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CREDIT BASED ECO-HOUSING MODEL FOR RURAL AREAS

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Abstract

Providing adequate shelter for its rural population continues to be a major challenge. Development Alternatives in collaboration with Fondazione FEM Onlus did an action research project on "credit-based eco housing for the rural populace of Bundelkhand region" in central India, which aimed towards provision of low cost eco-friendly housing for working poor through ecosystem approach.

During this project, an innovative model for provisioning of eco-housing solutions for rural poor was piloted. The focus of the project was on four essential elements: availability of technology and efficient delivery mechanisms; capacity building of artisans and communities; market creation and awareness for eco-building products; and availability of appropriate credit linkages for eco-construction. Several unique interventions for easing access to housing for rural working poor like formation of joint liability groups, initiation of 'Build Together Pay Together' process and introduction of 'bridge financing' were adopted in the project.

The paper deals with the project case study and details the process innovations pioneered in the project, the benefits achieved through these innovations and the learning from the project. Based on this case study, the paper would also detail the mechanisms necessary for scaling the model for wider dissemination in Indian populace.

INTRODUCTION

The shortage of finance for rural housing has been recognized as one of the obstacles to the provision of housing for low-income/with irregular income of rural households. Also the current construction practices for rural housing are non-eco-friendly in nature which uses more natural resources as well as not cost effective. Currently, most of the rural households belonging to Above Poverty line (APL) category build their houses using personal savings or taking informal loans at very high interest rate and rural households belonging to Below Poverty Line (BPL) category build their houses through rural housing schemes which are funded by Central or State Government but the construction time in this case is very unpredictable due to complex nature of the schemes. Moreover, the extent of the need does not match with the provisions of such schemes, so the issue of adequate housing for rural working poor

remains largely unresolved.

With appropriate housing finance institutions, rural households could be encouraged to save for housing, increasing the resources for housing finance. Unfortunately, many institutions who are involved in housing finance do not fully appreciate rural housing finance mechanisms, and also need to know more than they do about eco housing technologies in addition to rural housing finance mechanisms.

Fig.1 brings forth all the important aspects in a diagrammatic presentation.



Fig. 1: Need for Eco-Housing Delivery Model

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Thus, housing delivery models are required that facilitate "processes for sustainable habitat development" in villages of India. These processes need to address concerns of energy and resource efficiencies in construction; delivery mechanisms that support and enhance local skills and economies; and development of durable and safe habitat in response to local climate and geomorphologic conditions.

Development Alternatives (DA) in collaboration with Fondazione FEM Onlus has developed a comprehensive credit based eco housing model having community processes like 'the build together, pay together' (BTPT) and institutional mechanisms like 'bridge financing' which promises to be a revolutionary development in solving this critical housing shortage.

The BTPT model was initially implemented in Pipra village in the region of Bundelkhand of Madhya Pradesh achieving great success with the completion of 28 houses in just over 7 months. This included collection of documents from clients, NOC process, bank linkage and construction of eco houses, as compared to the original model where individual loans were issued and 37 houses were completed in over two years. As what happens with the implementation of any new approach, there was initial scepticism from the targeted beneficiaries, which got rapidly dispelled with the, actual processes happening of ground and knowledge of expected benefits to be incurred.

The model derives its name from its base principle of constituting beneficiaries into joint liability housing groups prior to them getting a loan sanctioned, so that they can 'build together and pay together' acting as a stable local community level mechanism that ensures that the objectives of the program are attained smoothly. The grouping system validates the choice of borrowers, bringing in efficiency and co-ordination in the construction process and bringing peer-pressure among the group members in the repayment process. The groups formed are responsible to 'build together and pay together' meaning that they have to take onus of ensuring building progress of other group members and assuming joint liability over other group member repayments.

The Model has brought in a breath of fresh

air into the stagnant rural household construction process. The benefits of the model supersede just the housing and credit benefits provided to its clients.

THE ECO-HABITAT DELIVERY MODEL

The rural habitat model, thus created through three years' implementation on ground (2010-2013) in Bundelkhand focussed on four key elements which are essential for the successful delivery of an eco-rural habitat model. The availability of technology and efficient delivery mechanisms, capacity building of artisans and communities, market creation and awareness for eco-building products, and last and most importantly the availability of appropriate credit and bridging funds linked to eco-construction, to enhance its demand.

