

**CPWF SMALL GRANTS PROGRAM  
FORMAT FOR PROPOSAL SUBMISSIONS**

**Proposing Institution:** International Development Enterprises India

**Project Title:** (no more than 20 words) **Sustainable dissemination of Low-cost irrigation technologies which impact lives of smallholders of Jharkhand, India.**

**Brief Title:** (no more than 5 words) **Affordable Irrigation for Smallholder farmers**

**Budget Requested:** (min \$25k max 75k) **US\$75,000**

**Project Duration:** (up to eighteen months) **Target commencement date:** 1<sup>st</sup> December 2005

**1. PROJECT TEAM**

**1. Lead Institution: International Development Enterprises India**

**Name of Project Leader: Amitabha Sadangi**

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**Email: amitabha@ide-india.org**

**Telephone number: (land line and mobile): +91-11-26969812/3; +91-9811017425**

**Primary discipline/experience of importance to this proposal: Social Entrepreneurship / Designing and Disseminating irrigation solutions for and among the smallholders**

**Type of Institution: NGO**

Amitabha Sadangi is the Executive Director of IDE India, which he joined in 1992. He holds a Post Graduate Degree in Labor and Social Welfare with an additional Degree in Law. He abandoned a promising Government employment in 1982 and decided to focus on issues of poverty and development.

Amitabha has spent 24 years in various aspects of rural development work. He started his career in development with Churches' Auxiliary for Social Action (CASA) implementing grass roots rural development programs in the state of Orissa, India. After five years he moved on to OXFAM, where he helped several organizations to initiate micro enterprises development programs.

He then joined IDE International, serving first as the Country Director of IDE Sri Lanka and as the Deputy Country Director of IDE International's India program until April 2001. Since joining IDE, India Amitabha has worked on all elements of its operations, including program design, field program management, staffing, finances, marketing, strategic planning, fundraising, donor relations and new product development. He has represented IDE in a number of international settings, supporting the achievements of IDE International and IDE in India.

Amitabha's mandate when he joined IDE was to build IDE India into a fully fledged organization with strategic reach and impact throughout India. Under his leadership, IDE created an exemplary treadle pump supply chain that has provided 500,000 treadle pumps in India as of March 2004, with the market growing and average sales of 40,000 per year.

He led the introduction of a low-cost drip irrigation technology with the potential to dramatically improve incomes for farmers living below the poverty line. Three years ago, Amitabha led IDE India's transition to an autonomous Indian organization. He is a founding member of IDE (India) and serves on its board. At the time of the transition, Amitabha was selected to serve as the first Executive Director of IDE (India).

Amitabha is passionate about the issue of poverty in India and committed to a market-based approach to addressing the critical needs of those living below the poverty line. He has a vision of social change that sees small-scale farmers as consumers with a basic right to products and services that address their needs. He also sees the need for social change organizations to

achieve sustainability, and has sought to generate innovative models for revenue generation for IDE (India). In the same way that the poor suffer through short-term subsidized programs, he believes IDE will suffer if it remains dependent on donations. Amitabha is already making headway in the development of a for-profit entity which will demonstrate the viability of enterprises that serve the poor. Amitabha's entrepreneurial approach to addressing the needs of poor farmers has led him to develop some of the most effective marketing and distribution strategies currently deployed in India. He and his staff seek direct feedback from farmers, with each employee responsible for speaking with 100 individual farmers each year.

Amitabha's efforts in the development sector have won him recognition from many organizations, including the Who's Who Historical Society, Skoll Foundation, Atlas Foundation and the World Technology Network. He also continues to serve on the Boards of several reputable development organizations. His efforts working with governments, non-profits and currently a for-profit enterprise have convinced him that a spirit of entrepreneurship, innovation and a commitment to results for the poor are universally applicable and essential across sectors and institutions. He sees a continuing need to demonstrate scalable models to address poverty, and will provide leadership for the development sector as an Indian social entrepreneur with an understanding of the needs of poor farmers, an ability to work across sectors, and a commitment to developing market-oriented solutions.

