

IDEAAS

Instituto para o Desenvolvimento de Energias
Alternativas e da Auto Sustentabilidade



CANOPUS FOUNDATION



Instituto Hórus
de Desenvolvimento e
Conservação Ambiental

THE QUIRON PROJECT

COMBINING NATURE
CONSERVATION,
SUSTAINABLE DEVELOPMENT
AND TECHNOLOGY

THE PROBLEM AND ITS CONTEXT:

25 Million People in Brazil have no electricity and little prospect to access energy in the mid- to long-term future

Without access to energy, rural farmers and their families will continue to live in poverty, face health and education problems, and seek to flee rural areas, adding to problems of urbanisation



Southern Brazil :
Faces rural electrification
poverty and poverty
problems as the North
and North-East of Brazil

In the Quiron project area of Rio Grande do Sul:

18 000 rural properties have no electricity

There are enormous distances between these rural properties and local villages and services within Rio Grande do Sul

Rural residents face cold and damp winters,
different from more northern regions of Brazil



Addressing the problem with a sustainable and entrepreneurial approach that introduces a productive uses approach with:

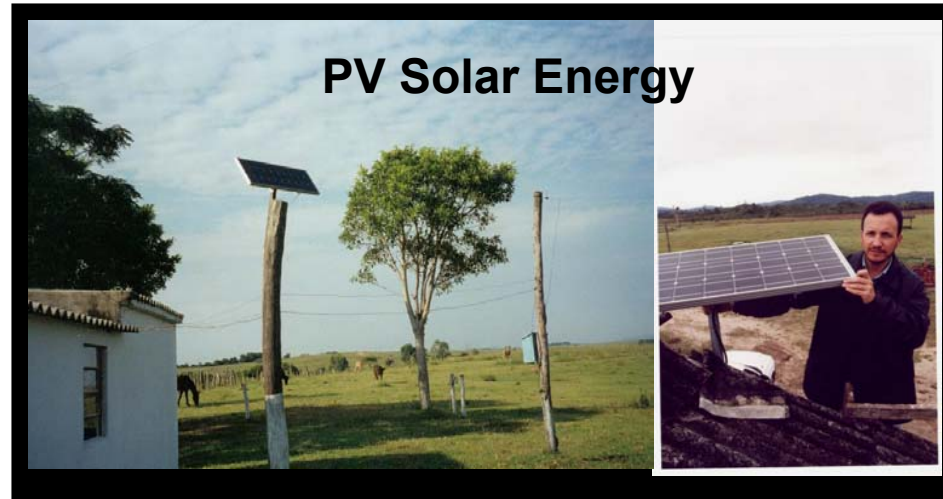
- **Decentralised, renewable energy**
- **Appropriate micro-technologies**
- **Entrepreneurial and technical training**

to **low-income rural families**, permitting them to increase their income, quality of life and leave a vicious circle of poverty

QUIRON also addresses problems of environmental degradation through conservation **and restoration of degraded land**



STEP 1: PROVIDING ENERGY TO THE RURAL POOR



Solar energy improves quality of life, education and health within the home

Solar Home Systems provide light within the homes and can also power a 10 000 Volt electric fencing system for livestock management



STEP 2: USING ENERGY FOR DAIRY AND MEAT PRODUCTION WITH WATER BUFFALO.

The energy and the organic farming elements of the Quiron project ensure that the rural family's income is increased.



Grazing management with electric fencing, facilitated by the electricity provided by the farm's solar home system, improves the income and the quality of products linked to meat and milk production.

In previously proven applications of the model developed and used by *IDEAAS*, there can be an increase of animal production from 100-200% simply by improving the management of pastures and animals, made possible by solar energy.

STEP 3: NATURE CONSERVATION



QUIRON provides an opportunity to **reverse** the process of loss of bio-diversity and increase sustainable production, income generation and quality of life, thus reversing the process of poverty in rural areas.

Fossil fuel energies (kerosene, diesel oil, gas and millions of batteries) previously used are replaced with solar energy. Reforestation with native species and reducing deforestation through pasture and grasslands management also reduce global warming.



STEP 4: REPLICATION

QUIRON is poised for replication within Brazil largely due to IDEAAS national networks and partners throughout impoverished areas of Brazil.

It is expected that QUIRON will provide a model for social investment for world-wide reapplication.



Project Status

Business Plan financing secured by the AVINA Foundation and the CANOPUS Foundation, for implementation in January 2003. IDEAAS is presently seeking market test financing for the Quiron Project to complete the business plan.

- Approximately US \$80 000 is still required for a market test implementation for five rural farms.
- Grants are needed and welcome to support the development and 'soft' return elements of the project such as training and reforestation.
- Investment will be sought for implementation for the next phase 750 families/3750 persons. *Estimated* investment required is US \$1.5 million with a project return on investment of 4% after 4 years. These estimations are pending business plan completion.



