

Homeless International

**BRIDGING THE FINANCE GAP
IN HOUSING AND INFRASTRUCTURE**

**INDIA: The role of NGOs in the implementation of
infrastructure projects, and how they manage risk.**

A short case study of YCO in Yellimanchilli, Andhra Pradesh

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1 Background to YCO

YCO first registered under the Societies Act in November 1981, with the primary purpose of alleviating rural poverty within the target areas of Vishakhapatnam District of Andhra Pradesh. The Organisation is secular, non-political and non-profit making in its structure, and focuses its programmes on self-reliance, self-help and community development. Initially YCO operated in 4 target villages and now extends to over 120 villages and 10,000 families. Programmes are in wasteland management, health, sanitation, sustainable housing, credit management and income generation for the poorest.

YCO is governed by a 13-member board of executives which includes a President, Vice President and Executive Secretary. The Executive Secretary is the Chief Executive Officer of the organisation and responsible for day-to-day management.

The organisation is divided into 3 major departments:

- Projects and Programmes,
- Finance and Administration and
- Management Information Services.

A Project Officer manages each department. The Projects and Programmes Department has three sections:

- Community Development Projects /Programmes
- Land Based Projects/Programmes
- Non-Farm Sector Projects/Programmes.

YCO is currently working with over 10,000 families, consisting of more than 77,000 persons. These are primarily landless agriculture labourers, small and marginal farmers, and artisans. Women are the primary beneficiaries as evidenced from the fact that of 10,000 families about 6,703 women have enrolled as members of the self help programmes.

A micro finance programme was started as an activity in YCO during 1992. Initially the approach was one of linking self-help groups and banks. This approach changed over the following years, with YCO establishing a separate savings and credit programme to enable the savings of members to be reinvested into the communities through loans offered to other members. The Swayamkrushi Women's Development Mutually Aided Co-operative Thrift Society was registered under the Andhra Pradesh State Mutually Aided Co-operative Societies Act 1995 with the Registrar of Co-operatives Societies, Vishakhapatnam on 26th November 1996, and has been functioning independently since 16th January 1997.

A brief history of YCO with the significant events, both internal and external is shown in the appendix to the report. This report will consider two specific activities undertaken by YCO which are relevant under urban infrastructure. The first is that of housing finance and in particular the loan guarantee scheme supported through HI and the second, an irrigation rehabilitation project, which had an impact on the semi urban town of Yellimanchilli (the home base of YCO), as well as other more rural villages. The principle of rehabilitation of infrastructure is the key issue and the lessons learnt in having an NGO participate in construction of public services can be applied equally to high-density urban environments.

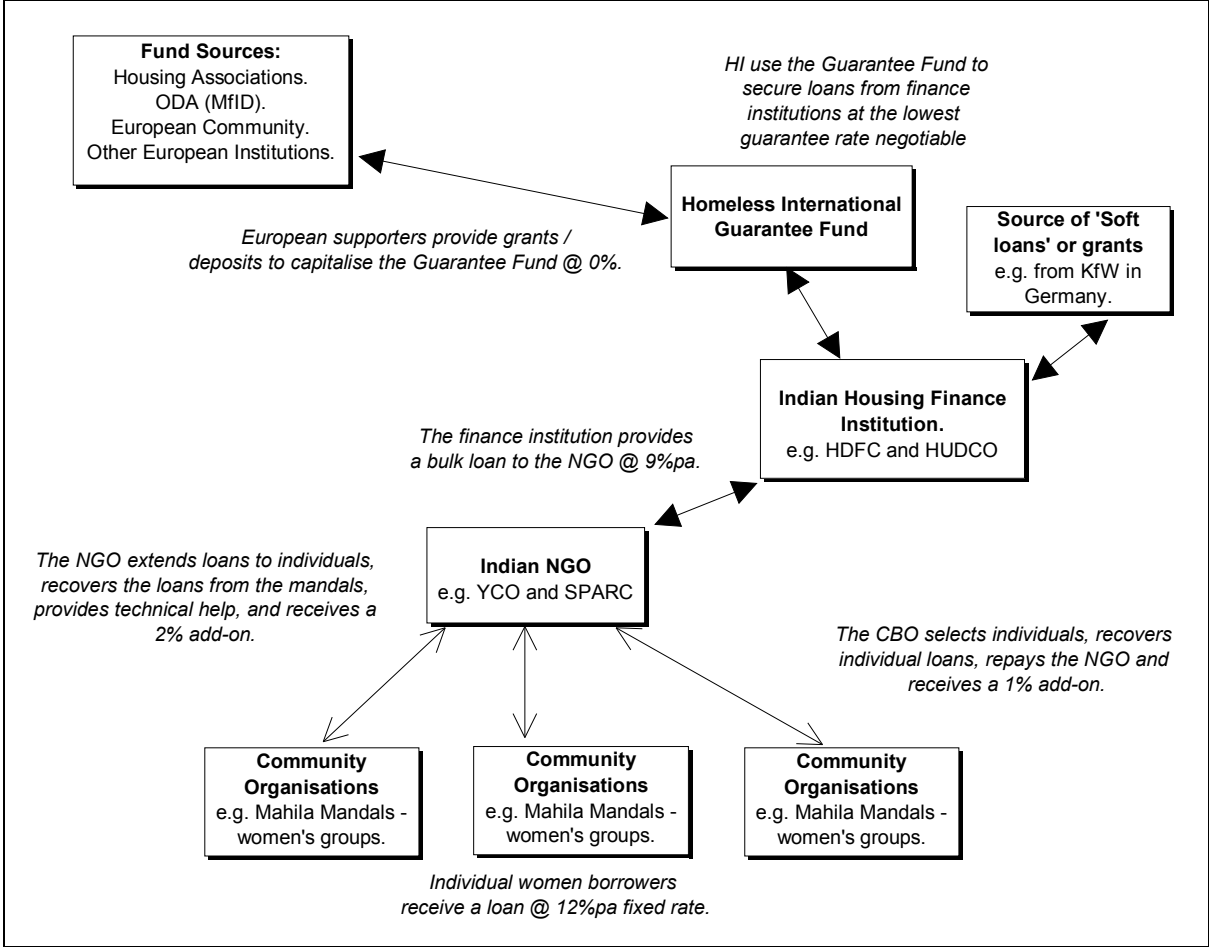
2 Housing Finance and the History of Loan Guarantee Scheme

