WASSAN

Under Estimating the Estimates ….
Piloting Andhra Pradesh Rural Employment Guarantee Scheme (APREGS) – 2005
in
Parigi Mandal, Ranga Reddy District

Report – IV: February 23 to March 4, 2006

The Pilot Project on APREGS anchored by WASSAN is not only brining issues at field level, but also helping to field test the soft ware and other systems that are being designed for the entire state and country.

Hard Times ahead with Software?

GoAP engaged services of Tata Consulting Services (TCS), Hyderabad to develop a software package for APREGS. This package is expected to help in the following aspects.

- Creating and analyzing data base of the program (applicants profile, works, budgets, expenditure and so on)
- Develop estimates and monitoring the project activities.
- Generating reports
- Other applications

The software is also expected to establish transparent project management systems and help in decision making at different levels. WASSAN is engaged with the TCS team and providing field level inputs to the TCS team from time to time. Based on the issues raised by the pilot experiences from WASSAN and others at MDO office, several improvements are taking place in the software. In previous reports also, WASSAN brought several software related issues to the notice of the readers, regarding job cards, exclusion of villages, data gaps in application forms and so on. Some of these issues are addressed by TCS, while others are yet to be addressed.

They also have entered into an MOU with Government of Andhra Pradesh for developing the same and providing support services in future. Domain knowledge is being provided by APREGS team at CRD, AMR APARD and district level officers. The field testing is taking place at Parigi mainly and other districts also are contributing to this process. The TCS team developed a broad framework for the software for the APREGS. Within this broad framework, the sub components of software are being developed while the project is progressing in the pilot villages. Several meetings and consultation are taking place at Hyderabad level, but the field testing of the software is making the entire exercise relevant to the field level issues.

Data Gaps in Application Forms -- Outsourcing the Problems OR Outsourcing Data Entry Task ?

Parigi Pilot is lucky to have a computer and data enter operators at Mandal Development Office as part of the pilot. The data entry operator tried hard to get complete and correct information of application forms, before issuing the job cards. In previous reports, the data gaps in applications forms were mentioned. Since this computer centers and data entry operators are not established in several districts, the task of entering the data of job cards

is "out sourced" in these districts. The experience of Pilot villages clearly indicates the need for pre-entry verification of the application forms. This hurried entry of data and issuing job cards could create a very weak data base of the project. One wonders, whether we are postponing the problem by outsourcing the problem.

Inventing Missing Villages – A Soft Touch:

In the previous report we mentioned about the missing villages in the inventory of villages in Parigi mandal. Based on requests from Pilot Team, TCS team redesigned the soft ware package to include such missing villages in the inventory of the villages. Incidentally, they also faced with similar problem from other parts of the state also. The MDO has to authorize the reinventing process of missing villages and give a code for each village (Based on the list that is normally available with MDO). In this process, Roopkhanpeta village is now in the list of the villages and other villages also can be accommodated now.

Missing Applicants:

While the TCS team redesigned the program and loaded the estimates part of the package, some of the old data got erased (by mistake??). As a result, data of about 800 applications is being reentered into the computer again. What kind of precautions are necessary to look into such accidents?

Underestimating the Estimates…

Pilot Team conducted several participatory exercises in three villages and generated the list of interventions such as earthen bunds, farm ponds, de-siltation of tanks, repairing of feeder channels, repairing of tanks, deepening of open wells and so on. The Pilot Team prepared the list of interventions and related details (such as location of works, number of farmers, dimensions of proposed activities and so on). Based on this "Input Sheets" (Refer **Box**) are

Input Data Sheet – What it contains?

An "Input Data Sheet" is developed for each type of work (such as farm pond, earthen bund, de-siltation, horticulture and so on. Depending on the nature of work, the data/ details in each input data sheet would differ. The field assistant is expected to fill these "Input Data Sheets" foe each type of work. Data Entry Operator at the MDO office uses these sheets for feeding into computer to generate estimates of that particular work. This estimate consists of details of earth work, material, unit costs, person days of employment generated. Along with these details, each work would also have a unique identity number and drawing of the activity. Typically, an Input Data Sheet for a farm pond consists of the following details.