The major stakeholders involved in this credit based eco habitat delivery model (Fig.2) are Implementation agency (DA in this case), Financial Institution (Madhya Bharat Grameen Bank in this case), Artisan's Guild (TARA Karigar Mandal in this case) for providing eco construction services, local entrepreneurs for production of eco building materials, village Gram Panchayat and village community for construction of eco houses and toilets.

The model was successfully implemented with the help of the Madhya Bharat Grameen Bank. It aimed to provide the disadvantaged sections of the society particularly families with annual incomes less than 1, 50,000/- with a stable credit mechanism a loan amount of Rs 30,000, allowing them access to adequate habitat. An important learning at this stage of the project was to get understanding that in rural India it is incremental housing which matters and secondly people have different requirements regarding housing and no one design or few designs serve the purpose.

The intricate financing model used makes the three parties involved i.e. the beneficiary, the bank and in this case FEM equal partners in the total bridge fund, providing incentive to every partner and dividing responsibility. The loan component of the model has a low interest rate making it affordable and cheaper than other similar credit mechanisms. To avoid the misuse of the funds sanctioned the beneficiaries are only linked to the bank once the

house is completed to the plinth level. The grouping of beneficiaries helps in the loan repayment process. The sense of community is stronger and more fortified in rural India, the grouping which comprises of 5-6 households at a time receiving the loan helps them keep a check on the repayment process, the construction of the house and helps strengthen the bonds in the community. The salient features of the schemes for financing construction of houses and toilets are given in Annexure 1 and 2 respectively. The salient features of Build together, Pay together model are given in Annexure 3.

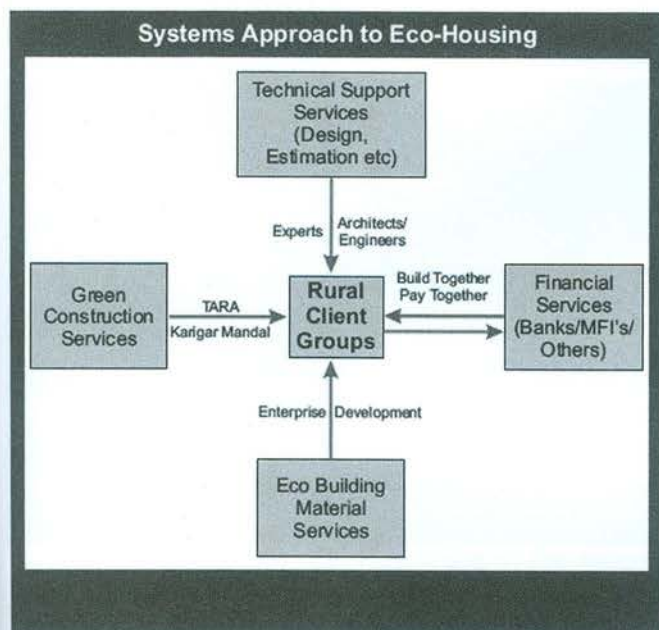


Fig.2: Eco-Housing Delivery Model

LEARNINGS AND OUTCOMES OF THE PROJECT

Access to Credit for Construction of Eco Houses: One of the principle learning from this project was to constitute beneficiaries into 'joint liability housing groups prior to bank loan sanctions so that they can move ahead with 'Build Together and Pay Together' (BTPT) process acting as a stable local mechanism that ensures that the objectives of the program are attained smoothly.

The grouping system essentially validates the choice of borrowers, bring in efficiency and co-ordination in the construction process and bring peer-pressure among the group members in the repayment process. The groups formed would be responsible to

'build together and pay together' meaning that they will have to take onus of ensuring building progress of other group members and also assume joint liability over other group member repayments.

Another important learning was that mobilisers need to be selected from the villages as they have good understanding of the local field situations.

Banks are very important stakeholders as financial model works through them, so any such attempt in rural scenario can happen only when there is close collaboration with banks. Acceptance and demand for financial model for eco houses in the villages has been noticed.

Improvement in the quality of life of the housing clients has been noticed as it is evident from the opinion of Pipra and Azadpura clients who have shifted in their new houses.

Good repayment collection has been observed in case of 'Build Together Pay Together Model'.

Acceptance and demand for the financial model for toilets in the village has been noticed. Demand for construction of toilets has been noticed in surrounding villages.