Homeless International first started to develop the Loan Guarantee Fund (LGF) in 1991, with the objective being to "enable families unable to access conventional housing finance to obtain credits from local finance institutions for the creation of self managed housing solutions" (McLeod, Oct 1994). In 1993, co-funding for the LGF was obtained under a joint funding scheme (JFS) agreement with the Overseas Development Administration (now Department for International Development - DFID). In addition, funds were also obtained from a number of UK based housing associations, on an interest free deposit basis, and from the European Community. An initial pilot project was established in Andhra Pradesh, India, with a local NGO, the Youth Charitable Organisation (YCO) being the implementing partner. It is as a result of the success of this pilot project that this current research programme has been awarded funding.

The principle of the LGF is in theory quite simple, though in reality it has proved to be much more difficult to get back-to-back agreements between participants. Figure 1 shows how the scheme was initially designed to operate. Funds obtained from various European Institutions are deposited with HI in the LGF for an average 10-year term, with 0% interest required by the depositors. The depositors also accept that any draw down on the LGF through default will be deducted from monies returned.

The LGF is then used to secure loans from finance institutions in India. The assumption here is that some degree of gearing will be possible, thus increasing the effectiveness of the LGF beyond that of the traditional grant or revolving loan fund, (see later model for revolving loan funds). This gearing has to date ranged between 4:1 (i.e. 25% security given - HUDCO phase 1) and 1:1 (i.e. where no gearing was possible - HDFC phase 1). In the case of HDFC a further security was demanded to cover the possibility of lost interest, making the total security required 109% of loans advanced.

Figure 1: Methodology for LGS



The finance institutions then lend bulk loans to the NGO who is responsible to the institutions for the collection and repayment of monthly interest and capital charges. The money is lent at 9% to the NGO with the bank understood to be making a 6% spread on its advances. In theory, the NGO is then able to cover its cost of administration by charging a further 2% to the various community based organisations (CBOs), which act as the final channels to distribute the loans. Again the CBO in theory is also able to add a further 1% charge resulting in a final interest charged to recipients of 12%. However, in the case of the loans obtained through HDFC, a restriction was placed in the agreement preventing additional charges above the 9% being made by the NGO. Thus the recipients of these loans pay no more than 9% fixed rate.

The initial design of the LGF involved HI using monies obtained from other sources, to be given as a grant to help YCO with its technical support services offered to the community organisations and individual recipients. However, due to the earlier delays experienced in getting finance through the banks, YCO were given permission to use this money as a bridging loan to enable villagers to commence with construction. The ongoing costs incurred by YCO in collection and administration of the scheme is also currently being drawn upon from this source of grant funding.

2.1 Stakeholders in LGS housing finance

As with most stakeholder analyses it is apparent that whilst there are many bodies identified as having an interest or stake in the project, the degree of interest or value of the investment in

the project varies greatly. Table 1 below tries to identify not just the stakeholder but comment on the investment and the size of the stake holding.

