TD 608
Project Management and Analysis

Part I
Project Conception and Execution

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Lecture 3

Project Conception

Recap

- *Gudwanwadi* and *Shilarwadi*
- Base-line data and a better understanding of the problems of both.

Let us now try and formulate projects for Shilarwadi

Issues of Shilarwadi

- Poor nutrition of villagers at 1650 kcal/day.
  - many reasons, esp., 550 kgs./acre, poor diet-mix.
- Accessibility of water
  - No water for agricultural use.
  - Time spent for procuring water 50,60,80 hrs/month/family in the months of March-May.
- Firewood collection time does not exceed 20 hrs/month/family.
- and many others ...

Objective: Increase nutrition

- What is current diet?

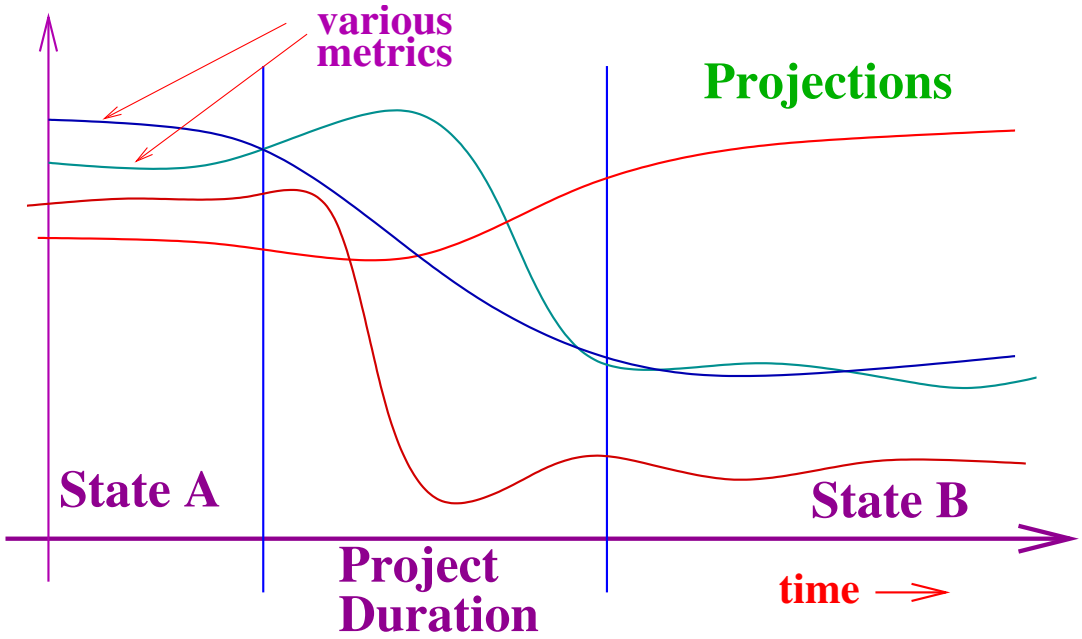
Kg/adult male/year and in Gcal/year					
Rice	89	0.335	Nachni	18.23	0.073
Vari	4.83	0.0193	Pulses	6.40	0.0269
Veget.	20.3	0.0811	Fish	8.7	0.0148
Meat	3.96	0.0067	Milk	5.97	0.004

- This is about 161 kg per year, i.e., about 1651 Kcal/day.
  - Capacity for useful work is about 1050 Kcal/day, i.e., about 4 hrs/day.
- Even worse for women and children

The Project

- What is situation now? Metrics
- What is to be done? Alternatives
- How do we know we have succeeded? Important
- How do we do it? Planning

What is a Project



- A project is a time-bound intervention to change the state of a system.
  - A project must end
  - A scheme is ongoing such as EGS.
  - A package is a response to an exceptional situation, such as flods.
- A project creates assets
  - These may be physical as well as in knowledge, practices and methods.