Children and women have started using toilets in Jamunia and Therka villages where toilets were constructed through this financial model.

Very good repayment collection has been observed. As the repayment amount was very small, many clients preferred to repay the amount before time and take loan for construction of house after this. It would be very good idea at policy level to provide a loan for incremental housing once the client has completed the repayment of loan taken for construction of toilet.

DESIGN AND BUILDING TECHNOLOGY

The second primary benefit reaped is the ecologically sound design and building technology provided within the model. Every household has different needs and aspirations. The model accommodates this fact in providing the beneficiaries with expertise helping in the construction process.

Eco-technologies used in the construction of these houses are intrinsic to the model. The eco-house is designed on the principles of low-energy construction to minimize the ecological burden of the house. Rationalizing the use of both high-energy materials and the local resource base of the region. An example of the type of technologies/techniques used is the innovative "Rat-Trap Bond" (Fig. 3), a type of wall brick masonry bond. This technique has various advantages over the typically used English or Flemish bonds. The advantages of thermal comfort where the interiors remain cooler in summer and warmer in winter are unquantifiable but provide immense comfort and satisfaction to the beneficiaries. The bonds are cost efficient, using rat trap bonding it is possible to use approx. 35 % less bricks and 50 % less cement mortar, which reduces the cost of a 9" wall by 30 % (based on brick dimensions 230 x 110 x 55mm). The environmental benefits being the reduction in CO_2 emission. 35 kg of CO_2 per cu.m of masonry is released compared to a value of 48 kg of CO_2 per cu.m for a wall using conventional brick bonds like English or Flemish. Fig.4 shows the houses constructed under the BTPT Model.



Fig. 3: Rat Trap Bond

CAPACITY BUILDING OF TARA KARIGAR MANDAL

One of the major outputs of the project has been the strengthening of the mason community in the region through the facilitation of skill development, providing of work opportunities including their overall social development and registering it as a 'Mutually Aided Cooperative Society'. With the help of master masons of TKM (TARA Karigar Mandal) the model

helped impart eco-building skills to a group of local untrained labour and existing masons who then carried out the construction, thus also providing employment opportunities. 1320 Mason / Master Mason days of work were generated by TKM for 55 Masons. The TKM master masons keep a strict quality control on the construction process. This aspect of the model was hugely successful.

It was observed that at the initial stages, the Karigar Mandal needed a strong support of architect, civil engineer, project manager, accountant, etc (in this case, it was provided by DA) for technical support and business development.



Fig. 4: Houses Constructed under the Model

ENTERPRISE DEVELOPMENT

Completing the value chain, the model also facilitates Enterprise Development in the region, the project served to strengthen the building material production base in the region through the micro-enterprise route. Three local community groups were

trained and supported to set-up micro-enterprises in production and supply of eco-building materials and elements such as Micro concrete roofing (MCR) tiles, (fig.5) precast wall panels, other precast habitat products, etc. MCR-enterprise (Jai Chardwari Samooh) which was established in April 2011 is running in full swing. The enterprise has completed four years from the date of its establishment. This enterprise has done a total business of Rs.10, 38,138/- in 2 years. In addition to the production of MCR tiles, the enterprise is also taking orders for fabrication of MCR roof under structure and laying of MCR roof.



Fig 5: Micro Concrete Roofing Tiles

The second enterprise "Jai Mansil Mata Mandal" of wall-mould, established by Kamata Kushwaha and Narayandas Kushwaha in the second year of the project has started doing business after taking loan of Rs. 22,500/- from revolving fund. In addition to the production of pre-cast boundary wall panels, they are also doing the production of fencing poles, pre cast beams and short pre cast columns. This enterprise has done a total business of Rs. 2, 00,000/- in one-year duration.

The third enterprise was established by women's group (consisting of six members) from Ambabai village (Mahila Udyami Mandal). This group is involved in the production of eco habitat products (fencing poles, flooring tiles, Jaipuri jali, flower pots, etc) and it was established at TARAGram Pahuj. This enterprise has done business worth Rs. 55,000/- in duration of 4 months.

In case of enterprise development with more than one member in group, it was learnt that the group has to be formed by themselves without any external pressure.