Table 1: Stakeholders

Stakeholder	Comment
Householder	Primary responsibility for the construction of the dwelling and the regular repayment of loan interest and capital.
TAG Group	Joint responsibility for loan repayment of each member within the group. Mainly enacted through close association as neighbours and group membership. Failure of any group member to repay will have a direct impact on each member of the group.
Mahila Mandals Community Based Organisation	Responsible for the regular repayment of all loans awarded within each of the TAG groups within the village or organisation.
Construction Workers	Directly and indirectly employed by the householders during the construction of the dwellings. Where employment opportunities are limited and increase in residential construction will increase construction workers (skilled, semi skilled and labourer) net incomes.
YCO	The credibility of the NGO is put at risk within each of its projects. Whilst the LGS provides some form of protection financially, the potential loss in terms of human effort and organisation expenditure in developing communities, groups and savings and credit schemes is at risk in the project. The NGO is responsible for collecting loan repayments from the various CBOs and monitoring of construction progress.
Homeless International	In a similar way to the NGO, the international NGO has at stake its credibility to put forward and develop viable projects with suitable partner organisation. Again the LGS will provide protection against direct financial loss, though the losses in terms of organisational expenditures in developing relationships and projects are at risk.
International Financial Institutions - Providers of the Loan Guarantee.	The lenders of the collateral which makes up the guarantee are mainly international funding agencies and supporters (DFID, EU, Housing Associations). These groups are at risk of losing all monies deposited into the project in the event of project failure.
National and Local Banking Institutions.	<p>The degree of financial exposure in each of the loans advanced varies between the two main banks involved in the project to date.</p> <p>The HDFC bank requires security to cover not just the capital but also the potential loss of interest on the loan. In total, security of 109% was initially provided. It is therefore difficult to classify this bank as a stakeholder with an investment at risk in the project. However, in terms of having an interest in the success of the project, the Bank is able to make a profit on the loan interest spread. With a potential market for such loans of many millions of households, the Bank appears to be keeping a low risk interest in the project.</p> <p>HUDCO, have been able to reduce the level of collateral required for the advancement of loans to slum dwellers and 'assetless' households. This might reflect the fact that they have some guarantee from central government on loans advanced to special needs groups.</p> <p>Canara and Baroda Banks: strong relationships have been established with these banks as a result of the project. Annual lines of credit for YCO have developed from recommendations of the local branch of Canara Bank. Both Banks have access to refinancing from the Housing Bank of India.</p>

2.2 Impact of LGS housing finance programme

The impact of allowing households access to affordable housing finance during the pilot scheme were documented in a report prepared by Richard Platt in 1997 and updated in the final evaluation of the project in 1998. These can be classified as below:

- **Health:** 100% of all households agreed that the health of the household has increased as a result of a proper house. No medical research has been carried out to verify these observations. However, it is reported that in the thatch houses dysentery, diarrhoea and occasionally cholera were to be found due to poor housing conditions. Open fires in the houses traditionally created lots of smoke which could take 3-4 hours to clear after cooking. This led to aggravated respiratory problems. New houses have improved

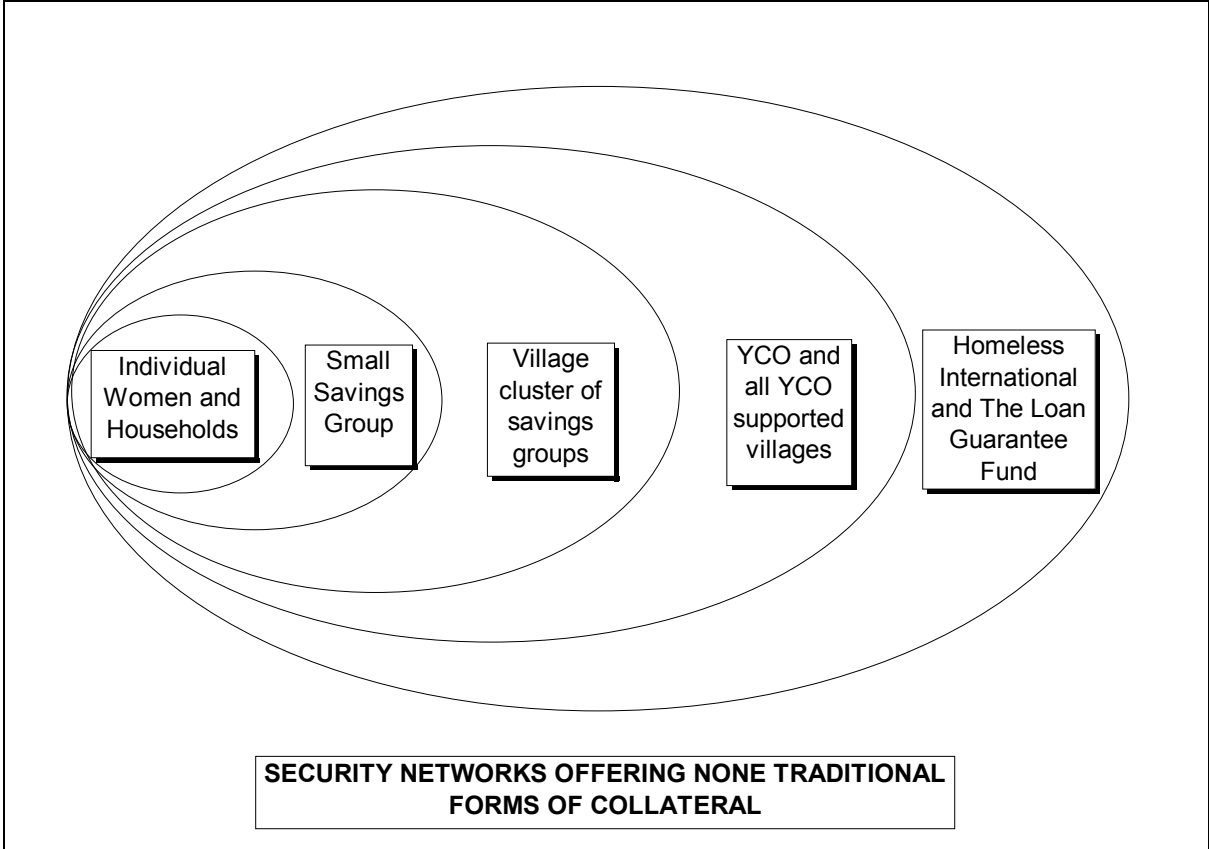
ventilation and tend to have a proper cooking hearth with chimney. The reduction of household spending on medicine is also to be included as further impact of housing.

