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ASSISTANCE TO THE REGIONAL DEVELOPMENT FINANCE CORPORATION (RDFC)

DP/PAK/85/024/11-52

PAKISTAN

Technical report: Installation and introduction of the UNIDO Computer Model for Feasibility Analysis and Reporting (COMFAR)*

Prepared for the Government of Pakistan
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Georg Kell, systems analyst

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United Nations Industrial Development Organization
Vienna

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ABBREVIATIONS

COMFAR	Computer Model for Feasibility Analysis and Reporting
DOS	Disk Operating System
NDFC	National Development Finance Corporation
PC	Personal Computer
PID	RDFC - Planning Identification and Development Division
RDFC	Regional Development Finance Corporation
Rs	Pakistan Rupee (17 Rs = 1 US$)
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Programme

LIST OF ANNEXES

PAGE		
17	ANNEX 1:	ORGANIZATIONAL CHART OF RDFC
18	ANNEX 2:	WORK PLAN OF THE CONSULTANT
19	ANNEX 3:	TENTATIVE PROGRAM OF THE COMFAR SEMINAR
21	ANNEX 4:	ABSTRACT ON THE SEMINAR PARTICIPANTS
22	ANNEX 5:	PARTICULARS OF THE SEMINAR PARTICIPANTS
35	ANNEX 6:	Hand Out: "COMFAR ADJUSTMENTS FOR RDFC"
43	ANNEX 7:	Hand Out: "COMFAR HARDWARE COMPONENTS AND SELECTED DOS COMMANDS"
54	ANNEX 8:	Hand Out: "BITS AND BYTES ON THE APPLICATION WITH COMFAR"
76	ANNEX 9:	Hand Out: "SPECIAL APPLICATION WITH COMFAR"
83	ANNEX 10:	Hand Out: "ECEA HELP MANUAL"
105	ANNEX 11:	Hand Out: "ABSTRACT ON SOCIAL COST BENEFIT ANALYSIS"
112	ANNEX 12:	SEMINAR ATTENDANCE LIST
113	ANNEX 13:	EXAMPEL OF SEMINAR CERTIFICATE
115	ANNEX 14:	SEMINAR REVIEW - SUMMARY

CONTENTS

		Page
ABBREVIATIONS		i
LIST OF ANNEXES		i
I.	BACKGROUND	1
A	REGIONAL DEVELOPMENT FINANCE CORPORATION	1
B	THE UNIDO PROJECT DP/PAK/85/024	2
C	THE MISSION OF THE CONSULTANT	3
II.	INSTALLATION OF THE HARD AND SOFTWARE	3
III.	THE RDFC/UNIDO COMFAR SEMINAR	4
A	GENERAL	4
B	TEACHING FACILITIES	4
C	THE PARTICIPANTS	5
D	THE SEMINAR PROGRAM	5
E	SEMINAR HAND OUTS	9
IV.	ON THE JOB TRAINING	9
A	HARDWARE - SOFTWARE INSTALLATION	9
B	COMFAR APPLICATION	9
V.	THE POTENTIAL OF COMFAR	10
A	GENERAL	10
B	RDFC STANDARDS AND COMFAR FEATURES	10
C	COMFAR APPLICATION ON DIVISIONAL LEVEL	11
D	IMPACTS OF COMFAR	14
	FINDINGS AND RECOMMENDATIONS	15
	THE COMFAR SEMINAR	15
	COMFAR APPLICATION	15
	ACKNOWLEDGEMENT	16

ABSTRACT

In the context of the project "Assistance to the Regional Development Finance Corporation", for which the United Nations Industrial Development Organization (UNIDO) is the executing agency on behalf of the United Nations Development Programme (UNDP), a consultant in the UNIDO Computor Model for Feasibility Analysis and Reporting (COMFAR) was assigned to the project for ten weeks. This mission started on 14 June 1987 and ended on 25 August 1987.

According to his job description the consultant was expected to increase RDFC's capacities for project preparation and evaluation by introducing COMFAR. The covered actvities, in line with the job description, were: The installation of required hard and software, the training of eleven professionals in the application of COMFAR within the framework of a 5 week seminar and on the job training. In addition, the consultant elaborated adjustments for the COMFAR application to meet RDFC standards and he estimated the potential of institutionalizing the software package.

It was found that RDFC can benefit by applying COMFAR in all technical divisions. The Consultant made the follcwing major recommendations:

1) The heads of divisions should encourage their staff to use COMFAR on routine base.

2) The Planning, Identification and Development Division can utilize COMFAR for almost all studies.

3) The Projects and Minerals Divisions can utilize the COMFAR package for the appraisal of medium and large scale projects.

4) One additional Personal Computer should be made available for the Projects Division.

I. BACKGROUND

A Regional Development Finance Corporation (RDFC)

RDFC was inaugurated in March, 1985 as a subsidary of the National Development Finance Corporation under the Ministry of Finance. However,the Corporation commenced operation in July, 1983. RDFC has been established to operate exclusively in the less developed areas of Pakistan viz; North West Frontier Province, Baluchistan, Azad Jammu and Kashmir, Northern Areas and Federally Administered Tribal Areas.

The major objectives of RDFC are:

a) The identification, preparation and promotion of projects in less developed areas.

b) The financing of commercially viable projects in less developed areas.

Over fourty professionals are working in RDFC's headquarter in Islamabad, three officers are in charge of branches in Mirpur, Quetta and Peshawar.

The Corporation is structured into four functional divisions, reflecting its objectives (ANNEX 1: RDFC Organizational Chart).

1) PROJECTS DIVISION

Fourteen officers are responsible for appraisal and financing of industrial projects and arranging credit lines from lending agencies. About 100 loan applications have been sanctioned so far whereby 80% originate from the private sector.

The average loan size is about Rs 2 million, reflecting emphasis on small scale projects mainly in the North West Frontier Province (about 90% of total disbursements).

2) MINERALS DIVISION

The Minerals Division fulfills the same function as the Project Division, marking the increased emphasis on Mineral sector projects. Four officers have also prepared feasibility studies for prospective clients. Over fourty loan applications have been sanctioned.

3) **PLANNING IDENTIFICATION & DEVELOPMENT DIVISION (PID)**

This division comprises of four officers with the responsibility to identify prospective projects and investors and to prepare proposals. Over twenty feasibility studies and numerous opportunity studies and project profiles have been prepared, P.I.D. is operating on fees base, providing consultancy services for mostly private investors.

4) **ADMINISTRATION AND ACCOUNTS DIVISION**

In addition to the usual administrative duties the management of RDFC's branch offices and the operation of deposite schemes is handled by this division.

RDFC's functional divisions are supported by specialised cells:

* Legal Affairs and Policy, within the Administration
* Market Research under P.D. and
* Management Information linked directly to the Chief Executive.

B UNIDO Project DP/PAK/85/024

Under the UNIDO project DP/Pak/85/024 technical assistance is provided to Regional Development Finance Corporation (RDFC). The immediate objective of the project is:

a) To upgrade RDFC's capability in project identification, preparation, evaluation and monitoring.

b) The identification and promotion of projects in less developed areas of Pakistan.

UNIDO as the executing agency of UNDP is providing about thirty man/months of expertise in the following areas:

Team leader/Financial Analyst
Expert on Agro and Forest based industries
Expert on Chemical and engineering industries
Expert on Mining and mineral based industries
Consultant on COMFAR

Furthermore, financing for computer hard and software is made available under the UNIDO project.

The project started in December 1986 and is scheduled to be completed in November, 1987.

C The Mission of the Consultant

The objective of the ten week mission of the consultant was to strengthen RDFC's capacities for project preparation and evaluation by introducing COMFAR.

The corresponding outputs of the mission were:

a) An installed and tested hard - and software configuration to operate COMFAR and its modules.

b) Eleven trained professionals of RDFC in the methodologies and application of COMFAR.

c) A documentary set on COMFAR

d) A report, summarizing the activities and findings of the mission.

In addition, the consultant was requested to give recommendations on the application of COMFAR for the corporation's functional divisions.

The mission was originally designed for fivemonths. However, the consultant was available for ten weeks only. The mission started on 14 June 1987 and ended on 25 August 1987. Upon the consultant's arrival in Islamabad a work plan was prepared (See ANNEX 2). All activities could be completed as planned.

II. ACQUISITION AND INSTALLATION OF HARD AND SOFTWARE

UNIDO purchased one complete IBM AT unit including an IBM proprinter (total USD 8,700) through the IBM office in Islamabad. RDFC made available one AKHTER PC Unit (XT compatible).

During the acquisition and installation of the PCs a number of problems had to be solved due to numerous power c ts, a damaged hard disk and above all because IBM could not deliver all required items on schedule.

IBM agreed to substitute missing items until the items as specified in the order were available. However, it is due to the excellent service of AKHTER Computer, Islamabad that eight days after the expert's arrival two complete units were installed. Graphic cards, keyboardsand even monitors were exchanged on the spot until COMFAR could be executed satisfactory.

Hence, there was no delay with respect to the COMFAR training. During the course of the seminar the systems were optimized. A complete documentation of the IBM AT acquisition can be found in the project's equipment file.

III. THE COMFAR SEMINAR

A General

In cooperation with the management of RDFC it was decided to introduce COMFAR in the form of a seminar, thus enabling a maximum of training benefit. The management also made provisions to reduce routine works of the participants. To allow a smooth continuation of necessary routine works the participants were divided into two groups. Group 1 had a morning session from 9.00 to 12.00 and group 2 had a session from 14.00 to 17.00.

Preparatory works for the seminar could be carried out in a most efficient way, due to the excellent support services of RDFC. This included the installation of hard - and software, the preparation of handouts and arrangements of teaching facilities. Thus the seminar could commence seven working days after the consultant's arrival.

B Teaching Facilities

The seminar was hold within the premises of RDFC. The spacious conference room was made available for the whole duration of the seminar. Teaching facilities inclu ed an overhead projector and a white board, all of which were used extensively during the seminar.

Two personal computers including printers were available:

* One IBM AT including one IBM Graphic Printer
* One AKHTER PC including one Epson FX 100 Printer

Thus, two or three seminar participants had one working station, which may be regarded as ideal.

C The Participants

Originally only three to four officers of the P.I.D. were supposed to receive training in COMFAR. However, due to the interest of RDFC officers it was decided to provide the training to eleven participants, representing over 50% of the professional staff of RDFC, excluding the Administration Division.

Among the participants were also the heads of the divisions: Projects Division, P.I.D. and Minerals Division and most of the group leaders. The participants background in Financial Analysis was very good. Almost all participants held a MBA. The average professional experience was about four years and most of the participants were practising project preparation and evaluation. A summary of the participants background is given in ANNEX 4 and particulars on each participant are enclosed in ANNEX 5.

D The Seminar Program

An overview of the tentative seminar program is given in ANNEX 3. During the course of the seminar some major changes were made: The Economic Module was incorporated and a second case study was included. This was possible because little time had to be spent on topics of Financial Analysis. Finally the seminar included the following six modules (one session = 3h per group)

1) Introduction to PC's and DOS (3 sessions)

2) Software Structure if COMFAR Main System (4 sessions)

3) Application of COMFAR with case studies (7 sessions)

4) COMFAR GRAFIX (3 sessions)

5) Special Applications with COMFAR (inflation, adjustments etc). (2 sessions)

6) COMFAR Economic Module (2 sessions)

The major pedagogical concept was a top down approach. Within the seminar as well as within each module first the basic functions were presented on a highly aggregated level. With increasing confidence of the participants more complicated issues were handled and modelled.

A frequent change between lectures, discussions and group work ensured a high level of enthusiasm and concentration. During the course of all seminar modules RDFC's requirements and standards for project preparation and evaluation were incorporated and necessary adjustments of COMFAR were worked out simultaneously(see ANNEX 6: COMFAR Adjustment for RDFC).

MODULE 1: Introduction to PC's and DOS

The first module aimed at providing sufficient background knowledge on Personal Computers and the most important Disk Operating System Commands. This was achieved within three session. Brief explanations alternated with exercises, whereby basic DOS commands were repeated purposely in the succeeding modules. The hand out COMFAR Hardware and selected DOS Commands" (See ANNEX 1) outlines the contents of this module.

MODULE 2: Software Structure of the COMFAR Main System

The objective of this module was to present the structure and functions of the COMFAR main system. Originally the Consultant had planned 8 sessions for this major module, however, due to the excellent background of the participants only five sessions were required.

First the UNIDO approach for project preparation was presented. The sequence of the software presentation was in accordance with the COMFAR application, starting with the initial investment lay out within the subsystem Data Entry and ending with the interpretation of schedules of the subsystem Report.

An exercise case was steadily developed, which was simple enough to emphasise the most important functions of the COMFAR main system. Later variations of the case enabled investigations of more complicated aspects, e.g. more than one loan, various products, standard costs etc.

A frequent change between lectures and exercises ensured that the functions of the model as well as its potential for application were absorbed fully.

MODULE 3: Case Studies

Within this module the participants modelled and appraised a detailed local investment study on the production of sheet glass. A situation was created to simulate practical work as close as possible. Thus, the participants went through all stages of an application, starting with the analysis of the case and ending with group presentations on the findings. The hand out: "Bits and Bytes on the application with COMFAR" (See ANNEX-8) served as guideline. Four sessions per group were devoted for the case.

At the very end of the seminar a second case study was modelled. The case originated from P.I.D., reflecting a typical routine case of the division. Besides the COMFAR main system also COMFAR GRAFIX and COMFAR Ecomnomic Module was applied.

Neither of the case studies are enclosed as ANNEXES as they are too voluminous. They are readily available at RDFC P.I.D.

MODULE 4: COMFAR GRAFIX

Withinthree sessions per group the participants were well acquainted with the techniques of COMFAR Grafix. The data of the case study was used to edit all possible charts. Besides the purely technical aspects emphasis was on the interpretation and selection of the charts. The COMFAR Manual served as guideline for interpretation.

MODULE 5: Special Applications With COMFAR

Two sessions were devoted to cover special applications with COMFAR. Upon request of the participants the topics on how to consider inflation and how to shorten the production phase to less than 15 years were emphasized.

The hand out Special application with COMFAR"(See ANNEX 9) sammarizes most of the topics of this module.

MODULE 6: COMFAR Economic Cost Benefit Analysis (ECBA)

The ECBA is the latest development within the COMFAR package and RDFC is one of the very first institutions where it has been installed. Although economic analysis is at the present of little practical relevance for RDFC over two sessions per group were devoted to the ECBA as the participants were very interested.

No manual exists yet on the ECBA. Two hand outs were prepared which could serve as a substitute until a manual is available: The ECBA Help Manual (See ANNEX 10) was printed and compiled. It was perfectly suitable as an operational guide. An abstract on the UNIDO publication "Guide to practical Project Appraisal" (Sales No. E.78 II.B3) was prepared (See ANNEX 11) which served together with the UNIDO "Manual for Evaluation of Industrial Projects" (Sales NO. E.80 II.B.2) as theoretical background.

Although the time allocated was not sufficient to cover all aspects of economic analysis the participants became well acquainted with the methodologies of the ECBA. The financial data of the case studies was used to apply adjustments for various in - and outputs on different stages. The economic schedules were interpreted and graphically presented.

E Seminar Hand Outs

During the course of the seminar the following books and abstracts were made available to the participants:

1) Manual for the preparation of Industrial Feasibility Studies (UNIDO ID/206)

2) Manual for Evaluation of Industrial Projects (UNIDO ID/244)

3) COMFAR Manual (UNIDO/IO/R.143. Rev. 3)

4) COMFAR Data Input Tables

5)* Abstract: "COMFAR HARDWARE COMPONENTS AND SELECTED DOS COMMANDS"

6)* Abstract: "BITS AND BYTES ON THE APPLICATION WITH COMFAR"

7)* Abstract: "COMFAR ADJUSTMENTS FOR RDFC"

8)* Abstract: "SPECIAL APPLICATION WITH COMFAR"

9)* Abstract: "COST BENEFIT ANALYSIS"

10)* Abstract: "ECBA HELP MANUAL"

11) CASE STUDY: "Establishment of a glass sheet factory"

12) CASE STUDY: "Establishment of a plastic industry"

Hand outs marked with * are enclosed as ANNEX.

IV ON THE JOB TRAINING

A Hard and Software Installation

The COMFAR was installed on two new machines and on two PCs already in use at RDFC. The installation was carried out in a harmonious cooperation with RDFC. As almost any thinkable problem was encountered (unsuitable graphic cards, damaged hard disk) and jointly solved it is believed that RDFC has now the capacity to install COMFAR on its own.

B COMFAR Application

Besides the two case studies which were handled in the context of the seminar assistance was provided to various professionals, who applied COMFAR for their routine works.

Emphasis was on aspects of practical application, e.g. methodology of data preparation, selection of decision criteria and presentation forms.

V. THE POTENTIAL OF COMFAR FOR RDFC

A General

One of the major areas of RDFC's activities is the preparation and appraisal of investment opportunities. Although over ten studies are processed monthly, two aspects have to be investigated before final conclusions on the application of COMFAR can be drawn:

1) Are the features of the COMFAR package in accordance with RDFC standards for project preparation and appraisal?

2) To which extent can COMFAR be utilized on divisional level?

B RDFC Standards and COMFAR

RDFC's methodology for feasibility analysis is widely covered by the framework of COMFAR. In addition, COMFAR offers features which can contribute much to increase the quality and flexibility of feasibility analysis.

In the context of project preparation and appraisal the following limits for the application of COMFAR were identified:

1) Sizeofinvestment: A great number of investment opportunities, RDFC handled by, have an investment layout of less than Rs 1 million. This limited size of investment requires monthly planning during the construction phase. Although COMFAR could be used by aggregating on a half year base it is believed that a manual projection of the few financial data is more effective.

2) Planning horizon during production: At RDFC financial projections cover usually five years only while COMFAR is fixed to 15 years.

3) Workers Fund Contribution: A social contribution for unskilled workers has to be considered under certain circumstances. COMFAR has no inbuilt option to model this.

4) Build up of working capital: At RDFC it is common practice to make provisions for Working Capital during

the construction phase to meet the full requirements of the first year of production. COMFAR permits only inventory to be modelled during construction.

5) Cost of Finance: In accordance with the commonly used mark up calculations, cost of finance during construction and grace period is amortized during the repayment. COMFAR has no inbuilt provision to model this correctly.