Rural Electrification with PV Solar

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The Market for pv Solar in Rio Grande do Sul

- ★ Market potential of the installation of solar home systems (SHS) to a potential 30 000 rural farms.
- ★ Over 60% of rural families can afford to pay for monthly leasing of the systems based on their existing monthly costs for non-renewable energies.
- ★ Within Brazil, the market potential for solar energy represents more than 25 million people who are without electricity. There are an estimated 1, 5 million rural properties without electricity.



IDEAAS is working with its private sector partner **STA** (Sistemas de tecnologia apropriadas).



STA is initiating a project to develop the important business and technical infrastructure for solar home systems in Rio Grande do Sul. This will success of the pv solar/Solar Home System component of QUIRON. STA has years of experience and works throughout Brazil.

STA's project, the Sun Shines for All aims to provide rental solar home systems (SHS) to 6,100 clients in Rio Grande do Sul, and is a for-profit, market rate return project with triple-bottom line returns.

Due to the high IRR and planned exit period for the investor, *The Sun Shines for All* **does not** permit for SHS rental for the lower strata of the population who only have limited amount of resources (i.e. 30-60 Reais (\$10-20 US) to pay for monthly energy costs

PROJECT STATUS

Draft Business Plan Completed - Financed by STA and The Solar Development Group (SDG)

Market Test Financing Secured also from the SDG: Market test implementation in Autumn, 2002

STA is presently seeking co-investors for the first phase of this project



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- BASED on the experience of STA's work and market studies, 30-40 of market segment that is not able to access electricity from the grid is are *unable to pay* for Solar Home Systems (i.e. do not even have 20-50 USD per month to spend on non-renewable energies and will remain without electricity). Families are also without water, sewage and basic services due to remote locations
- These rural farmers remain living within poverty
- Problems of rural exodus continue
- There is unsustainable exploitation of land and deterioration of local ecosystems

QUIRON addresses this poor market niche, empowers the poor and helps to create a vibrant, sustainable market for pv solar market.



Income Generation through Farming

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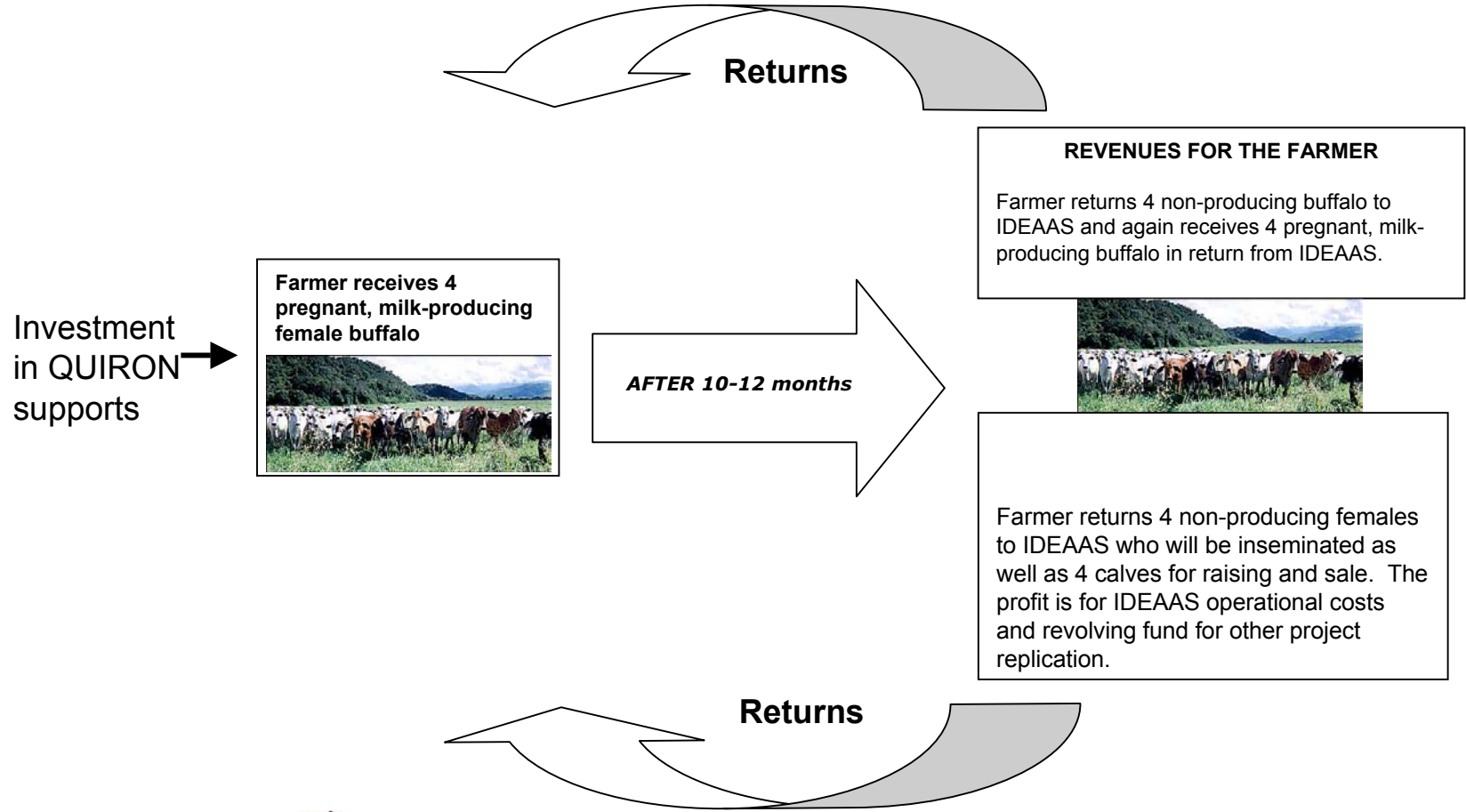
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...The graphic below demonstrates the financial sustainability of QUIRON at the local level