- **Prevention of Fire:** Previous homes with thatched roofs were very vulnerable to fire from open cooking and the fires would spread rapidly through a village. New houses with hearths and chimneys have largely avoided these problems.
- **Increased Security:** In addition to providing greater protection against cyclones and monsoon rains, the households are more confident to leave the house during the day to attend to business and work, with the knowledge that the house is unlikely to be entered by thieves.
- **Better Education:** The construction of a proper house has allowed many to gain access to legal electricity supply. This allows the children in the household to continue with their studies into the evening. No study has been made on the exact impact of this benefit alone though it could be quite significant over the period of a child's development.
- **Increased Esteem:** Most women commented that others - men and women - now regarded them in the village with greater esteem as a result of having built and now owning a proper house.
- **Reduced Maintenance Expenditure:** This is reflected in both the time spent on cleaning, previously reported as being 4 hours twice a week, to just a 'quick brush and mop' with the proper house. The real costs of replacing the thatch roof and re-plastering the floor and walls was estimated at over 2000 rupees per annum. This being comparable with the cost of loan repayments for the construction of a proper house - 228 rupees per month for a 10-year loan.
- **Business Development:** Many households use the house for a cottage type industry. It is perhaps inaccurate to say that the new house has increased the opportunity for business development, as these were undertaken in thatch-roofed dwellings. It is true to say that that the proper house does allow the business to be carried out more efficiently and within a safer environment.

2.3 Risk Management Techniques

The security or collateral provided in traditional housing finance is generally the asset of the property with title deeds held by the financing institution and a charge made on the property title register. The risks are further reduced by the institutions assessment of the security of income and the stability of the cash flows being reflected in the level of finance made available. In the LGF programme, title is less secure, thus reducing the value of the physical collateral. The options of repossession and sale of the asset are not considered viable and thus the need for an alternative form of security. However, the guarantee should not be regarded as either the first or only security offered in this form of funding, as there is a more complex structure of safety nets in operation as identified in various HI publications and shown in Figure 2

Figure 2 - Risk Management Techniques Used in LGF Scheme



Whilst from an institutional position, the LG is the only form of security which is bankable, the fact that there is a series of security nets and support systems in operation prior to the guarantee, gives the bank an alternative and possibly more effective form of security to those traditional forms. The NGO has further reduced the risks by arranging an insurance policy, with an annual premium of 100Rs, which provides additional protection in the event of a range of circumstances occurring which may permanently or temporarily affect the individuals' ability to repay the loan.

Table 2 – risks

What is the risk?	How does it arise?	What steps can mitigate the risk?	Who typically bears the remaining risk?	What steps can minimise the risk from occurring?
Design and Development risks				
Design defects in house	Variations in house style introduced by households not checked by structural engineer. Especially for flat roof dwellings.	Require all designs to be approved by engineer before advancing loans.	Generally householder. Lending Institution might be left with defective dwelling as security.	Insist on households adopting standard designs agreed by both engineers and lending institutions.
Continuity of Land Ownership and Rights of Women	Benefits of housing might not be passed on to women at death. Bribes required to change land document from man's name to women's.	YCO work with women to ensure possession certificates are made out in favour of the women.		Women's groups might agree that if a women member dies, the house will pass to daughter -in-law.
Construction Risk				
Cost overrun	Construction of dwelling differs from design. Often households consider this to be the only chance to obtain housing finance and thus take the opportunity to build a house bigger than that of the project design.	Give clear guidance to householders as to the full and real cost of construction. Use of housing exhibitions to inform in advance of construction. Advice on low cost building techniques.	Householders.	Develop the housing finance programme so that secondary housing loans can be made available. Allow for phased construction and phased drawdown of funds. Develop bulk purchase of building materials.
Loan advance not matched to construction costs.	Loans advanced in accordance with stage completion of construction. The payments made in the early stages do not reflect the true costs of construction: Up to plinth level can cost up to 50% but the loan advanced is only 25%.	Ensure that householder has built up sufficient funds to finance the short-term mismatch.	Householder.	Develop more complex method of valuation of construction costs and flexibility into loan advances. Possible use of NGO bridge finance.
Delay in completion	Finance from banks delayed. Material cost increase beyond budget in interim period.	Identify reasons for bank delays and seek to solve problem.	Householder. NGO where bridge finance is used in the delay period.	Develop alternative source of finance.