The Project Objectives

- Identify the current state
  - Base-Line Survey
  - The detailed nutritional survey
- Define the objectives
  - Improvement in the diet of the people
  - The intake will be 2000 Kcal/day in 2 years
  - This will be measured in the following way ...
- Identify the beneficiaries
  - The people of Shilarwadi
  - The land-holders in Shilarwadi?

The Project Document

Chapter 1

- Preamble
- The Survey and Methodology
- Discussion and Conclusions

Chapter 2

- Motivation for the project
- The objectives and the methodology
- Identify the beneficiaries

Lets list the alternatives

Agricultural

- A1 Increase in the productivity of land from 550 kg/acre?
- A2 Possibility of two harvests on some of the lands? Grow a second crop.
- A3 Decrease fallow periods? This will increase average yield per acre.

Market

- M1 Increase in working hours? Devote it to external labour thereby boosting incomes.
- M2 Develop skills other than agriculture. Use them to generate income.
- M3 Gather more forest produce and sell it. Use money to supplement diet.
- M4 Grow a cash crop?

Others

- O1 Get more cows so that dung will increase and milk quantity will increase.
- O2 Have a kitchen garden for all families.

All of the above?

Classification

- Direct-Supplementary
  - Increase the availability of current food sources.
- Direct-Complementary
  - Introduce alternate food sources.
- Indirect
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- Governance
  - Is the PDS (rations) reaching them?
  - Can the EGS be deployed to increase incomes?
  - Do the land-records match the area under cultivation?
  - Can we implement *Jal-Swarajya* and save time?

We will not look at the governance issues for the moment.

The basis for a project

Detect a *virtuous cycle* which, on key inputs shifts to a higher surplus.

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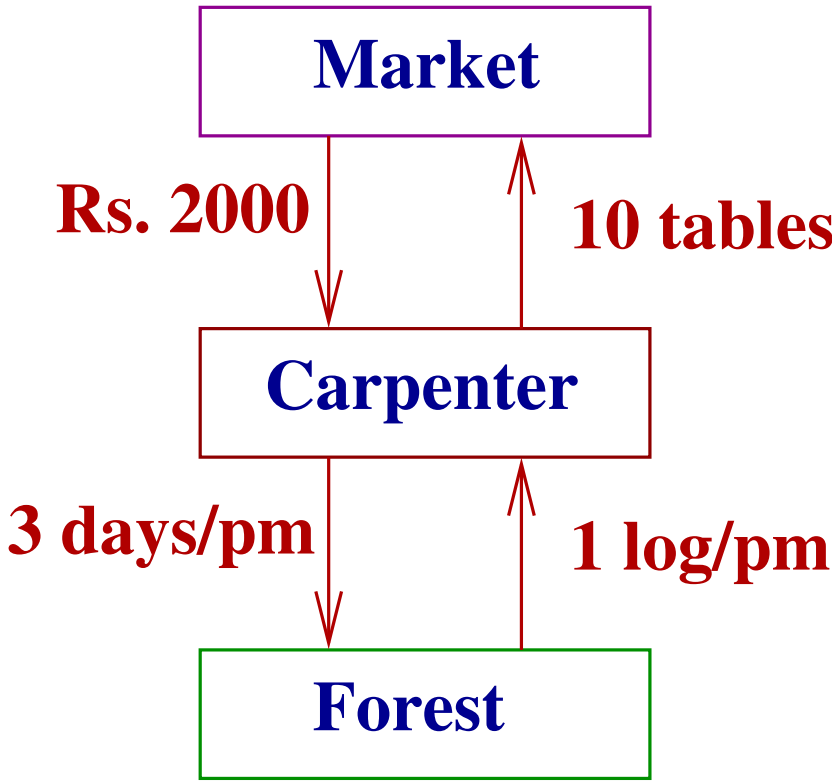