HUMAN STORIES

Latchhi Ram, a local mason from Pratappura village joined TARA Karigar Mandal (TKM) 8 years ago with the aim of learning eco friendly construction technologies. Today, he has turned into one of the finest master mason, supervisor and master trainer of TKM and he very proudly says that you name any eco- friendly construction technology and he will be ready to build it for you. He has proved his said words by demonstrating the excellent eco construction work done by him using eco friendly construction technologies like rat-trap bond for masonry wall construction, stabilized mud block construction, plank and joist roofing, brick arch panel roofing, ferrocement channel roofing, brick domes, etc. He has also developed project management skills and now able to take contracts for eco construction works. As of now, he is working in Manali District of Himachal Pradesh for construction of cottages using ferrocement eco construction technology. He is truly an 'Agent of Change' to change the face of conventional construction industry to eco friendly construction industry.

Mahendra Kumar Prajapati, a farmer from Pipra village says, 'Earlier I was living in a kutchha house which had lot of problems (for example every year we had to change the roof, in rainy season rain water would enter the house, etc) and now I had constructed a pucca house using rat trap bond technology for masonry walls and stone-patti slab for roofing. This house was constructed under the 'Build Together Pay Together' scheme of TARAGram / Development Alternatives and access to housing loan from Madhya Bharat Grameen Bank. I have constructed this house together with other four members of our group. It took very less time for construction of our houses when compared to earlier houses (through individual loaning and construction process) constructed in this village. There is lot of improvement in our quality of life after shifting in the new home. Now, the roof is pucca and there is no threat of water entering into the house in rainy season. We also feel proud that we have constructed an eco-friendly house in our village'.

CONCLUSION

This Model of credit based eco housing with 'build together and pay together' and 'bridge funding' mechanism provides economic gains to

all stakeholders involved along with environmental benefits and has great potential for scaling up of affordable eco-building solutions for the working poor in rural areas. The Standard Operating Procedures (SoP) for the model (which is prepared by DA, based on processes put in place for implementation of this model) can be used by Housing Finance institutions, NGO's, etc for providing credit based eco-housing solutions in rural areas.

The State Government Housing schemes (such as the Mukhyamantri Awas Yojana in Madhya Pradesh and the Credit cum Subsidy Scheme in Bihar) based on credit and subsidy model can replicate this model. This model also has a huge potential to achieve the Ministry of Rural Development's (MoRD) Mission of greening the National Housing Scheme.

ANNEXURE 1: SCHEME FOR FINANCING RURAL HOUSING DWELLINGS

S.No	Criteria	Details
1.	Objective	To provide credit to Rural poor for construction of eco house with around 200sft plinth area.
2.	Eligibility	Rural people between the age group of 21-50 having annual income between Rs 60,000/- and Rs 1,50,000
3.	Maximum Loan Amount (to an individual)	For houses: 20 times the total Monthly income or 50% of the total projected housing cost Maximum loan amount Rs 30000/-
4.	Margin money to be collected	Rs.2500/-
5.	Rate of interest	10.5% p.a. (in case of bank loan)
6.	Nature of facility	Term Loan or Overdraft
7.	Repayment period	6 years including a moratorium period of 3 months
8.	Minimum Monthly instalment	Rs 700 or 10% of the total monthly income, whichever is lower
9.	Security	Primary: No security required for loans under this scheme Collateral: In case of pilot project, DA (Implementing agency) offered third party guarantee to the extent of the exposure of the loan amount
10.	Assessment of loan application	Eligibility needs to be generated by Implementing agency and forwarded to the bank for their processing.
11.	Operational area	Rural Areas (defined blocks and Villages)
12.	Processing fee	Rs.500/- per loan
13.	Legal Charges	Maximum charges of Rs 200 to be recovered as a part of EMI
14.	Prepayment Penalty	No Prepayment penalty
15.	Fund Flow Mechanism	The disbursement of loan will be done to the Implementation agency. The disbursement schedule of payment to clients is to align with the stages of construction.
16.	Loan Insurance	Insurance can be availed on the discretion of the beneficiary, with one time one time premium to be taken as a part of EMI