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Revenue Risk				
Household revenues fail to meet loan repayment requirements.	Death of income earner; Natural disaster: cyclone, fire, flooding etc. Destroys crops or income earning potential.	Ensure all households are covered by insurance for both natural disaster and loss of income earner. EG: buffalo, beneficiary life cover, crop and business/home insurance.	Initially householder, and then stakeholders mentioned in the security networks diagram. Ultimately in large-scale disaster, the Depositor in the LGF and the Banks where collateral is less than loan. Also, collateral might be destroyed in disaster. Landless labourers (40%) are not covered by loss of income insurance.	Encourage the development of non-agricultural based income activities, which might be less vulnerable to cyclones and other natural disasters.
Financial Risk				
Exchange rate.	Devaluation of local currency, fluctuations in foreign currencies.	Keep deposit for loan guarantee in more stable currency account such as GB£ account in London.	Risk only occurs in the event of default and exchange fluctuation where Rupees appreciate to pounds Sterling. Then HI and depositors at risk.	Require loans in local currency and same currency as revenue.
Interest rate.	Fluctuations in interest rates	Agree on fixed rate for term of loan. Calculate interest to be paid on APR to avoid mis-comparison with monthly/quarterly/annual calculations.	Where variable rates drop over the term of the loan to below the fixed rate then the householder will pay more than had been necessary. However, the security of regular and predictable repayments will be the main advantage for small borrowers.	
Country Specific Risk				
Political	Division of population into groups, with backward castes being offered 'free' housing. Political interference by state with offer of housing to influence electoral votes.	Explain to householders the true cost of housing and the terms of government and non-government loans.	Unease and potential mistrust develops if some householders led to believe that housing finance is a grant which is not repayable. State finance often not sufficient to cover 50% of housing construction cost, householder left to arrange private finance at high rates of interest to complete dwelling.	Develop programmes to encourage self-reliance and move away from the mentality of grants and free handouts to timely and affordable housing finance through housing loans.

3 Infrastructure service provision

YCO have been involved in the development of infrastructure services over many years and in various projects. Typically these have been based around the provision of wells for clean drinking water and improved sanitation. Over recent years, the organisation has increased the scale of the projects which it has been willing to undertake and the means of operation. Most significantly this is reflected in two projects: the first is the construction of a road bridge to span and seasonal river and the second is the rehabilitation of the irrigation system in the surrounding districts to Yellimanchilli. Both of these projects are Government sponsored and have been carried out by YCO acting in the role of construction contractor.

The role is slightly different to that of the traditional contractor in that funds obtained for the project in the form of international grants have also been employed in the project and disbursed directly to YCO. Whilst the model being considered below is that of the refurbishment of an irrigation system, the issues raised are likely to be similar to those that YCO will encounter on other more urban projects.

The women's groups undertake many infrastructure projects without further assistance from YCO as a result of being able to demonstrate their abilities within the construction of housing. The Mahila Mandals are managing the process of negotiation with the local authorities and have gained access to government finance for their projects. For example in the village of Panchadarla, the government has provided 90% of the finance for the construction of an approach road to the village, at an estimated cost of 425,000 rupees. Table 2 below indicates other projects undertaken as a result of increased capability following the initial housing project.

Table 2: Infrastructure projects undertaken following housing programmes

Village	New Homes	Type	Estimated Cost	Participation	Comments
Panchadarla HDFC phase 1	50	Construction of School building	200,000 rupees	Women's group implemented	5% people's support 25% YCO support 70% Government under Janma Bhoomi
		Irrigation tank repairs	100,000 rupees	Women's group implemented	10% people's support 40% YCO 50% government under Janma Bhoomi
		Cement approach road to housing	425,000 rupees	Women's group implemented	10% people's support 90% Government
Gokiwada HDFC Phase 1	35	Internal road	425,000 rupees	Women's group implemented	5% people's support 25% YCO 70% Government JB
Krishnapuram HDFC Phase 1	22	Metal road	275,000 rupees	Women's group implemented	10% people's support 90% Government
		Community Centre	100,000 rupees	Women's group implemented	5% people's support 25% YCO 70% government JB
		Irrigation tank repairs	200,000 rupees	Women's group implemented	10% people's support 40% YCO 50% Government JB
Marturu HDFC Phase 1	74	Metal road	425,000 rupees	Women's group implemented	5% people's support 25% YCO 70% Government JB
Yellimanchilli HDFC Phase 1 HUDCO	24 75	Internal cement roads	400,000 rupees	Women's group implemented	5% people's support 25% YCO 70% Government JB

Currently, YCO is being requested to assist in the provision of water supply, internal roads and drainage to part of the semi-urban village of Dharamavaram. The village borders the irrigation project on the outskirts of Yellimanchilli. Previous projects in the village have included: saving and credit, housing, sanitation, irrigation channel and irrigation tank. Should YCO seek to implement further public infrastructure service projects on behalf of government, with or without sponsorship from external source of finance, then lessons learnt from the review set out below need to be considered.

3.1 Background to the Irrigation Rehabilitation Project

Within the Yellimanchilli district there is a large network of irrigation channels with the main feed supply being delivered via a series of 'groynes' spanning the main river flowing from the hills in the west to the coast on the east. The network was constructed under the colonial years, and has been left un-maintained over recent decades. Most of the groynes have been badly damaged and washed away, and the irrigation channels are for the most part silted up and in need of excavation. The State Government introduced new legislation in 1997 (Water Resources Act), to bring about Water Users Associations. These new bodies are made up of elected members from registered farmers and users (potential users) of the irrigation network. The WUAs are responsible for the management of the irrigation networks and collection of taxes. As yet there is no official legislation empowering the WUA to implement its projects by using NGO's as partners.