During the course of the seminar the above limitations were discussed at length and adjustments could be worked out, which permit a correct modelling. The adjustments may be regarded as manual manipulation of COMFAR. They enable a correct consideration of above aspects, although COMFAR has no provision for them a priori. The adjustments were fully integrated in the Seminar and they are outlined in the enclosed **ANNEX 6: COMFAR Adjustments for RDFC.**

In summary it can be stated that the size of investment is the only limitating factor for the application of COMFAR. All other standards of project preparation and appraisal are covered by COMFAR.

C COMFAR Application on Divisional Level

The objectives of RDFC's technical divisions are outlined under 1.1. Project preparation and appraisalare a major areas of activity within all technical divisions. In the following, an attempt is made to estimate the potential ofthe COMFAR application on divisional and group level.

1) PROJECTS DIVISION

The Projects Division comprises of four teams. Three deal mainly with project appraisal and one team is in charge of monitoring sanctioned projects. Also attached to the Projects Division is a Market Cell, which covers market aspects of investment opportunities for all divisions.

Within the three appraisal teams an average of 2.5 studies per month and team is handled. The typical life cycle of an investment opportunity is as follows (until loan is sanctioned):

1) RDFC receives an application for loan (about 80% private sector, average investment size Rs 2 million)

2) The client is requested to complete standard forms on major aspects of the investment.

3) A preliminary report is prepared. Based on a few criteria (location, sector, availability of funds) the proposal is recommended or rejected.

4) If the proposal is recommended and the Managing Director approves it, then the client is asked to pay fee (0.5% of the loans, which is about 50% of RDFC's annual operating expenses) and to submit further data, including machinery quotations.

5) The Market Cell carries out a survey and prepares a report (average 2 man weeks per study).

6) An appraisal team prepares a feasibility analysis.

7) If the proposal is found to be viable (average 70%) then it has to pass the Credit Committee (heads of divisions) and the Chief Executive has to approve.

8) Depending on the size of the requested loan it has to pass also the Executive Committee of RDFC (more than Rs 2.5 million) or the Board of RDFC (more than Rs 5 million) before the Legal Cell of the Administrative Division can issue a letter of credit.

It is obvious that COMFAR can be used for step (6) with emphasis on medium and large scale projects. The appraisal reports are mainly used internally to appraise the viability of the projects. So far it is estimated that about 10% of the sanctioned loans will not be fully recovered, however, the percentage may develop dramatically as only 20 out of 100 sanctioned projects have commenced production. In this context COMFAR could not only make the appraisal process more effective by substituting manual calculations. Its power for analysis could also be utilized to minimize the risk by producing more reliable and detailed findings.

2) **MINERALS DIVISION**

The Minerals Division processes about two to three studies per month. The life cycle of an investment opportunity is almost identical as described under 5.3.1. However, the Minerals Division does also the ground work of data collection.

The Minerals Division is also the dynamic force for computerization within RDFC. A simple but effective program for financial analysis has been established on LOTUS and all studies have been processed by it. However, the know how is limited to a few staff members. The Consultant appreciates highly the efforts and achievements on this area.

After numerous discussions and comparisons it was concluded that COMFAR can much contribute to increase the quality of feasibility analysis due to its superior power of analysis. This is the more true the bigger the investment layout is.

3) PLANNING IDENTIFICATION AND DEVELOPMENT DIVISION (PID)

P.I.D. is offeringconsultancy services on fees basefor the preparation of feasibility reports. The proposals are not necessarily linked with loan applications. In most cases clients approach P.I.D. and the project is already identified. The client is also requested to submit most of the data.

The average gross time for the preparation of one study is about two months with a net working time of 1.5 man month. About two to three studies are processed per month. The distribution of time for one study is estimated as follows:

35% establishing financial assumptions including data collection.

25% market study, mostly carried out by the Market Cell

30% financial projections and appraisal

10% compilation, write up

So far, financial projections and analysis have been carried out manually and it is abvious that COMFAR can increase the effectiveness considerably. Besides the time saving effect COMFAR has the potential to improve the quality of both, the analysis and the reporting.

D Impacts of COMFAR

The potential range of COMFAR application is summarized below:

DIVISION	SIZE OF INVESTMENT in Rs Mln: Small 1	Medium 1 to 5	Large above 5	ESTIMATED NO CASES PER MONTH
MINERALS			x	1
PROJECTS		x	x	3
P.I.D.	x	x	x	2.5

The benefits of the COMFAR application can be summarized as follows:

1, **Time Saving:** The calculation is reduced to a minimum of seconds. This includes changes of parameters or the investigation of alternatives (investment layout, financing schemes etc.) Although it is difficult to quantify this effect it is estimated that the average time for projecting financial data and appraisal can be reduced by 50%. Assuming an average of 10 days for a manual preparation and appraisal, the nettime savings for RDFC would be about 32 man days per month.

2) **Reduced risk to finance unviable projects:** The increased accuracy of the calculations, the wide range of possibilities for appraisal, including sensitivity analysisand dynamic ratios, enables the analyst to draw more reliable conclusions. The impact of this effect is not quantifiable.

3) **Improved presentation:** The optional schedules of the mainsystem and the grahic presentation allow a convincing demonstration. This effect is of particular relevance for client work, hence, the P.I.D. can profit most in this respect.

In addition, the application of COMFAR has favourable impacts on the user with two respects. Firstly, the user is forced to apply a methodical approach, which ensures that all aspects of financial appraisal are covered. Secondly, the user gets acquainted to use PCs in his daily work, which opens for him the facility to use other software packages as well.

FINDINGS AND RECOMMENDATIONS

The COMFAR Seminar

The RDFC/UNIDO COMFAR seminar could be carried out in a most effective way. RDFC made provisions for all required facilities and support services. Despite the pressure of routine works, highest priority was given to the seminar.

The participant's motivation and willingness to learn was extremely high. Thus a high level of enthusiasm could be maintained throughout the seminar. This is also reflected in the attached attendance list (ANNEX 12). With a closing ceremony the Joint Principal Secretary of the Ministry of Finance awarded the participants certificates. (See ANNEX 13 for the program of the ceremony and a copy of the certificate).

The participants completed a detailed questionary on various aspects of the seminar and the application of COMFAR. A summary is enclosed in ANNEX 14.

It can be concluded that the objective of the seminar was fully achieved. All participants came to learn the COMFAR package in detail and they are capable of utilizing it in the context of their routine works.

COMFAR Application

All technical divisions of RDFC can make use of the COMFAR package. COMFAR enables a more effective project preparation and appraisal. Besides a considerable time saving effect the application of COMFAR increases the quality of feasibility analysis. By applying modern techniques RDFC has the chance to become an institution per excellence with a comparative advantage in this area.

However, it should be noted that the full benefit will only materialize if COMFAR is applied on a routine base. The typical learning curve of the software package requires exercise and experience.

The following recommendations are made:

1) The heads of divisions should encourage their staff to utilize the COMFAR package. The management should also be patient and enable the staff to develop skills that can only be obtained through practice.

2) The P.I.D. should use the main system and the grafix module of COMFAR for all studies.

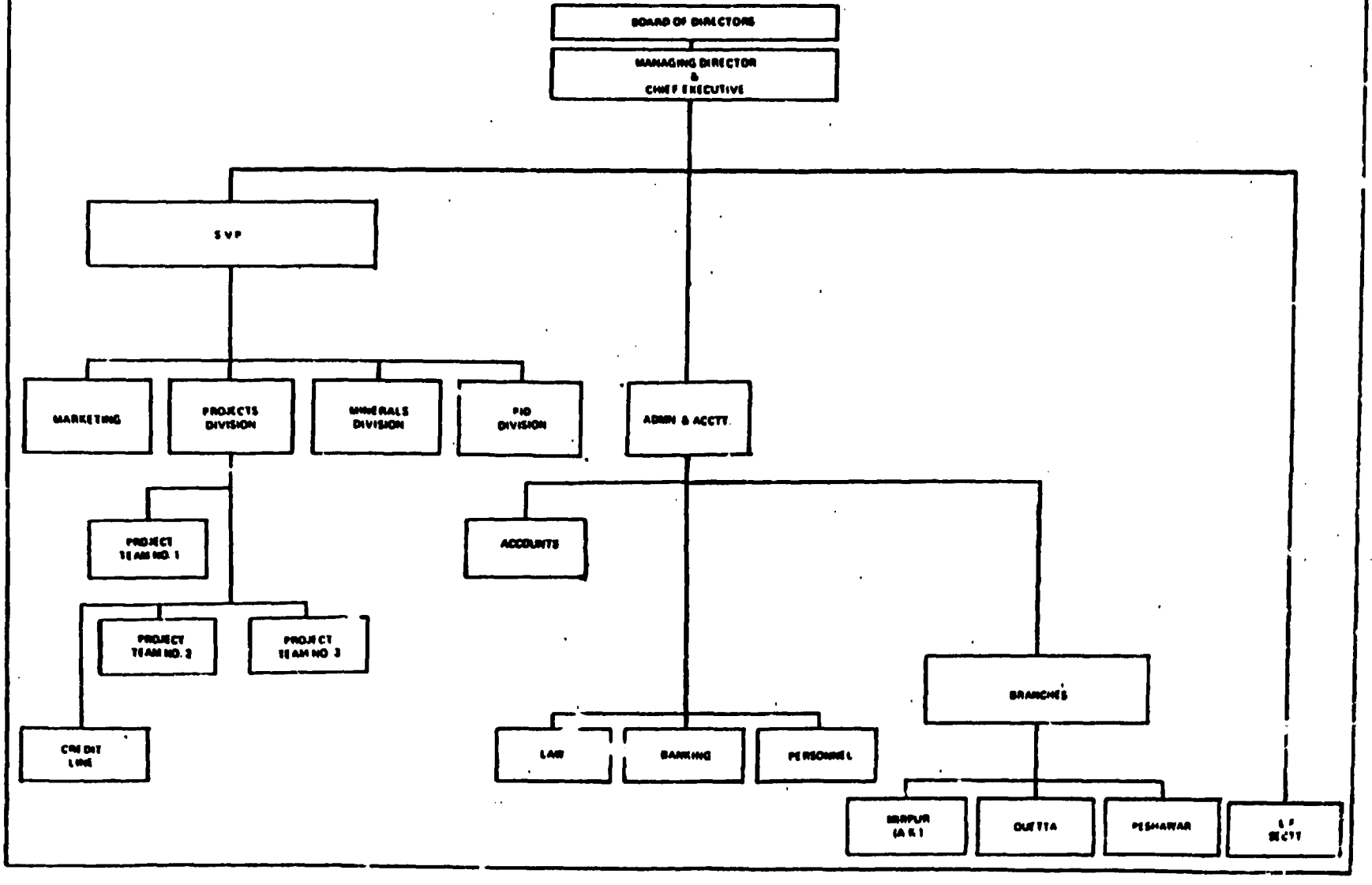
3) The Projects Division appraisal groups and the Minerals Divisions should use COMFAR for medium and large scale projects. Small scale projects, the preparation of loan schedules and the handling of credit lines should be handled by the programs, designed on the base of LOTUS.

4) One additional personal computer for the Projects Division is required as soon as possible. The UNIDO Project DP/PAK/85/024 funds for equipment should be utilized.

ACKNOWLEDGEMENT

The consultant wishes to express his gratitude to Mr. Muzaffar Mahmood Qurashi, Chief Executive and to Mr. Mirza Amin Baig, SVP of RDFC for their interest and support. Furthermore the Consultant wishes to thank Mr. Ahsan-ul-Haq, AVP, for his valuable assitance in the hardware installation and Mr. Syed Sadaqat Ali, AVP, for his assistance on various aspects of the seminar organization.

REGIONAL DEVELOPMENT FINANCE CORPORATION



ANNEX 2

WORK PROGRAM
G. REIL SYSTEMS ANALYST

ACTIVITY	Week-1	Week-2	Week-3	Week-4	Week-5	Week-6	Week-7	Week-8	Week-9
	21-25 June	28-2 July	5-9 July	12-16 Jul.	19-23 Jul.	16-30 Jul	4-6 Aug.	3-13 Aug.	16-20 Aug.
1 PREPARATION									
1.1 Purcahse hardware	———								
1.2 Install hardware	—								
1.3 Install Software	—								
1.4 Organise Course	———								
2. COMFAR TRAINING 2 group, 1 session/ group/day									
2.1 Data preparation		———							
2.2 Report system			———	———					
2.3 Case studies					———	———			
3. COMFAR FOLLOW-UP									
3.1 Adjustments of Comfar						———	———		
3.2 Institutionize Application							———	———	
4. REPORT WRITING									

PROGRAM

COMFAR SEMINAR

1July to 30 July

Daily Schedule	Wednesday 1.7.	Thursday 2.7
Group 1 9.00 to 12.00	Intro- duction	DOS
Group 2 14.00 to 17.00	Personal Computer and DOS	Commands

Daily Schedule	Sunday 5.7	Monday 6.7	Tuesday 7.7	Wednesday 8.7	Thursday 9.7
Group 2 9.00 to 12.00	Intro COMFAR	Softwar Structur of COMFAR	Data Entry	Data Entry	Data Entry
Group 1 14.00 to 17.00	History Method- ology Appli- cation		Text Gen. Variable Investm.	Costs Sales	Working C. Finances Taxes

Daily Schedule	Sunday 12.7	Monday 13.7	Tuesday 14.7	Wednesday 15.7	Thursday 16.7
Group 1 9.00 to 12.00	Data Entry	Report System	Report System	Report System	Sensiti- ivity Analysis
Group 2 14.00 to 17.00	Repe- tition Dis- cussion	Overview	Interpre- tation		

PROGRAM
COMFAR SEMINAR

Daily Scheme	Sunday 18.7	Monday 20.7	Tuesday 21.7	Wednesday 22.7	Thursday 23.7
Group 1	CS	CS	CS	CS	CS
9.00 to 12.00	Present-ation	Date	Optimize	Interprete	Sensitivity
Group 2		Entry	Base	Base	Analysits
	Data	Data	Model	Model	
14.00 to 17.00	Prepar-ation	Verifi-cation			

Daily Scheme	Sunday 26.7	Monday 27.7	Tuesday 28.7	Wednesday 29.7	Thursday 30.7
Group 2	CS	Comfar	Comfar	Comfar	Reviews
9.00 to12.00	Combi-nation	Grafix	Grafix	Grafix	
Group-1	Presen-tation				
14.00 to17.00	of find-ings				

PARTICULARS OF PARTICIPANTS
RDFC/UNIDO COMFAR SEMINAR

S.No.	Name	Present position	Academic qualification	Computer experience	Financial Analysis experience
1.	Mr. Hassan Nawab	Vice President(PD)	MBA 1983	Preliminary in Programming	5 years
2.	Mr. Riaz Akhtar Raja	Asstt. Manager (PID)	M.Sc 1980	Preliminary in Programming	5 years
3.	Mr. Saeed Ahmed	Manager (PD)	MBA, 1981	Nil	4 years
4.	Mr. Bakhtiar Shahbaz	Asstt. Manager	MBA, 1983	Preliminary in Software Applic.	4 years
5.	Mr. Shoaib Ahmed	Asstt. Manager(PD)	MBA, 1983	Nil	4 years
6.	Mr. S. Sadaqat Ali	AVP (PID)	MBA ,1976	Design and Applic. of Spread Sheets Programming	11 years
7.	Mr. Ahsan ul Haq	AVP (Minerals)	MBA,1983	Software Develop.	17 years
8.	Ms. Khalida Habib	Asstt. Manager (PID)	MBA, 1986	Nil	1 year
9.	Azizul Hameed	Asstt. Manager (PD)	MBA ,1984	Preliminary in Software Applic.	10 years
10.	Mr. Rashid Azeem	Operation Officer(PD)	B.B.A, 1985	Preliminary in Software Applic.	1 year
11.	Mr. M. Vaseem	AVP (Admin)	C.A. 1985	-do-	1 year.

P.D. = Projects Division. PID = Projects Identification Division AVP = Asstt. Vice President.

PARTICULAR OF PARTICIPANT

NAME:	AZIZUL HAMEED
ADDRESS:	No. 564, G-8/1, Islamabad.
PRESENT OCCUPATION:	Development/Investment Banker
MAJOR AREAS OF ACTIVITY:	Projects Implementation, Monitoring and Supervision.
ACADEMIC QUALIFICATION (YEAR):	1. MBA (Central State Univ.,USA), 1984. 2. BBA (Univ. of Oklahoma,USA), 1983.
COMPUTER EXPERIENCE:	Completed courses in "Computers for Business Decisions" and "Managerial Uses of Data Processing". Also did programming in Fortran and BASIC.
EXPERIENCE (PERIOD/ POSITION):	1. 04/87 to Present: Assistant Manager (Projects), RDFC, Islamabad. 2. 01/86 to 04/87: Financial Analyst, Industrial Development Bank of Pakistan, Karachi. 3. 04/78 to 04/81: Financial Analyst, Amin Ijaz & Co., Chartered Accountants, Lahore.

PARTICULAR OF PARTICIPANTS

NAME:	Bakhtiar M. Shahbaz
ADDRES:	Regional Development Finance Corporation 20-Blue Area Islamabad.
PRESENT OCCUPATION:	Working in Project Appraisal division as a financial analst.
MAJOR AREAS OF ACTIVITY:	1) Supervision of an apraisal Team 2) Financial Apraisal 3) Management of RDFC's credit lines and other borrowing arrangement.
ACADEMIC QUALIFICATION (YEAR):	MBA(Finance Major) 1983 BCom(Accounting) 1980
COMPUTER EXPERIENCE:	Has been working on pc's accordingly.

EXPERIENCE (PERIOD/POSITION):

1. (From: March 1984 to December 1984)
   RDFC (Assistant Manager:worked as project officer)
2. (From: December 1984 to April 1985)
   RDFC:(Assistant Manager:worked as a team leader/Financial Analyst)
3. (From: April 1985 to April 1987)
   RDFC:(Worked as Assistant Manager (credit lines cell)
4. (From: April 1987 to date)
   RDFC:(Assistant Manager: working as team leader of Appraisal & credit lines team)

PARTICULAR OF PARTICIPANTS

NAME: KHALIDA HABIB

ADDRESS: RDFC BLUE AREA ISLAMABAD

PRESENT OCCUPATION: ASSTT. MANAGER RDFC ISLAMABAD.