17.	Others	<p>Regular income from all sources could be considered for the eligible loan amount, provided the sanctioning authority is satisfied about the same.</p> <p>The loan amount will be limited to the Cost of project less margin money to be contributed by the applicant or the upper ceiling fixed for the activity.</p> <p>Income of the spouse can be considered for computing the loan amount</p> <p>(i) where the property is jointly held with the spouse and the spouse is borrower</p> <p>(ii) the property is held in single name and the spouse stands as a guarantor</p> <p>The borrower will get the NOC for construction of houses for family on family's land.</p> <p>Land title deed (Patta) in case the house is built on agricultural land. In case of non agricultural land, and the land title deed is not present, the borrower to get an affidavit with plots of lands, and land drawings from panchayat certifying that a particular family has been living in that plot for more than 20 years, and therefore is the claimant to this piece of homestead land.</p>
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ANNEXURE 2: SCHEME FOR FINANCING CONSTRUCTION OF TOILETS

S.No	Criteria	Details
1.	Objective	Credit facility for construction toilets in existing houses.
2.	Eligibility	Rural people between the age group of 21-50 having annual income of Rs 30,000/- or more
3.	Maximum Loan Amount	Maximum Loan Amount Rs 5,500/-
4.	Margin	Rs.500/-
5.	Rate of interest	10.5 % p.a. (Repayment incentive of 2% if the loan is serviced timely for the first 6 months)
6.	Nature of facility	Term Loan
7.	Repayment period	2 years including a moratorium period of 3 months
8.	Minimum Monthly instalment	Rs 200 or 10% of the total monthly income, whichever is lower
9.	Security	Primary: No security required for loans under this scheme
10.	Assessment of loan application	Eligible leads to be generated by Implementation agency and forwarded to the bank for their processing.
11.	Operational area	Rural Areas (defined blocks and Villages)
12.	Processing fee	Rs.200/- per loan
13.	Legal Charges	Maximum Charges of Rs 200 to be recovered as a part of EMI
14.	Prepayment Penalty	No Prepayment penalty

15.	Others	<p>Regular income from all sources could be considered for the eligible loan amount, provided the sanctioning authority is satisfied about the same.</p> <p>The loan amount will be limited to the Cost of project less margin money to be contributed by the applicant or the upper ceiling fixed for the activity.</p> <p>Income of the spouse can be considered for computing the loan amount</p> <p>(i) where the property is jointly held with the spouse and the spouse is borrower</p> <p>(ii) the property is held in single name and the spouse stands as a guarantor</p>
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ANNEXURE 3: BUILD TOGETHER, PAY TOGETHER MODEL

During the initial stage of implementation of demo project by DA, it was found that individual loans system for construction of rural eco houses was not very successful due to following reasons

- More paper work for each individual housing loan
- Bank / Financial institution has to deal with all the clients on individual basis which takes more time.
- Different stages of construction in case of each individual household.
- More time to complete the construction of eco houses.
- No proper repayment collection

Thus, during the later stage of the demo project, the grouping mechanism was evolved with the help of Bottoms Up Consultants "to overcome the above mentioned roadblocks for the successful implementation of this credit based rural eco housing scheme. This grouping mechanism so called 'Build Together Pay Together' was tested on ground and was very successful with positive results.

Rationale

The grouping system will essentially validate choice of housing loan / toilet loan borrowers bring in efficiency and co-ordination in the construction process and bring peer-pressure in the repayment

process. The groups formed would be responsible to 'build together and pay together' meaning that they will have to take onus of ensuring building progress of other group members and also assume joint liability over other group member repayments. The grouping process will reduce the primacy of the Implementing agency representatives' role in the process and thereby insulate them to some extent. Peer pressure has also been known to be an effective tool to secure repayments.

Through the grouping, beneficiaries have greater control on the process and can ensure that the process works in their favour, Implementing agency can insulate itself in a large measure from the credit and operational risks since the collective will act as a buffer layer especially in a scenario where Implementing agency acts as a 'bridge funder'. The coordinated process will also aid the bankers since it will be easier for them to track and report progress. An important aspect of the grouping recommendation is that, while the grouping of beneficiaries is done in the village at the level of implementing agency, at the level of the bank, the group would not be a recognised entity vis-à-vis the loan. As far as the bank is concerned, the loan is an individual housing loan, and the borrower alone is responsible for the repayment of all loan related dues. The recommendation to create groups is primarily for the benefit of the beneficiaries and reduced risk, convenience and efficiency for Implementation agency and bank / MFI. While the bank/ MFI would also benefit from the extent of co-ordination that groups will bring in, this is more at a process level rather than at a product level.