General Information:

1. Name of the Grama Panchayati
2. Name of the Village/ Habitation
3. Name of Work
4. Work Scope (Purpose of Work)
5. Name of the farmer(s) and Caste
6. Survey No(s)
7. GPS (Longitude and Latitude)
8. GP/MP/ZP Priority No:

Technical Information*:

1. Approximate Catchment Area (Acres):
2. Soil Type
   a. Hard (Rocky Soil/ SDR/ HDR
   b. Ordinary (Red/ Morum/ Clay/ Gravel)
3. Top Length of Pond (M):
4. Top Width of Pond (M):
5. Depth of Pond (M):
6. Stone Availability (Km) – (0-2.5; 2.5-5; 5-10; 10-15; >15)

Name of the official filling these details:
Designation of Officer filling these details:
Signature: Date:

* This data differs from work to work.

prepared. TCS team came to Parigi and tested the estimates of the works. This report describes the issues related to estimates of the proposed activities in pilot villages.

Like application forms, the Input Data Sheets also changed several times. (Refer **Annexure-1** and **Annexure-2** of Input Data Sheets). Several teams worked on these sheets together and independently. The logic of each "data" was discussed several times and finally the input data sheets are developed. The only problem is that these input data sheets and rest of the processes are not consistent. The Pilot experiences brought this point clearly. The teams engaged in designing of the Input Data Sheet such as AMR APARD team seems to have **not** seen the outputs of the software, so far, even after the field testing is over almost a week back.

The testing of software package is conducted in case of farm ponds and de-siltation of the tanks on 24th Feb 2006, at Parigi. The estimation of Farm Pond is explained in a detailed manner and estimates of other works are referred to substantiate any point.

In the pond on the bank -- Data Input Sheet for Farm Pond:

Theme	What is expected? *	Difficulty Faced	Suggestion
Name of the Work:	The Name of the work is supposed to help in tracking the location of work and also monitor the progress (along with Unique Identification No).	The Data Entry Operator or the Pilot Team named the work as "Farm Pond". The team could not establish the uniqueness or identity of work by giving a clear name.	Field Assistant and Data Entry Operator need considerable inputs and training for filling these forms. This training has to be on the job training.
GPS	This GPS data is expected to create unique identity of work and avoids the duplication of work.	The Pilot Team does not have the GPS instrument. It is most likely that many of the Field Assistants also do not have this instrument.	Depending on the commitment of the administration on the use of GPS, this data could be kept in the data input sheet. If it is not possible to give this instrument to generate GPS data, it is good to avoid this. The field assistants need considerable training on the use of this equipment.
GP/MP/ ZP Priority No	The priority of each work has to be decided first at Grama Sabha/ MP/ ZP, before filling up the Data Input Sheet.	Though the interventions are decided during PRA and transact walk, Pilot Team did not get a clear picture of the priority of each work.	It is important to decide when the priority of works will be decided. -Is it before estimates or after estimates? If it is after estimates, the Data Input Sheets need not have this point. If it is before the estimates, on what basis do they decide the priority?
Technical Information			
Catchment area of Farm Pond	It is useful for deciding the size of the pond.	The PRA team did not collect this information. Only location of the pond was identified. The size of the pond is fixed. The data on catchment is irrelevant, when the size is fixed.	If the design is standardized for any value of catchment, this input is redundant.

Theme	What is expected? *	Difficulty Faced	Suggestion
Soil Type	Helps in estimation of the farm pond.	The data given in input sheet and options in computer soft ware are not consistent with each other.	It is important to synchronize input data sheet and options in the computer package.
Stone Availability (Distance)	This data is useful for estimating the lead.	It is not clear whether exact distance has to be mentioned or not. There is no synchronization between input data and options available in software.	

** This clarity emerged only during discussion with APREGS team and Pilot Team. Before this, the Pilot Team did not have enough understanding on these aspects.*

The Pilot Team completed the Data Input Sheet and gave to the Data Entry Operator at MDO office in the presence of TCS team and Director, APREGS. At all the stages of data entry, the guidance and assistance of Director, APREGS was needed to fill the Input Data Sheet. When the data entry was over, the output was also generated from the computer. **(enclosed in Annexure – 3, Annexure – 4, Annexure – 5 and Annexure – 6).**

The estimate of the Farm Pond is full of surprises!!!

- The total estimate is Rs 14,806/- for a farm pond of 10 M X 10M X 1 M (with a bottom section of 8 M X 5 M. The cost of a typical farm pond of similar size would be between Rs 4500 to Rs 6000/- (Including labor, material and transport).
- The actual estimate of excavation came out to be Rs 6432/- including stone pitching (43% of total estimate). The volume of earth excavated is found to be correct, based on the standard engineering estimates.
- The silt trap is also not a compulsory component in the farm pond, particularly, when the water flows from all sides into the farm pond. The earth work this component is about 10% of the total earth work.
- The charges for watering and Aaya are estimated to be Rs 7040/-, which is about 48% of total estimate.
- The hire charges of tractor are Rs 1334/- (about 9% of total estimate). The normal transport charges by tractor range between Rs 150 to 200 per trip for 2.8 cum of stone (about 1 to 2 Km including loading and unloading).
- 0.45 Cm thick stone pitching was adopted for estimating the volume of stone work. The normal practice is to take 0.225 Cm thickness for stone pitching. As a result the estimate for stone pitching is almost doubled.