**2. Institution: IWMI-TATA**

**Name of Principal Investigator: Sanjiv Phansalkar**

**Postal Address: Elecon Anand Sojitra Road; Vallabh Vidyanagar; Anand 388 120; Gujarat India**

**Email: s.phansalkar@cgiar.org**

**Telephone number: (land line and mobile): +91-9824799055**

**Primary discipline/experience of importance to this proposal: Water Issues / Agriculture Economics / Research**

**Type of Institution: CG CENTRE**

Born in 1956, Sanjiv Phansalkar is a PhD in Management from Indian Institute of Management, Ahmedabad. His area of professional specialisation is rural livelihoods promotion. He has published three books

- Edible Oils Economy
- How not to ruin your small industry
- Making Growth Happen

He taught management and marketing courses for a number of years at the Institute for Rural Management of Anand (IRMA). He is a well-known author on business subjects, and had established Amol Management Consultants in 1994. The firm consults with government, businesses and non-profit organizations. The firm has completed over thirty assignments in the last six years. The major assignments were on

- Design, Appraisal, Evaluation and Impact Assessment of Livelihoods Enhancement Programmes
- Identifying opportunities and vetting of ideas;
- Commodity Studies and Assessment of Commodity Programmes
- Corporate and Organisational Research

He is currently a Principal scientist with IWMI-TATA project based out of Anand.

**2. Institution: India Development Foundation**

**Name of Principal Investigator: Shubhashis Gangopadhyay**

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**Telephone number: (land line and mobile): +91-124-5014055; +91-9810606762**

**Primary discipline/experience of importance to this proposal: Policy Advocacy / Research**

**Type of Institution: Research**

Dr. Shubhashis Gangopadhyay has a Ph.D. in Economics from Corenell University. He was a Professor with the Indian Statistical institute and subsequently is the founder-director of IDF. He has published wisely in journals on development economics, international trade, regulatory economics and finance. He has been on many government committees and consulted with various ministries and private business. He is the President of the Society for Economic Research and Financial Analysis and the President of the Society for the Promotion of Game Theory and its Applications.

He has led projects on

- Access of the poor to modern household fuels;
- Forecasting economic activity monitoring with policy variables;
- Employment and poverty;
- Changing trends in the sourcing of investment;
- Labour costs and productivity in Indian industry;
- Poverty profile in India;
- Leading indicators for the Indian economy;
- India and the WTO;
- Institutional systems and law;
- Quarterly macro-econometric model for India.

Some of the books he has authored include

- Economic Reforms for the Poor;
  - Counting the Poor: Where are the Poor in India;
  - Economic Theory and Development Policy
- (repeat as necessary with more team members) (delete institution types that are not applicable)  
(provide a one page c.v. of the project leader and key principal investigators)

**The project leader confirms that official representatives of all the institutions listed above have agreed to execute the proposal as described if it is selected for funding. YES**

**2. LINK TO CPWF RIVER BASINS**

**CPWF Benchmark basin in which the project will be conducted: Andean / Indo-Gangetic / Karkheh / Limpopo / Mekong / Nile / Sao Francisco / Yellow River / Volta**  
(mark the basin that applies)

### 3. THE PROJECT

**3.1 Provide a summary of the background leading to your proposal** (maximum 300 words justifying why your proposal is important and the work, or lack of it, that it builds on)

Jharkhand, a state in India has more than 80% of the population depending on agriculture. Net sown area is 1.8 million ha of 3.8 million ha cultivable land and Net irrigated area is only 9%. Smallholder farmers with land holdings <2 ha account for 83% of the farmers. They operate only 37% of cultivated area and have an average land holding of 0.53 Ha. Jharkhand receives average annual rainfall of 1340 mm and yet has little irrigated area and faces water scarcity in the summer months. About 72% of the sources of irrigation are surface water sources like, pond and wells. Since agriculture is the predominant livelihood, lack of irrigation becomes the single most important constraint in enhancing outputs, productivity and incomes.

Efforts to increase irrigation potential have included setting up big dams like the Damodar Valley Corporation. The undulating land terrain of the state is a hindrance for large-scale big dam irrigation projects. The state owned Bihar Hill Area Lift Irrigation Corporation created more than 400 Lift Irrigation schemes. Various kinds of small-scale individual or community owned irrigation facilities have also been promoted under various poverty alleviation schemes. These efforts have been hampered by frequent and drastic increase in fuel prices. Yet after all these efforts, less than 10% of the cultivated area of the State is irrigated.

IDEI intends to test low-cost irrigation technologies, both water-lifting and water-application technologies which meet the following needs of the smallholder farmer.