MAJOR AREAS OF ACTIVITY: FINANCIAL ANALYSIS.
FEASIBILITY PREPARATION

ACADEMIC QUALIFICIATION (YEAR): MBA (1985-86)

COMPUTER EXPERIENCE: NIL

EXPERIENCE (PERIOD/POSITION): ASSTT. MANAGER RDFC, ISLAMABAD
FEB, 1987-TODATE

MIDDLE EAST BANK
JUNE 1986-AUGUST 1986

NAME: M. AHSAN-UL-HAQ

ADDRESS: Incharge Minerals Division
Regional Development Finance Corporation
20, Blue Area,
Islamabad, Pakistan.

PRESENT OCCUPATION: AVP & Incharge Minerals Division

MAJOR AREAS OF ACTIVITY:

Looking after the activities of Minerals Division which include.

- Identification of Projects.
- Feasibility Preparation.
- Project Appraisal
- Implementation of the Project
- Preparation of departmental budgets
- Compurterization of systems, procedures and data base management.
- Policy formulation for mineral sector

ACADEMIC QUALIFACTION

MBA	1982	University of Ottawa Canada
MPA	1976	University of Punjab, Pakistan.
BA	1973	- do -

COMPUTER EXPERIENCE: I have working knowledge of following computer languages:

- FORTRAN (WATFIV)
- BASIC
- COBOL
- Have developed packages with BASIC on Micro-Computers.

- Developed financial analysis program, Data Base, Pay roll, Information System on PC-XT.
- Worked with Lotus 123, DBASE and other Computer Packages.

EXPERIENCE:	Period	Position
	Sept. 1983 todate	Regional Development Finance Corporation, Assistant Vice President and Incharge Minerals Division.
	1982 - 1983	Five Star Products, Canada Assistant to General Manager
	1977 - 1980	United Consultant Ltd, Lahore. Consultant
	1969 - 1971	K. M. Ashraf & Sons, Sialkot Manager

PARTICULAR OF PARTICIPANTS

NAME: MOHAMMAD VASEEM

ADDRESS: 1. 3-RAKHSHAN ROAD, WAH CANTT.

2. C/o RDFC - ISLAMABAD

PRESENT OCCUPATION: ASSISTANT VICE PRESIDENT (ACCOUNTS) RDFC - ISLAMABAD.

MAJOR AREAS OF ACTIVITY: SUPERVISION OF ALL THE FUNCTIONS RELATED TO ACCOUNTS/FINANCE

ACADEMIC QUALIFICIATION (YEAR): CHARTERED ACCOUNTANT - (1985)

COMPUTER EXPERIENCE: JUST 2 - 3 MONTHS WORKING ON LOTUS-123 SPREAD SHEET, ON PC

EXPERIENCE (PERIOD/POSITION):

1.	Sept. 1980 - Sept. 1984	With M/s Amir Alam Khan & Co, "Chartered Accountants" as Trainee Student (A compulsory part of CA Course)
2.	oct. 1984 - Jan.. 1986	With M/s Amir Alam Khan & Co, "Chartered Accountants, as Manager.
3.	Feb. 1986 - at present	Assistant Vice President (Accounts), in RDFC Islamabad.

PARTICULAR OF PARTICIPANTS

NAME:	Mr. Rashid Azeem
ADDRESS:	B. No. 17, A.R.L. Ltd. Rawalpindi
PRESENT OCCUPATION:	.Financial Analyst- Development Banker
MAJOR AREAS OF ACTIVITY:	Analysis of financial viability of industrial Projects in less developed areas.
ACADEMIC QUALIFICIATION (YEAR):	B.B.A. (Bachelor of Business Administration) Major Accounting, 1985
COMPUTER EXPERIENCE:	Fundamentails of IDA (Interoctive Data Analysis)
EXPERIENCE (PERIOD/POSITION):	Five months Operations Officer.

PARTICULAR OF PARTICIPANTS

NAME: RIAZ AKHTAR RAJA

ADDRESS: H. NO. 734, SECTOR I-10/4 ISLAMABAD.

PRESENT OCCUPATION: WORKING IN RDFC AS A OFFICER/PID SINCE MARCH, 1985.

MAJOR AREAS OF ACTIVITY:

PREPARATION OF FEASIBILITY, PRE-FEASIBILITY STUDIES, PROFILES, PROJECT IDENTIFICATION, CONSULTANCY etc.

ACADEMIC QUALIFICIATION (YEAR):

i. B.Sc DEGREE (PHYSICS AND MATHEMATICS) FROM PUNJAB UNIVERSITY
ii. M.A (EDUCATION) FROM PUNJAB UNIVERSITY)
iii. M.S (INDUSTRIAL AND LOCATION DEVELOPMENT) FROM BRUSSELS UNIVERSITY

COMPUTER EXPERIENCE:

KNOWLEDGE OF COMPUTER PROGRAMMING IN COBOL, BASIC, ASSEMBLER

EXPERIENCE (PERIOD/POSITION):

SINCE MARCH, 1985	OFFICER GRADE II	RDFC, ISLAMABAD.
TWO YEAR (1980-1982)	JUNIOR EXECUTIVE	CAPITAL TECHNICAL INDUSTRIES, BRUSSELS (CONSULTANTS)

PARTICULAR OF PARTICIPANTS

NAME:	Syed Hassan Nawab
ADDRESS:	House No. G-9 Street No. 56 G-9/4 Islamabad
PRESENT OCCUPATION:	Vice President Regional Development Finance Corporation Islamabad
MAJOR AREAS OF ACTIVITY:	Incharge of Projects division Supervise Project appraisal, financing, Monitoring, and recovery arrange credit lines from buting institution.
ACADEMIC QUALIFICIATION (YEAR):	MBA (Finance) USA 1983 B.Sc Engg. (Mech) Pakistan 1973
COMPUTER EXPERIENCE:	1. Preliminary in Fortran Programming 2. Preliminary in Basic Programming
EXPERIENCE (PERIOD/POSITION):	1983 todate: Vice President RDFC 1980-81 Refinery & Oil Field Service Engineer. Attock Oil Company Limited Rawalpindi 1975-76 Engineer: Arya Shipping Lines, Iron 1975-75 Engineer Pakistan Atomic Energy Commission Islamabad

PARTICULAR OF PARTICIPANTS

NAME: SYED SADAQAT ALI

ADDRESS: H.No. 184
Street 33
Sector G-8/2 Islamabad

PRESENT OCCUPATION: Working in the Planning Identification and Development Division of RDFC, Since November, 1984.

MAJOR AREAS OF ACTIVITY: Preparation of feasibility studies for clients, identifcation and development of Projects.

ACADEMIC QUALIFICIATION (YEAR):

MBA (1976) (Pakistan)
MBA (1978) (USA)

COMPUTER EXPERIENCE: Worked with British Mining Consultants on Compaq Computer(Smart Spread Sheet) and designed the formats for the financial restructuring of PMDC

EXPERIENCE (PERIOD/POSITION):

1976-1977	NDFC	(Financial Analyst)
1977-1978	Colony Square Hotel USA	(Night Auditor)

Jan 1979 - to June 1979	Sunshine Insurance Company (USA)	(Assistant Cash Manager)
1980-1981	Pak Kuwait Invt. Co. Karachi	(Project Analyst)
Jan 1981 to November 1981	National Fertilizer Corporation Lahore	(Deputy Manager Planning)
1981-1984	Attock Refinary Ltd	(Account, Incharge of the Budgeting, funds and Review section.

PARTICULAR OF PARTICIPANTS

NAME: SHOAIB AHMAD KHAN

ADDRESS: REGIONAL DEVELOPMENT FINANCE CORPORATION
20, BLUE AREA, ISLAMABAD,
PAKISTAN.

PRESENT OCCUPATION: FINANCIAL ANALYST

MAJOR AREAS OF ACTIVITY: -FINANCIAL APPRAISAL
-PROJECT MONITORING BEFORE AND AFTER COMMERCIAL PRODUCTION.

ACADEMIC QUALIFICIATION (YEAR):

MBA	1983
B. COM	1979
INTERMEDIATE	1976
MATRICULATION	1974 .

COMPUTER EXPERIENCE: NIL

EXPERIENCE (PERIOD/POSITION):

JULY 1983-TODATE	RDFC ASSTT. MANAGER
MARCH 1983-JUNE1983	DESCON ENGG. PROJECT ACCT
AUGUST 1982-SEP 1982	BANK OF AMERICA. INTERNEE
FEB 1980-JAN 1981	RIAZ AHMAD & CO. CHARTERED ACCOUNTANT ARTICLED CLERK

PARTICULAR OF PARTICI S

NAME:	SAEED AHMED
ADDRESS:	House No. 15 Street No. 55 Sector G-9-4 Islamabad.
PRESENT OCCUPATION:	Development Banker
MAJOR AREAS OF ACTIVITY:	Project Appraisal
ACADEMIC QUALIFICIATION (YEAR):	BBA(Hons)-1979 MBA -1981
COMPUTER EXPERIENCE:	NIL

EXPERIENCE (PERIOD/POSITION):

Worked as Assistant Executive in Baluchistan Poultry Limited Quetta from June 1981 to May 1982
Worked as Assistant Manager Marketing/Finance in Bolan Mining Enterprises Quetta from June 1982 to September 1983
Worked as Assistant Manager in Planning and Identification Department of RDFC from November 1983 to December 1985
Working as Manager Projects in RDFC from December 1985 to date .

1. GENERAL

The following adjustments of the COMFAR model have been worked out during the UNIDO/RDFC Seminar. The adjustments are useful for RDFC in order to make the COMFAR model more compatible with RDFC standards.

2. WORKERS_FUND_CONTRIBUTION_(WFC)

2.1. RDFC_Standard

WFC is a social contribution to unskilled workers. The WFC has to be paid by companies with more than twenty unskilled employees and is considered at 5-7.5% of the profit before tax. The WFC is paid out in the same year of the profit computation or on the following year. In addition, the WFC has a tax saving effect.

RDFC shows the WFC as cash outflow and as a special current liability if it has to be paid out the following year. The computation of the WFC is shown in the following example:

WFC Rate	:	7%
Profit before tax	:	100
WFC this year	=	100-100/1.07 = 6.5
Taxable profit	=	100-6.5 = 93.5

2.2 COMFAR - Option

There is no direct provision within COMFAR to model WFC in accordance with RDFC standars.

2.3 COMFAR_-_Adjustment

The following method leads to a correct modelling of WFC:

STEP 1: First the WFC has to be quantified for each year. This is done by entering the effective WFC rate in TIME 205, column 3 as income tax rate in percentage. Do not consider taxes yet. Note, that column 1 has to be set to operate is constant for all years. Then a calculation has to be carried out and the WFC are shown as tax in the schedule Cash Flow for each year.

STEP 2: Then the income tax in Line 205 has to be reset (Column 3 = 0). the WFC's of each year as computed under step 1 have to be entered in Line 211 as amounts. If the WFC are paid out one year later then enter WFC s are column further on. A further calculation will show the WFC's as Dividend.

STEP:3 A final step is necessary to consider the tax saving effect of the WFC. There are two options, which lead to the same result:

1) Either one adjusts the income tax rate proportionally, e.g.

Income tax = 45%

WFC - Rate = 7%

Effective income tax = (100-7) x 45 = 41.85%

2) or, one enters the WFC of each year as Investment Allowance in Line 206. Thus, the profit before tax (See Schedule Net Income Statement) will be reduced accordingly.

Both methods lead to the same results, however, the second reflects reality closer as the actual income tax rate can be entered.

CONCLUSION

Above adjustment allows a correct modelling of the WFC. The WFC appear correctly as Cash Outflow in the desired year in both, Net Income Statement and Cash Flow. Two limitations remain: Firstly, WFC's can not be shown as current liability in the Balance Sheet but are a part of the cash surplus and profit respectively. Secondly, WFC's are shown as Dividends and the name WFC cannot be assigned. Those two limitations are of minor importance as a simple manual note on the Balance Sheet can clarify the situation and the word Dividend can be explained.

3. PROVISION FOR WORKING CAPITAL (WC) DURING CONSTRUCTION

3.1 RDFC - Standard

At RDFC it is common practice to make provisions for WC during the construction phase to meet the full requirement of the first year of production.

3.2 COMFAR Option

Within the COMFAR an excellent method for WC during production is offered, however, for the construction phase only one line entry (12/24) for inventory is offered. Any entry of this line will be added to the WC computed during production, which might not reflect requirements as outlined under 3.1.

3.3 COMFAR Adjustment

The following steps allow a perfect modelling of WC - requirements during construction.

STEP 1: Do not enter values in Line 12/24 but complete the WC entries in COMFAR according mean days of coverage. A first calculation will show the requirements of WC for the first production year (Schedule WC).

STEP 2: If it is regarded as necessary to build up the total Net WC during construction, then enter this amount in Line 12/24 in the last period of construction. Otherwise, reduce the amount accordingly.

STEP 3: Enter the same amount as negative value in Line 36/48 in the first year of production. This will offset the entry of Line 12/24 in the first year of production as the WC is there correctly computed by the program.

3.4 CONCLUSION

Above adjustment allows the correct build up of WC during construction. There are no limitations.

PROJECTING FOR LESS THAN 15 YEARS

RDFC Standard

At RDFC financial projections cover usually five years only. The reasons being mainly that loans provided by RDFC are repayed within five years and that the average size of total investment is about Rs 5 million only.

COMFAR - Option

COMFAR projects for 15 years of production. This time frame is fixed and rquires reinvestment during production for assets with an economic life of less than 15 years. There are good reasons that 15 years are sufficient to model almost any industrial investment opportunity. However, a shorter horizon is adequate when e.g. the major equipment is written off and re-investment is doubtful due to market or technological developments. Other arguments are the non-availability of reliable date beyond a more limited time frame. Of course one can project with COMFAR for 15 years and interprete the first five or ten years only. However, there will be a distortion of the ratios (IRR, IRE, NPV) due to:

1) The difference in the time value of residuals.

2) The difference of the first years of production where rated capacity is not yet achieved. (Two years of capacity build up have a more significant impact within a 5 than within a 15 year model.

The difference between a 5 and a 15 - year projection is th bigger the less homogenious the projects in - and outflow are and the higher values of residuals are, relatively t production costs and revenues.

In cases where in and outflows are more or less constant an residuals are small it is justifiable to model for 15 year and interprete the first five or ten years only.

COMFAR - Adjustment

In the case one wishes to design the production phase for less than 15 years then the following aspects have to be considered (YAP = year after production phase):

STEP 1: FINANCING, INVESTMENT, SALES, ADJUSTED COSTS. Next make sure that for above aspects there are no entries after YAP.

STEP 2: Standard Costs

After production quantity under sales are zero all variable components of the Standard Costs are automatically zero too. However, if under standard costs some cost items also have a fixed proportion (Variator less than 100) then, this fixed proportion will be continued generated after YAP. These fixed costs have to be neutralized by:

a) First quantify the fixed costs after STEP 1 is completed in the Schedule Production Costs.

b) Then enter these fixed costs as Negative values for each year up from YAP in the corresponding lines under Adjusted costs.

c) Make a further calculation to ensure there are no more costs up from YAP (except depreciation).

This adjustment can be avoided if one enters no fixed costs under standard costs. (Splitting costs into variable, which are entered in Standard Cost and have a variaor of 100 and fixed, which are entered in Adjusted Costs).

E.g. Annual Maintenance Costs at 100% capacity = Rs 800
Variable Proportion = 60%
Then enter in Standard Cost : 480, Variator = 100
and in Adjusted Cost : 320 for each year

STEP 3: Assets

From the model viewpoint there are three types of assets:

a) Working Capital
b) Assets which are not depreciated
c) Assets which are depreciated

Note that the Working Capital is cleared automatically as soon as production and costs are zero. The net working capital appear in YAP as negative outflow (inflow) while accounts payable have to be repaid. (see Cash Flow and adjusted Balance Sheet).

Assets, which are fully amortized are cleared automatically as well. Hence, only two types of assets require adjustment:

a) Assets, which are not depreciated (e.g. Land, Inventory Line 12/43).

b) Assets with an economic life beyond YAP.

Note, that CUMFAK clears residuals in the 16th year (the Outpaliable - Investment) and that a simple adjustment trims in the residual in YAP:

a) First enter the negative book value in YAP.
This will cause the correct inflow of the liquidation in YAP.

b) Then enter the same amount again as investment (positive value) in year 15 to neutarlize the inflow in the 16th year. To be precise, one has to divide the amounts by it Discounting Rate to get the same time value of year 15 and 16.

For assets which are depreciated one additional adjustment is required: The book value is the initial investment minus accumulated depreciation in YAP. This book value is also the salvage value. In order to discontinue the depreciation up from YAP the salvage value has to be enter in % in column 3 of Input table.

CONCLUSION

Although above adjustments might give the impression that it is complicated to shorten the life cycle to less than 15 years it is actually a question of five minutes only. Therefore, the fixed production phase of 15 years is not regarded as a limitation.

COST_OF_FINANCE_DURING_CONSTRUCTION

RDEC_-_Standard

RDEC is computing repayments of loans on the base of mark-up calculations. The instalments are calculated as annuities, whereby cost of finance during the construction phase and the grace period are amortized during the repayment.

$$\text{Instalment (total)} = \frac{P \times R (1+R)^N}{(1+R)^N - 1}$$

P: Amount of disbursement + cost of finance during construction and grace period.

R: Cost of finance p.a./number instalments per year

N: Total number of instalments.

In the repayment schedule the presentation is as follows:

Principal = Constant amount = disbursement/N

"Return" = Cost of finance = constant = (Instalment - Principal)/N

COMFAR_-_Option

COMFAR offers three types of amortization, including annuity. However, there is no inbuilt option to amortize cost of finance during construction and grace period. Cost of finance during construction is covered automatically by a forced bank overdraft which bears no interest. The user is free to increase equity or loan disbursements to cover cost of finance, however, it will still appear as such, without being amortized.

COMFAR - Adjustment

There are several ways on how to adjust COMFAR to adopt it to RDFC standards. The smartest is the "VASEEM - Method".

STEP - 1: Declare the loan as usual in General Variable, (type = Annuity) and specify the disbursements.