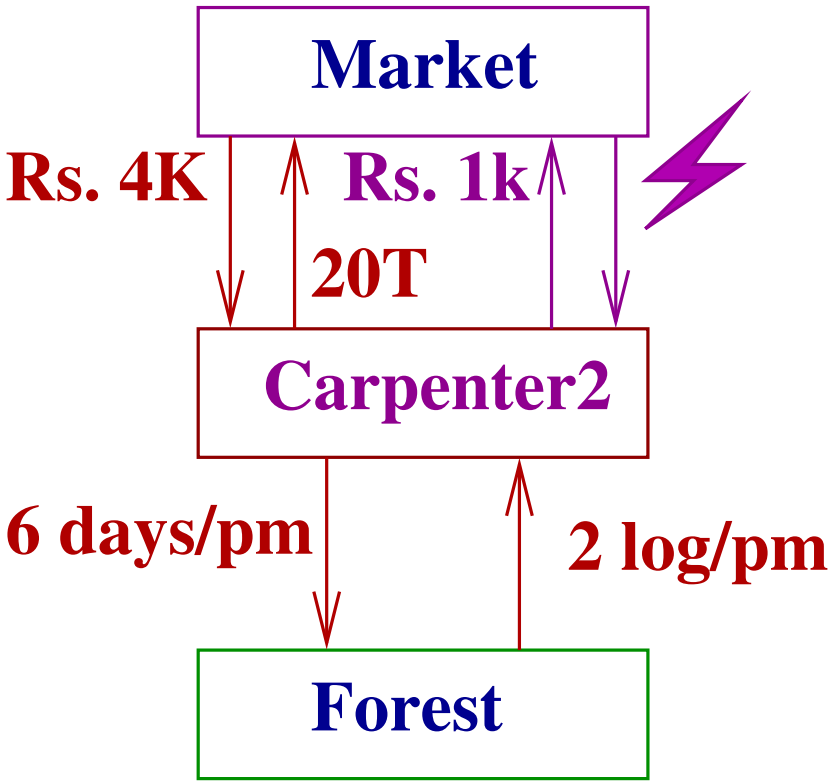
State A

- A carpenter cuts one log a month. He takes 3 days to cut a tree.
- He makes 10 tables out of this, using his tools. He takes 2 days per table.
- He sells them at Rs. 200 each to make Rs. 2000 p.m.

