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# NEPAL SOCIAL MERCHANT BANK MODEL RECONNAISSANCE STUDY

USAID SOUTH ASIA REGIONAL INITIATIVE FOR ENERGY  
(USAID SARI/ENERGY)

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## List of Acronyms

AEPC	Alternative Energy Promotion Center
AIDG	Appropriate Infrastructure Development Group
ATP	Ability to Pay
BAU	Business as usual
BISCOL	Bindhavasini Savings Co-operative Society Ltd.
CEPT/KU	Center for Excellence in Production and Transportation of Electrical Energy/Kathmandu University
CRT/N	Centre for Rural Technology, Nepal
DCGC	Deposit and Credit Guarantee Corporation
DM	Development Marketplace (World Bank Nepal Development Marketplace Award)
CDM	Clean Development Mechanism
DDC	District Development Committee
ESAP	Electrification Schemes from another Program
FI	Financial Institutions
GOA	Ghatta Owners Association
GHG	Green House Gas
GTZ	Deutsche Gesellschaft fur Technische Zusammenarbeit (German Agency for Technical Cooperation)
ICIMOD	International Centre for Integrated Mountain Development
ICT	Information and Communications Technology
IWM	Improved Water Mill
IWMP	Improved Water Mill Program
LSAFPMA	Low-speed Axial-flux Permanent Magnet Alternator
LS IWM	Long Shaft Improve Water Mill
MBM	Merchant Bank Model
MSME	Micro Small Medium Enterprise
MOU	Memorandum of Understanding
NGO	Non-governmental Organization
NR	Nepal Rupee
PV	Photovoltaics
RET	Renewable Energy Technology
RETSC	Rural Energy Technology Service Center
RF	Revolving Fund
S <sup>3</sup> IDF	The Small-Scale Sustainable Infrastructure Development Fund, Inc.
SARI/E	South Asia Regional Initiative for Energy
SMB	S <sup>3</sup> IDF's Social Merchant Bank
SNV	Netherlands Development Organization
SS IWM	Short Shaft Improved Water Mill
USAID	United States Agency for International Development
VDC	Village Development Committee
WTP	Willingness to pay

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## EXECUTIVE SUMMARY

This report is the deliverable for a Reconnaissance Study prepared under SARI/Energy Task Order 002 with cost sharing by The Small-Scale Sustainable Infrastructure Development Fund (S<sup>3</sup>IDF), Inc. and its Nepal partner, the Centre for Rural Technology, Nepal (CRT/N). The objective of the Reconnaissance Study was to reinforce the working hypothesis of the potential for transferring and/or applying S<sup>3</sup>IDF's Social Merchant Bank (SMB) model to Nepal by answering various questions: "How? With whom? (local partners), and What type of initial projects?" And finally, "What would a preliminary plan and budget include for an initiative to transfer and/or apply the SMB model and build a pilot portfolio of SMB projects?"

The working hypothesis of the study encompassed two additional factors: i) that there was great near term potential for successful adoption of the SMB model by building on the efforts under the Nepal Improved Water Mill Program (IWMP); and ii) that such transfer/application would be facilitated by the longstanding relationships between some of S<sup>3</sup>IDF's founders and the principals of the Centre for Rural Technology, Nepal (CRT/N) and the Centre's integral role in the IWMP.

### Overall Results

The overall results of the study are sufficiently positive at the reconnaissance level with regard to reinforcing the aforementioned working hypothesis. **There is no question that the S<sup>3</sup>IDF SMB model is applicable in the context of the IWMP. Moreover there is a clear need for such an application/transfer of the model if the already very successful IWMP is to reach its full potential.** Achieving this potential requires an expansion of the IWMP to cover all the districts of Nepal where there is significant potential for IWM investments, and to overcome the challenges faced by thousands of generally poor existing entrepreneurs who own and operate traditional unimproved pani-ghattas (water mills), to finance IWM investments. Addressing these challenges are especially important for the LS (long shaft) IWM investments (which have higher investment costs than SS (short shaft) IWM investments) because LS IWM investments can provide many modern energy services needed for development in the hill areas of Nepal. Application of S<sup>3</sup>IDF's SMB can do much to address these challenges and its application should be part of "mainstreaming" financing in the future of the IWMP. In addition, it appears that application of S<sup>3</sup>IDF's SMB would also be effective in other Nepal contexts especially with regard to facilitating the market penetration of other small-scale infrastructure investments particularly those embodying various renewable energy technologies.

### Selected Findings, an Initial Initiative and Major Issues and Questions

It warrants noting that the IWMP has already had an extensive and positive impact on thousands of communities in rural Nepal, serving in the neighborhood of 1 million people and having particular benefits for women IWM clients. It has demonstrated how the capability of local ghatta owner/operator *entrepreneurs*, the majority among the poorest Nepalese generally from socially excluded groups, can provide a basis for small-scale *private sector* provision of infrastructure services. If the IWMP evolves as **it could** –based on its already proven track record– and as **it should** given its unique possibility of near to medium term economic development potential, it can literally and cost-effectively help transform vast parts of the rural hills of Nepal like no other conceivably feasible (in technical and financial terms) program can. Reiterating the point made above, part of this evolution should be the mainstreaming of financing in the future IWMP and as part of this, mainstreaming application of the S<sup>3</sup>IDF's SMB.

Moreover, it warrants underscoring that the IWMP has a track record unique in development programs in Nepal. It appears that the current IWMP is set to meet 90-95% of its targets on time and on-budget. This record is virtually unheard of in Nepal where so many development programs lag in their achievement of various target metrics.

It is clearly critical that the existential issue of whether support for the IWMP continues, after the currently schedule completion date, be resolved soon.

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An institutional structure for an initial Initiative to begin implementing the transfer and application of S<sup>3</sup>IDF's SMB in the context of the IWMP has been designed and is presented in the Section C. This initial Initiative would have a *Facility* providing both financial and know-how/capacity building support to local partners and IWM entrepreneurs and would operate a Revolving Fund (RF). The RF is envisioned to provide "gap filling" finance in accordance with the S<sup>3</sup>IDF's SMB to make currently viable but non-bankable IWM investments bankable and thus overcome the critical financing challenges noted above. Ultimately the institutional structure of the proposed Initiative and its *Facility* could become part of a further IWMP when financing is mainstreamed in the IWMP.

It would be very helpful to have external support from SARI/E or another source for more detailed investigations to further prepare transfer and S<sup>3</sup>IDF's SMB in the context of IWMP and the proposed Initiative. This includes investigation of a possible "Third Party" option for operation of the revolving fund (RF) in a commercial fashion (which CRT can not do). Nonetheless, despite the usefulness of more detailed investigation, S<sup>3</sup>IDF and CRT are planning initial phase transfer/application of the Initiative and will draft and agree on a MoU.

- As envisioned, to be detailed in a MoU, S<sup>3</sup>IDF and CRT would seed finance the initial Initiative activities.
- S<sup>3</sup>IDF with CRT would seek support for more initiative preparation while beginning the transfer.
- S<sup>3</sup>IDF seed finance would encompass "Know-How" transfer to CRT (through professional time, intellectual property and other in-kind inputs); a possible operations cost (grant) is being discussed.
- Depending on fundraising successes and addressing major issues and questions (below), future support for the *Facility* RF is envisioned.

Activities for the Initiative by necessity will be constrained by the fact that CRT is not legally allowed to operate a revolving fund in a commercial fashion as envisioned for the Initiative as it ultimately will operate. However, a set of initial phase activities have been identified and are outlined in the report that will allow for "learning by doing" by CRT and other key partners identified.

The proposed Initiative would focus on the Karve and Sindupalchok districts and it is envisioned that in these two districts, the Gatta Owners Associations (GOA) and related Service Centers (developed under the IWMB) would be partners in the proposed activities. And a few selected banks are also targeted to be partners in the Initiative activities.

### Major Issues and Questions

For the Initiative's *Facility* to operate as envisioned, an alternative mechanism likely involving a Third Party will be required to circumvent CRT legal inability (due to its NGO status) to run a commercial RF.

As this report was being prepared it appeared that the IWMP would be extended beyond the end of 2008 (its' scheduled completion date) for some interim period into 2009. It also appears efforts are underway to marshal support from the Nepal Government, SNV (Netherlands Development Organization) and perhaps other donors for a future multi-year extension of IWMP. Given the aforementioned outstanding characteristics of this Program it is essential for the development of the Nepal hill districts that this extension takes place and preferably with continuity with the existing IWMP and the key players.

Assuming there is an interim IWMP extension followed by a future multi-year IWMP, it is critical that financing challenges be addressed as they are integral to the future IWMP. With respect to this matter there are a series of critical questions/issues:

- Will addressing financing challenges be a mainstreamed effort in the future IWMP with such mainstreaming including the adoption and use of the key aspects of S<sup>3</sup>IDF's SMB and continuation of the *Facility* concept as mentioned above (and discussed in the report)?
  - Whether CRT involvement as a key player will continue and its responsibilities be expanded to encompass the financing matters including the utilization of S<sup>3</sup>IDF's SMB type approaches that it will now be "learning by doing."
  - Whether the government's carbon policy can change to attract "green" investors to the proposed *Facility's* RF; as such investors will look for both carbon credits and financial returns.
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- Assuming that there are also conventional funders who will support a *Facility's* RF, whether the RF is operated to truly facilitate Banks/FIs financing of IWM investments; which it should; or substitutes for Bank which it should not, but which typically happens in donor capitalized RFs.
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## A. INTRODUCTION AND BACKGROUND ON S<sup>3</sup>IDF AND THE IWMP

This report is the deliverable for a Reconnaissance Study prepared under SARI/Energy Task Order 2.0 with cost sharing by The Small-Scale Sustainable Infrastructure Development Fund (S<sup>3</sup>IDF), Inc. and its Nepal partner the Centre for Rural Technology, Nepal (CRT/N). The objective of the study was to reinforce the working hypothesis of the potential for transferring and/or applying S<sup>3</sup>IDF's Social Merchant Bank (SMB) model to Nepal by answering various questions: "How? With whom? (local partners), and What type of initial projects?" And finally, "What would a preliminary plan and budget include for an initiative to transfer and/or apply the SMB model and build a pilot portfolio of SMB projects?"

The working hypothesis of the study encompassed two additional factors: i) that there was great near term potential for successful adoption of the SMB model by building on the efforts under the Nepal Improved Water Mill Program (IWMP); and ii) that such transfer/application would be facilitated by the longstanding relationships between some of S<sup>3</sup>IDF's founders and the principals of the Centre for Rural Technology, Nepal (CRT/N) and the Centre's integral role in the IWMP.

### A.1 Overall Results, Report Purposes, and Readers Guide

The overall results of the study are sufficiently positive at the reconnaissance level with regard to reinforcing the aforementioned working hypothesis with regard to transfer and application of the S<sup>3</sup>IDF's SMB model. And at the reconnaissance level of investigation, it is also possible to answer in preliminary fashion, the aforementioned "How" and other questions necessary for a start in applying the model (some of the know-how transfer having begun in this study).

It would be very helpful to have external support from SARI/E or another source for additional detailed investigations to further prepare the Initiative including the determination of a mechanism to address the fact that CRT is not able to operate a revolving fund (RF) that is commercial in nature. Nonetheless, S<sup>3</sup>IDF and its key partner CRT have agreed based on the results of this Reconnaissance Study, there would be an initial phase of an Initiative aimed: i) at a minimum of increasing the understanding among partners and stakeholders of how the IWM investment financing constraints can be overcome by employing the S<sup>3</sup>IDF's SMB; and ii) perhaps producing some IWM investment transactions utilizing aspects of S<sup>3</sup>IDF's SMB and so that the know-how transfer and learning by CRT and other local partners can learn by doing.

While this report is a deliverable to SARI/Energy as the prime contractor and its sponsor USAID, it is the intent that this report also be useful for interrelated purposes: i) the basis for what is anticipated to be continuing dialogue between S<sup>3</sup>IDF and CRT/N to move beyond this study to implement a collaboration that will lead to the aforementioned "pilot portfolio of SMB projects" and ii) the basis for beginning a dialogue (by S<sup>3</sup>IDF and/or CRT/N) with various entities regarding the importance of continuing and expanding the IWMP and "mainstreaming" the application of S<sup>3</sup>IDF's SMB model into the IWMP activities so that some of the critical IWM investment constraints can be overcome. This dialogue will continue with the Government of Nepal, AEPC and SVN, the existing IWMP supporters, and potential future supporters of either the overall IWMP or the specific components with regard to the application of the S<sup>3</sup>IDF's SMB as outlined below.

This report is organized as follows. The remainder of Section A has two subsections. The first provides some background on S<sup>3</sup>IDF and its SMB Model, the second discusses traditional and IWM and the IWMP. Section B presents some perspectives on the IWMP including the potentially important role of applying and mainstreaming the S<sup>3</sup>IDF SMB model into future IWMP activities. Section C outlines the answers to the "How", "With whom" and other questions regarding a proposed S<sup>3</sup>IDF and CRT/N collaboration to begin an initial Initiative that would apply the S<sup>3</sup>IDF SMB in the IWMP. Section C presents seven suggested interrelated activities to be undertaken in the initial Initiative.

## A.2 About S<sup>3</sup>IDF and Its Social Merchant Bank Model<sup>1</sup>

The Small-Scale Sustainable Infrastructure Development Fund (S<sup>3</sup>IDF), Inc. was formed in response to the limitations of traditional development approaches to providing infrastructure services to poor people. These infrastructure services are a necessary if not sufficient condition for economic growth and the reduction of poverty.