STEP 2: Make a calculation and add up costs of finance during construction and the grace period (for each loan seperately).

STEP 3: Add the total cost of finance to the disbursement (it doesn't matter whether to the first, second or equally to all disbursements). Then redeclare the loan by not charging interest during construction and grace period.

E.g Cost of finance (10) from (3) to (15) with construction phase = 2 years and repayment starts in the first year of production (1 year grace)

CONCLUSION

The "Vaseem Method" produces the same instalments per year (annuities) as RDFC is presently computing them manually. However, the presentation is different.

The presentation of RDFC pretends that the "return" is constant, while it is actually based on annuity calculations. Although the annuities of the RDFC presentation (return + principal) are identical with COMFAR annuities (decreasing cost of finance + increasing principal). It can be stated that the RDFC presentation is not correct with respect to the return presentation. However, this has to be accepted as long as it is a common standard of Pakistan Banks to relative interest oriented calculations.

Still within the preparation and evaluation of projects the Vaseem Method fulfills all requirements and there is no limitation of COMFAR's application. Only when it comes to present detailed loan schedules to third parties a decision has to be made with respect to the presentation form.

1. HARDWARE COMPONENTS

1.1.General

COMFAR has been designed for Personal Computers(PC)

- o Apple III
- o IBM-PC XT and Compatible.

For IBM-PC or compatible the following components are required:

- * 320 KByte Ram(Minimum)
- * 1 Floppy Diskdrive
- * 1 Fixed Diskdrive
- * MS-DOS 2.1 or later version.

The description of hardware components below aims at providing an introduction to PCs, emphasing basic functions.

1.2 Units of a personel computer.

Basically a PC consists of four units:

(a) A microcomputer,including a microprocessor,an input-output processing unit and a working memory.

(b) A unit for output of information, e.g. a monitor or a printer.

(c) A unit to communicate with the PC, e.g. a Keyboard.

(d) An external memory, e.g.a floppy disk or a fixed disk.

1.3 The Microprocessor or Central Processing Unit(CPU)

The CPU is the brain of the PC. It controls the calculating and processing of data. The type of CPU influences speed and reliability of the system, potential software application and memory extension.

Today mostly 16-Bit-Processors are in operation, which can work simultaneously with 16 bits. MS-DOS was designed for a 16-Bit-Processor. Newly developed 32-Bit-Processors can run the latest version of MS-DOS.

1.4 Memory

Each PC needs a memory which contains programmes and information for processing operations. The capacity of the memory determines how much information can be processed or what type of software can be applied. There are two types of memories within the microcomputer:

(a) ROM = Read only Memory. This part of the memory contains predefined programs which allow the user to operate his applications. The contents of this memory is independent of power.(Permanent memory).

(b) RAM = Randem Access Memory or Working Memory. The contents of this memory depends on power. Once the PC is switched off, the information in this memory is erased. Applications, e.g. COMFAR are loaded shortly before execution from a permanent storage device (e.g. fixed or flexible disk) and all data generated during the execution are stored in the working memory until they are transferred to a permanent storage device. The storage capacity is given in bytes:

8 bits = 1 byte
1 byte ≙ 1 character
1024 byte = 1 K

The minimum capacity for executing COMFAR is 320 KByte (= 320 x 1024 Byte)

1.5 Keyboard

The Keyboard enables the user to communicate with the PC, e.g. to start a program , to enter data or to execute DOS commands.

Usually a keyboard has alphanumeric keys like a typewriter and a number of additional keys. For executing COMFAR the following additional keys are used:

ENTER or RETURN: To tell the computer that an entry is terminated

SHIFT : To generate upper case letters and special symbols.

ALPHA LOCK : It has the same function as SHIFT, however, it is valid only for letter keys and not for number keys.

ARROW KEYS : To move the cursor, which indicates on the monitor where the next character will be placed.

1.6. Monitor

The Monitor is connected with the keyboard and the microcomputer. It displays the data or commands entered by the user and indicates the 'reply' of the program.

There are a number of different types of monitors. Black and white monitors function with one colour-white and the background remains black. Green and white monitors are based on green phosphor and coloured monitors function with video signals.

1.7 Printer

There is a huge variety of printers, functioning on different physical principles e.g.

- o Matrix printer,
- o Electorstatic printer
- o Thermo printer.

With respect to the data transfer one can distinguish between:

- o parallel printer and
- o serial printer

Parallel printer are usually faster than serial printer, however, the quality of the print outs is lower.

1.8 Diskdrives

Diskdrives may be regarded as external storage devices. They allow a permanent storage of data in comparison to the power dependant working memory.

There are two different types-
(a) Fixed Diskdrive.
(b) Flexible Diskdrive or Floppy Disk.

1.8.1 Flexible Diskdrive(name : A:)

The name'Floppy Disk' originates from the flexible material. Depending on the diameter one distinguishes between 'Disks' (8-inch) and 'Mini Disks'(5¼ inch).

The storage capacity of one Mini-Disk is 360 KByte, which is about five COMFAR applications. This limited storage capacity may be regarded as a disadvantage in comparison to a fixed diskdrive, however, the user can easily exchange floppy disks.

Within COMFAR floppy disks are used to store input tables and output tables.

Floppy disks are very sensitive and a number of precautions should be followed:

- o Do not touch the magnetic surface
- o Enter them very carefully into the diskdrive
- o Keep them away from magnetic fields
- o Make copies of important data or programs

1.8.2 Fixed Diskdrive(name:C)

In comparison to the floppy disk fixed diskdrives consist of a number of fixed drives which have to be installed and cannot be easily exchanged or removed.

Fixed diskdrives permit the permanent storage of a huge amount of data and information. An IBM XT e.g. has a fixed drive of 10 MByte(=10*1024 KByte).

Within COMFAR the fixed diskdrive is used to store the program itself and all necessary run time.

2. DISK OPERATING SYSTEM(DOS)

2.1 General

The Disk Operating System is a group of programmes which control and coordinate the whole computer system.

Once DOS is installed it is automatically loaded whenever the computer is switched on. DOS consists of different

programmes to faciliate the work with the computer.,e.g. it takes care of loading and storing of programmes, controls the operation of the diskdrives,copies and compares files etc. For the user of COMFAR only a few commands are necessary.

2.2 Names for Hardware-components

Diskdrives within the COMFAR program and hardware components have the following names:

Component	Name
Keyboard	CON:
Parallel Printer	lpt 1:
Serial printer	lpt 2:
Flexible Diskdrive 1	A:
Flexible Diskdrive 2	B:
Fixed Diskdrive	C:

The present diskdrive is indicated on the monitor. If one wants to switch to another diskdrive one just has to enter(= type and send off) the name of the new diskdrive.

3. SELECTED DOS COMMANDS.

The following list of the MSDOS-Commands is a subset of available commands. Only such commands have been selected which are necessary to load and install COMFAR on the harddisk and to get the programme started. The following syntax is used:

C: IBM DOS-command(optional parameters) or and indispensible parameters.

All parameters which are optional are written in brackets. All indispensible parameters are described without brackets.

COMFAR

HARDWARE COMPONENTS
AND SELECTED DOS COMMANDS

(1) DIR- Command (listing of stored files)

Syntax : Dir(device:)(subdirectory(s)(/w) or (/p)

Description: The computer lists all files which are stored on the specified device in the specified subdirectory. If you do not specify the device the computer will list for you the contents of the default-drive and subdirectory. You can also specify the layout of the listing and where you want to have the listing.

/w condensed, column-oriented listing.
/p line-oriented listing(computer stops listing if screen is full and waits for your continuation-reply).

Examples: dir c:\comfar.eng. /p
dir /w

(2) CLS-Command(clear screen)

Syntax : Cls

Description: This command clears the screen and displays the DOS-prompt in the upper left dorner of the screen.

Example : cls.

(3) COPY- Command(copy file(s)).

Syntax: Copy (sourcedevice:)(sourcefilename(s)
(targetdevice:)(targetfilename(s)

Description: The copy command copies the files(s) which is (are)specified with source device and (source filename(s) to the (targetfile(s) onto the storage medium target device. If you do not specify the source-or target device the system assumes the default device as specified device. If you do not specify the (targetfile(s) the system uses the source-

filename(s) for the targetfilename(s).Additionally the system allows the entering of * to specify groups of files.

Example(s): Copy a: comfar. bat c: comfar. bat.
copy a:comfar.bat
copy *.* c:\comfar.eng.

4) DISKCOPY-command(copy complete disk)

Syntax: Diskcopy sourcedevice:targetdevice:

Description: This command copies the whole contents of the diskette specified with sourcedevice to another disk specified with targetdevice. The command only works between devices of the same capacity (e.g.:diskdrive and diskdrive)not between different storage-mediums,like diskdrive(a:)and harddisk (c:).

Examples: Diskcopy a:: a:
Diskcopy a:: b:(2-drive machine only)

Remarks: Although some computers do automatically FORMAT the targetdevice before copying it is recommended to FORMAT the targetdevice before the COPY Command is applied. Defects of the targetdevice would otherwise remain undetected, and the produced copies would be useless. Watch out not to enter C:DISCKOPY. .The computer would try to copy the harddisk in itself.

(5) DEL - Command(delete files)

Syntax del(device)(\subdirectory)('filenames).

Description: This command deletes a file or a group of files from the storage-medium specified with "device" .If you do not specify the device, the system assumes the default device as specified. As already mentioned during the description of the copy command it is also possible to define

a group of files by using the *. A file which has been deleted with this command can not be recovered.

Example : del a: comfar.bat
del *.bat
del c:\comfar. eng*.exe
del * . *

(6) REN-Command(rename files)

Syntax : ren(device:)(\subdirectory(s) old filename(s) new filename(s)

Description: This command changes the name(s)of.the files specified with "device""subdirectory(s)" and "old filename(s)".As already mentioned during the description of former DOS-Commands the *can be used to specify a group of files.

Example(s): ren a:comfar.bat comfar 1.bat
ren*.old *.new
ren c:\comfar. eng\c*.cfr c*.bob

(7) MD.-Command(make directory)

Syntax : md(device:)(\ sub directory name)

Description: This command creates on the specified device a subdirectory with the specified name. If you put a \ in front of the subdirectory name the system will create the subdirectory on the first level under the root directory. No\ means that the directory will be created on the level under the current level.

Examples: md c:\comfar.eng.

(8) CD-Command(change directory)

Syntax : cd(device:)(\) subdirectoryname

Description : This command changes from one subdirectory to another subdirectory.The subdirectory has to exist already .The use of the\is exactly the same as in the md -command.

Examples : cd c:\comfar.eng.
cd\doku
cd e

(9) RD-Command(remove directory)

Syntax : rd(device:)(\)subdirectoryname

Description: This command removes an existing subdirectory. Two restrictions have to be observed:The subdirectory has to be empty(containing no files) and the location in the directory structures must be one level above that which is to removed. The use of the \is exactly the same as in the md-command.

Examples rd c :\comfar.eng.
rd\doku
rd e

(10) FORMAT-Command(format a storage-medium)

Syntax :format(device:)

Description:This command initializes a diskette(Flexible or fixed) which is specified by device. This command is very dangerous. All the information which has been stored on this device will be deleted and there is no possibility to recover it.

Never use the command FORMAT C: This command would delete the whole contents of the hard-disk. The FORMAT command has to be used for a new floppy disk. Hence only the following command should be used.

Example : Format a:

25. Structure of COMFAR on the harddisk

The structure which will be described here is only a recommendation given by UNIDO/FEAS.

COMFAR needs 4 subdirectories on the harddisk(c:) The names of these subdirectories are:

\comfar.eng
\save
\calc
\doku\e

If these subdirectories do not exist they can be created by the following sequence of commands:

```
md\comfar.eng
md\save
md\calc
md\doku
cd\doku
md e
```

COMFAR is delivered on three diskettes. The first disketts contains a program called LDCOMFAR.BAT. This program loads COMFAR automatically onto the harddisk.You only have to mount the first diskette to the diskdrive (a:) and enter.

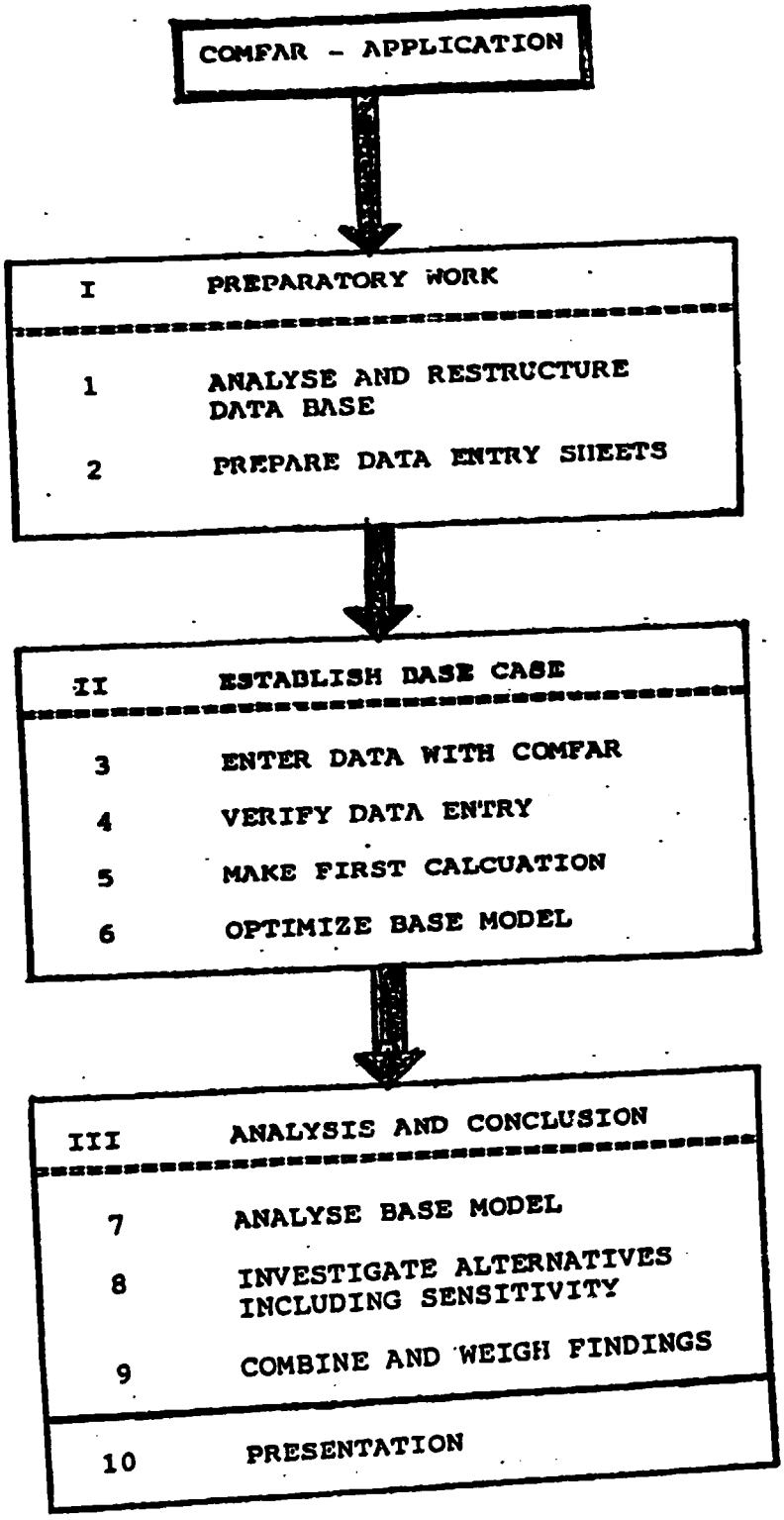
```
a: ldcomfar
```

The program will guide you afterwards what you have to do to get COMFAR transferred to the harddisk.

If you want to load the program via the keyboard the locations of the files stored on the backup diskettes are the following:

1. All files with the extensions. exe,.cfr,.bat,.com have to be stored in the subdirectory comfar. eng.
2. All files with the extension .cfe have to be stored in the subdirectory doku\e

BITS AND BYTES ON THE APPLICATION OF COMFAR



INTRODUCTION

The 10-STEP APPROACH for the application with COMFAR, presented in this paper, aims at providing suggestions on how to facilitate the COMFAR application. It consists of a methodical approach with hints on how to avoid mistakes and how to optimize the application itself.

The 10-STEP-APPROACH is designed for users who know already the software structure of COMFAR. It is no substitute for a manual but rather a guideline for the practical application.

1. PHASE I-PREPARATORY WORK

GENERAL

Preparatory work for the COMFAR Application consists of analyzing and restructuring the data base and the preparation of the Data Input Sheets. COMFAR does not substitute for lack of understanding but only computes data which have been entered (" garbage in-garbage out"). Hence this phase is crucial for the quality of the COMFAR-Model and in practice it may consume up to 50% of the total time of a COMFAR-Application.

STEP I: ANALYZE AND RESTRUCTURE DATA BASE

The very first step is to analyze the CASE(data and information of a new investment, investment study in the form of opportunity, Prefeasibility or Feasibility Study). The user of COMFAR has to go through all parts of the CASE, including technical aspects.

It is recommendable to make notes on major assumptions and special care is necessary when the financial data is examined. Major financial data should be checked.

Unfortunately in many cases the financial data is not in accordance with the UNIDO methodology. Then tables have to be decomposed or combined and missing information has to be derived from the technical part or assumptions have to be made.

Furthermore it is recommended to make rough manual calculations with respect to investment, production costs and sales. This helps to develop a feeling for the figures and will also later on to recheck the COMFAR-Model.

At the end of STEP I the following should be fulfilled:

(1) The user should have a good understanding of the CASE.

(2) Notes on major assumptions should be made.

(3) The financial data should be structured in line with the UNIDO Methodology.

(4) A preliminary estimation of expected results should be given.

STEP 2: PREPARE DATA INPUT SHEETS

Before data can be entered with the computer one should complete a "Data Input Sheet." These sheets are identical with the COMFAR Data Entry System and permit an effective data entry.

During all parts of the data entry(investment,costs etc.) a distinction between foreign and local components should be made. It will pay off in the later stages of the COMFAR-Application.

In the following the completion of the Data Input Sheets is highlighted with respect to some tricks and hints:

(1) Text Variables: Simple, no comment.