When these issues are brought to the notice of the TCS team by the Pilot Team, they made some modifications in the software and brought down the number of person days for watering and Aaya to 8 and reduced the corresponding estimate to Rs 8406/-.

Inconsistent Practices …

There is gap between proposed planning process, Data Input Sheets and computer software. This issue is well illustrated by earthen bunds.

Planning Exercises:

- In the name of simplifying planning process, demand for works is generated in Grama Sabha and these are converted into inventory of activities. In tune with this, Secretaries are generating the following details for earthen bunds.

    - Name of Farmer
    - Caste of farmer
    - Survey Number
    - Area of land

The Pilot Team conducted PRA in three villages and generated an inventory of activities that are identified by the villagers. These activities are listed by the Technical Assistant. (Refer Inventory of Activities in Ibrahimpur). Based on this, further field visits are conducted to generate "data" as per the needs of "Data Input Sheet". In spite of these efforts, some required data could not be generated in the given time. It is difficult to generate the technical rigor in the data sheets, in the given time and quality of technical assistants.

Data Input Sheets:

- The Data Input Sheet does not have space for the above details. In stead, the Data Input Sheets ask for "Length" of earthen bunds and number of outlets.

Data Entry and Estimates by Computer Software:

- Computer software does not have space for some of the data that is generated or takes the data only in a particular format, which is not there on the Data Input Sheet (such as types of soils).

Some Critical Issues in Soft Ware Applications (Mainly Estimates) of APRGES:

It is important to develop perfect synchronization and harmony among the following three stages of the estimation processes.

1. **Planning and Data Generation:**

    The planning process or demand generation process should be fine tuned to generate "Data Input Sheets" for each of the identified works. For doing this, it is also important to answer following questions:

    a. What data can be generated practically with what kind of accuracy?
    b. Can this data be used for estimating and other requirements?
    c. Can the existing teams (Technical Assistants and Field Level Assistants) generate this data through the available planning tools?
    d. What kind of capacities should the project build in them?

- Some of the activities require detailed engineering surveys (Such as Percolation Tanks and so on) and field to field visits (Such as length of field bunds).
- The planning team should have adequate time and capacities to conduct the planning exercise to fulfill the needs.
- It is important to orient the planning team on data requirements of the planning process and subsequent steps (estimates, monitoring, finances and so on).

2. Designing of Input Data Sheets:

The main principles for designing of data sheets should be:

a. Minimize redundancy of data
b. Should be consistent with field level planning process
c. Practicality in generating the data
d. Satisfy the planning needs

Currently the Data Input Sheets have changed several times. It is likely that these Data Input Sheets might further change, after testing them in the pilot villages. It may be remembered that the inputs from Pilot are used to improve the application forms and job cards.

3. Testing the Correctness of Outputs:

The outputs of the software also need to be "tested" and verified. The verification has to be conducted in the following aspects.

a. Rationale of technical design and data requirements
b. Rationalization of costs for drinking water supply/ Aaya.
c. Accuracy of mathematics/ calculations/ use of formulas
d. Drawing of the designs

It is important to test the outputs for every type of work and different sizes of works. This testing process needs to be consistent with planning (data generation) and data compilation (input data sheets) and outputs (accuracy of outputs).

4. Other Issues:

a. Abilities of the data entry operator are very critical in this entire exercise. The main limitations are command over English (for translating from Telugu to English) over coming the limitations of data gaps (which is a common practice); ability to generate outputs as per the needs of the decision making bodies.
b. Menu Driven Enquiries and Analysis: Currently the package does not have menu driven options for analysis of the data. This option is important though it may be very difficult to image the range of queries.
c. Though the package is developed "free" of cost, GoAP is likely to pay considerable amount of money for installing the package in each district. As indicated in the Pilot, the hand holding support requirements to run this package could be enormous, which has huge implications on the finances and permanent dependency on the software.