Rules and Features

	Particulars	Details
1.	Purpose of groups	Construction of low cost eco houses within the village in collaboration with Implementation agency through the use of bank loan
2.	Geographic Limits	Group Constituents to be within one village, within walking distance of each other
3.	Gender Combination	No restriction
4.	Age Limit	18-60 years at the time of loan sanction
5.	Group Size	Minimum 5, Maximum 8
6.	Other Restriction	Permanent residence in village for 3 years at least, Persons of the same family not to be members of the same group ¹
7.	Group Status	JLG internally and for Implementing agency. Individual liability vis-à-vis bank.
8.	Representative	Coordinator appointed in rotation (must be literate) ²
9.	Group Functions	a.
10.	Nature of loan	Individual Loan
11.	Nature of Liability of Members	Own and collective mutual guarantee for other members internally and in dealings with Implementation agency. Individual liability while dealing with Bank
12.	Other loan terms	As advised by bank from time to time
13.	Additional Group Compliances	Deed and Mutual guarantee documentation Meeting records Accounting for all cash transactions
14.	Bridge Finance Availability	Yes
15.	Bridge Finance tranches	Four tranches of 7500 each ³
16.	Bridge finance terms	Same as bank loan
17.	Bridge finance repayment	From Bank Loan (interest to be paid by borrower)
18.	Total Loan tenure	Bridge loan tenure + Bank loan tenure

Snapshot: Process

1. Implementation agency would shortlist⁴ a village based on the feedback from bankers / financial institutions and carry out awareness activities detailing the requirement of a low cost eco-friendly houses and its benefits to the village residents covering specifically, members who are ineligible to apply
2. Interested villagers to be explained the housing construction and loan process and to be advised to come in groups
3. Sites as proposed by interested villagers to be inspected by implementation agency officials and certified as appropriate for the project
4. Simultaneously, process of securing No-objection from banks to be carried out

¹ Family defined as father, mother, wife, children, grandchildren, brother, sister, mother-in-law, father-in-law and first cousins.

² Coordinator preferably not to be reappointed successively and before all other eligible members finish their turn

³ It is presumed that DA wishes to continue with tranches that are similar to the product specified in the product of Madhya Bharat Gramin Bank

⁴ Try to avoid villages in which DA is working on grant based projects.

5. Self Group formation by the clients
6. Filtration and finalization of group by implementation agency representatives
7. Implementation agency representatives to explain BTPT and Bridge Fund processes to all the group members.
8. Groups to be Trained on group administration and rules of BTPT and Bridge Fund Processes
9. First group coordinator to be appointed
10. Group coordinator to create a list of all group members
11. Testing of the groups by implementation agency representative and final certification / registration of the groups.
12. Simultaneously, Implementation agency representative and group coordinator to finalise designs for each house
13. Villagers who come through all the above processes to be constituted into groups by executing the group deed, the joint liability agreement and a bridge finance application (with an undertaking to repay as soon as funds are received from bank) in the presence of a notary public. Implementation agency representative to reiterate the functions and duties of the group
14. Group coordinator to collect all documentation required for savings account and loan account opening from each member
15. Implementation agency representative and Group-coordinator to ensure savings account opening and loan account opening for all members
16. Group coordinator to also collect and hand-over to implementation agency representative initial earnest money from each member
17. Next group coordinator to be appointed
18. Construction process to commence and ask all the group members to complete up to plinth level as per the drawings submitted to the bank.
19. Implementation agency to provide bridge finance tranche 1 after completion of plinth level.
20. Implementation agency representative to secure material and labour as required and advice timelines to masons
21. Group coordinator and Implementing agency representative to monitor and report progress and to ensure uniform completion of phases
22. Group coordinator to ensure regular group meetings
23. Tranche 2, Tranche 3 and Tranche 4 of loan to be provided as per progress
24. Upon sanction of Tranche 3, Group coordinator to facilitate bank inspection
25. Construction completion
26. Group coordinator and Implementation agency representative to secure full bank loan for each member
27. Implementation agency bridge finance to be repaid by bank / client in full
28. Next Group coordinator to be identified. New coordinator to be appointed for every 6 months
29. Repayments to commence. Group coordinator to ensure collection of instalments from each member prior to due date
30. On date prior to due date if there is shortfall on account of some member, other group members to make up for shortfall
31. Group coordinator to make repayment to bank and secure evidence in pass book
32. Group coordinator to report repayment status to Implementation agency representative

