage all stakeholders in protecting our natural heritage
• To build the capacity of local communities to manage Indonesia's natural resources
• Support the development of the necessary regulatory environment and infrastructure to encourage ecotourism
• To support the development of the necessary regulatory environment and infrastructure to encourage sustainable development and investment in natural resources

P.T. Trimbawan Swastama Sejati (TSS) – a part of the Sustainable Management Group in partnership with the West Bali National Park took on responsibility for managing a monsoon forest area in the Cultural Use Zone. In this zone TSS has built a scientific education and research facility (SERC) to support the successful management of the park. TSS has taken on the responsibility of working with the community living around the national park area. For the last ten years, as part of their effort towards corporate social responsibility, TSS has worked with local farmers to encourage improved organic food and fodder production incorporating agroforestry methods, and has worked to restore fire damaged areas of the forest and protect the forest fauna.

In 2010, initiated by TSS, a joint venture agreement was signed between Biosphere Foundation and Yayasan Dwi Asih Sejahtera to create "Friends of Menjangan" a community association dedicated to community conservation and education programs. As part of this program, in 2011 TSS initiated partnerships with researchers from the Biosphere Foundation (BF) and LIPI to conduct relevant activities.

Key staff:

Mr. Albertus Husein Wawo, M.Si
Biologist, Indonesian Institute of Sciences
Advisor for agroforestry.

Graduated from University of Indonesia - Depok, with a Masters Degree in Biology Conservation (MSi). He also earned an Insinyur (Ir) degree from Bandung Raya University. He has worked at Biology Research Center – LIPI since 1979 as Botany Researcher. As a researcher, he has studied agroforestry in the dry land district of Wonsari, Yogyakarta for 6 years, after that he studied agro forestry based on sandalwood in East Nusa Tenggara for 8 years. He is currently studying the agroforestry of agarwoods in Malinau, East Kalimantan. He has authored several books on agroforestry in Indonesia (CV available on request)

I Made Sudana
Community Outreach officer TSS.

Made Sudana, resident of Pejarakan village is both a farmer and the community outreach officer of TSS, responsible for co-ordinating the work of the farmers groups. His responsibilities also include the ecological maintenance of the section of the National Park under TSS management.
He is an experienced, farmer, forester, and a highly respected member of the local community.

Sally Silverstone, B.A.

CFO and Director of Agriculture and Forestry, Biosphere Foundation.
Advisor for agriculture

For the past 20 years Sally Silverstone has been actively engaged in agricultural, environmental, forestry and closed system research and development projects, with a particular interest in the area of food and agriculture systems for closed ecological systems. Currently she is a Director and Chief

Financial Officer for the Biosphere Foundation.

In 1991 she joined the first team of eight researchers as Co-Captain and Food Systems Manager for the historic two-year Biosphere 2 experiment. During this time she was responsible for the overall management and co-ordination of the eight-person crew and for management of the half-acre agriculture system that fed the crew during the two year closed mission. (CV available on request)

Describe how the community wouldcontribute to the project implementation and ongoing management.If this is an existing project, describe the community contribution to date.

The project is carried out entirely with the co-operation of farmers in the TSS farmers groups. To date four farmers have donated land to carry out the crop testing and demonstration of irrigation system techniques. One farmer in Pejarakan has donated a 20 are area to set up a long term demonstration plot . All TSS staff have donated their management time to this project.

BF is currently putting together a plan for the local Banjar and will request the use of land for both an agriculture resource center and a trash management center. The head of the Banjar has already expressed an interest in both of these projects.

How would the project be sustained on an ongoing basis once the DAP funds are complete and who would be responsible for the ongoing project management?

The project works with farmers to promote agriculture activities that are both sustainable and economically viable. Successful techniques and small enterprises will be adopted and continued by the farmers themselves.

Biosphere Foundations involvement and its continued collaboration with LIPI staff is planned to continue until 2016.

TSS and their local staff at SERC will continue to co-ordinate and assist the efforts of the local farmers groups as they have done for the last 10 years.

What is the estimated length of time needed to complete the project?

We are currently seeking funding for the next stage of our work which will largely involve the testing of alternative dry land crops, and the demonstration of green cropping methods – (see activities above). Estimated to take 12-18 months beginning in May 2014 – depending on local weather patterns.

Biosphere Foundation Sustainable dry land farming budget 2014			
		Total Budget	DAP Funded
Management labor and stipends		**7000**	
Permits/Visas/Professional Fees		**500**	
Printing & Office & General Supplies		**100**	**50**
Postage/Shipping		**50**	
Telephone/Internet Communications		**200**	
International Travel		**400**	
In Country Travel			
	LIPI staff air fares	250	
	LIPI staff taxis	100	
	LIPI staff food /accom	500	
	Gas	300	100
	investigative trips	500	
Total in Country travel		**1650**	**100**
Field Expenses			
	LIPI Stipends	750	
	Labor farming	550	
Total field expenses		**1300**	**0**
Hardware Equipment and Supplies			
	seeds and plants	500	500
	livestock	1,850	1,850
	tools and equipment	300	300
	farm fencing	400	400
	nursery	200	200
	compost system	100	100
Total Hardware equipment and supplies		**3350**	**3350**
Workshops, Training and volunteer expense			
	Organic farming worksho	5000	1500
Total workshops/training/vols		**5000**	**1500**
Total Budget		**19,550**	**5,000**

C. Declaration

Note: This declaration must be signed by all project applicants before the application will be considered.

This application for DAP funding is submitted to undertake the project as detailed above. The project will assist the communityas described in the application. The project is not for personal benefit. I understand that by signing this declaration I agree to the conditions outlined in the DAP application guidelines and, should I make a false declaration, I am liable to prosecution under Indonesian law.

Applicant(s) signature
Position
Date