(2) General Variables: The specification of loans and equity often causes problems and is a common source of errors. The reason being that general parameters are specified within "General Variables" while the actual disbursements are entered in Line 191 ff. The entry " year of first disbursement" under General Variables determines which year is assigned to the first column of Line 191 ff. In case of two loans (A and B) the first column of Line 194(loan-A) would be assigned to a different year than the first column of Line 195(Loan B). In case there are more than two loans and half-year planning is selected, the specifications in Line 191 ff. becomes most difficult, as each line might start with a different year.

To avoid this complication it is strongly recommended to leave the default value of "year of first disbursement" at 1. Then in line 191 ff. for all loans and equity disbursement specifications the first column is the first year.

Note also that the minimum for the Grace Period is one year, which means that repayment starts the year after the last disbursement has been taken down . The amortization type "profile" is simply specified by entering negative figures in line 194 ff. By this one can also define a repayment during the construction period, which is otherwise not possible in the COMFAR Model.

3. Initial Investment: The breakdown of the COMFAR-investment is often regarded as insufficient. For example there are six types of machines specified within a case while COMFAR can accomodate two only. This is no serious limitation as long as a

correct aggregation is possible(grouping according to identical or similar depreciation).

When depreciation type 1 (= linear, annual depreciation=% of initial value) is selected then it is not necessary to specify salvage value and depreciation period.

(4) Investment during production: The same is valid as described in (3). In addition a thorough checking is recommended to ensure that all replacements are specified. Note that there is no depreciation during the construction phase and that during production depreciation starts in the year following the investment.

(5) Working Capital: In practice often the problem arises that working capital is given in figures and not in mean days of coverage as required by COMFAR. There are two options: Either one enters the total amounts in Line 36 and/or Line 48 . This is recommended when the figures are given in line with the production programme. This "easy solution" has the disadvantage that an eventual variation of the production programme in later stages will not effect the working capital. The second solution is to estimate the mean days of coverage for the major components and execute trial and error calculations until the working capital computed by COMFAR is identical with the given figures.

(6) Production Costs: With respect to the breakdown of the cost components the same is valid as described under(3). A correct aggregation(identical variator) will not distort. the results.

Note that the table "Adjusted Costs" (Line 52 to 93) does not permit a distinction between fixed and variable costs. In this case later variations of the production programme will lead to wrong results as all cost components remain unchanged. Hence, under all circumstances "Standard Costs"(Line 94 to 107) should be used- at least for those cost components which are partly variable.

(7) Production and Sales:

COMFAR assumes that the total production of each year will be sold. Problems can arise when production exceeds sales(building up of stock).As there is no possibility to specify "finished products" under working capital for each year seperately.As far as in Line 110 ff. the production quantities and not the sales quantities are entered there is only a minor distortion: The difference between production and sales is valued at sales prices and not at factory costs plus admin.overheads as suggested within the UNIDO approach. The difference may be neutralized by entering negative figures in line 36 or 48.

In case one wishes to enter in Line 110 ff the actual sales and not the higher production then one has to enter the stock seperately in e.g. Line 36 or 48, valued at factory costs plus administrative overheads. This is however only recommended when both production costs and working capital have been specified independently of the sales. That means only "Adjusted Costs" have been used and the working capital has been specified in figures according to the actual production.

(8) Source of Finance

Often the financing is not or only partly specified. It is then recommended to enter only those sources which are definetly determined and leave the remainder open. COMFAR will compute the actual requirements which can be specified later (see STEP 6- optimizing financing).

In the absence of special sources of finance or if the financing is insufficient COMFAR will cover deficits as follows:

* during construction capital investments by equity and interest by Bank Overdraft.
* during production all deficits are covered by Bank Overdraft.

(9) Taxes, Distribution, Allowances

Notes should be made on these aspects, however, it is recommended to consider these aspects at a later stage (STEP-6)

At the end of STEP 2 most of the designing work is completed. The Model is structured and the objective that the model reflects reality as close as possible should be fulfilled.

PHASE II: MODELLING THE BASE CASE.

GENERAL

This phase deals with the computer modelling of the case. Actually the major design work is already completed and all the computer does is to calculate the data in order to produce interpretable results in the form of schedules. The same manual computations would take a long time and it is doubtful whether the same precision could be obtained. This is one of the major advantages of COMFAR. The modelling of the case consists of different steps:

STEP 3: ENTER DATA WITH COMFAR.

Now the user will start the COMFAR program and enter the data in the subsystem Data Entry. After some text is entered the General Variables may be specified. Then the data is entered with the help of the Data Input Sheets. As the lines on the computer monitor are the same as in the Data Input Sheets it becomes soon clear that this is a rather machanical work . During the whole process of entering the data a dialogue is guiding the user.

STEP 4: VERIFY DATA ENTRY

Before a calculation is executed the user should check his input data. Easily a mistake may have occured when the data was entered(wrong column, line or one zero too much) This can be done in the Reporting Subsystem by screening the Input Tables. Either one compares from the screen the data with the Input Data Sheets or- recommendable in complex cases-

one produces a printout of the Input Tables . Although this exercise is quite mechanical it is worthwhile, as otherwise it might be the case that input errors will be never discovered.

STEP 5: FIRST CALCULATION

Now a first Calculation can be executed and a first'Output Table' containing the results, is being produced by COMFAR. By examining the results in the Reporting System the user may decide whether he accepts it or whether he wants to further optimize his model. If he accepts it, then the "Base Model" is finalized and established.

STEP 6: OPTIMIZE AND FINALISE BASE MODEL

The Base Model might not yet be completed because:

(a) Some results are 'out of line' or

(b) some aspects(e.g.financing, taxes and profit distribution) were left open purposely.

In case(a) the error has to be traced and corrected in the Data Entry System and recalculations with the corrected input data are necessary until one is sure of the correctness of the model. The following hints might help to trace an error:

* Make cross checks of tables by comparing COMFAR results with the Data Input Sheet.
* Frequently the product of quantity and price in the sales programme are wrong by the factor 1000. There is a simple rule which helps to avoid this mistake: The product has to have the same unit as the accounting currency has.
* In Line 146,152, 153 the first column is the reference capacity and not the quantity produced in the first year.
* If costs are skyrocking then most likely inflation was entered by mistake in the first column of Line 52-93.
* The same might have occured in Line 111, 117, 123, 129,135, 141, 147, 153, 159,165,171 or 178,when sales are out of line.

In case(b) one can-after(a) is completed-finalize the Base Model. If the financing e.g. is not yet completed then the "sub-step" optimizing the financing is due. With the help of COMFAR loan conditions- as far as they are not explicitly predefined- may be changed until the financing of the case is regarded as almost ideal:

* No deficits, which means also that there is no Bank Overdraft
* No significant cash surpluses, induced by external financing.
* Minimal costs of finance.

This can be achieved within an iterative process by varying financing parameters like type of amortization, disbursement- and repayment schedule. After each variation a calculation is required to investigate within the schedule Cash Flow the effects of the variation(surplus,deficit,cost of finance) Usually a number of calculations are necessary before the financing scheme may be regarded as satisfactory from the project viewpoint.

After STEP 6 the "Base Model" is finalized and one should make a print-out of all schedules.

PHASE III: ANALYSIS AND CONCLUSION

Although the Base Model is established and COMFAR has produced financial projections on major aspects of the case the most challenging task is still ahead: The interpretation of the Base Model, the examination of alternatives and the conclusion on all findings.

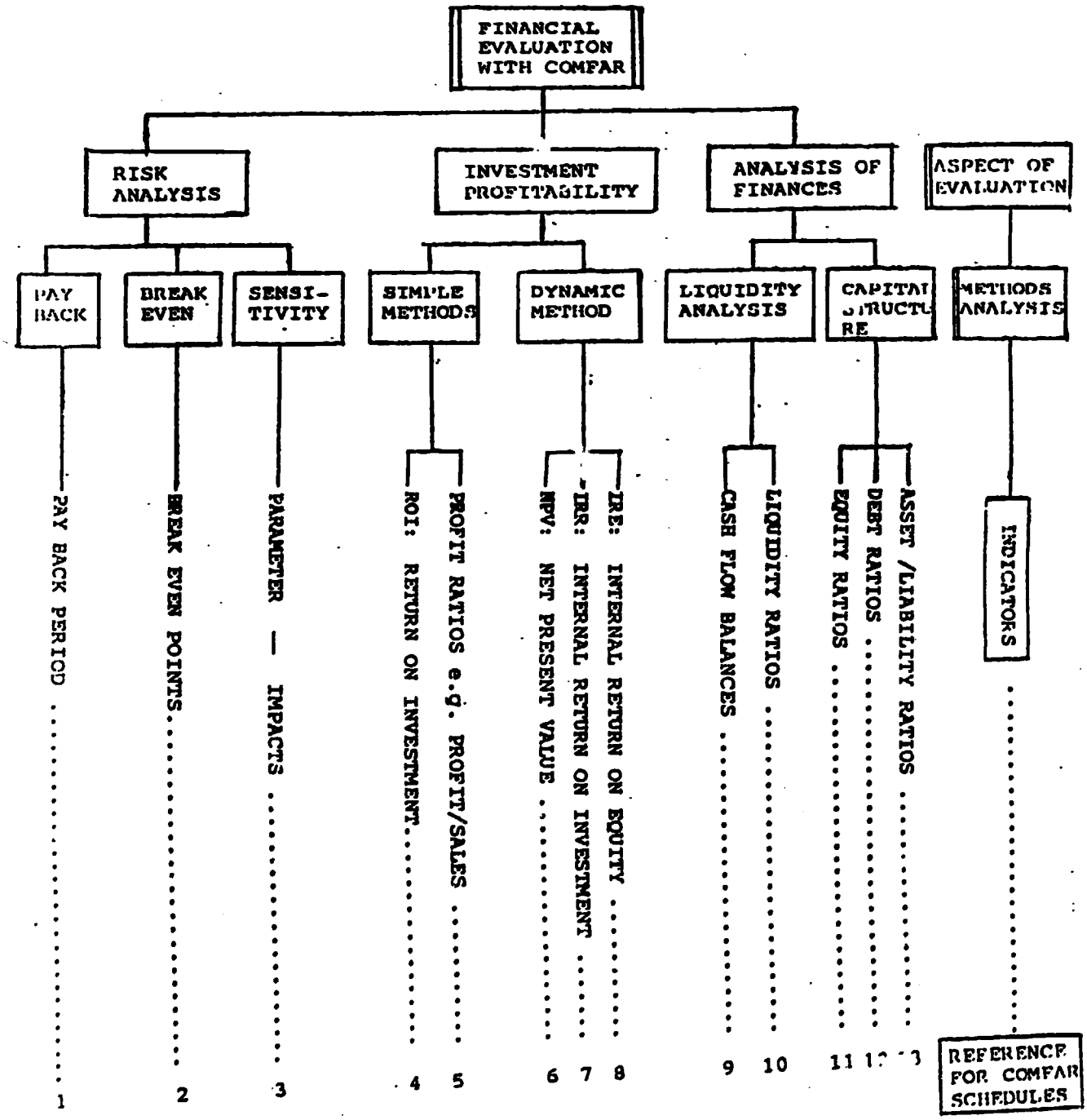
COMFAR functions like a calculating machine and does not substitute for the expertise of a Financial Analyst. Depending on the input data it provides information which needs to be appraised by the user. This crucial process of interpretation can hardly be formalized as each case has its unique characteristics. Hence, the following Steps are only meant to provide a general guideline:

STEP 7: ANALYSE BASE MODEL.

Assuming that the Base Model has been established correctly all necessary information to appraise the case can be found in the Schedules.

Financial analysis includes the investigation of a proposed investments' profitability, the analysis of the financing and the analysis of the involved risk. COMFAR facilitates the evaluation by providing a wide range of information on these aspects, including a number of financial ratios.

The following picture outlines major aspects of financial evaluation, some methods of analysis and a selection of financial ratios.


FINANCIAL EVALUATION WITH COMFAR
RISK ANALYSIS
INVESTMENT PROFITABILITY
ANALYSIS OF FINANCES
ASPECT OF EVALUATION
PAY BACK
BREAK EVEN
SENSI-TIVITY
SIMPLE METHODS
DYNAMIC METHOD
LIQUIDITY ANALYSIS
CAPITAL STRUCTURE
METHODS ANALYSIS
PAY BACK PERIOD 1
BREAK EVEN POINTS 2
PARAMETER — IMPACTS 3
ROI: RETURN ON INVESTMENT 4
PROFIT RATIOS e.g. PROFIT/SALES 5
NPV: NET PRESENT VALUE 6
IRR: INTERNAL RETURN ON INVESTMENT 7
IRE: INTERNAL RETURN ON EQUITY 8
CASH FLOW BALANCES 9
LIQUIDITY RATIOS 10
EQUITY RATIOS 11
DEBT RATIOS 12
ASSET /LIABILITY RATIOS 13
INDICATORS
REFERENCE FOR COMFAR SCHEDULES

The following list gives a reference of the financial ratios to COMFAR Schedules:

1. PAY BACK PERIOD: Although it is not shown explicitely it can be found easily in the Cash Flow Statement. It is the year where the accumulated net cash flow (bottom line) is for the first time positive. If the accumulated net cash flow does not become positive then the projects' generated surpluses are not sufficient to repay the investment.

2. BREAK EVEN: Brak even points are not calculated by COMFAR. However, all necessary data to make a manual calculation can be found in the Net Income Statement.

3. SENSITIVITY: This method is described seperately in STEP-8

4,5. STATIC RATIOS FOR PROFITABILITY: Static ratios, e.g. gross prorit % of sales, return on investment and return on equity are given for each year at the bottom of the Net Income Statement.

6/7/8 DYNAMIC OR DISCOUNTED RATIOS: IRR, NPV and IRE are computed by COMFAR and shown at the end of the Cash Flow Statement.

9. CASH FLOW BALANCE: Cash flow balances are computed for each year and decomposed into local and foreign componentswithin the Cash Flow Statement.

10. LIQUIDITY RATIOS: Liquidity ratios are not calculated by COMFAR, however, they can easily be manually calculated as all required data is available within the Balance Sheet E.G. the "current Ratio" (=current assets/current liabilities) or the "Quick" Ratio" (=quick assets /current liabilities) with quick assets= current assets-inventory.

11. EQUITY/LIABILITY: Is given at the bottom of the Balance Sheet.

12. DEBT RATIOS: They can be manually calculated on the data base of the Cash Flow Statement, where all necessary information can be found (interest on loan, principal, cash balances)

For interpretation of ratios see. UNIDO Manual: "Evaluation of Industrial Projects".

In addition to the financial appraisal the COMFAR-Model, although it is a financial model, can be used to investigate some economic aspects:

1) Impact on Foreign Exchange:

Deficits and surpluses of the foreign component of the financial cash flow correspond with the projects foreign exchange requirements and earnings. By discounting the annual foreign exchange balance the projects' impacts can be quantified, assuming no adjustments are required. If the project causes secondary effects e.g. import substitution or increased Income from exports, then those impacts have to be included.

2) Economic Profitability:

The user is free to adjust the financial COMFAR Model to compute an economic rate of return. However, numerous adjustments bear the danger that the economic model becomes too complex in the sense of interpretability. One of the reasons being that adjustments are not documented and their impacts are not documented.

With respect to the financial analysis a warning is adequate not to relay on one or a few ratios. All ratios have limits and each type of ratio covers only one specific aspect. This is also true for the IRR, which is often used as "the indicator" for justifying a project. E.g. it does not give absolute amounts, which limits the IRR when it comes to selecting mutually exclusive projects. Furthermore, it is assumed that surpluses can be reinvested at a rate equal to the IRR. This limits the interpretability, especially when the IRR is above a cut off rate.

The example of the IRR makes clear that the process of interpretation is quite complex. In addition one has to be fully aware of the view-point of the analyst:

(a) A banker is rather inclined to emphasize liquidity in order to secure debt services.

(b) A private investor is most likely interested in a relatively short pay back period in order to minimize the risk of his investment and a high return on his equity(Leverage Effect).

(c) The "ideal manager " is more interested on the projects' results, trying to satisfy both(a) and (b) and he might rely more on productivity, resulting in a high IRR,low costs etc.

(d) The National View Point might contradict all the above.

Despite the complex nature of the evaluation process the user of COMFAR has it comparatively easy. COMFAR gives all information, necessary to cope with the high demands. A systematic approach is suggested in STEP 9 .

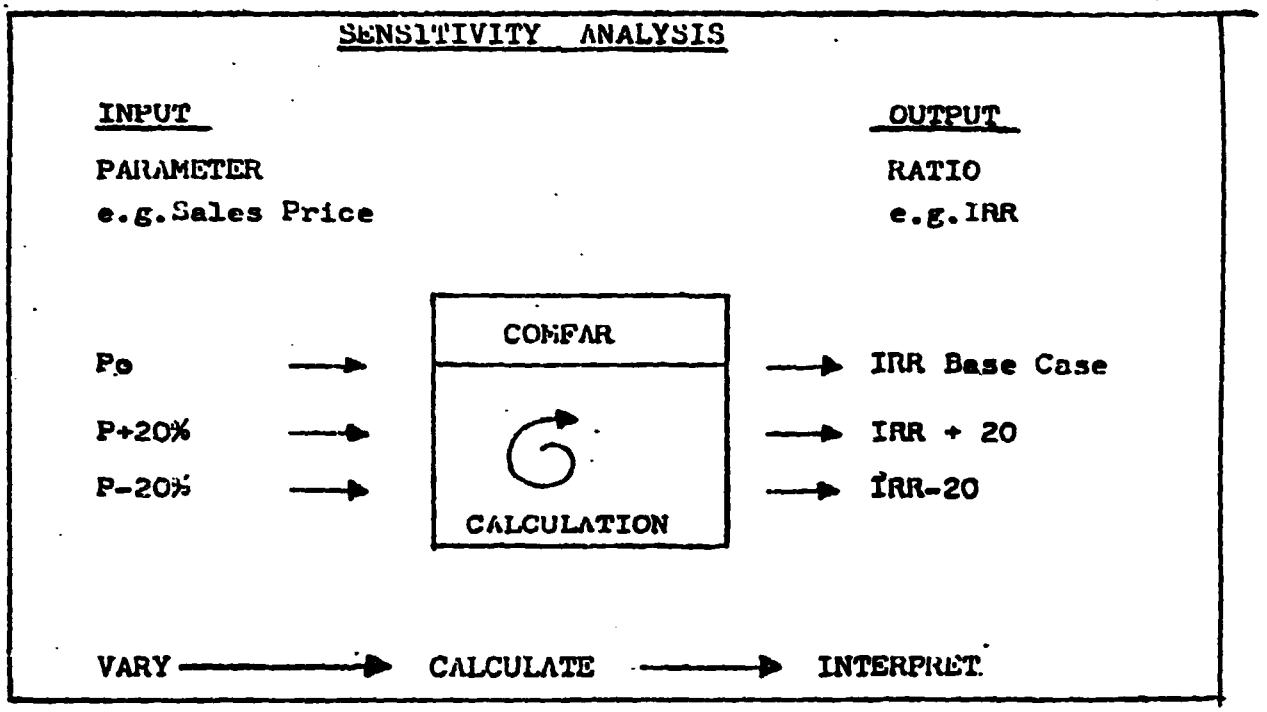
At the end of Step 7 it is sufficient when each ratio is specified and briefly interpreted. This will provide a fairly good outline of the Base Case showing its weak and strong points. Above this, it facilitates the calculation of alternatives and parameter variations as they are likely to be the logical consequence of this first evaluation.