A possibility

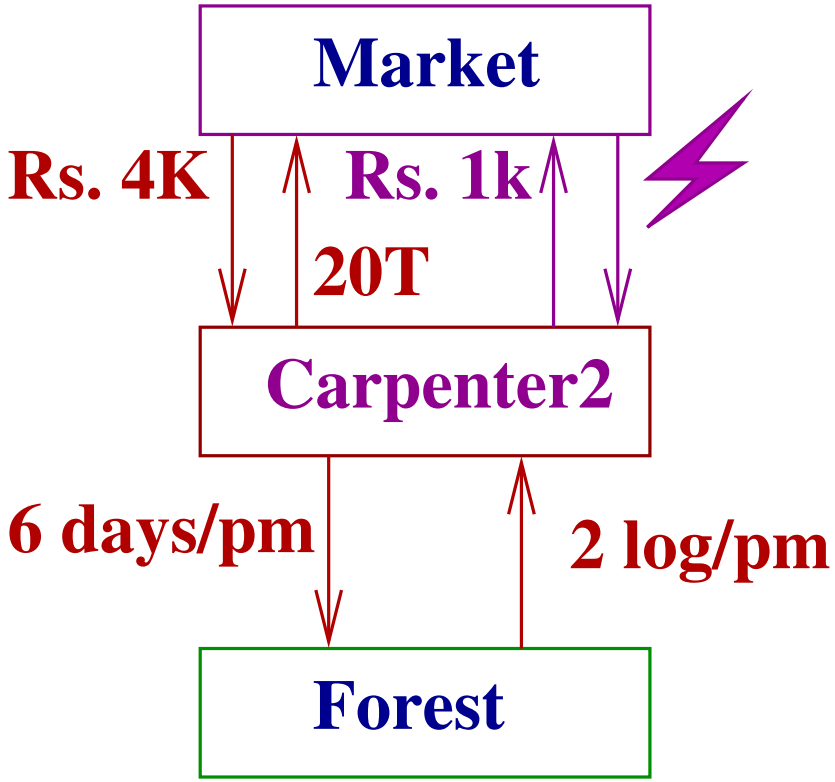
State B

- A carpenter cuts red 2 logs a month. He takes 6 days to cut a tree.
- He has an electric saw:
  - This cost him 20K.
  - The electricity cost 1K p.m.
- He makes 20 tables out of this, using his tools. He takes 1 day per table.
- He sells them at Rs. 200 each to make Rs. 4000 p.m.



Analysis of State B

- Economic Analysis
  - Income: Rs 4K
  - Expenditure: Rs 1k electricity, Rs. 400 depreciation,OM.
  - One extra day of work.
  - net change: Rs2.6-Rs2=0.6K/pm
- Technical
  - Carpenter must be trained in use of machines
  - Electricity must be present
  - Repairer must be nearby
- Risk: electricity rates, market price.



- Sustainability
  - now 2 logs/pm
  - And the electricity.

Alternate Analysis

- The earlier analysis is for the bank-manager who approved the loan for the machine.
- Lets look at the ecological analysis:
  - Now, there are two logs p.m. which need to be cut.

  $\longrightarrow$ can the forest support this?
  - There is an electricity consumtion of Rs. 1000 p.m.

  $\longrightarrow$ what is the carbon footprint?
- Economically too:
  - Rs. 400 go to maintenance. Thus, this will employ an electrician about 4% of his/her time.
  - This may well have other effects-social technical know-how may increase.

  $\longrightarrow$ This newly-created electrician may repair pumps.
- The transition itself needs resources:
  - A loan of Rs. 20K, and a machine to be made.
  - What the effects of such demands on a growing/industrializing society?

Who else is affected?

- Society, i.e., the people and the resources.
  - Costs: Extra log p.m., and Rs. 1000 of electricity
  - Benefits : better living for the carpenter and employment creation for 0.04 of an electrician.
- What about the competition?
  - `Carpenter2` has a price-advantage which she may use.
  - `Carpenter1` may become job-less, unless she too mechanizes!
  - Even worse, `Carpenter2` benefits from innovation in machine technology and a cheaper machine, a more likley event than improved human skills at carpentry.

All this makes it very complicated, but there are some guidelines:

- Idetification of Replenishable Resources.
- Efficient and Equitable Allocation of these resources.
- Development of Technology and Practices for Convivial utilization.

But more on this later

Lets get back to *Shilarwadi*

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The Shortlist

- Short-List
  - based on our technical capabilities
  - possible extent of project and costs
  - based on community skills and extent of disruption
  - ecological impact and sustainability
  - external linkages and risks
- Select from the short-list to detail
  - prepare a rough technical and implementation plan
  - assess the impact, risks, and economic outlay

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Based on this:

- We discard market-based options-risky, long-range and possibly beyond our scope. We also discard getting more cows-we dont have the know-how.
- We list the others:
  - Increase productivity
  - Two harvests
  - Reduce fallow periods
  - Have a kichen garden
- We choose two for deeper analysis:
  - Reduce fallow periods
  - Have a kichen garden

In detail

Have a kitchen garden -Recall BAIF wadi program

- Develop a plan for a typical (small) plot of land.
- Outline the inputs required- skills, water, farm-inputs, infra-structure
- Match plan and inputs to specific location.

- Examine feasibility-technical, social and economic
- Examine sustainability-technical, social and economic
- Examine risks and efficacy

All of these questions must have explicit and detailed answers in the Final Project Document.

The Facts

The first questions:

- What vegetables grow in that region and in what months?
- What is the procedure of growing these vegetables? Is there course-material and does it need training?
- What is the cost of the seeds and where are they to be obtained?
- What sort of soil is required? What is the produce to be expected per acre?
- How much water is required and how is it to be provided?
- What are other inputs such as fertilizers and pesticides and what are their costs?
- What is the nutrition in vegetables?
- Have I missed something?