YCO were contracted by the state government irrigation department to implement the project for the reconstruction of one 'groyne' and the associated network of irrigation channels served by the 'groyne'. The State of Andhra Pradesh is accessing finance for the rehabilitation of irrigation networks as a loan from the World Bank, whilst YCO also accessed grant monies to contribute to the cost of construction.

The grant monies were advanced to YCO prior to the commencement of the project and were not required to be disbursed in stage payments. The cashflow table below demonstrates that the advance payments from the donors to YCO were vital in reducing the cashflow deficit which accumulated during the project. YCO has access to a small bridge fund which it can use to facilitate infrastructure projects where cashflow requirements result in the need to support the working capital demands of implementing a large project. However, these funds (approx. 3,400,000 rupees) are understood to be fully drawn upon at present to support the construction of 475 dwellings where bank finance is still awaited.

The cashflow shown in Figure 3 is not fully accurate in terms of the exact timing of income and expenditure, though is sufficient to represent the broad sequence of events and the impact upon YCO cashflows and for the analysis of the risk implications for NGO's undertaking infrastructure projects on behalf of government.

It is assumed that the construction of the 'groyne' and the network channels commenced at the same time and took approximately 6 months to complete. Stage payments from the Irrigation Department are made two months after valuations, with valuations being at the end of each month. Thus YCO are required to finance the working capital demands of at least 3 months construction costs. These could be offset by using creditors as part of the working capital provision. However, the cashflow shows expenditures paid in equal monthly instalments in the

month when the expenditure was incurred. This partly reflects the fact that labour is a significant part of the construction costs.

Figure 3: Construction phase cashflows

Construction Phase Cashflows													
	Month	1	2	3	4	5	6	7	8	9	10	11	12
Income													
German Agro Action (10% of groyne)		500,000											
Echo (Channel 3.45L)		345,000											
Andhra Pradesh State Gov't (Groyne 90%)						749,999	749,999	749,999	749,999	749,999	750,005		
Andhra Pradesh State Gov't (Channel 1.7L)						28,333	28,333	28,333	28,333	28,333	28,335		
Total Income		845,000	0	0	0	778,332	778,332	778,332	778,332	778,332	778,340	0	0
Expenditure													
Groyne 50 lachk (6 months)		833,333	833,333	833,333	833,333	833,333	833,335						
Channel 5.15 lachk		85,833	85,833	85,833	85,833	85,833	85,835						
Total Expenditure		919,166	919,166	919,166	919,166	919,166	919,170						
Net monthly Cashflow		-74,166	-919,166	-919,166	-919,166	-140,834	-140,838	778,332	778,332	778,332	778,340	0	0
Balance B/F		0	-74,166	-993,332	-1,912,498	-2,831,664	-2,972,498	-3,113,336	-2,335,004	-1,556,672	-778,340	0	0
Cummulative monthly cashflow		-74,166	-993,332	-1,912,498	-2,831,664	-2,972,498	-3,113,336	-2,335,004	-1,556,672	-778,340	0	0	0
Notes:													
1. Grant moneis paid in advance of construction													
2. Stage payments via WUA minimum of 3month from valuation													
3. Negative cashflows to be paid by YCO reserve and bridge funds													
4. 'Bribe' moneis assumed to be included within overall costs													