1. Small-Plot cultivation from shallow surface water sources (<7 meters)
2. Small Plot cultivation from deeper surface water sources (>7 meters to <14 metres)
3. Family nutrition needs met by Kitchen Garden cultivation
4. Small Plot cultivation by in water scarce areas

**3.2 Who is/are the target group/s of your project?** (maximum 100 words)

The target group of our projects are smallholder farmers who comprise 2.2 million (83%) of farmers in Jharkhand. Though they are large in numbers, they operate only 37% of the cultivable land and on an average 0.53 ha. Productivity of both food and non-food crops is well below national averages. The smallholder farmers are the most vulnerable category who generally follow traditional farming practices with minimum technology and resources and therefore require special attention. The smallholder farmers, who are mostly tribal, have a high involvement of women in their current farming practises.

**3.3 What specific agricultural water management strategy or technological/dissemination innovation does the project intend to address?** (maximum 100 words)

The strategy is to demonstrate solutions for diverse situations faced by smallholder farmers. Surface Treadle Pump is designed to lift water from shallow surface water sources like ponds and wells. Rope & Washer Pump is designed to draw water from greater than 25 feet and works where centrifugal pumps cannot. Family Nutrition Kit is a

20m<sup>2</sup> backyard drip irrigation system to grow vegetables for domestic consumption. Micro-sprinkler is a low-pressure sprinkler which can irrigate close-spaced crops. Low-cost drip irrigation systems which can irrigate food and non-food crops and is cheaper than conventional drip irrigation systems by 60-80%.

**3.4 Provide a summary of your project methodology/approach activities for achieving the project results**  
(maximum 500 words)

The project proposes to enhance the agricultural water productivity in terms of farm productivity and household income of the small holder farmers. For effective project implementation and management, following methodology is proposed.

***A. Training of potential adopters:***

Specifically, to bring visibility to our product and create awareness on its benefits we will carry out various dynamic and static promotional activities such as:

1. Live Product demonstrations - in village haats (weekly rural local markets), melas (fairs) and panchayat meetings formed the backbone of all promotions. Product demonstration at the weekly haats, potential cluster villages, and agricultural fairs are the core field activity.
2. Conducting farmers' meetings in villages where product benefits were mentioned
3. Mobilizing opinion leaders to spread good word about the products.
4. Conducting video van shows of products at strategic places in the villages
5. Demonstration Plots developed by IDEI for all the products.
6. Short campaigns, a process where a jeep is usually decorated with product banners and an attached loudspeaker, where it moves around a cluster of villages explaining the product benefits.
7. Farmer's exposure visits to other successful farmers who has reaped benefits using the technology, built a lot of confidence to the poor marginal farmers to adapt a new technology.

***B. Establishing a commercial marketing channel:***

Specifically to ensure wider outreach and sustainability, we will carry out the following activities:

1. Develop decentralized manufacturing capabilities
2. Develop standard designs, quality control procedures and after-sales.
3. Develop dealer network and provide training to supply chain in distribution, installation and maintenance of technology.

***C. Adopters of technology:***

Over the project period we expect to cover 1,000 households of which 700 households will be covered by water lifting technology; 50 households will be covered by family nutrition kits and 250 households will be covered by water application technologies.

***D. Agriculture intensification support***

A new irrigation technology brings about the need for adaptations in the whole cropping and marketing system. Smallholder farmers, who are used to grow mainly crops for home consumption, need support for a move from subsistence crops to high value marketable crops. The adaptation may be difficult also where people already grow vegetables, but

they do it in a different way, and they are used to irrigate in the way they always did. Or they may not be used to grow vegetables, and they may have a lot of questions about how to grow and/or how to market them. They may need information about what types and varieties have the best price potential, how to get access to good seeds, how to apply fertiliser and manage pests, and how to get the produce to the market at the right time and in the best way.