All of the above questions must be answered in a detailed document.

It is also clear that the resource-person must understand agriculture.

Here are the answers

Traditional Vegetables

- *Karli, Val Papdi, Shirali, Tondli* and other creepers.
- *Suran, Ratale* and other tubers.
- Growing season typically 90-110 days.
- Creepers need (an easily constructed) *mandav*.
- Water about 0.5-0.6 LPD.
- About 40 kg/*guntha*
- Seeds from earlier crop.
- No training required.

Modern Vegetables

- Tomato, Cauliflower, Brinjals and so on
- Growing season 80-100 days.
- Water same, about 0.5 LPD but distance between plans less (about 70cm).
- Produce 40-50 kg/*guntha*
- Needs seeds and much more care. Training advised.

Water Supply

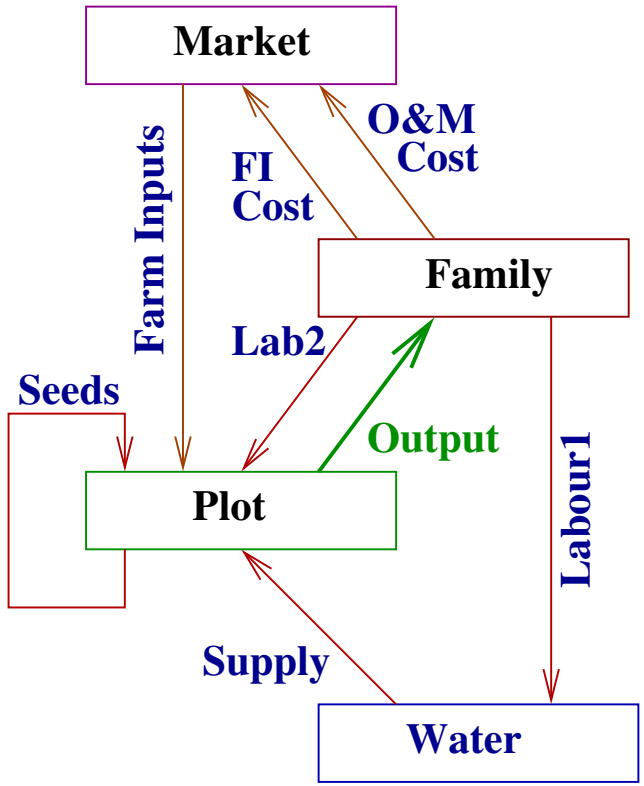
- Drip Irrigation about Rs. 10,000-30,000 Rs. per acre, but varies greatly.

The Unit Plan

- Diagram based on earlier study
- Family is of 5 and a Plot of 2 *gunthas*
- Water needs a drip-system and therefore O&M
- One-time inputs are ignored

Farm I.	Fert. and Pest.
FI cost	Rs. 300/season
Supply	100 LPD[a]
Labour 1	2 HPD[b]
O& M cost	Rs. 300/season
Labour 2	1 HPD
Output	80kg

[a] liters/day
[b] hours/day



Plot and Scheme

Now, we see how to implement the unit plan at *Shilarwadi.*

The first questions

- Is the plot size right? In whose ownership?
- Should there be a single large plot or several small ones?
- Is the soil good? Is it close to water? Is it close to the hamlet?
- Is there chance of theft? Would stray animals destroy it?
- What equipment may lie on the plot and what must be secured?
- Is it for a few families or for the whole village?
- How do they share the work and the produce?
- Have I missed something?

It is now clear that ...

- We need to have a community dialogue
- and that we must also have social-science skills.