Figure 4: Construction flow diagram for Water Irrigation Project Phase 1

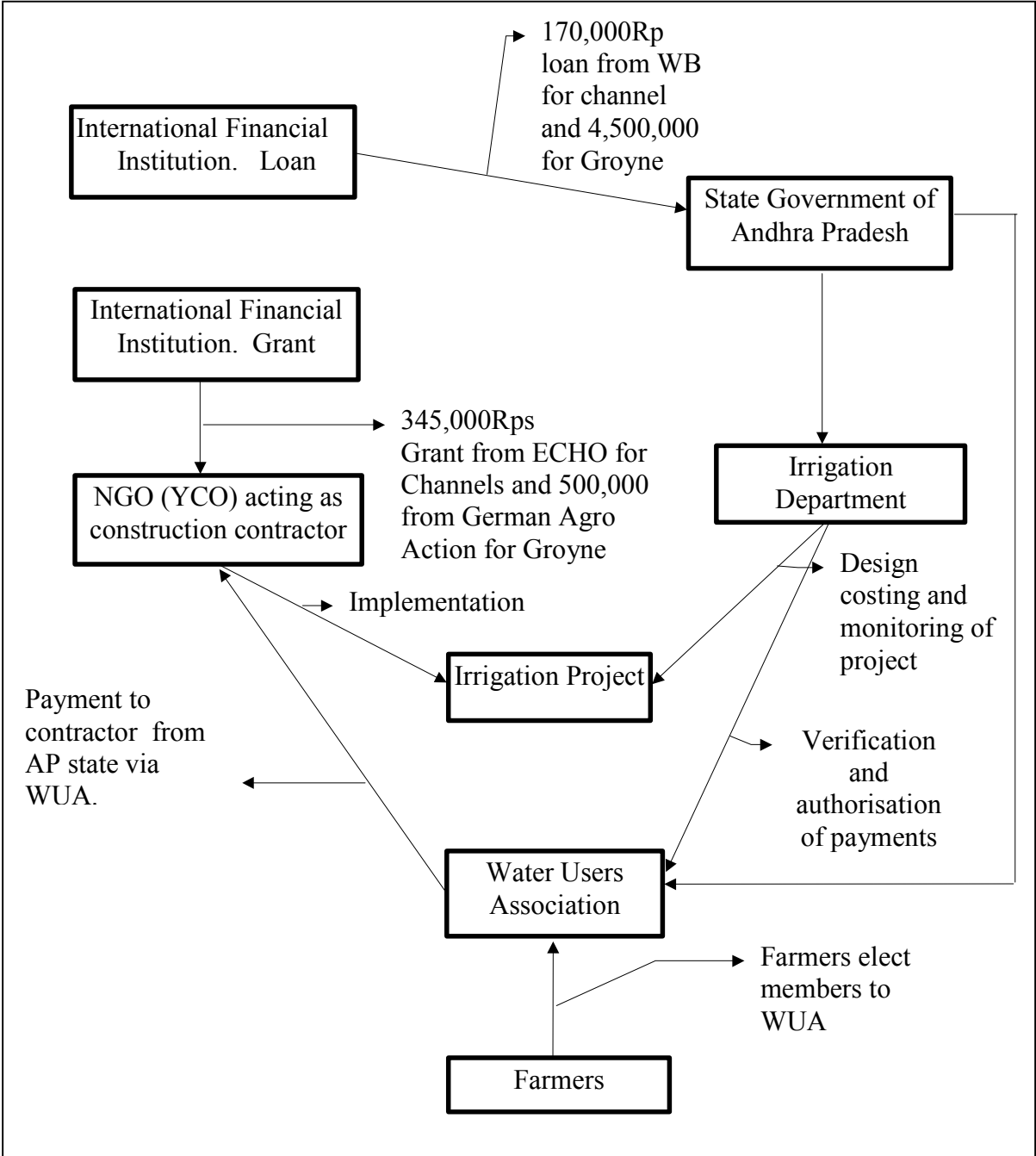


Figure 4 indicates the relationship flows within the contract. One of the main difficulties operating as a contractor for government organisations within India is the constant need to pay bribes in order to have payment certificates authorised and payments made in accordance with the contract. This level of corruption appears to be institutionalised and can add a further 15% on to the total construction costs. In this contract, YCO obtained its payments through the WUA and it was their duty to deal with the officials within the irrigation department. As mentioned, this contract was not typical of construction contracts, and this is further reflected by the fact that the quantities were not just prepared by the irrigation department but they also undertook the pricing. This resulted in YCO becoming a price taker, rather than price giver, and thus subject to the estimates prepared by others. It is understood that within this price,

allowance had been made for the payment of bribe monies - such is the level of institutionalised corruption.

The delay in the payment of valuation certificates further reflects the delays introduced by the need to give bribes to obtain legitimate payment. Within the contract it is understood that unofficial transactions took place between WUA and the Irrigation Department. However, for an organisation such as YCO, which refuses to pay bribes as a matter of principle, and is willing to lose programmes as a result (see early adult education programme in history of YCO), this issue is of significant importance should it find itself at the interface with government officials for contractual payments.

3.2 Return on Investment

The benefits derived from the project are quite remarkable, and in project performance terms they represent an amazing return on the capital investment. It is estimated that there are approximately 1800 acres of farmland which would benefit from the irrigation project. As a result of having access to irrigation, alternative crops can be grown, including sugar cane, which represents a risk mitigation measure for the farmer, as this is less prone to cyclone damage. Further, increased yields for rice are possible. This has been calculated at approximately 28 bags of rice with irrigation and 15 without. In terms of increased income per acre this equates to approximately 4,500 per acre. With a total acreage of 1800, this results in a net increased benefit of 8.1 million rupees per annum for an initial capital expenditure of 5.6 million rupees. There are of course annual maintenance costs of approximately 162,000 rupees.

Table 4: Annual statement of costs and benefits

Annual Statement of Costs and Benefits		Year	0	1	2	3	4	5
Investment Costs			5,600,000					
Increase in Working Capital			0	0	0	0	0	0
Operating Costs			0	162,000	162,000	162,000	162,000	162,000
Total Costs			5,600,000	162,000	162,000	162,000	162,000	162,000
Revenue/Benefits			0	8,100,000	8,100,000	8,100,000	8,100,000	8,100,000
Net Benefits/Cost			-5,600,000	7,938,000	7,938,000	7,938,000	7,938,000	7,938,000
NPV @ 15%		18,269,050						
NPV @ 25%		12,598,004						
IRR		140%						

As stated, this is rare to find a project which offers such immediate and long lasting financial and economic returns. Obviously, the true cost of the project is not shown, since much of the project is rehabilitation of existing infrastructure. Nevertheless, the impact of the project is not to be ignored. Further, this is just one of 11 similar projects awaiting implementation in the region.

