



ICCA

**INSTITUTE OF CERTIFIED
COST & MANAGEMENT ACCOUNTANTS**

CFSC

CERTIFIED FEASIBILITY STUDIES CONSULTANT



Feasibility Study



A feasibility study typically is the response to some client-identified problem or opportunity. It reveals what is required to build a solid business case, allowing management to make an informed decision about funding or canceling the project. "To be, or not to be?" is the primary question a feasibility study answers. This primary question can be decomposed in three supporting questions: What is this project all about? Should we do this project? How should we go about this project?

What is this feasibility all about?

One primary reason for project restarts, or outright failure, is the lack of a project mission, which at this early point means a careful analysis of the problems or opportunities and their possible impact on the organization. Team members, customers, and other stakeholders need a good understanding of the project's fundamental components - goals, objectives, scope, problem statement, constraints, and vision.

A good test of whether or not a project is understood is to walk around and ask various participants what they think it's all about. A crisp, business-oriented, non-technical answer usually means the project's groundwork is well established. The answer could be what we refer to as a project objective statement: a short, concise, high-level summary of the project.

Should we do this project?

The second major question answered by a good feasibility study is whether or not the project should proceed. The very name "feasibility" indicates one possible outcome is not to proceed. A significant portion of the multi-billion losses on software projects comes from projects that should never have gotten past the feasibility stage, but got caught up in corporate egos and politics. Once the problems and opportunities have been identified, the next task of the feasibility study is to define the criteria for an acceptable solution. Feasibility (acceptability) incorporates political, economic, technical, and organizational components. For example, if the senior vice president of engineering demands that a particular project to be done, why spend weeks coming up with a detailed cost/benefit analysis? In this case, the "should" question is fairly easy to answer. It is more effective to spend the remaining time answering the other feasibility questions.



A feasibility study should arrive at definitive conclusions on all the basic aspects of a project after consideration of various alternatives. These conclusions and any recommendations made with regard to decisions or actions required from parties involved in the project would have to be explained and supported by compelling evidence. For convenience of presentation, the feasibility study should begin with a brief executive summary outlining the project data (assessed and assumed) and the conclusions and recommendations, which would then be covered in detail in the body of the study; and supporting material (statistics, results of market surveys, detailed technical descriptions and equipment lists, plant layouts etc.), however, should be presented in a separate annex to the study. The executive summary should concentrate on and cover all critical aspects of the study, such as the following: the degree of reliability of data on the business environments; project input and output; the margin of error (uncertainty, risk) in forecasts of market, supply and technological trends; and project design.

The executive summary should have the same structure as the body of the feasibility study, and cover-but must not be limited to-the following areas :

Summary of the project background and history

- ✧ Name and address of project promoter
- ✧ Project background
- ✧ Project (corporate) objective and outline of the proposed basic.

Project strategy, including geographical area and market share (domestic, export), cost leadership, differentiation, market niche.

- ✧ Project location : orientation towards the market or towards resources (raw materials).
- ✧ Economic and industrial policies supporting the project.

Summary of market analysis and marketing concept

- ✧ Summarize results of marketing research : business environment, target market and market segmentation (consumer and product groups), channels of distribution, competition, life cycles (sector, product).
- ✧ List annual data on demand (quantities, prices) and supplies (past, current and future demand and supplies).
- ✧ Explain and justify the marketing strategies for achieving the project objectives and outline the marketing concept.
- ✧ Indicate projected marketing costs, elements of the projected sales programmed and revenues (quantities, prices, market share etc.)
 - Describe impacts on : raw materials and supplies, location, the environment, the production programme, plant capacity and technology etc.