The answers and The Problems

- The Plot: is OK. There is indeed 2 *gunthas* per family which is suitably located. Soil is good enough.
- Water: is a problem and is avaliable only from June to February. Its becomes harder and harder to get it as February approaches. If all families did a vegetable plot then there could be water conflicts.
- Problem 1 : Most are wage-labourers and working 3 HPD has a cost! Furthermore, there are seasonal requirements for agriculture.
- Serious Problem 2 : There are cattle and *bakris* which will destroy our produce.

The answers and The Problems

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- Serious Problem 2 : There are cattle and *bakris* which will destroy our produce.

Solutions: We take first the labour problem:

- We go back to our base-line survey and see that there is indeed some under-employment.
- We agree to *charge* 1 HPD at Rs. 10 per day as forgone wages in opur analysis.
- We select our growing period suitably.

More Solutions

The Water Problem

- We choose the months Oct-December. Water is plentiful even if all families decided to have a vegetable plot.
- The above months do conflict with the harvesting season but we note that there is fair amount of under-employment.

The cattle problem

- Prosecute owners of infringing cattle. Though legally right, it will lead to project-affected-families, a sure recipe for conflict.
- All the plots may be enclosed by a fence, but that will be a large capital expenditure. Maybe all the plots should be together?
- Cattle owners may be persuaded to manage their cattle.
- Bull/Cow proof fences are cheaper.
  - Create a village *bakri* pen.
  - Create a cow-proof fence for the collection of plots.

The Cost-Benefit Analysis

Running Costs per Season

labour at Rs. 10 per HPD

Farm I. cost	Rs. 200	
O& M	Rs. 200	
Labour 1	Rs. 600	Rs. 1800
Labour 2	Rs. 300	Rs. 900
Total	Rs. 1300	Rs. 3100

Benefits : 80 kg. of vegetables!

Note the cost of production!

Capital and One-Time Costs

Drip system	Rs. 2000
Fencing	Rs. 1000
Tools and Misc.	Rs. 1000
Training	Rs. 500
Total	Rs. 4500

Thus, the financing costs at 11% p.a. would be around Rs. 500 per season.

Conclusions :

- Actual cash costs: Rs. 400 per season plus financing costs.
- 80 kgs per family is about 1 kg per day, which is very good!
- More later

Recall...

- Develop a plan for a typical (small) plot of land.
- Outline the inputs required- skills, water, farm-inputs, infra-structure
- Match plan and inputs to specific location.

This has been done

- Examine feasibility-technical, social and economic
- Examine sustainability-technical, social and economic
- Examine risks and efficacy

This is more-or-less clear:

- Risks are largely contingent on social arrangements. If *bakri-owners* are happy, there appear to be no families adversely affected by the project.
- Modulo financing costs, the price of 1 kg is roughly 1.5 hours of labour.
- The project appears moderately sustainable on all counts.

The Project Story so far ...

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We now come to Chapter 3 of the Project Document. This is the Technology Alternatives and Choice and is a core analysis.

Chapter 3

- List various alternatives
- Through community diaglogue, prepare rough plan
- Evaluate in SET (socio-economic-technical)
- Classify as FSR (feasible-sustainable-risky)
- Analyse adverse impacts-esp. people and environment
- Analyse efficacy
- Choose the project option

An Exercise

Develop a similar outline of the project option of reducing fallow periods.

This should be in two parts:

The technical background and a technical solution

- An analysis of the planting cycle for various types of lands.
- A study of technical basis for such fallow periods.
- Indicators, traditional and quantitative, for soil fertility.
- Various schemes for increasing fertility without a chemical foot-print.

The particularization of the solution to *Gudwanwadi*

- A state diagram and key inputs.
- Social, economic and technical analysis.
- A cost benefit analysis.

We will implement your project this monsoon!

Discussion

1. Are project beneficiaries easy to identify? Are there projects without beneficiaries?
2. What do you think "methodology" means in the description of Chap. 1 and 2?
3. We analysed a particular option. Would this have been your choice? Why?
4. Are there any virtuous cycles at all if you consider all externalities?
5. If a virtuous cycle does indeed exist then why is it not already implemented?