STEP 8: ALTERNATIVES AND SENSITIVITY ANALYSIS

Once the Base Model is established and a first appraisal is done, further questions can be examined. If there are alternatives with respect to investment lay outs, financing schemes or production technologies (costs; output;) then these alternatives have to be examined in the same way as the Base Model (STEP 2-7).

Alternatives and Sensitivity Analysis are closely related from the Methodical view point. The following abstract outlines the basic concept and shows that the variation of the parameters is a special feature within the COMFAR.

Sensitivity Analysis is simply the variation of a "Critical parameter and the consequent examination of the impacts. If the parameter variation has a considerable impact on the result, then one says the project is sensitive towards this parameter. The following picture might illustrate the process of Sensitivity Analysis.



To identify critical parameters two question should be examined

(1) Which parameters are important in the sense that variations have a likely considerable impact on results(usually Sales price, ,production program,certain cost components).

(2) Which parameters are likely to vary, to which extent? The final answer to this question lies in the future but the technical part of the study(major assumptions), statistical data and personal experience might help to make estimations.

The computing power of COMFAR facilitates sensitivity analysis. The following approach is recommended:

(1) First ,list all parameters which could be critical.

(2) Then carry out sensitivity analysis for each parameters. Vary the parameters until the results suggest to reject the project. (e.g.IRR below cut-off rate)

(3) Then interpret the degree of variation with respect to its probability.

This approach has the advantage that the user avoids the difficult predetermination of variation ranges. By analyzing the variation range of a specific parameter where the project is to be rejected one cane give an answer to the question whether this variation is likely to happen.

At the end of STEP 8 one should have a clear picture of the involved risk and it is recommended to prepare a summary table on the parameter variations.

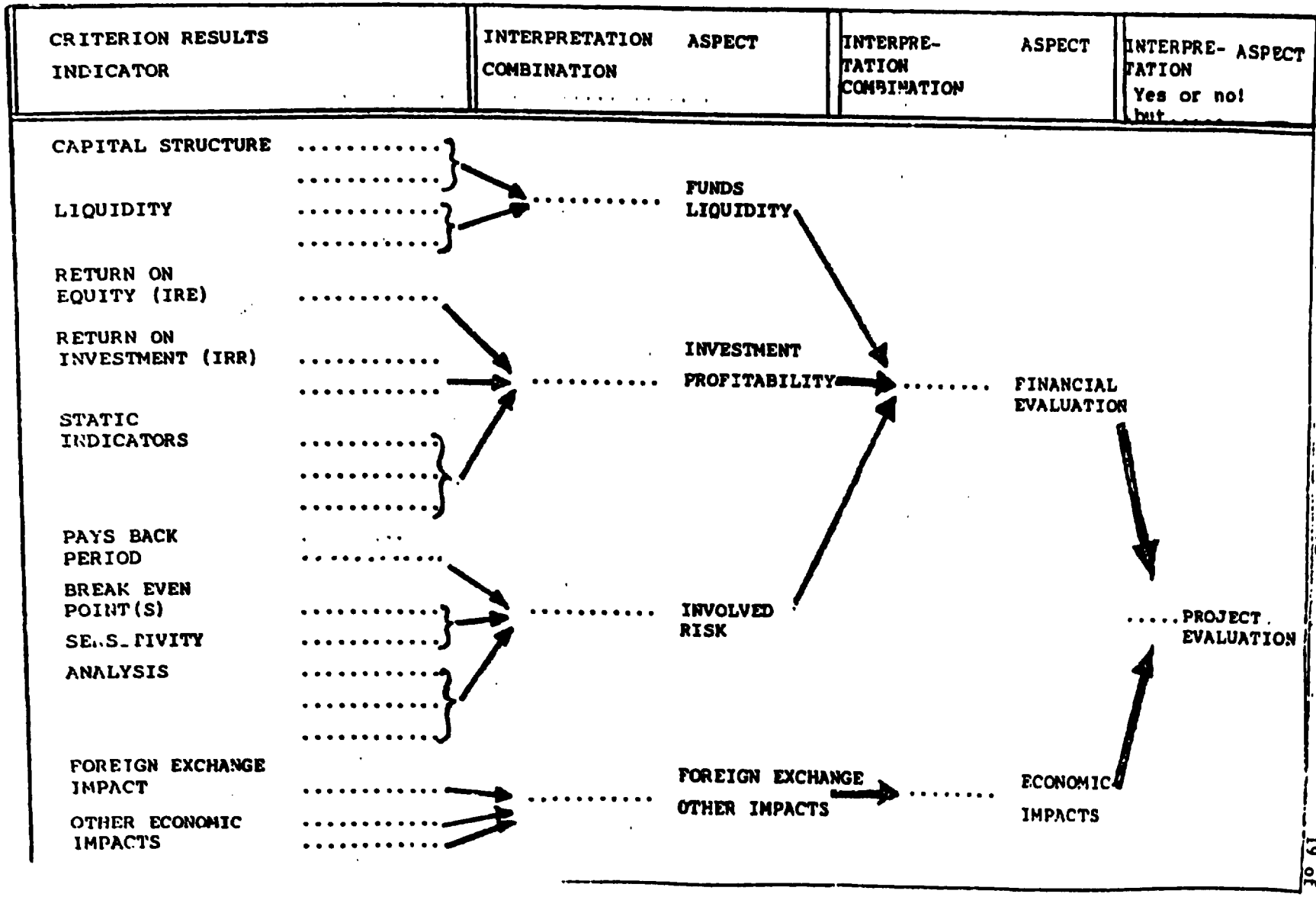
STEP 9: COMBINATION OF FINDINGS

Finally all findings of the Base Model(Step 7) and the variations(STEP-8) have to be combined in order to come to a final conclusion. Again, much depends upon the view point and the relative scoring of the findings.

The following picture suggests an analytical bottom up approach. This method has the advantage that all aspects are first assessed separately and that the user is forced to go through all of them. The complexity of the evaluation becomes obvious and the crucial processes of combination reflects the analyst's capabilities.

CONFAR

BOTTOM UP EVALUATION



STEP 10: PRESENTATION

With STEP 9 the evaluation process itself is completed. The last step within the application of COMFAR deals with the presentation of the findings for the subsequent process of decision making.

Before STEP 10 is discussed it is worthwhile to point out the sensitive character and the importance of the presentation. A Financial Analyst, who carried out the evaluation, is likely to be well aware of the case's crucial assumptions, its weak and strong points. However, to present these aspects to decision makers, who often are not aquainted with details of the case, who probably are neigher accustomed to evaluation techniques nor to computer aided modelling and calculation, requires a transparent presentation.

No general guideline can be given on the contents of the presentation, e.g. the level of aggregation or the importance of specific aspects. The requirements of a presentation depends upon a number of determinants ,e.g.

TYPE OF COMFAR APPLICATION

* Project preparation(scheduling of funds etc.)
* Appraisal of investment studies(Opportunity- Feasibility)
* Evaluation of ongoing projects.

ASPECTS OF THE CASE

* Sectoral aspects.
- Importance of external determinants(e.g.availability of loan.)
* Type of opportunity(e.g. mutually exclusive).

OTHER ASPECTS

* For whom COMFAR was applied(e.g.National Planning Institute, Investment Institution,Private Investors).
* Availability of presentation facilities(e.g.COMAR-GRAFIX).

Although each COMFAR Application has its specific characteristics, requring a specific presentation, an attempt is made to outline the contents of an appraisal report,which may be regarded as "typical" for the evaluation of an industrial feasibility analysis. Furthermore it is assumed, that COMFAR Grafix was not applied. It is suggested to structure the presentation in accordance with the analytical "bottom up" evaluation process to ensure all aspects are covered. Assuming a five page presentation the contents should cover:

(0) BACKGROUND
(0-1)Who carried out the study for whom
(0-2)Source of data etc.

(1) EXECUTIVE SUMMARY(derived from(2) and (3)).
(1.1) Major advantages
(1.2) Major disadvantages.
(1.3) Conclusion and
(1.4) recommendations.

(2) FINANCIAL ANALYSIS(Reference to COMFAR Schedules)

(2.1) Profitability.

(2.2) Liquidity and Funds.

(2.3) Risk Analysis.

(3) ECONOMIC ASPECTS(Selected aspects: no COMFAR ECA Module)

(3.1) Foreign Exchange impacts.

(3.2) Other economic impacts.

(4) COMFAR SCHEDULES(as annexes)

SPECIAL APPLICATIONS WITH COMFAR

0. GENERAL

COMFAR, like any model, is valid only within the limits of its definitions. However, COMFAR's structure permitts a number of "manual" adjustments, thus increasing its potential range of application.

In the following some methods on manual adjustments are presented and the frequently discussed problem on how to consider inflation is outlined.

1. INFLATION

COMFAR offers the option to consider inflation. From a "technical" viewpoint the following aspects should be noted :

* Assets can not be inflated by the program. Depreciations are cosequently derived from present, constant prices and they would be insufficient for future, inflated replacements! A manual adjustment is possible. The remaining book value for each year and asset would have to be increased accordingly. This would not only be a time consuming exercise but also contradict taxation laws. The conflict between the cost-approach and the cash-flow approach would require two models.
* Inflation by the program (Sales and Adjusted Costs) are fixed for the whole life cycle. This means, that the inflated values are skyrocking with subsequent leverage on the results. Inflation enforces already existing tendencies, if the rates for sales and costs are equal.(deficits and surpluses will leverage). In cases of different rates a compensation will take place:

If e.g. the rate for costs is higher than the rate for sales. then deficits will leverage and surpluses will decrease or even be transformed into deficits. The reverse is valid too:

Besides these "technical aspects" the consideration of inflation would only be justifiable, if the following conditions were fulfilled:

(a) Inflation rates can be predicted for each parameter seperately.

(b) The rates are constant for 15 years.

(c) Secondary effects on non inflated parameters have to be quantifiable. (E.g. devaluation of local currency as measurement for inflating material imports. Which corresponding local sales price would be acceptable?)

It becomes obvious, that the complexity of the phenomena inflation does hardly allow a correct modelling. Even if all above conditions were fulfilled within a certain range, one should be aware that only slight deviations of the predicted rates from the actual rates would distort the financial model as a consequence of a inflation leverage.

It is therefore recommended to model in constant prices only. Aspects of inflation may be investigated within a sensitivity analysis. There, a selective variation is possible and the impacts are controllable. The base model should , however, be derived from constant prices. With this approach almost all practical cases can be modelled. The following practical situation is an exemption and worthwhile to be discussed :

Financing institutions might predefine loan conditions, which include inlationary aspects. An investment, modelled in constant prices, is likely not able to meet the inflated debt obligations. This can be the case even when the investment is highly profitable, e.g IRR much higher than a cut off rate, but cash deficits. Additional loans would only worsen the financial situation, as the deficits would increase. Possible solutions for this financial vicious circle are:

(a) Try to convince the financing institution that constant prices are a more reliable data base for financial analysis as inflation might have as well a positive impact on the investment and that it is justified to assume that the findings of the base model are the relatively most objective indicator, assuming neither a positive nor a negative impact.

(b) If above argumentation does not convince the involved parties, then a trick is appropriate :
Simply neutralize the inflated debt repayment by fictivous, additional sales. The justifiable assumption is, that inflation has neither a positive nor a negative effect.
Practically this is achieved by the following:
(1) Determine with the Base Model(non inflated debtestimate real cost of finance by subtracting inflationary proportion) the "real" costs of finance.
(2) Then make another calculation with inflated loan conditions.
(3) Quantify the differenoce of costs of finance of the Base Model and the inflated model(Schedules Source of Finance or Cash Flow) for each year.
(4) Enter these differences as a new product(name : "Inflation Compensation) and carry out another calculation.

Unfortunately the results of above trick (b) are only limited interpretable. Certainly the Cash Flow statements are "correct" and might serve for the purpose of demonstrating the project's ability to repay the debt. However, indicators on the profitability are partly distorted as additional sales at constant investment and costs leverage the IRR etc. Therefore, the Base Model should be used to argue on the profitability and above adjusted model (b) for financial aspects.

2. SHORTENING THE PRODUCTION PHASE TO LESS THAN 15 YEARS

COMFAR's fixed production phase of 15 years is often regarded as it's major limitation. There are good arguments, that 15 years are sufficient to cover the majority of industrial investment projects. However, one might wish to shorten the production phase because the major equipment is written off after eight years and a reinvestment is not intended, due to uncertainties of technological or market trends. Other arguments could be advanced to underline the necessity for a shorter production phase. As long as a new version of COMFAR is not available, one has to apply manual adjustments to reduce the life cycle. These adjustments are not complicated and the following steps outline the method, assuming that a base model with 15 production years has already been established :

(a) Reduce Sales to zero after actual Production Phase (APP)

This should not cause any problems, simply enter 0 after APP. This would have two impacts: Working Capital will appear as negative outflow(-inflow) in the first year after APP, which is correct. Secondly, Variable Costs would be reduced to zero after APP. Fixed costs would still remain!

(b) Reduce Costs to zero after APP

In case only adjusted costs have been applied this is easily done by entering zeros in the years after APP in Adjusted Costs. If Standard Costs have been used then Fixed Costs will continue, although production is down to zero. Make a calculation with (a) effected and quantify the Fixed Costs in Schedule Production

Cost. Then enter these amounts as negative costs in the corresponding years of Adjusted Costs.

(c) Residual Values

As the standard production phase of COMFAR is 15 years, any residuals (Book Value of Assets) enter in the 16th year as inflows and are then discounted for NPV, IRR calculations. If APP is shorter than 15 years, then an error would be induced, due to the different time values of residuals. There are several methods to correct this. The easiest method probably is :

First calculate manual the book value of assets at APP(Salvage value of assets at APP, inventories,not included in Working Capital from Line 36,48,12,24 Data Entry). Note, that Working Capital is automatically cleared, when production is zero.

Add up all residuals and enter this amount as inflow in the year after APP. COMFAR will continue to generate depreciation,however, this is just a cosmetic aspect, with no impact.

Finally,the residual values, generated by COMFAR in the 16th year have to be eliminated. The user has only access in the 15th year. Therefore, investments in the 15th year, equal the residual of the 16th year and divided by (1+r) have to be entered, with r - Discounting Rate.This will neutralize inflows in year 16.

Besides adjustments for Residuals, the shortening of the production phase does not require much efforts. With respect to Residuals it can be stated, that a not perfectly effected adjustment will most likely have litte impact on results.

3. EXTENDING THE PRODUCTION PHASE BEYOND 15 YEARS

The author of this paper is not aware of any practicable methods. on how to extend the production phase. Theoretically there are two possibilities :

(1) Regard each period as two years.

(2) Design two compatible models.

Both methods involve a number of quite sophisticated adjustments, which would not justify the effort. Above thi ggregations would diminish the transparency of the results.

Practically, the upper ceiling of 15 years is no serios restriction as most industrial investments do not exceed this planning horizon. Even if available data covers over 15 years (which could be doubted) then the involved deviation from the 15 year model is likely to be neglectable. The present value of flows beyond 15 years is marginal. (This can be demonstrated by shortening even from e.g. 15 to 12 years.)

However, again a practical problem might be imposed by externally predefined loan conditions. Soft Loans might have amortization periods of far over 15 years. In this case it is recommended to finalize the COMFAR model, as if it would cover the desired APP. The outstanding debt and subsequent debt services can easily be computed manually. A short statement, describing the projects debt service in comparison to its Net Cash Flow after APP should be sufficient.

4. COMFAR AS FINANCIAL CALCULATOR

The user would be mistaken to believe that COMFAR is suitable for fully outlined investment projects only. As a matter of fact, the imagination of the user is the limit of its application. Both, the degree of aggregation and the subject of application are free to be defined. There is no need to complete all types of Input Data and there is no restriction with respect to its aggregation. Eventual error messages during calculation can be neglected. The following selected examples might highlighten this :

* Within a preliminary OpportunityStudy only one aggregated figure for investment, costs and sales might be entered and calculated to get a first estimation.

* IRR and NPV can be computed, even when there are only net flows for each year available. (Just enter negativ flows as costs and positive flows as sales (or as negative costs) in the corresponding years.

* Examinations on operating costs (e.g. in dependence of varible production programs) can be carried out seperately(e.g. to determine an economic minimum capacity).

* Financing or Debt Schedules can be produced independently of other aspects. Just specify the financing and calculate!

ABSTRACT: GUIDE TO A PRACTICAL PROJECT APPRAISAL

FIVE STAGES:

I. CALCULATION OF FINANCIAL PROFIBILITY at market prices.

II. SHADOW PRICING to sustain the net benefit at economic efficiency prices.

III. ADJUSTMENT FOR IMPACTS ON SAVINGS ON INVESTMENTS.

IV. ADJUSTMENT FOR IMPACTS ON INCOME DISTRIBUTION.

V. ADJUSTMENTS FOR THE PRODUCTION /USE OF GOODS WHOSE SOCIAL VALUES ARE GREATER THAN OR LESS THAN THEIR ECONOMIC VALUES. (e.g. luxury goods or basic needs).