S<sup>3</sup>IDF has public charity status in the US (Section 501(c) (3) of the US tax code) and S<sup>3</sup>IDF India has analogous status. The two S<sup>3</sup>IDFs operate in a very integrated way. They are not typical charities: they are non-profit corporations that are very transaction-oriented and have a very business-like style of operation.

S<sup>3</sup>IDF's vision is to provide the services necessary, if not sufficient, for such economic advancement include the provision of electricity and other modern forms of energy, water supply and sanitation, transport, and, increasingly, telecommunication and information services. In the case of modern energy services, linked investments that increase productivity, such as the grain mills making use of the electricity, are often critical for development. Unlike some others entities supporting infrastructure S<sup>3</sup>IDF's vision has always encompassed support for linked "customer side of the meter" investments.

This investment focus and S<sup>3</sup>IDF's approach from the start, reflected realities that: i) the vast majority of the poor are working poor with willingness and some ability and to pay for infrastructure services, provided that the services meet their priority needs; ii) that the materials and technology evolutions over the last generation have made small-scale/distributed infrastructure options much more cost-effective; iii) the problem of the poor is more than the lack of access to adequate infrastructure services; they often lack access to financing, technology, and know-how (including business know-how) to organize and implement cost-effective and financial viable infrastructure solutions. The last point is illustrated in Figure 1 which shows the universe in which S<sup>3</sup>IDF operates.

S<sup>3</sup>IDF fosters small, explicitly pro-poor investments by bringing the technical, financial and business organizational innovations common in large infrastructure projects to the development of a portfolio of small-scale infrastructure investments benefiting the poor. S<sup>3</sup>IDF calls this a Social Merchant Bank approach. This approach and the interventions that achieve it are rare in small infrastructure projects that are explicitly pro-poor in their impact. The specifics of the approach are based on the knowledge of the organization's founders whose experience represents many decades consulting on conventional infrastructure in more than sixty countries.

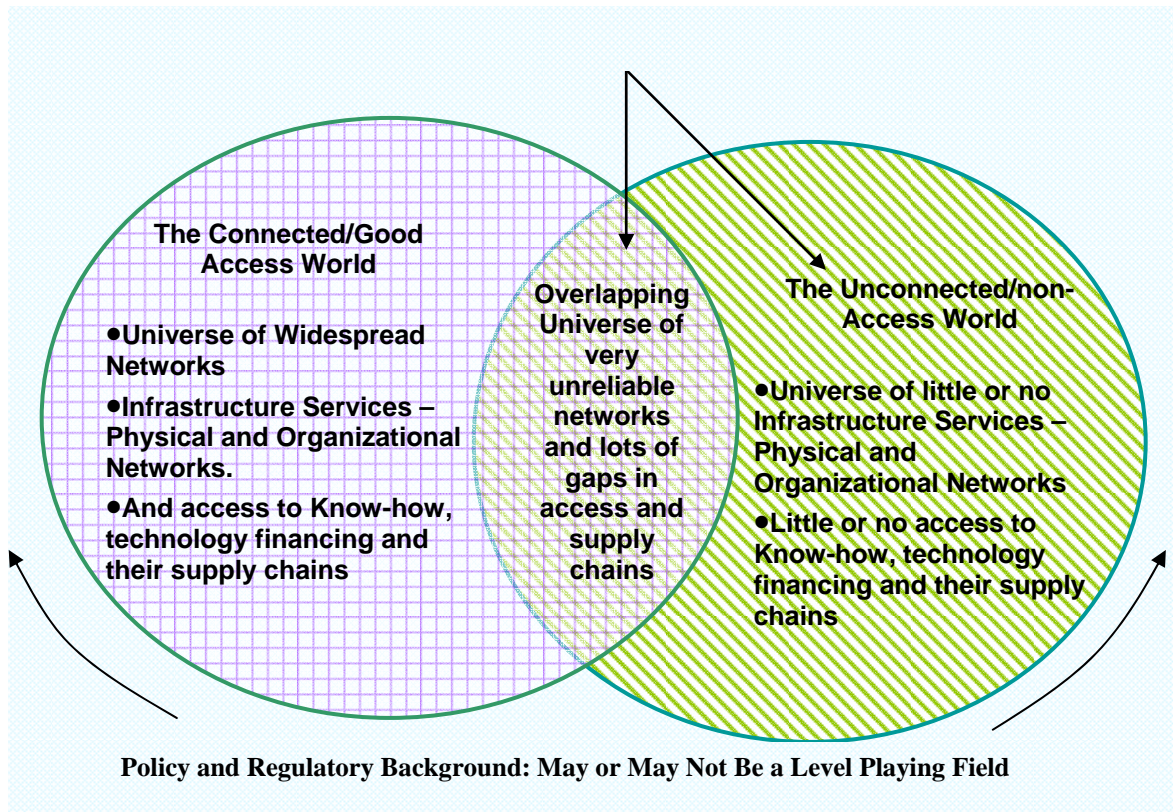
The investments S<sup>3</sup>IDF supports must explicitly benefit the poor in one or more ways (e.g. customers, employees, asset owners), be environmentally responsible in their construct and operation, and operate in a financially sustainable fashion including payment of loans from implementation onwards.

S<sup>3</sup>IDF's Social Merchant Bank model (SMB) solves the problems facing poor people by simultaneously overcoming their lack of access to the financing, technology and know-how, and facilitating the creation and implementation of viable micro, small and medium sized enterprises (MSME) providing infrastructure services. In addition to its vision, S<sup>3</sup>IDF's expertise is in combining the skills necessary to generate a viable deal flow that achieves the pro-poor objective.

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<sup>1</sup> This discussion draws directly from various S<sup>3</sup>IDF documents.

**Figure 1- The Universe in which S<sup>3</sup>IDF Operates**



The characteristics of S<sup>3</sup>IDF's SMB model include:

- Involvement of local small private players (as opposed to large and/or international players),
- Use of varying financial structuring, business and organizational approaches to ensure financial sustainability,
- Capture of financial markets and other development synergies, and
- Environmentally responsible approaches so environmental benefits (local and global) accompany the social and economic benefits of infrastructure investments.

In implementing its SMB model in its initial market-shed in south India (Karnataka and parts of adjacent states) S<sup>3</sup>IDF implements two distinct sets of operations: the first is grant funds to meet the high transaction costs involved in identifying and developing financially sustainable schemes that underwrite much of the pro-poor objective. The second is a revolving fund that provides the “gap-filling” finance, necessary to mobilize the necessary local finance. This revolving fund (currently grant capitalized) seeks to preserve its capital and achieve annual rates of return in the range of 10-14% and to use these returns to underwrite in part, costs that are non recoverable due to its explicitly pro-poor investment criteria.

S<sup>3</sup>IDF generates its deal flow by collaborating with local partners, activists, NGOs, academic groups, equipment suppliers, local banks and financial institutions.

It warrants underscoring that S<sup>3</sup>IDF's initial hypothesis (since verified in south India) was that financing small-scale infrastructure projects is within the capability of local banks and other financial institutions (e.g. leasing companies). In addition, that i) mobilizing such local financing would leverage any external development finance (including what

S<sup>3</sup>IDF provides), and; ii) for this local bank financing to happen, given the “business as usual” (BAU) mindset of banks and other realities of the poor, the necessary development finance (whether S<sup>3</sup>IDF’s or others) must include a menu of financing types: debt (primary and secondary), equity and partial guarantees or other credit conditioning instruments; and iii) this type of financing must be deployed in a “gap filling” manner along with investment financing and ownership and risk mitigation structuring such that banks will participate and previously viable but non-bankable projects become bankable.

S<sup>3</sup>IDF has demonstrated that the aforementioned hypothesis holds, namely that financing small-scale infrastructure projects is within the capability of local banks and other financial institutions. In its efforts to facilitate local bank participation in the financing of its projects, S<sup>3</sup>IDF has successfully arranged such participation with 10 banks and their sponsored regional rural banks (a total of 34 branches). But S<sup>3</sup>IDF’s expertise, business development services, investment co-financing, ownership and risk mitigation structuring is required to enable these banks and other financial institutions to participate in what would otherwise be viable but non-bankable projects.

S<sup>3</sup>IDF’s Social Merchant Bank model was designed to be very widely applicable. To achieve this, S<sup>3</sup>IDF pursued two interlinked objectives:

- To verify and utilize its innovative SMB business model by building a portfolio of successful small-scale investments in different sectors, and employing a range of technologies operating initially in south India (Karnataka and parts of adjacent states).
- To disseminate its SMB model by using the lessons derived from its transparent monitoring and evaluation to achieve a much broader impact by encouraging other organizations to adopt a similar approach through various dissemination efforts.

Since inception of operations in India in 2001, S<sup>3</sup>IDF has made good progress in meeting these objectives by both proving the viability of the concept, and in persuading other agencies to adopt a similar model. The portfolio now numbers over 130 schemes and has experienced no failures. The prospective pipeline contains over 100 funding possibilities with more than 40 in advanced stages of pre-investment analysis. The Social Merchant Bank Model has begun to influence other organizations as it is being used by the Global Village Energy Partnership (GVEP) (with modification) in its new African Initiative.

The success and innovativeness of S<sup>3</sup>IDF’s Social Merchant Bank Model has been recognized internationally by one of the first World Clean Energy Awards in 2007 and a Top Innovation Award in the Clean Energy Finance category by the Asia Clean Energy Forum Secretariat at the Asian Development Bank in June 2008.

### A.3 Traditional and IWM and the IWM Program’s Genesis, Objectives, Targets and Strategies<sup>2</sup>

Agro-processing is a very important activity for the farming communities in Nepal. Manually operated devices are pain staking and very low efficiency devices are used by a majority of the people in rural Nepal. But in many thousands of locations, hydropower for grinding purposes, in the form of traditional (wooden blades) low power output water mills (ghattas), has been in use in Nepal for centuries. In the mid hills of the country, these traditional water mills located on the banks of streams and rivers have been an essential part of village life as an important source of energy. Rural households depend to a large extent on these mills for their daily life.

It is estimated that more than 25,000 traditional water mills (ghattas) are in operation throughout the country. Although these traditional water mills have been part of villages for centuries, due to its low efficiency (generally producing 0.5 kW) they have not been able to meet the increasing agro-processing needs and other energy requirements of the rural communities. In response, diesel mills have penetrated in high agro-processing demand areas. In addition to polluting the local environment, these diesel mills have not only disturbed the self-reliant methods of the villages but they have also increased the dependency on imported machinery and diesel.

An Improved Water Mill (IWM) can in many instances, provide a superior (in service quality) and lower cost option to diesel mills. They take advantage of the same freely available natural resource used by the ghattas but

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<sup>2</sup> This section draws directly from various CRT/N material and documents.

whose utility can be highly enhanced through the introduction of a better and more efficient technology – the improved water mill (IWM).

An Improved Water Mill (IWM) is an intermediate technology based on the principle of existing mills that improves performance (generating up to 3 kW) as well as reliability of the mills. The IWM can be used for a longer period in the dry season –and through their increased energy output the quality of the milling service offered to the local community can be improved. The basic technical and functional differences of traditional mills (ghattas) and IWM are shown in the table below.

**Table 1: Basic Technical Features of the Traditional and Improved Water Mill (from IWMP documents)**

<b>Parts of Traditional Water Mill</b>	<b>Parts of Improved Water Mill</b>		<b>Traditional Water Mill</b>	<b>Improved Water Mill</b>	
Wooden water wheel with flat paddles	Metal runners with buckets	<b>Functions and Capacity</b>	Grinding of cereal grains only ( maize, millet, wheat, rice, etc.), 10-20 kg/ hr	Grinding of cereals (20-50 kg/ hr)	
Wooden hub covers the metal vertical shaft	Metal vertical shaft			Paddy hulling (50-70 kg/hr.)	
Wooden open chute of uniform cross-section	6" - 8" Diameter, HDPE Pipes			Oil expelling (10-15 kg/hr.)	
Runner mounted on to a wooden frame	Runner mounted on to a wooden frame			Electricity Generation (1-3 kW)	
	A pulley and belt system is introduced for power transmission				

Rural communities require food-processing services, in the form of cereal grinding, paddy hulling, oil extraction, etc. The availability and reliability of these services to a large extent determine the quality of rural lives. Adequate milling and other agro-processing services reduce the burden of carrying loads over a long distance; a task (often performed by female household members) that also stimulates and diversifies local agricultural production.

There are two categories of the IWM currently being implemented. The most widespread is the “short shaft” (SS) IWM which only provides for more efficient grain grinding but has very low incremental investment costs, typically around \$300 (NRs 20,000). The other is the “long shaft” LS IWM that is implemented only when greater power capacity is desired in order to provide other “add on” (to grain grinding) services such as paddy hulling, oil seed expelling, saw milling and even small scale “mini grid” electrification schemes. The incremental costs for LS IWM investments vary dramatically depending on the equipment to meet the targeted end-use or combination of end uses. Table 2 below presents representative current investments, costs and revenues for a (SS) IWM and eight LS IWM investments.

The history of the Improved Water Mill (IWM) in Nepal dates back to the 1980s, when various individuals and institutions undertook attempts to improve the operational efficiency of the ghattas. The major break through was when Mr. Akal Man Nakarmi of Kathmandu Metal Industries developed and implemented improvements to the traditional ghattas by using local material and designs that are *within the fabrication and installation skill capacity of local craftspeople*. With the exception of metal parts for the kit runner (turbine) and shaft the other parts of the water mill (chute, framework, stone grinder canal and intake) were kept intact without any change. Subsequent improvements by others would build on Akal Man’s breakthrough.