Annexure – 1:

Input data Sheet

Mini Percolation Tank

1. Name of Gram Panchayat : ----------
2. Name of Village / Habitation : ----------
   ----
3. Name of Work : ----------
   (Include location/landmark details)
4. Work Scope : ----------
   (Mention purpose of work)
5. Name of the farmer(s) : ----------
6. Survey no. : ----------
   ----
7. Priority No. : ----------
8. Soil type (Ordinary soil / Hard /Medium) : ----------
9. Jungle Type (Light Jungle/Medium Jungle/ : Heavy Jungle/ July Flora Clearance/Scrub jungle) ----------
10. Top Width of Bund(m). : ----------
    ------
11. By Wash Width(m) : ----------
    -
12. Length of Bund(m) : ----------
13. Chainage Distance(m) : ----------
14. Stone Availability (Km) : ----------
15. Depth of Stripping(m) : ----------

Annexure – 2:

Input Data Sheet (ప్రాథమిక సమాచార పత్రము)

EARTHEN BUNDING (మట్టి కట్టలు)

General Information (సాధారణ సమాచారము)

1. Name of Gram Panchayat :
   గ్రామ పంచాయితీ పేరు
2. Name of Village / Habitation :
   గ్రామము/నివాసపు పేరు
3. Name of Work :
   (Include location/landmark details)
   పని పేరు (ప్రదేశము/గుర్తింపు స్థలము)
4. Work Scope :
   (Mention purpose of work)
   పని యొక్క పరిధి (పనియొక్క ఉద్దేశ్యము)
5. Name of the Land owners benefited :
   లబ్ధి పొందిన భూమి యజమానుల పేర్లు

రైతు పేరు Farmer's name	కులము (యస్.సి./యస్.టి./బి.సి./ఇతరులు) SC/ST/BC/Others
1.	
2.	

6. Survey no(s) (సర్వే నెంబర్లు) :
7. G P S (భౌగోళిక స్థానం)
   Longitude (రేఖాంశము) :
   Latitude (అక్షాంశము) :
8. GP/MP/ZP Priority No. :
   గ్రామ పంచాయితీ/మండల పరిషత్/జిల్లా పరిషత్ యొక్క ప్రాధాన్యత సంఖ్య

Technical Information (సాంకేతిక సమాచారం)

1. Bund Length (m) :
   (కట్ట పొడవు (మీ))
2. Soil type : Hard (Rocky Soil/SDR/HDR) Ordinary/Red /Morum/Clay/Gravel
   నేల రకము : గట్టినేల(రాతి/యస్.డి.ఆర్/హెచ్.డి.ఆర్) సాధారణ:(ఎర్ర/మొరం/బంక/గరుగు)
3. No. of Stone outlets :
   (మత్తడి/ రాతి పట్టీల సంఖ్య)
4. Stone Availability :
   (రాళ్ళు లభించే దూరము (కి.మీ))

0-2.5	2.5-5	5-10	10-15	>15

Name of the official filling these details :
(సమాచారము నింపిన అధికారి పేరు)
Designation of officer filling these details :
(సమాచారము నింపిన అధికారి హోదా)

Signature (సంతకం) Date: (తేది)

Annexure – 3

Andhra Pradesh
Rural Employment Guarantee Scheme

Detailed Work Report: Farm Pond

Name of the Work	: Construction of Farmpond in pambala chendraiah land
Category of Work	: Water Conservation & Water Harvesting
Type of Work	: Farm Pond
Description of Work	: Harvesting rain water in 10 acres of cachment area
Work ID	: 15203291302101T001
Name of the Farmer	: pambala chendraiah
Proposed by	: Gram Panchayat
Survey Number	: 106
Extent/ Area (Acres)	: 10
Administrative Sanction No.	:
Village	: RUPKHANPET
Grampanchayat	: RUPKHANPET
Mandal	: Pargi
Estimated Cost (Rs.)	: 8406
(a) Labour Cost	: 8406
(b) Material Cost	: 0
(c) Person days generated	: 83

This estimate is prepared as per Rural SSR 2006-07 and the following provisions are made in this estimate.

1. Earth work excavation in Ordinary soils and depositing for bund formation including breaking clods, ramming and sectioning

Verified the estimate with reference to Input Data Sheet.