***E. Household technology-use observation:***

A stratified random sample of the 1000 households will be observed across the project period to draw observations on the following parameters:

1. Change in irrigated area
2. Change in cropping intensity
3. Change in water productivity
4. Change in food security
5. Income impact

**3.5 What results will your project provide to the CPWF? (maximum 200 words)**

The project will provide the following results:

1. Demonstrate **irrigation solutions** for smallholder needs of Jharkhand
2. Develop an **Irrigation-Solution-Matrix (ISM)** for Jharkhand taking into account various parameters like crops, water availability, water depth, water source, soil conditions and agriculture seasons.
3. A policy paper will be written and published about possible irrigation solutions for smallholders in Jharkhand
4. This solution will be demonstrated by the fact that **1,000** smallholder farmers will purchase these solutions.
5. Private sector players like **manufacturers and retailers** will produce, stock, sell and service these technologies to smallholder farmers.
6. Research data, observations and conclusions on the **adoption** of technologies by smallholder farmers.
7. Impact data, observations and conclusions due to **increased access** of smallholder farmers to affordable irrigation technologies, enabling them to prudently use their limited water and land resources.
8. Research data, observations and conclusions on change in **agricultural water productivity**.
9. Impact data, observations and conclusions on change in cropping patterns, change in food security, change in nutrition and **change in incomes**.

**3.6 What elements of your proposal are innovative and why? (maximum 300 words)**

The innovativeness of the proposal includes

**Development of an Irrigation-Solution-Matrix (ISM)**, which can be used as a reference point for providing solutions in multiple locations and contexts for the poor

smallholder farmers. The ISM will prove to be a reference point for any intervention designed at increasing agriculture water productivity in the state of Jharkhand. The ISM will be backed up by research and impact data. The ISM will cover the three agro-climatic zones of Jharkhand, both small and marginal landholders in the category of smallholder farmers, crops grown in the winter and summer months needing irrigation, all surface water sources commonly used by smallholder farmers; various social groups among smallholder farmers.

**Use of market forces** which makes the developmental impact sustainable. Since the project will use market forces, it will be able to map the potential for various irrigation solutions in the state of Jharkhand and areas which have similar agro-climatic conditions. The various private sector players will also be able to collect adopter feedback and make necessary modifications in the technology along the project period and thereafter.

**Adopters of technology** will pay for the technologies thus making the research data, observations and conclusion reliable. Feedback from farmers over the project period will justify the need for these irrigation solutions and form a basis for future interventions. Since adopters of technology will continue to use the technologies, there is scope for an ex-post evaluation as well as collection of research and impact data can continue beyond the project period.

**3.7 How, if at all, does your proposal address issues of** (maximum 600 words total in this section)

**1. stakeholder involvement** (demand by them and their inclusion in project activities; acknowledgement of their contribution)

Stakeholders in this project involve adopters of technologies and private sector players who produce and retail these technologies. Stakeholder involvement stems from the following:

1. Adopters of technologies have an array of solutions to choose from
2. They have the time and space to observe, collect information about the technologies and then decide whether to adopt it or not
3. They use their limited resources to adopt these technologies and therefore is the best way of measuring involvement
4. Adopters of technologies also have the option of choosing which crops they want to grow and the area they want to cover, as the technologies have the flexibility of irrigating up to one hectare.
5. Adopters of technologies will also be in a position to check with other farmers and learn from their experiences as well as influence potential adopters
6. Since the technologies are commercially delivered, there will be a continuous attempt to collect feedback and improve the technologies

**2. gender** (for instance, in data collection and analysis, farmer group activities)

Gender is well integrated in this project. It starts from developing irrigation solutions which can be used by women and meet their needs also. During the first phase of the project of training potential adopters, women are targeted and trained and help is also taken of local NGOs, CBOs and SHGs. Followed by this is the adoption itself, where women influence the adoption of these technologies as they are directly impacted. In

addition, when we collect data from a sample of the households, data can be collected from women and responses can be gender disaggregated.

**3. environmental security** ( e.g. biodiversity, water quality)

Environmental security is targeted and achieved by using technologies which are powered by human energy rather than fossil fuels. The technologies which will be promoted as part of this project help in better and improved use of water, which increase water use productivity. Water-soluble fertilizers were applied through the drip system resulting in targeted fertilizer application, lower fertilizer costs, and reduced harmful impact on the environment. Decrease in input cost and energy use per unit area irrigated attacks the core issue of the water-energy nexus.

**4. impact on the poor** (including food security and wellbeing)

Short Term Impacts will primarily be income effects due to increase in production level using the technology which in turn is due to increase in cropping intensity and net cultivation area. As the technology generates 100 percent return on investment in the first crop, the farmers have access to capital to invest further in agriculture and meeting immediate consumption needs.

Long term Impacts included the benefits that will accrue due to the enabling effect of the farmers to grow wider variety of fruits and vegetables thus enhance their agricultural skills. With the removal of water and capital constraint, farmers will practice crop diversification, grow high value crops, and take on new initiatives like direct retailing of vegetables and fruits in the markets, take part in auctions and will be on the lookout for value addition options.