From its establishment in 1989 CRT/N has been playing an instrumental role in the promotion and dissemination of the IWM. During the period leading up to the IWMP, there were various promotional initiatives with support from various agencies aimed at traditional mill owners, supporting them with technical and financial support and also aimed at local communities, especially the women to reduce their drudgery and stress. A number of international development agencies were involved in these various initiatives with the most important ones being supported by German Technical Cooperation (GTZ), ICIMOD (International Centre for Integrated Mountain Development) and SNV (Netherlands Development Organization). As a result of these initiatives, by the time of the start of the IWM Program more than 900 IWMs were working in about 40 hill districts of Nepal. CRT/N played a key role in all of these initiatives.

**Table 2: Investment and Annual Income Analysis for Different End Use Technologies (NRs.)**

	Particulars	Short Shaft	Long Shaft							
		Grain Grinding	Grain Grinding	Rice Hulling	Oil Expelling	Rice Beating	Lokta Beating	Spice Grinding	Electrification	Saw Milling
1	Total Investment Cost	20000	34675	51875	119175	124975	63375	47675	305675	48875
2	Subsidy from IWM Programme	9000	18000	18000	18000	18000	18000	18000	18000	18000
3	Subsidy from AEPC/ESAP								120000	
4	Amount to be financed	8800	13340	27100	80940	85580	36300	23740	134140	24700
5	Total Revenue	40720	40720	33600	58800	120000	21000	36000	72000	40000
6	Total Expenses	34468	34468	13147	35024	67227	7601	19510	48648	30029
7	Cash Flow	6252	6252	20453	23776	52773	13399	16490	23352	9971
8	Payback Period (Years)	1.8	2.7	1.7	4.3	2.0	3.4	1.8	7.2	3.1

Source: CRT drawing from IWMP experience.

Notes:

1. For all the projects of LS installations, the projects are supposed to be installed independently
2. For the financing (Row 4), the loan is taken as 80% of the difference of the total investment and subsidy amount provided as it assumed investor has equity of 20% as per normal bank norms
3. For electrification project the capacity of the electrification system is 3kW and provides service for 40 households
4. The tariff of electrification facility is charged Rs. 150 per household per month
5. Payback period (Row 8) is calculated by taking the ratio of total investment amount less subsidy to the cash flow.

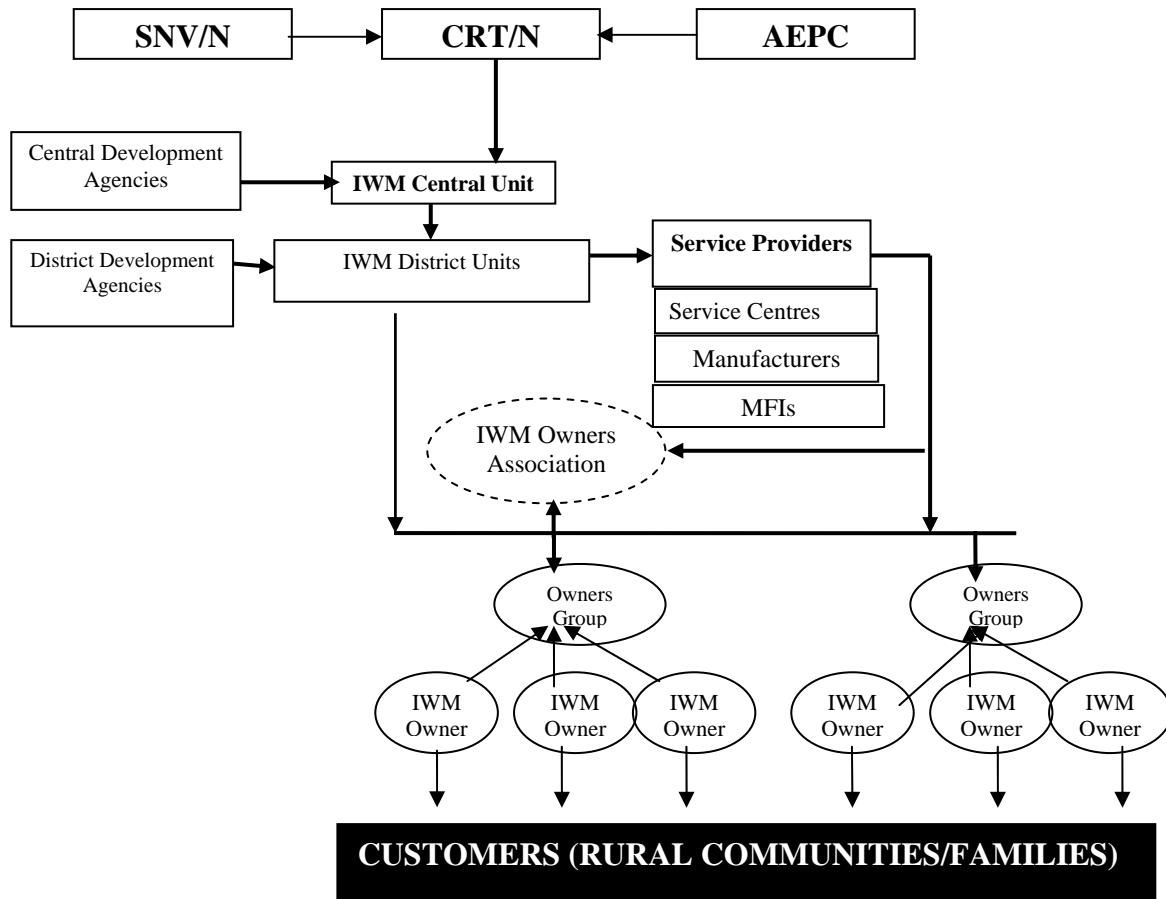
### The IWM Program, its Objectives, Targets and Strategies

The IWM Program (IWMP) is a five year program that began implementation in early 2004. The overall objectives of the IWMP are:

- To improve the living conditions of rural households especially of the traditional water millers and their users and,
- To improve the sustainability of the IWM sector through institutional strengthening and local capability development.

Currently the program is being implemented in 16 districts. It is being supported by SNV/N on behalf of the Dutch Government and the Government of Nepal with a management and implementation structure that encompasses stakeholders at the national, district and local levels as shown in Figure 2.

**Figure 2: IWMP Program Management and Implementation Structure (from IWMP documents)**



The program provides a subsidy for “basic” upgrade components for both the SS and LS IWM; these subsidies are currently NRs 9,000 for SS and NRs 18,000 for LS. There is an additional subsidy (NRs 1,500 for SS and NRs 3,000 for LS) applicable only to IWM investments in remote districts. There is no IWMP subsidy for the add-on equipment for the various LS IWM investments such as those presented in Table 2. However, for mini-grid electrification schemes there is currently a subsidy of NRs 40,000/kw available from another program<sup>3</sup>.

In addition to a target to achieve the 5000 IWM investments (current achievement of 4000+ units), the IWMP includes multiple interrelated activities in support of achieving the following major strategies of the program:

1. Build capacities of local service providers – Ghatta Owners Associations, service centers and equipment manufacturers;
2. Strengthen diversification of end-uses including electrification;
3. Support establishment of Ghatta Owners Associations (GOAs);
4. Maintain quality standards of equipment and service provision;
5. Link with available subsidy and credit support;
6. Support research and development for upgrading the technology and/or its use.

<sup>3</sup> There are IWM investments in place that include battery charging service schemes; the customers use the batteries primarily for lighting.

The discussion in the following section provides some perspectives on the achievements of the IWMP including the constraints faced in increasing the numbers of LS IWM investments and the potentially important role of applying and mainstreaming the S<sup>3</sup>IDF SMB model into future IWMP activities.

## **B. PERSPECTIVES ON THE IWMP AND POTENTIALLY IMPORTANT ROLE OF APPLYING THE S<sup>3</sup>IDF SMB MODEL IN THE IWMP**

A critical perspective for looking at the IWMP is the *absolutely necessary* role of energy services to eliminate drudgery and allow for a variety of productivity increases and quality of life improvement at the household, community and small enterprise level. **No society on the face of the earth has escaped the poverty trap without access to a modicum of modern energy services.**

The IWMP has already had an extensive and positive impact on thousands of communities in rural Nepal, serving in the neighborhood of 1 million people and having particular benefits for women IWM clients. It has demonstrated how the capability of local ghatta owner/operator *entrepreneurs*, the majority among the poorest Nepalese generally from socially excluded groups, can provide a basis for small-scale *private sector* provision of infrastructure services. Taking note of the comments at the start of this section, it is the author's view that if the IWMP evolves as **it could**, based on its proven track record, and as **it should** given its unique possibility of near to medium term economic development potential, it can literally and cost-effectively help transform vast parts of the rural hills of Nepal like no other conceivably feasible (in technical and financial terms) program can.<sup>4</sup> It is clearly critical that the existential issue of whether support for the IWMP continues after the currently scheduled completion date, be resolved soon.

Moreover it warrants underscoring that the IWMP has a track record unique in development programs in Nepal. It appears that the current IWMP is set to meet 90-95% of its targets on time and on-budget. This record is virtually unheard of in Nepal where so many development programs lag in their achievement of various target metrics.

There are five dimensions of how the IWMP should evolve for it is to help this transformation of much of the rural hills of Nepal. But before outlining these dimensions, comments with respect to supply chains and the IWMP's track record are warranted recalling the perspectives explicit in Figure 2 above and the accompanying discussion. This comment is in order especially for readers unfamiliar with the issues and challenges of building supply chains. Here the focus is on the needed supply chains for technology, know-how, and financing of energy and other infrastructure investments, in the context of undeveloped or underdeveloped markets of populations with limited ability to pay. The general case is that these markets are not sufficiently attractive for these supply chains to evolve and reach the rural poor just on the basis of commercial market forces. Assistance is needed to create, build, and strengthen these supply chains. The IWMP has done this, with the exception of financing, but only in the 16 districts that are being served. However, in some of these districts there is considerable strengthening of various supply chain players (the Service Centers and GOAs), and some equipment suppliers that still needs to be done.

It is possible to outline five dimensions of how the IWMP should evolve if it is to achieve its unique economic development impact on vast parts of the rural hills of Nepal.<sup>5</sup>

*First*, the IWMP's reach should be expanded to include all of the hill districts.

*Second*, it should continue its strategy of capacity building among local players so all players achieve the capability of those in the more experienced districts (e.g. Karve). However, even in the more experienced districts additional strengthening is necessary if they are to assist with mainstreaming activities which is the *third* dimension of the evolution.

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<sup>4</sup> This view has been reinforced by the author's efforts during this reconnaissance study. But it should be noted that the author has a longstanding familiarity with the Nepal energy sector as a result of consulting assignments over a number of years and the extensive other relevant experience he brings to formulating this view.

<sup>5</sup> Many but not all of these dimensions are explicit or implicit in the IWMP strategies noted earlier in Section A.3. Based on material reviewed, interviews and discussions with various players involved in the IWMP, the views articulated here are widely shared but with likely differing views on the relative emphasis that some place on the various dimensions. Over-riding all of this is the existential issue of whether the IWMP will be continued, not to mention continued with greater scope in these dimensions.

*Third*, there must be a mainstreaming of activities to address the financing constraints of many potential IWM entrepreneurs, especially with regard to LS IWM investments (more on this below). Most financing constraints can be addressed at the specific investment level and by replication over many transactions at the portfolio level for all IWM investments. However, some constraints need to be addressed at the portfolio level; an example is the need for flood insurance for IWM investments. As a corollary to the activities to overcome financing constraints at the transaction level, the IWMP needs to develop an insurance scheme.<sup>6</sup>

*Fourth*, the menu of technologies and technology packages and suppliers related to providing additional energy services (e.g. paddy and wheat threshing) and other infrastructure services that are energy/electricity dependent (e.g. cell phone charging and other ICT services) must be part of the evolving umbrella of the IWMT activities.<sup>7</sup>

The *fifth* dimension, directly related to all the other dimensions, is the need for proactively targeting LS IWM investments such that as the IWMP evolves a much larger percentage of the IWM investments are LS. It is through LS IWM investments with a provision of increased diversity of energy services and end-uses that the IWMP can achieve its potential for dramatic impact in facilitating poverty alleviation and economic development in the hill areas.

Assuming that multi-service LS IWM investments are increasingly incorporated into the IWMP, it is possible that the sites of these new schemes will provide platforms for the integration of other energy technologies (e.g. biogas) and the services they can provide. Ultimately these platforms and their entrepreneurs can also serve the delivery of other infrastructures and non-infrastructure services to further facilitate the development of their communities.

#### B.1 LS IWM Investment Financing Challenges and Potential Role of the S<sup>3</sup>IDF's SMB Model

The vast majority (about 87%) of the IWM investments that have been implemented are (SS) IWM, and of these there has been very limited participation by formal FIs. The post-subsidy costs for SS investments are such that they are usually sources from savings and borrowings from the informal sector; however, these amounts are small, commonly in the order of NRs. 9,000.<sup>8</sup> LS IWM investment costs are much higher; the subsidy (except for electrification schemes) NRs 18,000 usually represents a much smaller fraction of the costs; and the cash cost of the equipment (e.g. the oil expeller) represents a large fraction<sup>9</sup>. The net result is the need for considerable equity and/or debt on the part of the LS IWM investor.

There is an enormous market potential, many thousands, for financially viable LS IWM investments whose potential cash flows can easily support them (see Table 2 above). But under current conditions these are generally financially viable but non-bankable and hence are not being implemented. In comparison to (SS) IWM investments, LS IWMs present a much greater financing challenge for ghatta entrepreneurs due to a combination of factors.<sup>10</sup>

i. As mentioned, LS IWM investment costs are much greater than those for SS IWMs. Commonly these costs are in excess of \$1000. For example, investments including multiple energy services (e.g. grinding and oil seed expelling) and/or electrification can be as much as \$4000 for a community of 40 households<sup>11</sup>.