STAGE I : FINANCIAL PROFIBILITY

1 THE ANALYTICAL FRAMEWORK

The calculation and recording of the data is based on three basic tables:

a) THE FINANCIAL INCOME STATEMENT (FIS)

SALES AT MARKET PRICES
-TAXES
=SALES AT FACTORY COSTS
+INVENTORY
-PRODUCTION
=MATERIAL
VALUE ADDED
OPERATING EXPENSES
OPERATING PROFITS
-INTEREST
=NET PROFIT BEFORE TAXES
-TAXES
-DIVIDENDS
=RETAINED EARNINGS

b) FINANCIAL CASH FLOW (FCS)

(1) FINANCIAL CASH FLOW-REAL

IN: OPERATING PROFIT
AMORTIZATION
DEPRECIATION
EXTERNALITIES

OUT: CURRENT ASSETS
INVENTORIES
FIXED ASSETS
LAND
BUILD.
EQUIP.
OTHER CAPITAL, INV

(2) NET CASH FLOW-FINANCING

IN: NEW BORROWINGS
NEW EQUITY

OUT: WORKING CAPITAL
CASH
RECEIVABLES
DEBT SERVICE
INTEREST
PRINCIPAL
TAXES
DIVIDENDS
OTHERS e.g .....

c) **FINANCIAL BALANCE SHEET (FBS)**

I. ASSETS

1) CURRENT ASSETS
CASH
RECEIVABLES
INVENTORIES

2) FIXED ASSETS

TOTAL
AT COST
ACCUMULATED

LAND/BUILD/EQUIPM.
AT COST
ACCUMM.

3) OTHER CAPITALIZED ASSETS

4) OTHER (e.g. securities)

II. LIABILITIES

1) CURRENT LIABILITIES
PAYABLES
DEBT
OTHER

2) LONG TERM DEBT

III. NET WORTH

1) PAID IN EQUITY
2) RETAINED EARNINGS
3) OTHER

FIS- does not consider investment ! -FCF

FCS- gives/no breakdown of capital costs ! -FBS

GROSS CASH FLOW = OPERATING PROFIT + DEPR. from FIS

2. DISAGGREGATED DISCOUNTING

Shadow pricing is based on adjustments of NPV of individual inputs and outputs and not on their annual values. This means that individual inputs/outputs or groups, which have a common relationship between market and shadow prices, have to be discounted seperately.
This has some advantages:

1) If the relationship between market and shadow prices is constant overtime then there is no need to assign annual shadow prices.

2) Discounting has not to be repeated every time a shadow price is changed =>

3) Sensitivity analysis becomes easy.

3. CURRENT OR CONSTANT PRICES

Inflation may artificially improve a project's result by increasing revenues without considering that assets have been bought with more valuable capital. Or, in other words, the depreciation allowances are not sufficient to replace assets.

Hence assets have to be revalued, if inflation is considered.

STAGE III: DIRECT ECONOMIC BENEFITS GENERAL ISSUES

1 SECOND BEST OPTIMIZATION

One could agree that shadow pricing does not make sense if the overall economic policies follow different principles. However, it is believed that on project level better results can be achieved by applying shadow prices than by distorted market prices.

2. SELECTIVE SHADOW PRICING

In practice shadow-pricing has to be done selectively, in terms of two criteria:

i) Which inputs/outputs are most significant with respect to costs/benefits?
ii) Which inputs/outputs have market prices that are out of line?

Usually, the most frequent candidates for shadw pricing are:

i) Main outputs (present benefits)
ii) Importable inputs
iii) Non importable inputs
iv) Unskilled labour (market wages offer exceed its shadow wages)

5. TRADABILITY

The tradability of a good is a central issue for shadow pricing, because if a good can be imported/exported then international market prices often are a guide for valuating a good and the production costs can be compared with the "trading opportunity costs".

EXAMPLE

Presently: 20.000 autos are produced annually.
20.000 are imported under a fixed quarter

Project: Wants to produce
15,000 annually. As an incentive government reduces imports to 15,000

20.000 previously produced
15.000 project
15.000 import

Imports:

1) Increase of consumption e.g. by 5,000
2) Decreased production in economy if prices of project autos are lower than e.g. 5,000 of high cost domestic . replaced.

3) Decrease input by e.g. 5000

IMPACT DOMESTIC

1) Increase consumption } prices: consume willingness
2) Reduced production }

IMPACT FOREIGN : Less imports

4. SOURCES OF SHADOW PRICES

The "guidelines" classify three sources of shadow pricing, depending on the project's impact on the national economy. Any given input/output may affect:

I. Supply available to the rest of the economy:

Level of production in the rest of the economy.

Level of its inputs/outputs.

II In terms of production of an output the project may:

Increase consumption .

Decrease production

III A project's consumption of input may:

Decrease consumption

Increase productuion

Increase imports or decrease exports.

(Exampel: A project may have one or all three imports!)

For calculating the shadow prices of a project's inputs/outputs the factors to be considered are:

TYPE OF IMPACT	INPUT	OUTPUT	VALUATION
DOMESTIC (non traded			
1. Production-supply	increase	decrease	cost of production
2. Consumption-demand	decrease	increase	value of consumer
FOREIGN traded			
1. Exports	decrease (less export)	increase	value of export(f.o.b.)
2. Imports	increase (more imports)	decrease	value of imports(c.i.f.

CAPITAL INPUTS

When shadow pricing the capital costs of a project two aspects are important.

1. The capital is transformed into assets.
2. The capital is taken away from other potential investments, hence the opportunity costs are of importance.

1. Pricing Assets

is done according pricing other resources.

The shadow price if it is non-traded:

a) Economic cost of production if project induces increased production .

b) Economic value in terms of consumer willingness to pay if the project takes it away from other users

The border price if it is fully taded.

2. Pricing opportunity cost of capital.

a) In theory it is price that must be paid to forgo an additional present consumption = CRI = consumption rate of interest if the capital is drawn from additional savings.

b) the value of additional production in alternative uses.

As both measurements are different to quantity the UNDO appraisal suggests to make the oppurtunity costs of capital a "switching value", which is then the IRR.

6. APPLICATION (Table 10)

1. The NPV s of the financial cash flow statement are adjusted by adjustment factors (AF). This is done for each input/output.

2. and for different discounting rates

3. The NPV's * A/F = gives the positive or negative Adj. value (AV)

4 By adding up AV's for each discounting rate a preliminary Economic NPV is obtained!

EXAMPEL

1. IMPACT-DOMESTIC-CONSUMPTION : + 5,000 CARS

Prices should be the consumer's willings to pay for additional cars.

Usually for the market price = shadow price only if:

i) Good is freely ayailable.
ii) No monopsony one customer beys all)
iii) Change in the supply does not change prices. However if price elasticity of demand and supply are non-zero then changes should be considered e.g. if prices decrease then the consumer has a benefit:

CONSUMER SUPPLUS

which strictly speaken should be regarded as project's benefit. In practice it is neglected..

iv) With respect to inputs, the market prices are not artificially inflated.
In practice all 4 conditions are met, if the project is not very big, hence market prices. However, if project is big then a distinotion is necessary.

2) IMPACT-DOMESTIC-PRODUCTION : 5,000 CARS

Assuming 5,000 units domestically produced care are replaced by the project these have to be valued by marginal social COST OF PRODUCTION = PRODUCTION COSTS OLD - PRODUCTION COSTS NEW (all shadow price).

In practice this is often difficult.

3). IMPACT - FOREIGN - IMPORT : - 5,000

Import substitution, valued at CIF with respect to forex saving.

5 TAXES

. Taxes should be neglected for traded goods away from other producers or adds

. If a project takes non-traded inputs/ not-traded goods then taxes should be considered as a part of the consumer willingness to pay the marginal economic value.

However, if more domestic production of inputs is caused or less domestic production of outputs by other producers then taxes should be neglectled.

6. THE NUMERAIRE

The numeraire is a unit account to calculate unlike quantities. It has to be specified with respect to:

a) INFLATION

Most commonly a unit of domestic currency is the numeraire, to exclude erronously implications of inflation the numeraire should be expressed in "constant" unit or current.

b) PRESENT VALUE

The numeraire also should be expressed in presenrt or discounted values.

c) SHADOW PRICES

It has to include further more the value system. e.g. domestic accounting units or border prices.

d) SAVINGS AND CONSUMPTION

The value of one unit for savings might be different from one unit of consumption e.g. scarcity of capital. If the difference has to be considered then the numeraire has to consider this by transfering (adjusting) saving fbenefits to consumption benefits.

e) DISTRIBUTION

If the distribution aspect plays an important role e.g. government wishes consumption for the poorest than this should be considered by: specifying a " base-level of consumption".

In practice this level may be estimated by observing government taxation policies. Below the base-level the government will provide subsides, above taxes (usually progressive) have to be paid.

Income at the base level is equal in value to Government income, which may be added directly, without further adjustment. income below, positive adjustment.

(a-e): The full specification of the UNIDO-NUMERAIRE should be:

"NET PRESENT CONSUMPTION BENEFITS
IN THE HANDS OF PEOPLE AT THE BASE LEVEL CONSUMPTION
IN TERMS OF CONSTANT PRICE DOMESTIC ACCOUNTING CURRENCY"

STAGE TWO: DIRECT ECONOMIC BENEFITS-SPECIAL APPLICATION

A) SHADOW PRICING OF SPECIAL RESOURCES

1. TRADABLE IN/OUTPUTS

a) A good that is fully traded is not necessarily freely traded and the condition that changes in domestic consumption/supply imply equal changes of imports/ exports is not sufficient. e.g quotas or territs do not restrict evailability on intern . market. However in practice it is the best of assume that tradable inputs/outputs are fully traded and dthen the borden price is the relevant shadow price.

b) 1) A traded good d(tradable) must be valued at its marginal economic costs = costs of producing an additional unit, if the project induces additional production or less production by domestic competitions or at its.
marginal economic value = consumer's willingness to pay for an additional unit, if the project takes input away from the users or increase supply to consumers.

2. NON TRADED

Definition: Interm. transport costs raise border price above domestic production costs and domestic production costs are higher than f.o.b.; otherwise the good dwould be exportable.

The valuation depends on its impact on the domestic economy:

i) If consumption increase : consume willingness to pay.

output

ii) If other domestic production is replaced : difference in production costs.

iii) If availability of non-traded inputs is replaced: willingness to pay for this input.

input

iv) If additional domestic production is induced : production costs. A break down of components might be required and border prices may become relevant, if the non-traded good consists of tradables. (e.g. foundetions imported comment.....)

In practice it is probably sufficient to calculate with general adjustment factors for non-traded inputs/outputs by which NPV's are adjusted.

3. EXTERNALITIES

e.g. poliution, housing preinfrestructure should be quantified- if possible- or mentioned qualitative in the summary sheet.

4. LABOUR INPUTS

Basically there are three different types, to be distinctioned when calculating shadow wages for labour:

:Taking labour away from others (usually skilled).
:Creating or producting labour (also unskilled-skilled).
.Hiring labour from abroad.

a) Taking Labour Away

The shadow price is usually the willingness of other producers to pay for this labour. Then the "marginal product of the works" corresponds with the shadow price. Difference might have to be considered if e.g. union pressure increase wages (see P. 37).

b) Prodluction of Additional Workers

For calculating shadow wages four cases have to be considered.

1. Employment of previously Unemployed.

This, is a classical case where the shadow wage is Zero as society gives up nothing. However, a closer look-rises doubt as e.g. consumption habits may change...

(p. 38).

2. Improved productivity

The costs for society is what the employee gives up = marginal product.

3. Rural to Urbal worker

Costs are social costs of migretion e.g. housing electricity etc Ind. family.

4. Unskilled to Skilled

If the training is covered by the project, then costs/benefits (higher productivity: are automatically taken care of.

If government provides, then costs can be ignored.

If employee receives training by the project and leads= exterridity.

In theory this should be considered by reducing wages

c) Importation of foreign workers.

The basic shadow wage is the wage they command.

EXAMPLE

ITEM	FINANCIAL NPV AT 0%	10%	20%	ADJ. FACTOR%	ADJUSTMENTS 0%	10%	20%	PRELIMINARY PV AT 0%	10%	20%
NET CASH FLOW	10000	4381	773		-5,800	-4,20	-3,100	4,1000	301	-2,371
:										
Material imported	22,000	17,700	14,7	-15%	-3300	-2670	-2210	18,7	15,7	12,5
Labour unskilled	5,9	4,7	3,9	-50%	-2,9	-2,3	-1,9	2,9	2,3	7,9
Fixed assets	3,0	3,4	3,8	-10%	-0.3	-0,34	-38	2,7	3,1	3,4
NET CASH FLOW-FINANCIAL										
Interest	1,4	1,1	0,9	+35%	0,5	0,4	0,3	1,89	7,5	7,3
Taxes	0.9	0.7	0.5	-100	-0.9	0.7	0.5	0	0	0
Dividends	0.9	0.6	0.5	-100	-8.9	-0.6	-0.5	0	0	0

Explanation:

The value of material exceeds by15% it's trading opportunity (border) costs. Unskilled labour is overpriced by 50%.

Fixed assets are overpriced because of duties on imported parts and excess costs of labour in the construction.

By adding up all adjustments and financial NPV one receives the preliminary Economic (excluding FOREX aspects !) PV!

The purpose of adjusting the financial flow is to measure the project's impact on the income, received by various

groups (see next page)

e.g 1) Project receives a loan from Government for which it pays less than the opportunity costs of capital are =D + 35%.

2) Taxes have no direct value to the project and as secondary effets are not considered, They have to be eliminated.

3) Divends abroad(=0) no benefit for project.

7. FOREIGN EXCHANGE

Af In principle, all inputs outputs are

1) TRADABLES, which can be valued directly in forex or

2) NON-TRADABLES, which can be disaggregated into:

TRADABLES

NON-TRADABLES

LABOUR

8 However, only inputs/outputs valued at boarder prices have to be assigned a premium of ferex as inputs/outputs valued at the consumer's willingness to pay or economic production costs include already a premium for forex!

c) Whether forex-adjustments have to be done on a year-by-year base or on PV, as recommended in the guide depends on the assumptions :

a) the shadow price of forex is constant ore time

b) the content of forex is constant over time

Although there can be distortions the UNIDO / manual recommends to adjust the NPV only, which simplifies the calculations enormously. This means that the PRELIMINARY ECONOMIC are simply multiplied with WEIGHTED (Constant * Factor) FOREX ADJUSTMENT,

thus leading to the NP-ECONOMIC value. (STAGE II)

EXAMPEL TAB !!

	PRELIM. 0%	ADJ. NPV 10%	20%	CONTENT	PREMIUM	ADJUSTMENT-FOREX 0%	10%	20%	ECONOMIC NPV STAGE II 0%	10%	20%
CASH FLOW REAL	4,125	301 .	-2372	-	-	3630	2778	2166	7755	3079	-205
Material/imp	18,7	15,1	12,5	100%	10%	1,8	1,5	1,2	20,5	16,6	13,7
Material/dom	17,4	13,9	14,4	31%	10%	0,5	0.4	0.3	17,9	14,6	11,8
CASH FLOW FINIOL											
Equity	7	7	7	40%	10%	0.28	028	0.28	7,28	7,28	7,28
Dividends				50%	10%	0.045	0.074	0.026	0.045	0.034	0.026

In the exampel it is assumed that the domestic currency is overvalued by 10% !!. In theory one would have to split up for/each item forex content! Here only the content is estimated in % !!

MEASUREMENT OF THE INCOME IMPACT

With an income flow analysis table, based on the differences between market and shadow prices gains and losses of different proup e.g. project , private government, workers, consumers,external can be measured.

The data is derived from the adjustment table of financial for economic values and the adjustment table for Forex.

Items, where financial values are equal economic values and which have no forex component can be neglected as there is no distribution effect.

Some principles:

1) MEASUREMENT: For physical resources gains and losses are equal the distortion between market and shadow prices. For financial resources it is the price paid and the value received.

2) INCOME GROWS: Solution is flexible and may include rural/urban.....

3) PROJECT ALWAYS INVOLVED: to simplify method only first-round flows are considered and secondary effects neglected.

4) LOSSES BALANCE GAINS: For each gainer there is a loosen ; double entry book keeping is possible.

d) How to calculate the premium of forex? (in the example = 10%)

The Guidelines use a forex shadow price, based on the marginal social value = consumer willingness to pay for imported goods.

The derivation is based on an average percentage by which the marginal domestic price exceeds the c.i.f. price and weighted by the share of each good in the marginal import bill

A simple formula for calculating an average shadow exchange rate (ASE) at a given years date is:

$$ASE = \text{Official EX rate} * \frac{M + Ti + X + SX}{M+X}$$

M= C.I.P value of imports
X= F.O.B. value of exports
Ti= Import Taxes
Sx= Export subsides

on
plus quotas/tariffs should be included.

8. ECONOMIC ACCEPTABILITY

The discount rate is equal CRI (consumption rate of interest) as all values have been transformed/into their consumption equivalent. It is a switching value and CRI has to be analysed..... according given conditions! (UNIDO suggests 10% as a cutoff value!!). Problems arise if capital can not be absorbed because IRR's < interest rates

This is likely to arise in

1) least development countries

2) Capital-surplus countries e.g. oil exporting

The conclusions could be:

1) The low IRR's are due to underdeveloped infrastructure. Hence it could be adequate to interest in infrastructure for future benefits.

2) There is a lack of capabilities to identify viable projects. Hence expertise should be hired.

EXAMPLE - TAB 12

ITEM	ADJUSTMENT FIN/ FLOW	ADJUSTMENT FOREX	GROUP PROJECT	GROUP PRIVATE	GROUP GOVERN	GROUP WORKER	GROUP CONSUM	GROUP ENTER
PRODUCTION VALUE	-15800	+6320	+9480				-9480	
MATERIAL-IMP.	-3300	+1870	-1430		+1430			
MATERIAL-DOM	-3075	+550	-2525	+2525				
LABOUR-UNSKILLED	-2950		-2950			+2950		
ASSETS-land/build.	-300		-300	+150		+150		
INTEREST	+490		+490	-490				
EQUITY		+280	+280					-280
NET. DISTR.IMPACT			+1260	+2690	+1795	+3115	-9480	+241
AT 10%								
AT 20%								

Explanation:

PRODUCTION VALUE: In the financial cash flow its market value is higher than its shadow value(border price). Hence in the economic adjustment tab. (10), there is an adjustment of -15,800. There is a gain for the project which receives this amount because its output is protected.This is equal the loss of the consumers who have to pay more more. However, there is also a premium on farex (70%) which means a loss for the project (6320) and a gain for the consumer. The difference is 9480 in favour of the project and a loss for the consumers.