CASE STUDY - BEFOREConventional Livestock Cattle Production in open, extensive natural pastures

ANNUAL OPERATIONAL EXPENSES R\$ 24,000 (USD 9, 500)

ANNUAL REVENUES R\$ 42,908 (USD 17,006)

TOTAL ANNUAL PROFIT R\$ 18.908 (USD 7,495)

CASE STUDY - AFTER...

Livestock Buffalo Production with rotational natural grazing practices made possible by solar powered electric fencing.



Solar Panel is connected to an electrifier that powers a 10 000 V fencing system



Buffaloes grazing in a controlled, intensive rotational grazing management system, increasing their weight and dairy productivity while conserving nature by using less pasture and playing a role in eliminating invasive species

AFTER

ANNUAL OPERATIONAL EXPENSES R\$ 19, 000 (USD 7, 520)

ANNUAL REVENUES R\$ 66, 069 (USD 26, 145)

TOTAL ANNUAL PROFIT

R\$ 47, 069

**INCREASE IN REVENUE
OF 149%**

QUIRON on a larger scale

Increased dairy production and livestock sales made possible by renewable energy and conservation agriculture (grazing management)

Increase in family income of **214%** due to Livestock and Dairy Production¹

Source of revenue	Per Annum (\$US)	Monthly (\$US)	(%)
Actual Income	900	75	32
Income with QUIRON model	1925	160	68
TOTAL	2825	235	100



Dairy producer where Cooperbufalo Farmer's buffalo milk is processed into high-priced quality buffalo mozzarella. Cooperbufalo is the leading the buffalo cooperative in Rio Grande do Sul.



Celestino Goulart Filho, Co-founder of Cooperbufalo, demonstrates market for buffalo products in Zafari, a major supermarket chain in Southern Brazil.

¹More detailed information is available and is based on market rates for Buffalo Meat and Dairy products, and is tested and documented from experiences using the Quiron model

Nature Conservation and Restoration

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Conservation and Restoration of Natural Processes



- * Conservation of natural processes is key to sustainable development.
- * Quiron *combines micro and appropriate technology with natural processes*, permitting degraded areas to be reconverted into functional systems.
- * Opportunity to **reverse** the process of loss of biodiversity by good management of natural resources, production using native plants and eradication of alien invasive species.
- * Forest production using native trees.
- * Reverse the process of destruction for lack of adequate management in rural areas.
- * Increase in sustainable production, income generation and quality of life.



Other Info

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- * The Institute for the Development of Natural Energy and Sustainability (IDEAAS) located in Porto Alegre, Brazil, President, Mr. Fabio Rosa. Mr. Rosa has received many international awards and recognition for his work.
- * IDEAAS' vision is based on the belief that the *social and economic processes of development are compatible with environmental conservation*. Developed affordable, appropriate rural electrification applications for the local market and provided **1 million people** (250 000 families) with low cost electricity
- * Farm incomes have been increased from 200-400% bringing many villagers to return to their land from the city
- * Local network of partners and entrepreneurs who provide technical support and maintenance (key to a the success of any rural electrification project)

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- * The Canopus Foundation is located in Freiburg, Germany
- * Engages in poverty reduction activities by working with projects requiring specific *financial engineering of market-oriented projects* for social good, appropriate *micro technology packages*, and entrepreneurial *training and technical support*.
- * Affiliated with PerEnergy GmbH which provides private equity for entrepreneurial initiatives in the field of clean energy technologies
- * A partner bringing international project experience and extensive networks in the field of renewable energy and financing of renewable energy projects.

San Jose Mercury News
Tech innovators honored for service



Rosa
Development
award winner

SC-
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O ESTADO DE S. PAULO

CIÊNCIA E TECNOLOGIA

Projeto de eletrificação rural
garante prêmio a brasileiro

Why “QUIRON”

Quiron is Portuguese for the Centaur “Chiron” of ancient Greek mythology. He was known for his exceptional goodness and wisdom, tutoring greek heros including Achilles, Aesculapius, Actaeon.

In Southern Brazil, Quiron Gauchos symbolise wise guardians of the Brazilian Pampa, standing for sustainable use of natural resources.