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<sup>6</sup> The management of the IWMP has been examining this issue and reportedly AEPC is working on an insurance scheme for other renewable energy investments. Perhaps the scope of these efforts could be broadened to include IWM investments.

<sup>7</sup> It is noted that there is ongoing IMWP activities focused on some additional technologies.

<sup>8</sup> The SS subsidy (NRs 9,000) covers a significant fraction of the overall investment costs, typically in the order of NRs 24,000 and this figure includes the cash value of in-kind inputs (labor and local materials for civil works) that the entrepreneur can usually provide on a non-cash basis.

<sup>9</sup> There is an additional subsidy for LS IWM electrification schemes from another program (ESAP). This subsidy is NRs 40,000/kw or NRs 4,000/household whichever is lower.

<sup>10</sup> The entrepreneur owned LS IWM investments that have been implemented have largely been by ghatta entrepreneurs in relatively higher income and/or asset positions for which the factors below do not pose a constraint. In addition in the case of electrification LS IWM schemes there are instances of contributions (defacto equity) by the community, or the local development body and in some cases by other grant money sources.

<sup>11</sup> This implies a per household cost of \$100, a very cost effective solution to providing modern lighting which makes a dramatic impact on household quality of life. And these schemes provide, for example sufficient power for most households to also have radios, and some will have TV (back and white) and a number will have cell phones.

- ii. The pre-investment income and asset position of most ghatta entrepreneurs are such that they can not meet the business as usual (BAU) requirements of most banks and other FIs that might in principle be open to providing debt financing. As mentioned above, most of the ghatta entrepreneurs are among the poorest of Nepalese and are commonly not in a position to provide neither the minimum equity contribution nor the requisite collateral requirements. Regarding the latter, and especially relevant is the fact that the land on which the existing ghatta sits is often not owned by the entrepreneur but rather land for which commonly there are use rights, often going back generations. This land is not acceptable to the many banks/FIs as collateral.
- iii The footprints and BAU practices of Banks/FIs present a number of challenging factors, at least some of which are sufficiently important to mention.
- First is whether the Banks/FIs (at any of its locations) have any generally pertinent transaction experience encompassing term lending to MSME for fixed assets (as opposed to for example just one-year crop cycle loans).
  - Second is the matter of the footprint of most Banks/FIs. They often do not have a branch presence in locations close to the sites and their policies preclude considering investments of these scales outside their defined market areas.
  - Third is the fact that Banks/FIs do not consider investments on a “project financing” basis with a primary focus on cash flows, but rather deal in “asset/collateral” based financing. The requisite collateral policies of many Banks/FIs and their policy with regard to untitled land of many ghatta entrepreneurs were noted above. Apparently there can be exceptions for some FIs if the existing ghatta is registered as a cottage industry.<sup>12</sup> As serious a constraint is that many Banks/FIs do not accept the equipment (e.g. paddy huller) as collateral.
  - Fourth is the often conservative nature of Banks/FIs when considering new types of investments especially ones that encompass technologies with which they are not familiar. Beyond the unfamiliarity issue is the matter of perceptions on risk –real or only perceived. Aside from market risk related to demand for and willingness to pay for services the LS IWM investment carries two additional risk categories: the performance risk (of the equipment) and the various hydrological risks related to extremes - low flows and flood.

Other, perhaps less challenging factors such as cumbersome procedures of Banks/FIs can be mentioned but the challenges of overcoming these cannot be addressed until the first issue outlined above can be overcome.

#### Overcoming the Financing Challenges by Employing the S<sup>3</sup>IDF SMB Model

The results of the Reconnaissance Study suggests that employing the S<sup>3</sup>IDF SMB model can overcome most but not all of the financing and challenges outlined above at the level of individual transactions. This judgment is made by also synthesizing the IWMP context and constraints with the experience of employing the S<sup>3</sup>IDF SMB in India and other efforts to examine its transfer application to other developing economy contexts (East Africa). The financing challenges and constraints that are beyond the scope of the S<sup>3</sup>IDF model include two factors. One is lack of experience in bank/term lending to MSME for fixed assets. The second is flood risks and lack of an insurance scheme. Fortunately the former is not severe as most banks/FIs seem to have some experience and those with more experience will be the focus of initial transactions. Unfortunately, with regard to flood risk, only some mitigation with regard to site selection for initial transactions and perhaps some other steps (and reserves) can be built into specific transaction preparation and implementation. Broader efforts must await the development of an insurance scheme by IWMP or in association with a broader insurance initiative by AEPC or another entity.

Employing various dimensions of S<sup>3</sup>IDF SMB’s model can overcome many of the constraints outlined above and make financially viable but currently non-bankable LS IWM investments, bankable. These would include a menu of “gap-filling” financing (debt, equity, partial guarantees) and transaction specific ownership and financing structuring. But this is not to suggest that it will be easy. The initial transactions to overcome such challenges

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<sup>12</sup> This exception was mentioned in an interview with Bharat Sharma Chairman Bindhavasmi SACCO.

require underwriting significant pioneering costs to make these LS IWM investments happen with bank finance. Assuming this pioneering hard work is undertaken, at the reconnaissance level of this study it is useful to indicate with examples how employment of the S<sup>3</sup>IDF SMB model can overcome some of the constraints outlined above with some representative examples.

Tables 3 and 4 below present some representative cash flow analyses of two of the most common LS IWM investment cases: rice hulling and oil expelling. The investment costs, subsidies and revenues shown in these tables are consistent with the average case particulars that were presented in Table 2. For the oil expeller investment cases, Table 4 also includes a variant reflecting the higher revenue that is being achieved in the Kavre district according to CRT/N, which is the focus of some initial Initiative activities presented in Section C. These cases incorporate multiple elements and players of financial and organizational/business model engineering to overcome financing constraints.

In these cases, employing the SMB model, a revolving fund (RF) finances the 20% equity contribution typically required by local bank BAU norms, but usually beyond local entrepreneur resources. The tables show that, even with this cost of repaying the SMB RF loan, these investments are usually both profitable to the entrepreneur and now locally bankable.

**Table 3: Rice Huller Cash Flow Analysis –“Average” Case (NRs)**

Cost of the project					51,875
Subsidy amount					18,000
Loan to be bank financed					23,500
Equity Contribution Loan (from SMB RF)					10,375
Annual effective interest rate for bank & SMB loans (effective rate is sum of 14% Bank + 5% Agent)					19%
Loan tenure period					3 years
<b>Particulars</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	
Daily Income	112	112	112	112	
Monthly revenue	2,800	2,800	2,800	2,800	
Less monthly expenditures	2,337	2,346	2,357	1,126	
Loan repayment	861	861	861		
Operators Salary	1,000	1,000	1,000	1,000	
Repair/Maintenance	95	105	115	126	
Repayment to RF	380	380	380		
Monthly Surplus	463	454	443	1,674	
Annual Surplus	5,556	5,448	5,316	20,088	

Source: Table 2 and drawing from CRT/N drawing from IWMP experience.

**Table 4: Various Cases of Oil Expeller Cash Flow Analysis (NRs)**

<b>Case Type</b>	<b>Average</b>	<b>Average</b>	<b>Average</b>	<b>High Revenue (Kavre)</b>
Total Project Cost	119,175	119,175	119,175	119,175
Subsidy Amount	18,000	18,000	18,000	18,000
Bank Loan	80,940	80,940	80,940	80,940
SMB RF Loan for owner's equity contribution	20,235	20,235	20,235	20,235
<b>Lending Terms</b>	<b>19% - 5 Yrs</b>	<b>19% - 9 Yrs</b>	<b>13% - 7 Yrs</b>	<b>19% - 5 Yrs</b>
Gross Income	58,800	58,800	58,800	<b>81,000</b>
Operating Expenses	35,024	35,024	35,024	35,024
Loan Repayments (Bank & RF)	31,494	23,541	22,084	31,494
Net Cash Flow (1st Year)	-7,718	235	1,692	14,482

Source: CRT drawing from IWMP experience. Investment costs, expenses and revenues from Table 2.

Notes:

1. Average Cases are calculated using alternative financing terms. Kavre Case has higher income.
2. Subsidy amount is from IWM Programme.
3. Bank loan financing is 80% of the difference of the total investment and subsidy amount assuming investor contributes 20% equity as required in typical bank norms.
4. SMB RF loan provides the funds for the 20% equity contribution needed to obtain local bank loan.
5. Effective interest rate in all cases is the sum of the Bank/FIs interest rate plus an Agent fee of 5% annually.

The following assumptions have been made:

1. Under the SMB model, there is a revolving fund (RF) and a RF operator to provide:
  - a) Supplemental financing, for example, to allow the entrepreneur to make equity contributions to meet bank norms; and/or
  - b) Credit conditioning (e.g. partial risk loan guarantees) in order for the loan to meet bank collateral or other norms.
2. There is an entity/player to serve as a “Bank agent/correspondent” to provide services (e.g. loan origination and payment collection) on a fee-for service basis to overcome the bank “footprint” constraint. These two roles and elements may or may not be played by the same entity. In the most likely case, in the context of the future IWMP (see Subsection B. 3 below), there will be different players.<sup>13</sup>
3. A Bank/FI will provide debt to the project where this is facilitated and enabled by the above elements and players. There may be an additional element and player involved, as in the next point.
4. An entity may provide partial risk loan guarantees to the Bank for some fraction of the loan. This role can logically be played by the Deposit and Credit Guarantee Corporation (DCGC) providing the Bank assumes role #3 and has an agreement in place with DCGC (see Subsection B.3). This player would be a preferred alternative to a SMB RF guarantee as it means more local financial sector involvement and development.

<sup>13</sup> For some of the investments it fosters in India and where the bank loans come from HDFC Bank, S<sup>3</sup>IDF-India plays both roles.

In Tables 3 and 4 above, an indicative “effective” annual interest rate/fee of 19% has been used to encompass all Bank and RF interest rates and all agent and guarantee fees as applicable. If, for example, the Bank has DCGC coverage and this cost is embedded in the bank’s rate, the 19% rate might allow for such combinations of Bank/RF interest of 14% and agent fee of 5% or a different mix of 12 and 7 percent respectfully. The 19 percent figure is below the informal but professional money lending rate reported to be prevailing in the rural markets.

These combinations of interest and agent fees are realistic based on what was learned in the course of this reconnaissance level investigation. But it is underscored that these are indicative only. Nonetheless, as shown in Table 3 for average revenue cases, these indicative numbers show that the very common Rice Huller LS IWM investment can be made bankable. Table 4 shows that oil expelling is a much higher investment and making it bankable in average revenue cases requires either much longer term lending in the case of the “effective” 19% rate or some mechanism that would lower the effective interest rate –such as a lower bank rate and/or lower agent fees. Reportedly in some situations such as in Kavre, oil expelling revenues are much higher as shown in the last column of Table 4. With these higher revenues, these investments can be made bankable if loan tenure can be five years.

It warrants reiterating that the examples above are merely indicative that by employing the various financial and organizational engineering elements and players that fit under the umbrella of the S<sup>3</sup>IDF SMB model, financially viable LS IWM investments can become bankable. If we assume from the beginning of the application of the SMB to individual transactions, some are chosen to have some diversity with regard to the mix of financing constraints/challenges addressed, it will allow for the building of an initial portfolio of transactions that can provide the basis for scaling up the SMB to many individual IWM investment transactions and a large portfolio.

## B.2 An Important Possible Near Term IWMP Option Also With Financing Challenges

An important near term development for the IWMP is an electricity generating technology that will make electrification based on SS IWM feasible. The technology is already in its fourth prototype stage and under development by a for-profit company, RETSC (Rural Energy Technology Service Center<sup>14</sup>) which has an affiliation with CRT. RETSC makes and sells other renewable energy technologies including a family-scale pico-hydro system. This new technology employs the Low-speed Axial-flux Permanent Magnet Alternator (LSAFPMA); a technology that is employed in generators linked to small wind machines manufactured in industrialized countries. This low-speed generator technology can be coupled with existing SS IWM schemes. It produces reactive power opening up the potential for using the electricity generated for many productive uses employing electric motors.

The development of the technology is being lead by Professor Maskey, Coordinator of the Center for Excellence in Production and Transportation of Electrical Energy at Kathmandu University (CEPT/KU). Development of this indigenous technology was supported in part by the Ashden Awards funds that CRT received in 2007 in recognition of its work in the IWMP. Prototypes have been tested at two SS IWM sites in Karve district. Currently, with funding from a World Bank Nepal Development Marketplace (DM) Award, a project team including RETSC and CRT plans to further test, demonstrate and disseminate the technology at ten sites in the districts of Karve, Nuwakot and Dhang.

Based on their experience with the prototypes Professor Maskey and his colleagues think the technology can be fabricated with very low amounts of imported materials/components and be done with Nepalese craftspeople. They estimate that the technology might be available on a commercial basis at around \$700/kw for a 3 kw version ex-factory. This would be sufficient for a SS IWM coupled with this equipment to supply a mini-grid for community lighting and various productive uses. Thus this technology has the potential to massively expand the potential of IWM. And of course such investments embodying the LSAFPMA technology would face the same financing constraints outlined earlier.

But in the near term, even more financial challenges would need to be addressed for the initial deployment/roll-out of this technology assuming the efforts under the DM project are successful. Even if the DM project is very

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<sup>14</sup> This is translation of its RETSC legally registered name in Nepali which is Gramin Urja तथा Prabidi Sewa Kendra.

successful and only minimal improvements or modifications are required before beginning commercial production, the technology does not have a sufficient performance record to ask poor entrepreneurs who are “early adaptors” to make an investment. Therefore, roll out of the technology should involve financial ownership structuring that mitigates the risks any poor entrepreneur should have to assume. Some variation of lease-toward-purchase combined with strong supplier (RETSC) performance guarantees and good integration with the IWMP supply chains and their service centers will likely be needed.