3.3 Stakeholders and Risk Takers

- Farmers: The farmers are ultimately the group with the most to gain from the project. With annual incomes increased and greater security provided by the planting of some sugar cane. With average farm sizes in the region of $\frac{1}{2}$ to 1 acre, farm incomes are not great, but the average increase of up to 4,500 rupees will be important to the very low income levels of these farmers. Their contribution to this project is the rehabilitation of the final stages

of the irrigation channels to individual plots of land, and perhaps the payment of the irrigation tax (300 rupees), which has perhaps been ignored in previous years.

- **Water Users Association:** Primary responsibility for the collection of taxes and the management of the irrigation networks. With rehabilitated networks the WUA will have increased importance in the community and appointments to the boards could be sought after. This might lead to local political activity and interference with the equitable and efficient operation of the network.
- **Irrigation Department:** the establishment of the WUA will have reduced the role of the ID and might lead them to become more active in 'monitoring' the quality of the rehabilitation and maintenance. It is expected that maintenance budgets, allocated from state government to the WUA will be distributed through the ID and thus give them some local control.
- **YCO:** As an Implementer of government projects, YCO has invested its own resources and appears to be the main risk taker of the entire project. Failure to comply with the design criteria would have resulted in non-payment, delays would result in penalty charges and cost overruns would have been borne out of their own funds. Increased working capital required to finance the construction phase was at the risk of YCO. Yet significantly, very little of the benefits of the project, which as stated are great, are passed on to YCO the contractor and in part, enabler. Some working capital was provided by advance grants. Profits on the project were not large and were net of monies paid by the WUA as bribes. YCO stand to benefit in terms of increased profile within the community. Since the project fits well with the stated mission of the organisation, then YCO has been able to fulfil its role.
- **State Government of Andhra Pradesh:** As the Implementer of government projects, YCO might also have been able to start developing an alternative for community infrastructure development in Andhra Pradesh. Currently, government is looking for new and effective means of improving infrastructure, and the NGO route has up until now been little explored. This project, and the positive outcome could lead to the development of a longer-term relationship between the NGO and the state government. Further acts of parliament will be required to strengthen the legal basis for NGO's to involve themselves in the provision of infrastructure services in urban districts. Increased tax revenue is likely to be a benefit of the project in the long term.
- **International Financial Institutions:** In the project the World Bank is understood to have made available loans for the state government. With taxes of 300 rupees per acre, and an annual commitment to the WUA for maintenance expenditure of 90 Rupees, the project will require long term finance in the region of 15 - 20 years, if no increase in the irrigation tax is planned and loan repayments are to be derived from the project cashflows. Donor agencies have an interest to see that the return on the investment meets their requirements or represents an efficient and effective allocation of its funds. With an IRR of 140% after five years, there are few projects which could be shown to have a return on investment of a similar magnitude.

3.4 Replication of the project and lessons for the future

One of the most obvious facts in studying this irrigation project is that even though the project has an IRR of 140% after 5 years, the loan is unlikely to be repaid until year 20. This will reduce the volume of loan finance which could be made available and thus the rate of rehabilitation within the state. Were the project to be implemented along the lines of the housing finance scheme, with the main beneficiaries paying for the service out of increased incomes, then it would be possible to accelerate the programme of rehabilitation.

An alternative suggestion might be for the rehabilitation to be undertaken by the WUA and not through the state. Thus the WUA would take out a five-year loan for the rehabilitation and in turn the state would forego its rights for tax collection during this period. The farmers would then be required to pay an increased sum to the WUA for 5 years to cover the cost of loan repayment and maintenance. This might be in the order of 850 - 1000 Rupees. After 5 years the loan would be repaid and the farmers contribution could be reduced to the normal level for state taxation. In adopting this approach it is possible for the WUA to accelerate the rate of progress in the rehabilitation of the irrigation networks and thus in the long term increase the economic performance of the whole region.

Implementation could be carried out using the NGOs who have proved capable of such project management. Also, the NGO, as in the case of YCO might improve the ability of the WUA to gain access to international and national sources of project finance. The banking officers and their representatives would control release of funds, where corruption is less endemic, thus reducing further the cost of rehabilitation. Collection of repayments is through a democratically elected body where transparency of operations is less of a problem compared to a government department and can be controlled by the beneficiaries.

The role of the NGO in accessing finance and managing large scale community projects would be vital to the success of the project undertaken in this form of partnership. In terms of replicability, a key factor is the WUA having being granted legal status and given powers of tax collection and management responsibility. Where similar, though non-irrigation, projects are planned for municipal authorities, similar empowered bodies might need to be created if the existing bodies are deemed inappropriate.

To place the loan and the responsibility for repayment with the WUA or similar body, removes the risk of political interference. This might occur where a politician seeking to gain popularity claims that monies for the project are grant monies and that the beneficiaries need not make such loan repayments. Were the project to be undertaken entirely by the NGO, such interference could result in large-scale non-payment and ultimately result in the bankruptcy of the NGO and default on the loan.