Signature of TA/AEE:
Name:
Date:

Mandal Program Control Center: Ranga Reddy
System developed by Tata Consultancy Services Limited

Annexure – 4

Work ID: 15203291302101T001
Survey Number: 106

Abstract

Type of Work : Farm Pond

Name of the Work : Construction of Farmpond in pambala chendraiah land

Sr No.	Description of Item/Task	Qty	Units	Rate (Rs.)	Labour Cost		Material Cost (Rs.)	Total Cost (Rs.)	Person days
					(Unskilled) (Rs.)	(Skilled) (Rs.)			
1	Earth work excavation in Ordinary soils	77.42	Cu.m	43.00	3329	0	0	3329	41.6
2	Collection and Dry Packing of 225mm stone for Stone Outlet	31.03	Cu.m	100.00	3103	0	0	3103	38.8
3	Tractor Hire Charges for Stone Outlet	31.03	Cu.m	550.00	0	1334	0	1334	2
4	Water Person Charges	4	Days	80.00	320	0	0	320	4
5	Aaya Person Charges	4	Days	80.00	320	0	0	320	4
	Total				**7072**	**1334**	**0**	**8406**	**83**

Mandal Program Control Center: Ranga Reddy
System developed by Tata Consultancy Services Limited

Annexure – 5

WASSAN

Work ID: 15203291302101T001
Survey Number: 106

Detailed Estimates

Work Specifications

Catchment Area (Sqm)	40470	**Soil Type**	Medium
Diesel Rate		**Total Diesel Cost**	234.00
Tractor required days	2	**Stone Availability**	3

Estimates

Sr No	Description of Item/Task	Nos	Length (m)		Width/ Breadth (m)		Depth/ Height (m)	Qty	Units
			Top	Bottom	Top	Bottom			
1	Earth Work excavation							77.42	
1.1	Main Pond	1x1	10	5.00	10	8.00	1	70.00	Cum
1.2	Silt Trap	1x1	2.00	1.00	2.50	1.00	1.00	1.50	Cum
1.3	Inlet	1x1	2		2.50	1.60	0.45	1.85	Cum
1.4	Toewall	1x1	0.45		8.00		0.45	1.62	Cum
1.5	Silt Trap Toewall		0.45		1.00		0.45	0.20	Cum
1.6	Outlet	1x1	2		2.50		0.45	2.25	Cum
2	Collection of Stone and dry packing	-	-		-		-	31.03	Cum
3	Transportation of stone	-	-		-		-	31.03	Cum

This is to certify that the above detailed estimates were verified and found correct.

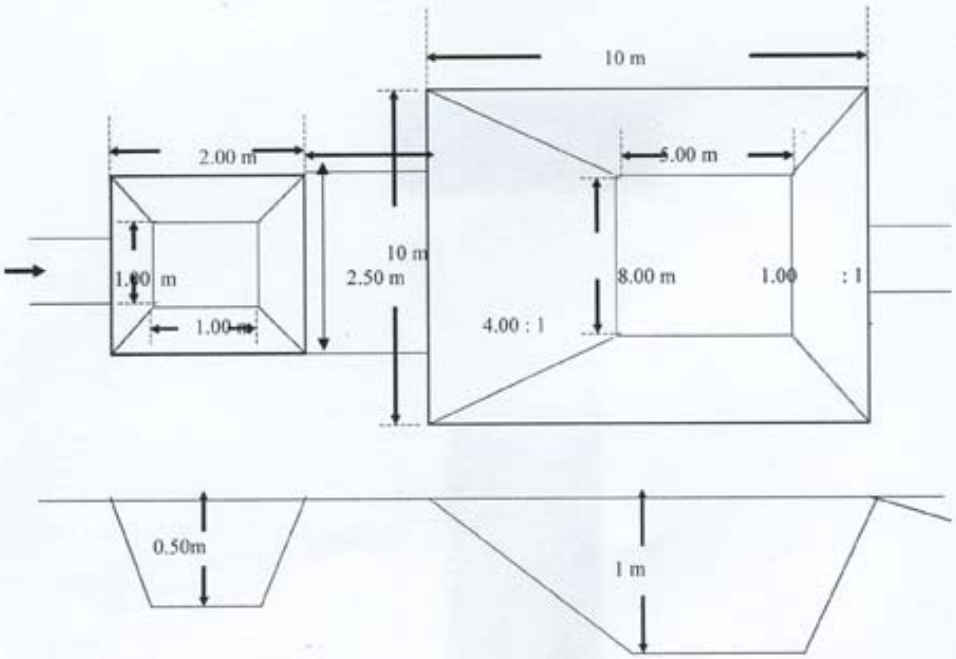
Signature:
Designation:

Mandal Program Control Center: Ranga Reddy
System developed by Tata Consultancy Services Limited

Annexure – 6

Work ID: 15203291302101T001
Survey Number: 106

Diagram



Mandal Program Control Center: Ranga Reddy
System developed by Tata Consultancy Services Limited