### B.3 Mainstreaming Financing in the Future IWMP: Some Recommendations

As mentioned above, the IWMP has a unique positive track record in terms of development programs in Nepal. It is already having significant drudgery alleviation and productivity impacts on thousands of households and communities in the hill districts. And, it has the potential to have very widespread and poverty alleviation results that no other program can conceivably do on such a cost-effective basis for many thousands of hill district communities. But this potential can only be achieved if the IWMP and its continuation addresses the financing challenges discussed above. Below are some recommendations to address these challenges.

*First*, addressing the financing challenges must be mainstreamed in terms of priority activities of the IWMP. This means that addressing financing challenges and in particular enabling financially viable, but non-bankable LS IWM investments to become bankable, must become an integral part of the IWMP, along with the many technological and institutional development matters that are now integral to the IWMP. Moreover it would be best if this mainstream is done such that the responsibilities for addressing these challenges are added-to and integrated into the overall responsibilities of CRT in its overall role as IWMP implementation.

*Second*, in addressing these financing challenges it is suggested that the IWMP adopt and as appropriate modify the S<sup>3</sup>IDF SMB model as its utilization would be helpful in addressing the financing. The use of the SMB model in turn points to additional third and fourth complementary recommendations.

*Third*, the IWMP sponsors (Government, SNV and hopefully in the future other donors) create a special IWMP revolving fund (RF) and provide a menu of “gap filling finance” (equity, debt, including secondary position debt, guarantees) to facilitate bringing bank debt financing to the IWM investments. This will also require arranging for a RF management mechanism that can function as an integral part of the IWMP implementation team. (A possible structure for this is outlined in Section C.1).

It must be underscored that an objective of the application the S<sup>3</sup>IDF SMB model and use of the RF should be to facilitate Banks and other FIs (e.g. leasing companies) to provide the primary debt for the IWM investments. Using the analogy of the ice-cream shop, the aim should be for the plain vanilla debt to come from the banks. The IWMP RF must be prepared to offer a diverse menu – strawberry, chocolate, blueberry, mango etc, of the financing types to “fill the financing gap” on specific IWM investments and to ensure that the bank norms are met and they provide the “plain vanilla” debt the IWM entrepreneur and his/her/their investment requires.

*Fourth* to avoid or minimize the use of funds from the IWMP for partial risk guarantees, the IWMP should have a proactive dialogue with Banks (commercial banks and development banks with commercial bank operations) and the Deposit and Credit Guarantee Corporation (DCGC) such that DCGC covers the bank loans for IWM investments. DCGC provides 75 percent guarantee coverage for all bank loans in its portfolio that qualify. IWM investments would qualify. Banks with existing agreements with DCGC should be encouraged and assisted to participate in lending to IWM investments. Banks with expressed interest in financing IWM investments should be encouraged and assisted to put agreements in place with DCGC.

### Other IWMP RF Investors and the Carbon Credit Issues

The IWMP and its existing supporters (Government and SNV) when seeking additional support for continuation and expansion of the IWMP, now with financing an integral component, should proactively seek “non-conventional” funders specifically for the IWMP Revolving Fund. This should include international social,

environmental and philanthropic investment funds that might be attracted to the IWMP. However, for many such possible investors in the IWMP RF, the matter of credit and ownership of the carbon/GHG (Green House Gas) credit revenues generated by the IWM investments explicitly supported by such investors funds in the IWMP RF will likely be a major issue.

It is the author's understanding that the Government's position on carbon/GHG in relation to development programs such as the IWMP that are government/donor assisted, is that all benefits and associated revenues must accrue to the government. While one can understand this position, a number of factors must be underscored: a) the IWM investments that will happen with support from the IWMP RF and as a result of mainstreaming financing activities in the IWMP will happen because of the **additional** support from the IWMP RF; b) this **additional** support would be financed in part by funds provided by investors in the proposed IWMP RF; c) in all of the evolving carbon markets –CDM (Clean Development Mechanism) and other regulated markets as well as the voluntary market, **additionality** and who provides it is recognized as a key factor associated with who is entitled to ownership of the carbon/GHG credits and the revenues that may flow should this credit be monetized; d) many potential investors in the recommended IWMP RF will expect and likely have as a condition of investing in the RF, that in return for the additionality their investment brings, the parties to the investment transactions (including the IWMP investment owner as well as Government and SNV and any other sponsors of the IWMP) that the ownership of the carbon/GHG credits in whole or in part (depending on the transaction particulars and contributors to additionality) be vested with the RF investors to sell or otherwise use as they judge relevant to their corporate mission.

It is S<sup>3</sup>IDF's judgment that if the Nepal Government wants to attract “non conventional” investors in the IWMP RF it will have to be willing to acknowledge the source of the additionality and that typical investor funds expect to share in the carbon/GHG credits. It is recommended that the Nepal Government examine the carbon matter explicitly in this context and devise an equitable approach to sharing carbon/GHG credits.

## **C. A SUGGESTED APPROACH TO APPLYING THE S<sup>3</sup>IDF SMB MODEL IN THE IWMP AND BUILDING A PILOT PORTFOLIO**

Even though CRT is not able to operate a RF that is commercial in nature, the results of the Reconnaissance Study have led to a judgment that this constraint can be overcome and the potential for the transfer and application of the S<sup>3</sup>IDF's SMB model to Nepal is feasible. The positive position on such transfer is based on starting in the context of the IWMP. At the reconnaissance level of investigation, it is also possible to answer the "How? With whom? (local partners), and What type of initial projects?" and "What would a preliminary plan and budget include to begin effecting such transfer. Section C.1 below outlines the overall proposal for the transfer/application of S<sup>3</sup>IDF's SMB, presents answers to these aforementioned questions and notes critical assumptions underlying some aspects of the proposed approach. Section C.2 presents some indicative transactions/activities that would be undertaken in the proposed Initiative.

### C.1 Overall Approach, The How, With Whom and Other Important Issues and Critical Assumptions

The overall approach is to implement an Initiative to transfer/apply S<sup>3</sup>IDF's SMB model through a collaboration between S<sup>3</sup>IDF and CRT in the context of the IWMP and CRT's important role in the management and implementation of the IWMP (as noted previously). The Initiative will be implemented in a phased manner. The Initiative proposes the first step towards mainstreaming financing for the IWMP as emphasized below and integral to the discussion in Section B above and in particular the recommendations presented in Subsection B.3.

#### Usefulness of Further Detailed Investigations, But Starting Initial Phase

It would be very helpful to have external support from SARI/E or another source to complete more detailed investigations to develop the Initiative. This support would cover:

- a) An alternative to overcome the constraint that CRT can not operate a RF that is commercial in nature; this may include examining multiple alternatives with possible Third Parties. This could include more explicit and direct collaboration with one or more possible bank partners or others noted below.
- b) Assuming an appropriate solution emerges from a) for a commercial Third Party operation of RF in the Initiative (short of what is recommended above in Section B.3 as part of the mainstreaming of financing in the further IWMP), and if feasible, the subsequent investigation would include funds for pilot deals under an Initiative commercial RF.
- c) Personnel exchanges between CRT and S<sup>3</sup>IDF India to facilitate know-how transfer.
- d) Further investigations of facilitating initial pilot transactions especially electrification transactions, including selected survey and analysis.
- e) Approaches to support and structure (for risk migration) the introduction of "new" add-on technologies for LS IWM investments.
- f) Examination of select other development programs and initiatives that could be high-priority partners due to the synergies such as the potential of their incorporating "bankable" LS IWM investments in their activities.
- g) Examination of new partnerships or collaborations outside the context of the IWMP, identified in the Reconnaissance study as candidates for utilization of select aspects of S<sup>3</sup>IDF's SMB<sup>15</sup>.
- h) Additional consideration of how the Initiative's Facility presented below could evolve to a more formal entity with a structure that would enable the acceptance of future support from local and international financiers.
- i) Examination of the feasibility to transfer some/all the IWM technology (including various "add-on" technologies for LSIWM schemes and other technologies examined in this Reconnaissance study) to India in the context of what S<sup>3</sup>IDF and some its partners are doing.<sup>16</sup> The particular transfer area would be the Western Ghats in Karnataka and some of the northern Indian hill areas where its partners are working.

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<sup>15</sup> Two such candidates are RETSC (mentioned in Section B.2) and another is ANSAB (Asia Network for Sustainable Agriculture and Bioresources)

<sup>16</sup> An aspect of S<sup>3</sup>IDF's activities is such technology transfer. S<sup>3</sup>IDF works with its partners to build supply chains so that poor households and communities can access cost-effective technologies to provide the infrastructure services they require in a

j) Dialogue with select philanthropic and/or “green” funding sources whose programs make them logical candidates to consider support of an appropriate RF or other aspects of fully integrating S<sup>3</sup>IDF’s SMB into the IWMP and/or its application to other RET and sustainable development related small-scale pro-poor investments.

### Starting an Initial Initiative Phase

Despite the constraints of CRT’s inability to run a RF on commercial principles, S<sup>3</sup>IDF and CRT have agreed, based on the results of this study that there would be an initial phase of an Initiative implementation with the following aims: i) at a minimum, increasing the understanding among partners and stakeholders of how the LS IWM investment financing constraints can be overcome by employing the S<sup>3</sup>IDF’s SMB; and ii) perhaps producing some IWMP investment transactions utilizing aspects of S<sup>3</sup>IDF’s SMB so that the know-how transfer and learning by CRT and other local partners (see below) can learn by doing.

This initial phase will begin as soon as is administratively feasible after S<sup>3</sup>IDF and CRT have signed an MoU that will be based in large part on the Reconnaissance Study and discussions that have taken place during the study. In accordance with this S<sup>3</sup>IDF will provide know-how, some operations support and dependent on various evolving factors, subsequent support to the Initiative.

During this initial phase, S<sup>3</sup>IDF in agreement with CRT will seek additional support from external sources including as appropriate, integrating the Initiative into S<sup>3</sup>IDF’s fundraising activities targeting international philanthropies. As noted below, subsequent Initiative phases will be much dependent on what happens with regard to the future of the IWMP and a solution to the need for operations of the RF on commercial principles.

Figure 3 below presents the schematic of the proposed Initiative which would be a collaboration between S<sup>3</sup>IDF and CRT and a possible Third Party whose role could likely be limited to operation of the Revolving Fund. Figure 3 shows the collaboration’s Facility and its relationship to the IWMP and the various players and stakeholders. For this transfer of S<sup>3</sup>IDF’s SMB model, CRT would be the key operational partner and will have responsibility for everyday operation of the Facility. If (or when) a Third Party becomes involved to operate the proposed RF in a commercial manner, it too would be an important operational partner.

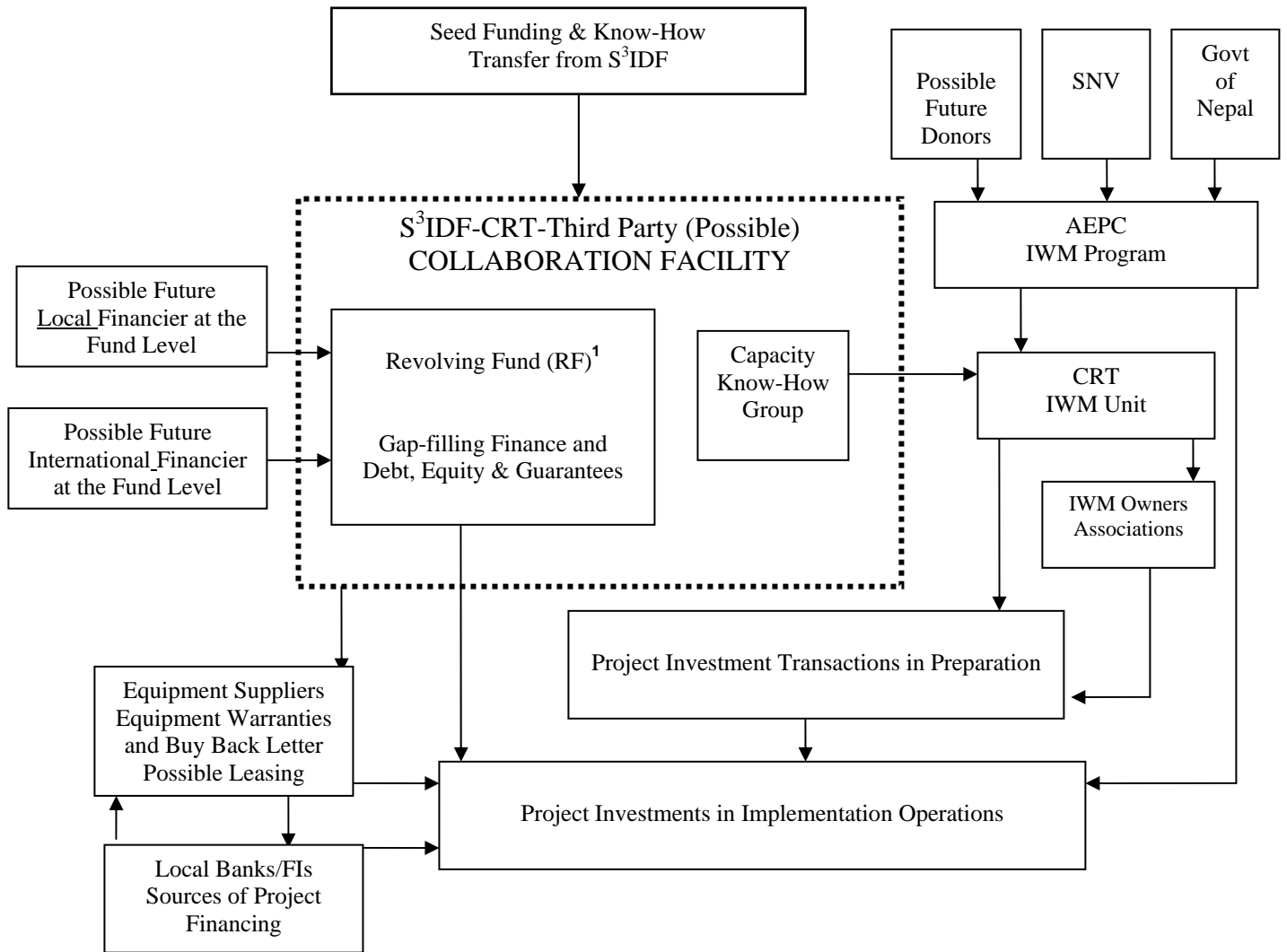
Given the major roles that AEPC and SNV play in the IWMP funding and/or management, it would be most preferable if they are partners in agreeing to and supporting the proposed Initiative. Moreover as SNV and its management and advisers are engaged in examining how to deal with the IWMP investment financing challenges discussed earlier (Section B) it is assumed that SNV will be active in providing its advice as they deem appropriate and agreed upon by CRT and S<sup>3</sup>IDF’s direct participation in the Initiative. (More in points below.)