STAGE III: THE SAVING IMPACT

GENERAL: Difference between consumption and saving is consuming now and consuming later. If a doller invested now will yield more, thus increasing the time value, then savings are more valuable, especially if capital is scarce. Also of importance is the distributional impact which often is related to capital and labour intensive alternatives.

STAGE III is consists of

1) Determine the amount of income gained/lost by each groups (TAB 12)

2) Evaluate the impacts on savings, given the marginal propensity of each groups.

3) Place a premium as additional savings the project induces through income distribution.

1) DETERMINE AMOUNT (SEE TAB 12)

2) SAVING IMPACT

The PV of the income flow analysis (TAB 2) for each group are transfered to TAB 13 = ECONOMIC VALUE OF SAVINGS. These additional incomes are multiplied with the NPS (Marginal propensity to consume), producing the Net SAVING IMPACT by group, which added up give the total NET SAVING IMPACT.

The NPS should be available from household ependiture savings!!!

3) VALUATION

For valuating the NET SAVING they are multiplied by the Adjustment Factor for savings AFs, which measures the social value of a domestic currency unit invested exceeds that of one consumed .

The formula is :

MATERIAL: The economic adjustment table indicates that the project paid 3,330 more for imported materials than its economic value is because of input taxes. However, the project paid 1870 less than the economic value of the FOREX for purchasing the material. The difference is 1480 in favour of the government.

Another loss for the project is the overpaid domestic material. Only 31% have foreign components, leaving a loss of 2525 for the project. Local producers gain.

LABOUR : Skilled labour are paid its efficiency costs. Hence there is no transfer. Unskilled labour is overpaid by 50%. Hence the project pays 2950 more than its economic value.

If the unskillled would have received from a pool of unemployed, thon the shadow wage would be zero (assuming no social value on forgone leisure.) The whole difference to the paid market wage would be a loss to the project and a gain to the workers.

FIXED ASSETS : The cost of investment were inflated by excess labour and material costs by domestic prices and input taxes. It is assumed that the relation is 150:150.

FINANCIAL FLOWS:

INTEREST: The project received a credit from the Government with a subsidised interest, 490 lower than the opportunity costs of capital.

EQUITY: The project received equity from foreigners without paying a premium on forex of 20% equal 490. This is a gain for the project and a loss for the foreign investors.

TAXES: Taxes are a loss for the project and a gain for the government. They represent a transfer of income, although they are not included in the NPV as this is calculated before tax.

$$AFs = \frac{(1-s)^{*}q}{i-sq} - 1 = p^{inv} - 1$$

S = marginal propensity to save
q = marginal producting of capital (several methods to calculate)
e.g. increase in national product; growth of economy real rate!

i = Consumption rate of interest =

p^{inv} = Social price of investment

The formula is valid only if s,q,i is constant overtime!

In practise AFs between 0-20% is a good starting point!!!

Once the adjustment factors have been determined it is multiplied with the NET SAVINGS TO OBTAIN THE ADJUSTMENT VALUE.

These values are then added or substracted from the NPV of stage II to obtain NPV of stage III !

STRUCTURE OF TAB B:

AT 0%	+ INCOME (from tab 12)*		NPS = SAVING IMPACT EACH GROUP	NET SAVING* IMPACT	AFs = ADJUSTMENT VALUE
GROUPS	1	x	6.5 = +		1.8 = 136
	2	x	0.4 = +		
	3	x	6.6 = +		
	4	x	= +		820 at 10%
					63 at 20%

STAGE II	ECONOMIC VALUES	+ SAVING ADJUSTMENT VALUES	= ADJUSTMENT VALUES NPV STAGE III
AT 0%	7755	+ 936	= 8697
AT 10%	3079	+ 820	= 3899
AT 20%	-705	+ 63	= -142

STAGE IV. DISTRIBUTION IMPACT

If the only objective of government planners is selecting projects to MAXIMIZE the present value of net aggregate consumption benefits from production at shadow prices " then the analysis is completed".

If distribution impacts should be considered, then adjustment factors have to be derived (favouring e.g. low income groups, rural again)

What is zero-level with weight 1,0?

It is supposed to be the "base level consumption". In theory this level can be determined through a detailed analysis. In practice this level may be estimated by referance to the income level at which people are neither taxed nor subsidized!

(the base data is in TAB 12)

The income impact for each group is multiplied with an adjustment factor (TAB 14 + 15) thus obtaining adjustment values for income distribution which are then added or substracted from the social net present value of the project. (see Summary matix)

STAGE V: SOCIAL POLITICS:

In some circumstances it may be desirable to take into account social politics for merit and demerit goods by adjusting the net present value of the project. This would then effect the "social Value" of the resources per se!

The social value of a good may be more or less than it's efficiency value.

If it is more, then it is a MERIT GOOD e.g. generation of forex

in order to contribute to independance of ....or goods that serve basic needs ..... A premium can be added to the economic value!

If the social value is less than the efficiency value then one talks

of a DEMERIT GOOD e.g. alcohal, tabacco, luxury goods.

A downwards adjustment can be carried out!

However, adjustments at this stage are linked to political objectives and an elevator should be externaly careful as these adjustments could take any project "good"

PROJECT SUMMARY MATRA

Selecting projects means considering different and often conflicting objectives. To express the benefits of a project with o[illegible]umber does not serve to demonstrate the impacts of objectives (like financial viability, economic efficiency or social equity) and assumes agreements on their weights.

It is regarded as more appropiate to present the variety of insignts so that decision makers explicity see the various inpacts a project will have.

This is done with the project summary matrix and a project summary graph.

I n d e x

main menu, help text 1 ... page 2
main menu, help text 2 ... page 3
subtables, adjustment ... page 4

ARRANGE source for analysis page 5
PRELIMinary adjustment ... page 6
ForEach adjustment by item page 7

range option ..... page 8
split option ..... page 9
range (split & FSER) ..... page 10
shadow exchange rate adjustment page 11

show schedules, option ..... page 12

Page 2 — main menu, help text 1 — help manual

SOURCE .... enter the name of the COMFAR Input and Output Table to be used as a "source" for the economic analysis

FILE .... with adjustments, contains adapted source values (Arrange) and all adjustments defined by the user (Prelim; ForExch)

SHOW .... is active only when a valid file with adjustments is defined. Selected or all schedules may be displayed and printed, excluding or including indirect effects

ADJUST .... when selected, allows to <Arrange> a "source" table, or to enter conversion factors : <Prelim> or <ForExch>

SAVE .... the adjusted file MUST be saved to continue with GRAFIX

HELP ......

continue with the n e x t "help" page

Page 3 — main menu, help text 2 — help manual

HELP .... may be called when the F9-key is active. You may page though the text. Return to the system with F10 (Exit)

Printer ... press <P> to change the printer destination

Mode ... press <M> to switch between DISPLAY and PRINT mode

Language ... press <L> to change the REPORT language

EXIT .... would bring you back to the previous menu

F-key .... to call an option, press the corresponding function key F-keys / options displayed on the bottom line are active

options .... are described on the respective pages of the help manual

Level 1 — Subtables, adjustment — help manual

! to select the subtable to be adjusted
the highlighted line shows the table selected

Arrange ... is used to adapt the original source table (TABQ,TABW from COMFAR) b e f o r e the conversion factors are defined for adjustments (Preliminary and ForEach), as required for economic analysis, e.g. foreign / local, import substitution; sales tax, indirect effects, etc)

Prelim. ... to define conversion factors for the computation at adjusted market prices -- preliminary adjustment --

ForEach ... to define conversion factors for the exchange rate [redacted] — shadow exchange rate
allows to define ONE factor for the complete table, or to define different factors for each YEAR (column)

Level 2 — <Arrange> .... adaptation of source — help manual

For a table item, a line or column, or for any larger range you may alter values contained in the tables. The following options are available:

Add ... the value entered will be added to the current values of the table, but only for the range specified. Negative values may be entered if required.

Mult.,Divide current values contained in the table will be multiplied or divided by the value entered, but only for the range specified by the user

Range ... see help manual — page 8 and page 10 —

Split ... see help manual — page 9 and page 10 —

COMFAR ECBA

<Prelim.> .... preliminary adjustment help manual

For a table item, a line or column, or for any larger range you may define a — conversion factor — the following options are available:

Display ... to switch between display of factors and source values

Range ... see help manual — page 8 and page 10 —

Edit ... enter the — c o n v e r s i o n f a c t o r — for the range defined
for : MP = value at market price (source value)
: cf = conversion factor (= multiplier)
: PA = preliminarily adjusted value, i.e. at adjusted market prices

PA = cf * MP

COMFAR ECBA

<ForExch> exchange rate adjustment help manual

For a table item, a line or column, or for any larger range you may define a — conversion factor — for the foreign exchange rate applied on foreign flows)

Range ... see help manual — page 8 and page 10 —

Edit ... enter the — c o n v e r s i o n f a c t o r — for the range defined
for : PA = preliminarily adjusted value, i.e. at adjusted market prices
: cf = conversion factor (= multiplier)
: AV = value at economic prices

AV = cf * PA

COMFAR ECBA

Page 8 <Range> option help manual

Range ... read the default values for the range, to change you may chose either of the two methods:

- to the beginning of (Line,Column) of the range and press [F4] again. Then move the cursor to the end of the range and press [F4] again The currently valid "range" is displayed; or you may

press [F4] enter LINE numbers and COLUMN numbers of the table range for for which your date entry shall be valid

——— Then select a data entry option (ADD, MULT, DIVIDE, SPLIT)

COMFAR ECBA

Page 9 <Split> option help manual

Note that SPLIT is valid for ONE LINE range only, i.e. for any single item or any range of columns of the current line

Split ... from the current line of the subtable (source table) you may deduct any value - expressed in % - of the original

You may split e.g.:
labour — skilled and unskilled labour
local sales — import substitution and other sales
foreign (local) components originally included in
— (local) foreign components

Range ... Use the range option in case the split-rate is constant for a number of consecutive items (values) of the current line

COMFAR ECBA

<range> split & shadow exchange rate help manual

When the SPLIT option or subtable shadow exchange rate has been selected, the option

... allows to define a c o l u m n range for which the split rates (%) are constant:

... and [-] or [-] and [F4] again to define the currently valid range (the column ranges may also be defined entering the numbers)

... press [F6] to enter the c o n v e r s i o n factor

COMFAR ECBA

shadow exchange rate help manual

This option will be used always when the shadow exchange is c o n s t a n t for all lines and columns (years) or when the shadow exchange rate varies over the years only

press [F8] to execute the adjustment of the foreign exchange rate throughout the complete worktable, using the conversion factors defined in the line displayed

Page 17 <show> schedules

Guide to Practical Project Appraisal
Present Values (PV) exluding or including indirect effects:
foreign - local - total PV of cashflows may be shown
- financial analysis = at market prices
- conversion factor : adjustment of market prices
- preliminarily adjusted present values
- SFER c/nversion factor :
- adjusted present values = at economic prices
adjustments, total (discounted) and by year, for all steps shown above

Manual for Evaluation of Industrial Projects
Including or excluding indirect effects:
- absolute efficiency test
- foreign exchange effect
- distribution of the domestic value added

[] or [PgUp][PgDn]

ANNEX 12

COMFAR SEMINAR : UNIDO-RDFC JULY 1987, Islamabad

ATTENDENCE OF PARTICIPANTS

GROUP - I

1. Mr. Hassan Nawab
2. Mr. Riaz Akhtar Raja
3. Mr. Shoaib Ahmed Khan
4. Mr. Bakhtiar M. Shahbaz
5. Mr. Saeed Ahmed

GROUP - II

1. Syed Sadaqat Ali
2. Mr . Ahsan-Ul-Haq
3. Miss Khalida Habib
4. Mr. ~~Haider Zaman~~ Azizul Hameed
5. Mr. Rashid Azeem
6. Mr. Mohammad Vaseem

1	2	5	6	7	8	9	12	13	14	15	16	19	20	21	22	23

26	27	28	29	30

GROUP - I
1. Mr. Hassan Nawab
2. Mr. Riaz Akhtar Raja
3. Mr. Shoaib Ahmad Khan
4. Mr. Bakhtiar M. Shahbaz
5. Mr. Saeed Ahmed

GROUP - II
1. Mr. Syed Sadaqat Ali
2. Mr. Ahsan-Ul-Haq
3. Miss Khalida Habib
4. Mr. Azizul Hameed
5. Mr. Rashid Azeem
6. Mr. Mohammad Vaseem

PROGRAMME

Vennu: RDFC
Blue Area
Islamabad .

Date: 19th August, 1987

11.00 a.m.	Participants/guest take their seats.
11.05 a.m.	Tilawat-e-Quran
11.10 1.m.	Address of Welcome by the Chief Executive
11.15 a.m.	Demonstration of COMFAR
11.25 a.m.	Addres by UNDP/UNIDO representative
11.30 a.m.	Distribution of Certificates
11.35 a.m.	Tea

UNIDO

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

CERTIFICATE

This is to certify that

_____

has participated in and completed the

Training Seminar

on Application of UNIDO Computer Model for Feasibility

Analysis & Reporting (COMFAR) in Project Preparation & Appraisal

organized under the joint auspices and sponsorship
of the
UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION
and the
UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)
with the
REGIONAL DEVELOPMENT FINANCE CORPORATION (RDFC)

from 1 July to 30 July 1987

Date: 30 July 1987

Location: Islamabad, Pakistan

United Nations
Industrial Development Organization

UNITED NATIONS
DEVELOPMENT PROGRAMME
REGIONAL DEVELOPMENT
FINANCE CORPORATION
Co-sponsor

SUMMARY

REVIEW

RDFC/UNIDO

COMFAR - SEMINAR

(1ST JULY TO 30 JULY 1987)

Name of Participant: 11 Participants

Position (Division, Group): 3 * PID, 2 * Minerals Div., 1 * Admin, Div.
5 * Project Division.

1. OBJECTIVES OF THE SEMINAR

1.1 The major objective was to improve expertise in project preparation and appraisal by applying the UNIDO computer model COMFAR.

In your opinion, was this objective achieved?

YES 11 *

NO

COMMENTS

6 * Positive remarks about COMFAR

5 * no comment

2. DISTRIBUTION OF TIME BETWEEN DIFFERENT MODULES

The following table shows the different modules of the Seminar. Kindly indicate how important the modules are for your work and evaluate the number of sessions assigned. (one session average 3 hrs)

MODULES	No. of Sessions	Importance			No. sessions allocated		
		Very	Med-ium	Less	too much	enough	not enough
1. Introduction to PC's and DOS	3	5*	6*	-	-	8*	1*
2. Main system software structure	4	9*	1*	1*	-	8*	2*
3. GRAFIX system	3	10*	1*	-	-	9*	2*
4. ECONOMIC system	2	3*	8*	-	-	5*	4*
5. Special Aspects and Adjustments	2	11*	-	-	-	7*	1*
6. Case Studies	7	8*	3*	-	-	8*	1*

3. DURATION OF SEMINAR

Was the seminar too long, too short or of sufficient duration ?

Sufficient : 9*

Not sufficient -- economic analysis : 1*

Note sufficient - case study: : 1*

3. GENERAL EVALUATION

3.1 Considering your personal requirements of training which objective should, in your opinion, be assigned to a seminar as the one in which you just participated?

Same	: 4*
Different heading, same meaning	: 3*
Slight changes of meaning	: 3*
No comment	: 1*

3.2 Retrospectively, if at the moment of your application for the seminar you have had the same informaiton about the contents and the structure of this seminar as today, would you still have applied to participate?

YES 11*

NO

COMMENTS

No comment	: 7*
Positive remarks	: 4*

3.3 Please indicate in the space below suggestions that may help to improve future seminars:

More PCs	: 4*
Less routine works during the seminar	: 2*
more emphasis on limitations:	: 1*
an ideal model case should be handeled:	: 1*
more case studies	: 1*
Technical aspects should be included	: 1*
one should start with a simpler case	: 1*

3.4 Would you recommend that persons in a similar position like yours, participate in this kind of seminar?

YES 11*

NO

4. ADJUSTMENTS OF COMFAR

During the seminar the following features of COMFAR were identified not to fulfill RDFC standards:

(a) Planning horizon during construction/production
(b) Consideration of Workers Fund Contribution.
(c) Deferment of cost of finance during construction

In your opinion, are the adjustments, which were worked out and practised during the seminar, sufficient to make the COMFAR package acceptable? (if not, indicate why)

Yes	**: 6***
Partly	**: 4* (Mainly Workers Fund Contribution)**
No.	**: 1***

5. APPLICATION OF COMFAR

Will the application of COMFAR be of relevance to your work?

5.1 If no, please indicate why:

No	**: 1* (present task is monitoring)**
Partly	**: 1* (Present task is administration)**

5.2 If yes, please comment the following questions:

(a) How many COMFAR applications will you carry out or supervise per month?

3.5 : 1*
2.5 : 3*
2 : 1*
1.5 : 1*
1:1*
Not quantified : 4*

(b) What, in your opinion, will be the major benefits of a COMFAR application in comparison to traditional techniques? (please quantify as far as possible, e.g. time saving) **(double indications)**

Time saving	**: 7***
better analysis	**: 7***

(c) Which features of the COMFAR package (preparation, calculation of financial and/or economic models and presentation in the form of schedules or graphs) are the most important ones for your work? (Pleas give reasons)

main system	**: 4***
graphics	**: 3***
indifferent	**: 3***

(d) Which features are of less importance? (please give reasons)

economic module	: 4*
grafix module	: 1*
no comment	: 6*

(e) What would you recommend to add or change of the COMFAR Package? (double indication possible)

incorporation of manual adjustments	: 4*
flexible planning horizons	: 4*
flexible namings of lines	: 3*
amortization of cost of finance	: 2*
cost of finance for each loan	: 1*
simpler presentation	: 1*

6. OTHER COMMENTS OR REMARKS

Positive remarks on seminar	: 6*
no remarks	: 5*