Raw Materials and supplies

- Describe General Availability of
 - Raw Materials
 - Processed Industrial Materials and Components
 - Factory Supplies
 - Spare Parts

Supplies for social and external needs

- ✧ List annual supply requirements of material inputs
- ✧ Summarize availability of critical inputs and possible strategies (supply marketing)

Location, site and environment

- ✧ Identify and describe location and plant site selected, including :
 - Ecological and environmental impact
 - Socio economic policies, incentives and constraints
 - Infrastructural conditions and environment
- ✧ Summarize critical aspects and justify choice of location and site
- ✧ Outline significant costs relating to location and site

Engineering and technology

- ✧ Outline of production programmed and plant capacity.
- ✧ Describe and justify the technology selected, reviewing its availability and possible significant advantages or disadvantages, as well as the life cycle, transfer (absorption) of technology, training, risk control, costs, legal aspects etc.
- ✧ Describe the layout and scope of the project.
- ✧ Summarize main plant items (equipment etc.) their availability and costs.
 - Describe required major civil engineering works

Organization and overhead costs

- Describe basic organization design and management and measures required.

Human resources

- ✧ Describe the socio-economic and cultural environment as related to significant project requirements, as well as human resources availability, recruitment and training needs, and the reasons for the employment of foreign experts, to the extent required for the project.
- ✧ Indicate key persons (skills required) and total employment (numbers and costs)

Project implementation schedule

- ✧ Indicate duration of plant erection and installation.
- ✧ Indicate duration of production start-up and running-in period
- ✧ Identify actions critical for timely implementation.

Financial analysis and investment appraisal

- ✧ Summary of criteria governing investment appraisal
- ✧ Total investment costs.
 - Major investment data, showing local and foreign components
 - Land and site preparation
 - Structures and civil engineering works
 - Plant machinery and equipment
 - Auxiliary and service plant equipment
 - Incorporated fixed assets
 - Pre-production expenditures and capital costs
 - Net working capital requirements





- ❖ Total costs of products sold
 - Operating costs
 - Depreciation charges
 - Marketing costs
 - Finance costs
- ❖ Project financing
 - Source of finance
 - Impact of cost of financing and dept service on project proposal
 - Public policy on financing

- Investment appraisal : Key data

Discounted cash flow (internal rate of return, net present value)

Pay-off period

Yield generated on total capital invested and on equity capital

Yield for parties involved, as in joint venture projects

Significant financial and economic impact on the national economy and environmental implications

- ❖ Aspects of uncertainty, including critical variables, risks and possible strategies and means of risk management, probable future scenarios and possible impact on the financial feasibility of the investment project.
- ❖ National economic evaluation.
- ❖ Conclusions
 - Major advantages of the project
 - Major drawbacks of the projects
 - Chances of implementing the project

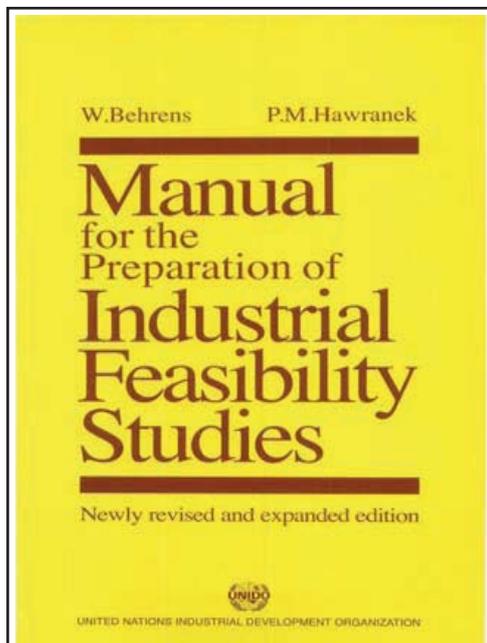
CERTIFICATE MATERIAL :

MANUAL FOR THE PREPARATION OF INDUSTRIAL FEASIBILITY STUDIES

Published by:



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Newly revised and expanded W. Behrens P. M. Hawranek



Contents of the Feasibility Study Course cover the following :



PART ONE :

PRE-INVESTMENT STUDIES AND THE INVESTMENT PROJECT CYCLE

- A. Investment project cycle and types of pre-investment studies.
- B. Basic aspects of pre-investment studies.
- C. Rehabilitation and expansion projects.
- D. Role of institutions, consultancy services and information systems.