1. S<sup>3</sup>IDF will provide know-how transfer to a S<sup>3</sup>IDF-CRT Collaboration Facility whose everyday management and operation will initially be the responsibility of CRT. S<sup>3</sup>IDF-US/India will provide intellectual property (IP) of the SMB with no fee and commits to capacity building by transferring know-how, including sample documentation, and subject to funding constraints, will support possible exchange visits with/from the team in India. As appropriate S<sup>3</sup>IDF-US/India will also provide project design and review for pilot investments.
2. CRT/N and other partners will recognize the IP of S<sup>3</sup>IDF’s SMB both in the initial Initiative phase and in future phases. It will also acknowledge S<sup>3</sup>IDF in any of its writings/descriptions of its own post Initiative efforts that incorporate the SMB model and it will encourage other Initiative partners to also do so.

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financially sustainable fashion. Because the IWPM does such supply chain development this aspect of the S<sup>3</sup>IDF approach was not emphasized in this Reconnaissance Study.

**Figure 3: Schematic of Proposed S<sup>3</sup>IDF-CRT (and possible Third Party) Collaboration Facility to Transfer/Apply S<sup>3</sup>IDF's Social Merchant Bank Model in IWM Programs**



<sup>1</sup>As the initiative evolves the RF may have to operate in conjunction with the facility but legally distinct. This will be the case especially if operated by a Third party that can operate commercially and receive funding from various supporters, some of whom may expect commercial returns.

3. The Initiative will focus its activities (see Section C.2) to overcome the financing challenges in two of the existing districts of the IWMP, Kavre and Sindupalchok
4. Noting point #3, it is expected that the GOAs/Service Centers of both Kavre and Sindupalchok will be important local partners in the activities of the Initiative (more in Section C.2).
5. The Initiative will focus, in particular, to overcome the challenges facilitating financing for all types of LS IWM investments because as discussed above, it is the LS investments that yield the greater development impact and which are facing greater financing constraints.
6. With regard to Banks/FIs, based on reconnaissance investigations only two are strong candidates for active partnering, Clean Energy Development Bank and Bindhavasini Savings Co-operative Society Ltd. (BISCOL). However, it is anticipated that during the Initiative other banks with some presence in the Kavre and Sindupalchok districts will also become involved.
7. It is planned that the first phase of the Initiative and its activities described below in Section C.2 (and others that grow out of these) may take six months to a year or more to implement. By then the situation should be clear with regard to the critical assumptions immediately below.
8. Given the characteristics of the communities served by the IWMP that may be supported by this Initiative, it is assumed that investments meet S<sup>3</sup>IDF's pro-poor criteria to receive support.
9. It is assumed that the IWMP will continue to a next phase into 2009 and beyond and that CRT's role in the IWMP will continue unabated. Should this not happen whatever progress has been made on the implementation of the proposed Initiative and its future will have to be revisited.
10. It is further assumed that as recommended in Section B.3 above, both AEPC and SNV agree that addressing the financing challenges will become a "mainstream" activity of CRT's involvement in the subsequent IWMP phases and that in such, CRT management and staff efforts in the collaboration with S<sup>3</sup>IDF will be considered as part of this mainstreaming and the staff and management engaged in this facilitation of financing will be covered by the IWMP.

#### The S<sup>3</sup>IDF-CRT Collaboration Facility

11. To begin, the S<sup>3</sup>IDF-CRT Collaboration Facility will merely be an administrative entity that would operate as a distinct cost/profit center in order to monitor its financial sustainability and seek means to maximize sustainability subject to the SMB mission. As appropriate CRT will keep separate accounts for the Facility and report on the Facility's operation in accordance with an S<sup>3</sup>IDF-CRT MoU .
12. It is envisioned that the Facility could evolve into an entity with more formal structure and legal status such that possible local sources of support interested just in the financing of IWM investments may participate.
13. For example, subject to further investigations it could be feasible for local banks to participate in the Initiative's RF and get credit towards its requisite priority sector lending requirements. Similarly as discussed in Section B.3, some international quasi-commercial, development and/or philanthropic sources attracted by the mix of clean energy and pro-poor characteristics of IWM investments supported by the Facility, may be sources for the RF's capitalization and others may be willing to provide soft/grant support for the capacity and know-how group and the functions it undertakes.

14. It is assumed that at some point during the Initiative's implementation, the Facility's RF will be capitalized to support at least a limited number of pilot transactions and the matter of running the RF in a commercial fashion will be addressed with an appropriate administrative mechanism. The Facility will provide financing from its RF and know-how to implement the initial Initiative activities outlined in Section C.2 and it will work with these partners to develop there capabilities to implement these activities.
  - a) If, for example, the target was a pilot portfolio of 50 LS IWP investments, this could require a capitalization of about \$23 thousand.<sup>17</sup>
  - b) In the absence of an immediate administrative mechanism to operate the Facility's RF on commercial terms, CRT has indicated (as part its commitment for CRT and other possible partners to 'learn by doing' see above) that it will ask its Board to provide the equivalent of "non-commercial" RF support to facilitate some pilot transactions, although this is likely to be a very small number of pilots.
15. During any initial Initiative period, assuming that there are international personnel involved for know-how transfer, the combination of local and international personnel costs are likely to exceed the costs of capitalizing the RF. However, as the number of LS IWM investments in the RF portfolio grows, the costs to capitalize the RF should dominate the budget for any such initiative.
16. Taking note of the above and in particular points 14.b, and 15, S<sup>3</sup>IDF will provide some start-up in-kind seed financing to begin the preliminary initiative. This will be in the form of: i) know-how transfer to CRT (which has already begun), including provision of sample project documentation (also already begun); and, ii) advice, reviews and suggestions on pilot deal structuring provided by S<sup>3</sup>IDF staff and management in both the US and India. In addition, from its reserves, S<sup>3</sup>IDF will provide a small grant to help defray some additional senior CRT staff costs during a learning period. The particulars of these matters will be agreed upon in an S<sup>3</sup>IDF-CRT MoU.
17. Subsequently and contingent on both S<sup>3</sup>IDF's fundraising successes and a mechanism to operate the Facility's RF on commercial terms, S<sup>3</sup>IDF will provide some start-up capital for the RF to be provided on a zero/low interest basis with contingent grant clauses so that CRT or the possible Third Party involved will not be at risk. This to allow some additional pilot transactions to happen prior to financing being mainstreamed under the umbrella of the next phase of the IWMP (see recommendations Section B.3).
18. It warrants underscoring that as soon as an appropriate administrative mechanism can be put in place, including arrangements with a possible Third Party, the Facility's RF will be operated on quasi-commercial terms to set examples that may at some point be attractive to other funders (local and international as recommended in Section B.3) and the interest earned in the initial phase can be used to offset some of the soft costs of the capacity and know-how groups working to develop and supervise activities such as this one. Bearing these dimensions in mind, a starting point for consideration should be 14% yield for RF monies

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<sup>17</sup> See Table 2 above; the after subsidy amounts to be financed range from NRs 9-134,000, with the range for more common rice hulling and oil expelling investments being NRs 27-81,000. Assume then that the average after subsidy about to be financed is NRs 60,000 and that the combination of "gap filling" finance (bridge finance, secondary debt for entrepreneur equity contribution, partial guarantees etc) amount to 50 percent of the total after subsidy investment. Then a pilot portfolio of 50 transactions requires RF capitalization of NRs 1.5 million or about \$23 thousand.

deployed in or in support of IWM investments. (Recall, these terms are used in indicative examples in Section B.2 above).

19. The principle criteria for the Collaboration Facility and the RF is to undertake financial transactions that demonstrate how one or more of the financing challenges outlined in Section B may be overcome and IWM investments, especially LS IWM can access financing from Nepal's Bank/FIs. In all instances in which a proposed IWM investment receives support as a result of the activities outlined below in Section C.2, financial viability is an absolute criterion. Depending on particular activities and the partner entities involved, it is anticipated that the Facility's RF may provide debt financing in conjunction with a non-bank/FI partner to demonstrate a way to overcome one or more financing challenges as is the case in the proposed partnership with the Karve GOA. In other instances the Facility may help to make financially viable but non-bankable IWM projects bankable in partnership with a particular bank/FI through the provision from the RF of one or another "gap filling" financing (debt, equity, partial guarantees etc.)
20. The Initiative's activities during the initial phase are outlined below in Section C.2. Subject to Initiative financial and human resource constraints and of course co-operation of partners, CRT will be responsible for implementing these activities with S<sup>3</sup>IDF playing an advisory and review role.

## C.2 Initiative's Initial Phase Financing Facilitation and Related Activities

During the initial phase of the Initiative attempts will be made to undertake a series of activities and those not accomplished will be discussed at length with potential partners. And subsequently, when constraining matters such as the capitalization of the Facility's RF and a mechanism to operate it in a commercial manner are resolved, the activities below may be taken up and/or continued.

All of the activities below are aimed at ultimately overcoming the many challenges to bringing Bank/FI financing to IWM investments (outlined in Section B). The proposed activities are an interrelated mix that are singularly or jointly aimed at affecting: IWM investments, building capabilities of GOAs to facilitate and/or participate in the financing of such investments, facilitating possible participation by particular Bank/FIs, increase the information available with regard to Bank/FIs in the target area and better understand matters pertinent to specific types of IWM investments. The following paragraphs briefly outline the concepts of seven complementary activities that warrant being undertaken.

### C.2.1 Activity I: Demonstrating Agent Cum Co-financer Role for Karve GOA or an Affiliate

The Karve GOA (Gatta Owners Association) is to a great extent the most mature and well developed in terms of capabilities and it is interested in expanding its role to serve its members and in bringing additional IWM investments to fruition. As the GOA is also the Karve Service Center, it is already performing the multi-dimensional technical pre-investment functions to determine IWM technical feasibility and costs, providing advice on financial viability and then implementing projects when the IWM investor decides to go forward and has arranged the necessary financing.

One role that has been discussed by the Karve GOA, CRT and the SNV Microfinance Advisor<sup>18</sup> is for the GOA to take on an “Bank/FI agent” role in order to overcome the footprint challenge of banks not having a presence close to the proposed IWM investment site but where the bank is interested, at least in principle in providing financing for such investments. Although this discussion focused on the consideration of the Kathmandu based Clean Energy Development Bank Ltd, (CEDB) to participate; in principle the “agent” role could be applicable to other Banks/FIs as well. And while such agent roles are utilized by banks in various situations in India and elsewhere,<sup>19</sup> this role has not been tested/demonstrated in the context of the IWMP and the LS IWM’s financing challenges.

GOA is interested in taking on the responsibilities of such an agent role providing that the agent’s fees costs are covered and it earns at least some margin above costs. In order for the costs of the agent role to be manageable, Karve GOA sees the key issue being time and transport costs for interfacing in both pre-investment and post investment loan payment collection phase. In the GOA’s view this will require a minimum number of IWM investments for which they are performing the agent role and that this “bundle” of investments be concentrated in a relatively small area of the Karve district. Given these conditions, when pressed (by the author) with regard to what would be the agent’s fees in terms of percentage of the financing provided they cited 5 percent.

The Karve GOA also has some reserves and it is willing to provide NR 1 Lakh<sup>20</sup> of these reserves to provide as financing for some member IWM investments in a manner in which it is also responsible for the agent role –acting both on behalf of its own funds and a greater amount of funds provided by an “external” source of funds. Moreover, when asked (by the author) Karve GOA indicated that they and/or its members had sufficient experience to assume the necessary roles (agent and co-financer). Moreover, they indicated a willingness to place their funds in a “first risk” position to achieve the leverage to bring additional financing from banks or other sources not “on the ground,” and also expressed the ability to cost-effectively perform many of the necessary pre and post investment functions.