Some of the parameters on which the Impacts can be measured are as follows:

1. Net additional Cash Income
2. Meet nutritional requirements of household by consuming vegetables grown
3. Decrease in input cost per unit area irrigated
4. Decrease in energy use per unit area irrigated
5. Multiplier effect in local economy as increased income is spent for local services and products

The most significant short term social impact with the use of technology will be the withdrawal of the woman of the household from the wage labor market where they spend long hours away from home and children.

**3.8 How do you intend to self-monitor the progress of the project towards obtaining the results?** (including the roles of institutions/groups involved (maximum 200 words)

The self-monitoring mechanism for the project will include the following:

1. A data set of initial conditions against which the final outcome will be bench-marked
2. A time line describing the points at which data will be collected for interim reviews of the implementation process
3. A set of indicators, one set for each of the four interventions listed above, that will be

used to evaluate the progress of implementation; these indicators will be observable at corresponding points along the time line

4. A system for objective evaluation of the indicators
5. A set of actions to be undertaken based on the analysis of the indicators
6. A system of revising plans based on the interim evaluations

IDEI, IWMI-TATA and IDF will review the project on pre-set timelines. A joint team consisting of lead person from both organizations will be determined to implement and monitor the project. The learning's from the project will be disseminated through networks of both organizations and within the organization.

**4. BUDGET (Calculate in US\$)**

Divided by institution as follows:	IDEI	IWMI-TATA	IDF	Partner 4	Partner 5	Totals
1. Personnel	\$3,000	\$3,000	\$2,000			\$8,000
2. Travel and accommodation	\$12,000	\$2,000	\$3,000			\$17,000
3. Other operational costs	\$45,000	\$0				\$45,000
4. Overheads	\$5,000	\$0				\$5,000
<b>Total CPWF Budget</b>	<b>\$65,000</b>	<b>\$5,000</b>	<b>\$5,000</b>			<b>\$75,000</b>
5. Additional budget provided by partner as 'matching funds'	\$75,000	\$0	\$0			\$75,000
<b>Total Cost</b>	<b>\$140,000</b>	<b>\$5,000</b>	<b>\$5,000</b>			<b>\$150,000</b>

Other operational costs: These costs involve

Static promotion includes promotional material like pamphlets, banners, dealer signage which are used during promotional activities and for merchandising.

Dynamic promotion includes activities which cover the target population for e.g. farmer meetings, video shows, product demonstrations at villages, markets and fairs, etc.

Training of Direct Service providers include trainings carried out to for manufacturers in production, maintaining quality standards, retailers and installers in promoting the product etc.

Primary Data collection is costs of the enumerator to capture data in a longitudinal manner from a select base of users and non-users of LDIT.

Data processing includes feeding data into computerized systems and generating reports from them.

Notes:

- Leave blank any budget columns that are not required.
- Capital items are not allowable.
- Provide clarification against amounts that you feel need explanation.
- No overhead maximum is stated, but be aware that your budget must be competitive and show value for money.
- Matching funds are not required, but a contribution will be viewed favourably either in cash and/or 'in-kind'.

Is there anything additional you would like to say in support of your proposal? (Maximum 100 words)

Some important links to our works highlighted by donors/journals

1. An independent evaluation done by the reputed environment journal of India – Down to Earth

[http://www.cseindia.org/dte-supplement/water20031115/dripping\\_promse.htm](http://www.cseindia.org/dte-supplement/water20031115/dripping_promse.htm)

2. IDEI (India)'s experience with developing markets for low cost irrigation technologies in India -

[http://www.aidandtrade.org/index.php?option=com\\_content&task=view&id=20&Itemid=44](http://www.aidandtrade.org/index.php?option=com_content&task=view&id=20&Itemid=44)

3. IDE (India) is an "NGO in Special Consultative Status with the Economic and Social Council of the United Nations

4. IDEI's work has already been recognized and supported by several donors over the past decade. Our work has attracted new donors as follows:

Skoll Foundation:<http://www.skollfoundation.org/grantees/socialentrepreneurship/index.asp>

Acumen Fund:<http://www.acumenfund.org/Work/WaterInnovations/Investments.asp>

Atlas Foundation:<http://www.atlasusa.org/reports/2005%20TFA%20Press%20Release.html>