Because of the critical importance of demonstrating/testing the “agent” role model and because of the GOAs willingness to put their financing in a “first loss” position in a *Joint Fund*, it is suggested that a test/demonstration of this concept be developed as soon as feasible without waiting to bring in a Bank/FI partner. The partnership would thus be between the Karve GOA and the S<sup>3</sup>IDF-CRT Collaboration Facility, utilizing monies from the Facility’s RF as the source of external funds. Even while this test/demonstration is being developed and implemented an additional partner such as CEDB might join. Making this concept operational will first require a detailed MoU to be negotiated between the Facility and the Karve GOA. Some of the more important issues that need to be agreed upon include:

i. Clarification of whether in fact the GOA under its existing legal structure, is allowed to do such lending or as has been suggested, it (or a subset of its members) may need to create an affiliate organization that can do such lending and how this might be structured so that the Karve GOA’s reserves can be used in such a “*Joint Fund*.”<sup>21</sup>

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<sup>18</sup> Discussions with Ramesh Kumar SNV Microfinance Advisor and review of document provided.

<sup>19</sup> S<sup>3</sup>IDF has just put in place an analogous bank correspondent relationship with a major Indian Bank.

<sup>20</sup> 1 Lakh = 100,000 Rupees

<sup>21</sup> The agent role is clearly allowable under the GOA existing structure as such a role is an extension of the role it plays for the IWMP. Unfortunately at the reconnaissance level of this study it was not feasible to

ii. The amount of leverage the GOA's funds should achieve. It is suggested that the amount from the Facility's RF's be in the 4-5 Lakh range. Taking note of issues presented in iii. and iv. the range of financing from the *Joint Fund* per LS IWM investment is likely to be 30 to 100,000 NRs assuming that even some fraction of the typical owners' 20% equity will need to be financed. But with the likely most common scheme, rice hulling, at the lower end of this range. Using an average unit financing requirement of NRs 50,000, a *Joint Fund* of 5 lakhs could provide debt finance for 10 LS investments.

iii. Whether both SS and LS IWM investments should be supported. It is recommended that only LS investments be supported.

iv. Whether any type of LS investment is to be supported. It is recommended that until Activity VI (Section C.2.6) is completed, electrification investments be precluded but battery charging equipment be allowed as one of the end uses.

v. Whether the agent fee be fixed at 5% or within an agreed upon small range. While it should not be the Initiative's position to have Karve GOA taking too much risk on the fee, the reality is that they will have great control over the choice of investments and location and thus ability to manage the costs of performing their agent costs. Moreover, by undertaking this partnership they have the possibility of dramatically increasing the yield on the fraction of their reserves placed in the *Joint Fund*. Also this issue is not independent of the various dimensions of issue vi. below.

vi. What should the interest rate be charged the LS investor and what should the interest yield be provided the Facility's fund? There are a number of dimensions to be considered in finalizing these rates. First, is the influence of the alternative of the informal but professional money lending rate. In general these will be at least 22% and often more. Second, is the local formal FI lending rate –even though they are not lending to IWM projects. Third, is what rate the *Joint Fund* earns and whether this should differ for the Karve GOA funds and that of the Facility's RF. And in considering the later it must be kept in mind that the Facility's RF will be operated on quasi-commercial terms (see Section C.1 Point 18). Taking these dimensions in mind a starting point for consideration should be 14% for the *Joint Fund* with this being the same for both the Facility's RF and GOA. Adding a 5% agent fee would imply an effective cost of funds at 19 percent.<sup>22</sup>

### C.2.2 Activity II: Examining and Perhaps Demonstrating the Leasing Option

Leasing is a common mechanism used by often undercapitalized MSMEs throughout the world to avail themselves of all types of equipment. And lease towards purchase financing mechanisms have been used to facilitate market penetration of RETs. This is the case with photovoltaics (PVs) in a number of countries. Worldwide among the multitude of equipment categories there is a mix of experience falling into two broad categories: leasing by equipment suppliers and leasing by independent companies that specialize in this form of financing. The latter are known to exist in Nepal. The constraints of this reconnaissance study did allow investigation of the former.

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determine clearly whether such an affiliate might need to be created and if so what legal for this affiliate might have to be.

<sup>22</sup> These are the terms used in the indicative examples in Section B.1 that demonstrate how some of the financing challenges can be overcome using the "gap filling" financing approach of the S<sup>3</sup>IDF SMB approach.

The possibility of arranging a lease finance approach needs to be examined especially for one or more of the most common equipment types involved in LS investments, e.g. rice hulling and oil expelling equipment. If the supplier has a strong balance sheet they might be in a position to offer such financing perhaps in an analogy to the case outlined above where the GOA acts as “agent”. The suppliers now engaged in LS IWM equipment are unlikely to have such strong balance sheets, but perhaps an arrangement could be crafted between the Facility, the equipment supplier and other parties including financing companies. If this examination looks promising a set of demonstration lease financing transactions should be developed and arranged with the logical collaboration of one or both of the candidate partners GOA (Karve and Sindupalchok).

### C.2.3 Activity III: Working with Bindhavasini Savings Co-operative Society Ltd. (BISCOL) to Develop a Pipeline of IWM Investments

Based on discussions with the Chairman of BISCOL during the Reconnaissance Study it appears they are open to financing IWM investments. It is suggested that the Facility open a dialogue with BISCOL with the aim to build a pipeline of possible LS IWM investments that they may eventually finance with the notion of employing the S<sup>3</sup>IDF SMB model. The discussion below first suggests why this dialogue is warranted, and then outlines the first steps to build such a portfolio.

The dialogue is warranted because BISCOL has two loan instruments that might be relevant. One is the no collateral “group guarantee” loan where the maximum amount is NRs 50,000, The other is a collateral loan whose maximum (NRs 25 lakh) is such that it is well beyond the needs of any IWM investment. While the former is potentially applicable to some LS IWM loan requirements (e.g. rice hulling), the general case is it is BISCOL’s collateral loan that is most pertinent to this discussion.

For this discussion, it is noted that to qualify for a BISCOL loan, the entrepreneur must be a member of BISCOL and presumably in good standing in terms of past credit history. And assume this is the case or that if the entrepreneur is located in the areas in which BISCOL operates, then he/she can become a member of BISCOL if he/she is not already.

Turning to the collateral loan option, it appears that in two important aspects of BISCOL’s BAU practice is more “friendly” especially with regard to this major collateral constraint facing ghatta entrepreneurs who are interested in undertaking LS IWM investments. The first aspect is that unlike most Banks/FIs BISCOL will accept the traditional pani-ghatta site as collateral even if it there is no title, however the ghatta must be registered with the appropriate authorities as a cottage industry. Second, again unlike many banks/FIs, BISCOL will recognize the equipment that is part of a LS IWM investment. These two practices may solve much if not all of the collateral requirements of the ghatta entrepreneur.

Of course under BISCOL’s norms, the entrepreneur must also be able to provide 20% equity contribution for the investment and this too may be more than the entrepreneur can provide. Keeping this 20% equity requirement in mind, even if the collateral evaluation given by BISCOL to these two components (site and equipment) do not add up to its required 80 percent loan coverage, for financially viable LS IWM investments this shortfall could be addressed using one or more of the “gap” filling financing techniques that are regularly part of the S<sup>3</sup>IDF SMB approach. This would entail packaging/facilitating the BISCOL loan with a partial risk guarantee

to BISCOL to cover the “collateral gap” and a separate financing arrangement with the entrepreneur to cover the “equity” gap.<sup>23</sup>

It is suggested then that one of the Initiative’s initial activities would be to work with the Karve GOA to develop a pipeline of possible LS IWM investments in the area in which BISCOL operates. The first step here would be to develop a “long list” of possible IWM investment sites in the BISCOL operations area. Some version of such a “long list” could come from: i) the Karve GOA information base of members waiting to access the IWMP subsidy and their location to determine if they are located within the BISCOL area, and ii) whatever similar information they may have about non-member ghatta owners who may be planning to join the GOA (and put themselves in the queue for the IWMP subsidy) and their location. For the existing BISCOL members the results of the survey (Section C.2.5 Activity V below) should reveal this and a shorter list of potential candidates could be prioritized for example, based on “proximity” to the nearest BISCOL location and a subset chosen for further pre-investment analysis very much like what is required under Activity I outlined in Section C.2.1.

#### C.2.4 Activity IV: Working with CEDB to Consider CEDB IWM Pipeline Loans to Be Covered By Deposit and Credit Guarantee Corporation

CEDB’s mission and current financing activities provide some experience and characteristics that eliminate some of the financing challenges noted in Section B. CEDB is familiar with small-hydro projects and even if not at the very small scale of IWM projects, it has relevant transaction experience both in RET and now in wholesale financing of MFIs. In addition, it has a commitment to build a significant rural financing portfolio and sees energy as a key component.

CEDB’s very limited footprint and lack of presence in rural areas particularly in the target areas of Kavre and Sindupalchok is clearly a drawback and means there must be some mechanism to overcome this constraint. As mentioned in Subsection C.2.1, CEDB has been involved in the discussion of a possible “Bank/FI agent” role which would be a potential solution to the footprint constraint of financing IWM and especially LS IWM investments. For CEDB, the footprint constraint could be overcome with a variation of what is proposed in Activity I whereby Karve GOA acts as an agent for CEDB.

The CEDB headquarters in Kathmandu offers a particular comparative advantage from the perspective of financing IWM investments and other select types of financing. Its location, combined with its aforementioned interests, balance sheet and recent financial and annual reports provide it with the comparative advantage of being able to more easily undertake the meetings and discussions to establish an agreement with the Deposit and Credit Guarantee Corporation (DCGC).<sup>24</sup> Under such an agreement, CEDB would be able to access 75% guarantee for its loan exposure to IWM loans, should it chose to make them. CEDB is interested in whether it can achieve greater “cover” (credit conditioning), for example, by getting “buy back” letters from equipment suppliers for LS IWM investments as it has apparently been able to do in other RET loan transactions (e.g. PV system components). A “buy back” letter is a formal agreement with

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<sup>23</sup> As part of the know-how transfer, an example of such an S<sup>3</sup>IDF set of interlocked gap filling transaction arrangement has been provided to CRT along with all the transaction documentation.

<sup>24</sup> As this report is being drafted, according to CEDB these discussions are close to reaching completion with an agreement between CEDB and DCGC.

the bank whereby the supplier agrees to “buy back” equipment if the project fails.<sup>25</sup> S<sup>3</sup>IDF routinely requires such letters from suppliers in investments it fosters in India.

With the aim of building a CEDB LS IWM loan pipeline, it is suggested that the Facility undertake various actions, some of which should prove useful for future LS IWM loan pipeline building by other Bank/FIs. It is suggested that the Facility under take the following tasks:

- 1.) Maintain an intermittent but regular dialogue with CEDB with regards to their: a) potential agreement with DCGC; b) progress in Activity I above; and c) progress on Task 2 below.
- 2.) Initiate dialogues with LS equipment suppliers serving the Kavre and Sindupalchok districts to gauge willingness to provide buy-back letters. For those open to the possibility, develop a draft letter they can be agreed upon and considered. Under the IWMP norms such suppliers could be given preferential position in procurement if this facilitates access to bank financing. As a complement to this effort begin some investigation of the secondary/re-sale market of the most common LS equipment (e.g. rice hullers). This task could in part be combined with Activity III.
- 3.) Depending on the progress in Activity I (Section C.2.1) and feedback from Task 1 above, examine possible steps to create a pipeline of CEDB LS loans in Karve that would entail some or all of the following components: a) the Karve GOA takes on a similar “agent role” for CEDB by developing a second “bundle” of LS investments, and/or CEDB joins Karve GOA and the Facility’s RF for an *Expanded Joint Fund* to finance a larger and/or second bundle of LS IWM investments; b) the Facility’s RF provides a “complementary” small fund linked to the *Expanded Joint Fund* to finance possible shortfalls in the CEDB’s requisite equity contribution to the project.<sup>26</sup>

#### C.2.5 Activity V: Learning about IWM Banking Relationships and Registration

An immediate term outcome of the Reconnaissance Study dialogue with GOAs and others was a positive response to suggestions regarding the potential usefulness of having information about the banking relationships of their members and also whether their enterprises are registered with appropriate authorities. The usefulness of this information in the context of Activity III was already noted. But in terms of registration it may be useful to have this dialogue with other local FIs who have BAU policies close to those of BISCOL.

The information with regard to Bank/FI relationships may offer opportunities to influence the behavior of these institutions that currently include many GOA members and are in a position to finance IWM investments but are not doing so or only in a few isolated cases. The GOA and/or a group of the members, possibly with involvement of the Facility Capacity and Know-how group could start this dialogue with the banks, emphasizing their member relationships and urging them to become pro-active in financing IWM and indicating the Facility’s willingness to provide “gap filling” finance. If the response is negative various actions should be considered. Members who can change their Bank/FIs without undue inconvenience should consider doing so. Communications with regards to the Bank/FI’s response should be reported to the Central bank

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<sup>25</sup> Such letters have various caveats related to equipment not being damaged etc. Generally such letters include clauses specifying the “buy back” price as a percentage of the original sales price and where this buy back price is a function of years of use. Commonly the buy back price is lower than the prevailing secondary market for such equipment if it exists, but it shifts the transaction burden to the supplier in the case of project failure.

<sup>26</sup> Such shortfalls could be financed with secondary debt to be paid off “early” in the investment life along the lines of an analogous project example from India that S<sup>3</sup>IDF has provided CRT and which involves a procedure to cover such shortfall in the entrepreneur’s inability to provide the necessary equity contribution required by the bank.

noting that the banks have priority/deprived sector lending requirements and that IWM investments qualify in this category. Such actions are unlikely to effect significant change in the behavior of these Bank/FIs but it will alert them to this activist community to which they may become more receptive over time.

Both the Karve and Sindupalchok GOAs agreed to undertake a survey of their members on these issues and to do so in conjunction with their annual meeting. In the Karve GOA this is scheduled to take place in September. As follow-up to the dialogue with the GOAs on this matter, a preliminary list of questions was prepared. A sample survey, attached as Annex I was to be provided by CRT to the two GOAs for their use with modification as they deem appropriate.

#### C.2.6 Activity VI: Understanding ATP & WTP for Electrification and Electricity Services

LS IWM mini-grid electrification investments are the most costly of the various LS IWM investments but can produce significant social and economic impacts in their communities and even more so when other LS based services (e.g. oil expelling) are available, either from the same investment site or one in the same community. Because of these very positive impacts such investments should be a priority. However, even taking into account both the IWMP LS subsidy and the electrification subsidy from another program, the financial viability of LS IWM investments will be dependent on whether there are additional subsidies available from the Village Development Committee (VDC) and District Development Committee (DDC), and the communities' ability-to-pay (ATP) and willingness-to-pay (WTP) in terms of both the contribution to the electrification investment costs and the tariff for the electricity.

There appear to be schemes in operations that have had no community contribution to investment costs, and others with such contributions.<sup>27</sup> With respect to tariffs, given the typical technical nature of the schemes (no meters, connections with load limiters), the common practice is an end-use device based tariff (light, radio, TV). But based on very limited information gathered in this study there seems to be considerable variation on such tariffs and tariff setting. There are tariffs with low charge per device (30 NRs/month per light bulb); often not fully reflective of relative device voltage (radio versus TV). And there are reported cases where tariffs are made based on a community's WTP reflective of avoiding the costs of kerosene for lighting. In these cases the tariffs are higher.

For undertaking its work the Facility needs a good understanding of both the investment contribution and tariff issues in general and very importantly on an investment specific basis for those it may support. The necessary investment specific pre-investment will be informed by the wide existing experience of the GOAs.

It is suggested that the Collaborative Facility:

- i) Undertake limited compilation of existing experience and;

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<sup>27</sup> There are also schemes where the investment costs have been underwritten in whole or in part by contributions from various local or international charitable sources and others whose investment costs have been paid in whole or part by other development programs in which these electrification schemes are integrated. Such schemes, while very interesting in terms of their impacts, are not very relevant to the issues related to financial viability and bankability except from the perspective of asking the question "how little of the charitable or development program subsidy" would be needed to make the scheme viable and hence whether this subsidy might better have been spread over multiple such schemes.

ii) In the course of other activities, if electrification schemes are being considered, require that a WTP study/survey be done as part of the per-investment analysis for both community contribution and tariff setting purposes.

Regarding (i), It will be important to gain a good understanding of the various existing cases with respect to community investment contributions and tariffs employed. For electrification schemes supported by the IWMP such information should be available. For cases that are private, supported by a development program, or located in districts covered by the GOAs, information can be requested from these entities including written notes if available. For cases outside the IWMP area, information requests should be made by CRT staff when they know the sponsoring entity. For site-specific pre-investment WTP studies/surveys, a simple protocol implemented by the GOA/Service Center staff should be prepared, and used and refined as various investments are considered.

### C.2.7 Activity VII: Exploring Budget Intercepts to Accelerate Electrification Schemes

As noted above LS IWM mini-grid electrification investments can produce significant social and economic impacts on the communities, but are the most costly of the various LS IWM investments. For these reasons many LS electrification schemes have been priorities for VDC/DDC's and they have contributed to the investment cost for a number of similar schemes. But in the current practice, these VDC/DDC contributions are only being made from current annual development budget allocations that come from the Ministry of Local Development. If various VDC/DDCs have an interest in accelerating the rate at which such schemes are developed, and they are willing to dedicate all or significant parts of their future (but near term) budget allocations from the Ministry to this, they can use a mechanism termed a *Budget Intercept* to achieve this.

The mechanism requires a binding agreement between the Ministry, the DDC and a Bank/FI. Under such an *Intercept* agreement the DDC allows all or some prescribed amounts of its annual allocation/transfer from the Ministry to be intercepted and deposited directly in the bank to pay off loans and interest until the loan is paid off. The Ministry agrees to pay the prescribed amounts to the Bank until the loan is paid off, and the Bank that is party to the *Intercept Agreement* accepts the *Agreement* and the associated financial flows as security for the loans, and a mechanism whereby the loan and interest due is paid by the "intercept" on annual transfers.

The loan monies for the bank can be used as the DDC contribution to an electrification scheme, or a bundle of electrification schemes depending on the funding amounts covered by the agreement. The interest costs charged by the bank could be deducted from the amounts to be contributed to the electrification schemes effectively reducing the DDC/VDC contribution. Such a mechanism could accelerate the time in which the scheme is implemented.

The bank participating in such a mechanism need not be the same bank providing the other financing to a specific LS IWM investment scheme (or schemes depending on the amounts of funding the loan provides). However, if the bank plays both roles it is assured that it can count such lending against its requisite priority/deprived sector lending. Whether such "intercept" lending, even if dedicated to such investments, qualifies as priority/deprived sector lending will need to be determined.

It is suggested that the Facility discuss the possibility of using such a budget intercept agreement with DDC officials and as appropriate the VDC officials starting with Karve and Sindupalchok.

If there is an interest, a dialogue could begin with the Ministry and a few select banks to determine if the first such *Intercept Agreement* could be put in place. If so, the preparation and documentation of such an agreement should be prepared to provide a “template” for future agreements. If there is strong interest by DDCs but getting a bank or banks on board is going to take undue amounts of time, consideration could be made to use the Facility’s RF to effect the first such agreement, depending on Facility RF resources.

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## ANNEX I

### Questionnaire for Members of the Ghatta Owners Association (GOA)

Name of Ghatta Owner: .....

Address: .....

1. Do you have any Bank or MFI or SACCO in your village?  
Yes ( ) No ( )
2. If yes, name of Bank/MFI/SACCO is .....
3. Do you have any relationship with banks/MFIs/SACCO?  
Yes ( ) No ( )
4. If yes, which type of relationship is?  
Savings ( ) Borrow ( ) Remittance ( )
5. In case of borrowing relationship,  
Borrowed amount: Rs.....  
Interest rate: .....%  
Relationship: Good ( ) Satisfactory ( ) Not satisfactory ( )
6. Have you taken any loan for ghatta business?  
Yes ( ) No ( )
7. If yes, the borrowed amount is Rest ..... @ ..... %
8. The status of land where ghatta is installed:  
Titled ( ) Untitled ( )
9. Do you have any registration of Ghatta?  
Yes ( ) No ( )
10. If yes, the type of registration is:  
VDC ( ) DDC ( ) Cottage & small Industries ( )
11. Do you have any means of communication?  
Cell phone ( ) Land line ( ) CDMA phone ( ) No ( )
12. If yes the contact no is:

## ANNEX II

In the course of the Reconnaissance Study numerous meetings and presentations were held in and around Kathmandu and in the Karve District to explain S<sup>3</sup>IDF's Social Merchant Bank Model and its potential application in the context of the IWMP and to identify potential partners. Prior to the field work in Nepal a series of meetings were held in Manila with members of AEPC Nepal at the Asia Clean Energy Forum (of which the author was an invited speaker). In the course of the Nepal Reconnaissance Study the following presentations/group meetings were held:

1. For USAID and SARI/E there was a Kick-off meeting.
2. In Kavre, a finance workshop was organized with a number of Banks/FIs, Savings and Credit Cooperative Societies (SACCOS) and GOA Kavre members.
3. Also in Karve, a meeting was held with the Executive Committee of the Kavre GoA and some of the GOA members.
4. In Kathmandu a seminar meeting was held and attended by representatives of national level Banks/FIs in addition to donor and government agencies.
5. In Katmandu, in response to an invitation, a presentation meeting was held at CEDB. In this meeting and the meeting in Kavre (#3), presentations were also made by CRT.
6. For USAID and SARI/E there was an Exit/Debriefing meeting.

In addition to the six group meetings/presentations, a series of informal meetings were held; some of which were in direct follow-up to discussions in the group meetings. Below is a partial list of individuals (excluding CRT personnel) who attended presentations and workshops and also individuals with whom meetings were held who were not part of these meetings. The lists are partial as in a subset of meetings it was not possible to get a list of all those who attended. Such was the case with the presentation at CEDB and the Kick-off and Exit Debriefing meeting at USAID.

### A. S<sup>3</sup>IDF - Nepal Presentations/Meetings, Attendees List (Partial and Excluding USAID-SARI/E Meetings)

#### Kavre

Half Day Seminar in Karve to explain the purpose of the study and the proposed S<sup>3</sup>IDF-CRT collaboration to apply the SMB model in context of IWM [Improved Water Mill] program. Attendees included Banks/FIs with a presence in Kavre and/or Sindhupalchok, and some relevant transactional experience/focus (i.e. SME lending) and others (equipment suppliers, IWM association).

Mr. Ramesh Basnet	Loan Officer	Agriculture Development Bank
Mr. Prem Nidhi Gyawali	GM	Annapurna Development Bank
Mr. Manoj Kumar Nepali	Manager	Araniko Development Bank
Mr. Bharat Pd. Sharma	Chairman	Bindabasini SACCOS
Mr. Hari Prasad Ghimire	President	Chakreshwor Saving & Credit Cooperative
Mr. Ganesh Kumar Ranjit	Treasurer	Chandeswori SACCOS
Mr. Mesh Bahadur Basnet	Branch Manager	Chhimek Bikas Bank
Mr. Raj K. Thapa	Renewable Energy Expert	Clean Energy Development Bank

Mr. Ram Hari Shrestha	Treasurer	GOA Kavre
Mr. Man Bahadur Gole	President	GOA Kavre
Mr. Man Bahadur Gole	Chairman	GOA Kavre
Mr. Shiv Sharan Shrestha	Secretary	GOA Kavre
Ms. Pramila Pakhrin	Member	GOA Kavre
Mr. Rajendra KC	Member	GOA Kavre
Mr. Achyut Subedi	Office Bearer	GOA Kavre
Mr. Ram Sharan Giri	Co-coordinator	GOA Sindhupalchowk
Mr. Bir Bahadur Tamang	Chairman	GOA Sindhupalchowk
Mr. Shambhu Lal Shrestha	Chairperson	Kavre Palanchowk SACCOS
Mr. Shanta K. Shrestha	Asst. Manager	Nepal Bank Ltd.
Mr. Kumar Khatri	C. Officer	Professional Development Bank
Mr. Birendra Basi	Fifth Level Assistant	Rastriya Banijya Bank
Mr. Shyam Nakarmi	Proprietor	RD Iron
Mr. Ramesh k. Gautam	MF Advisor	SNV Nepal

### **Kathmandu**

Kumaripati, Lalitpur

Half Day Seminar on S<sup>3</sup>IDF's Merchant Bank Model (MBM) Reconnaissance Study: Towards Collaboration with Centre for Rural Technology, Nepal (CRT/N) and Pilot Portfolio of IWM Investments.

Dr. Govind Pokharel	Executive Director	AEPC
Mr. Samir Thapa	RESS Coordinator	AEPC
Mr. Kailash Rijal	Deputy Director	DEPROSE Nepal
Mr. Shanker Pandey	Head Expert	KFW
Dr. Binayak Bhadra	Professor	KU
Dr. Ramesh Maskey	Professor	KU
Mr. M.L. Chaudhary	Infra. Expert	PAF
Mr. Kiran Man Singh	National Program Manager	REDP
Mr. Pritha Bdr. Thapa	Sr. Officer	RMDC
Mr. Keshar B. Shreatha	CEO	SB Bank
Mr. Uttam Jha	OSID Advisor	SNV Nepal
Mr. R.K. Gautam	MF Advisor	SNV Nepal
Ms. Subarna Newar Rai	PMT Manager	SNV Nepal
Mr. Subodh Adhikari		USAID

### **Kavre GOA**

#### **Executive Committee Meeting**

Mr. Man Bahadu Gole	Chairman	Kavre GOA
Mr. Rup Bahadu Yanjan	Vice Chairman	Kavre GOA
Mr. Shiva Sharan Shrestha	Secretary	Kavre GOA
Mr. Ram Mani Shrestha	Treasurer	Kavre GOA
Ms. Nanimaiya Shrestha	Member	Kavre GOA
Ms. Pranila Pakhrin	Member	Kavre GOA
Mr. Rajendra KC.	Member	Kavre GOA
Mr. Keshar Bahadu Jarga	Member	Kavre GOA

Mr. Shiva Bahadu Jarga	Member	Kavre GOA
Mr. Padau Bahadu Singtan	Member	Kavre GOA
Mr. Singha Bahadu Lama	Member	Kavre GOA
Mr. Achyut Subedi	Office Bearer	Kavre GOA
Mr. Hari Prasad Ghimire	Field Coordinator/CRT	Kavre GOA
Ms. Shanti Sapkota	Ghatt user (customer)	Kavre GOA

**Kathmandu  
Presentation at CEDB**

Mr. Manoj Goyal	CEO	CEDB
Ms. Barsha Shrestha	General Manager	CEDB
Mr. Raj Thapa	Head Renewable Energy Business	CEDB
A Group of Managers and Staff also attended		CEDB

**B. Other Meetings (Generally with one or more CRT colleagues)**

Mr. Ramesh Kumar Gautam	Microfinance Advisor	SNV
Mr. Jagadish Kumar Chalise	Dep. General Manager	DCGC
Dr. Subarna Rai	Programme Monitoring Team Manager	SNV
Dr. Govind Pokharel	Executive Director	AEPC + members of his staff
Dr. Binayak Prasad Bhadra	Director, and former Planning Commission member	Hama Financial Institution Ltd.
Mr. Tej Raj Dahal	Technical Advisor	Rural Water Supply & Sanitation Fund Development Board
Dr. Bhishma P. Subedi	Executive Director	ANSAB + members of his staff



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**United States Agency for International Development**  
***South Asia Regional Initiative for Energy (SARI/ENERGY)***

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