PART TWO :

THE FEASIBILITY STUDY :

I. Executive summary

II. Project background and basic idea

III. Market analysis and marketing concept

- A. Marketing
- B. Marketing research
- C. Outline of the project strategy
- D. Outline of the marketing concept
- E. Marketing costs and revenues

IV. Raw materials and supplies

- A. Classification of raw materials and supplies
- B. Specification of requirements
- C. Availability and supply
- D. Supply marketing and supply program
- E. Costs of raw materials and supplies

V. Location, site and environment

- A. Location analysis
- B. The natural environment
- C. Environmental impact assessment
- D. Socio-economic policies
- E. Infrastructural conditions
- F. Final choice of location
- G. Site selection
- H. Cost estimates

VI. Engineering and technology

- A. Production programme and plant capacity
- B. Technology choice
- C. Technology acquisition and transfer
- D. Detailed plant layout and basic engineering
- E. Selection of machinery and equipment
- F. Civil engineering works
- G. Maintenance and replacement requirements
- H. Estimates of overall investment costs

VII. Organization and overhead costs

- A. Plant organization and management
- B. Organizational design
- C. Overhead costs

VIII. Human resources

- A. Categories and functions
- B. Socio-economic and cultural environment
- C. Project-related requirements
- D. Availability and recruitment
- E. Training plan
- F. Cost estimates

IX. Implementation planning and budgeting

- A. Objectives of implementation planning
- B. Stages of project implementation
- C. Implementation scheduling
- D. Projecting the implementation budget

X. Financial analysis and investment appraisal

- A. Scope and objectives of financial analysis
- B. Principal aspects of financial analysis and concept of investment appraisal
- C. Analysis of cost estimates
- D. Basic accounting statements
- E. Methods of investment appraisal
- F. Project financing
- G. Financial and efficiency ratios
- H. Financial evaluation under conditions of uncertainty
- I. Economic evaluation

Schedules for financial analysis

- I. Case-study
- II. Outlines of general opportunity studies
- III. Outline of pre-feasibility study
- IV. Types of decisions to be taken during different pre-investment stages
- V. Status of an existing industrial enterprise
- VI. Demand forecasting techniques
- VII. Sampling principles
- VIII. Field surveys

Tables

- 1. Computation of net-present-value ratios
- 2. Example of cash flow discounting
- 3. Comparison of project alternatives
- 4. Example of different rates of return
- 5. Annual rate of return on equity capital.
- 6. Net profit of project alternatives
- 7. Example of investment outlay and structure of finance
- 8. Calculation of weighted IRR
- 9. Minimum days of coverage for computation of net working capital
- 10. Coverage of fixed costs
- 11. Production costs factors
- 12. Income and demand projections
- 13. Forecast of petrol consumption





Figures

- I. Pre-investment, investment and operating phases of the project cycle
- II. Project promotion and capital expenditures
- III. The firm and its environment
- IV. Coordination and harmonization of the functional strategies
- V. Interrelationship between the components of the feasibility study
- VI. Information flow chart for the preparation of industrial feasibility studies
- VII. Reliability of different types of pre-investment studies
- VIII. The phases of rehabilitation projects
- IX. Marketing research and preparation of a marketing concept

The marketing mix
 Marketing research and the marketing system
 Problem classification
 Market volume and market share
 Assessing the profile of possible reactions of competitors
 The life cycle of a sub sector
 Intensity of competition
 Outline of the project strategy and marketing concept
 Types of geographical project strategy
 Profitability and market share
 Basic strategic options
 Product-market relation
 Competition and market expansion strategy
 Basic elements for the determination of a project strategy
 Assessment of product-target-group fields
 Development of a marketing concept
 Phases of environmental impact assessment
 Example of an organization chart for an industrial enterprise
 Structure of the balance sheet
 Origin of cost items for profitability calculation (return on equity)
 NPV method and ranking problem
 Determination of the break-even conditions
 Check-lists and worksheets

Functional objectives and strategies

- III-1. Definition of the market and analysis of the market structure
- III-2. Analysis of the marketing system
- III-3. Analysis of market characteristics
- III-4. Analysis of the competitors
- I-5. Analysis of the environment
- III-6. Corporate (internal) analysis
- V-1. Domains of the natural environment subject to and generating environmental impacts
- V-2. Domains of the social environment subject to and generating environmental impacts
- V-3. Environmental impacts and factors
- V-4 Matrix for the identification of environmental impacts
- VI-1. Engineering and technology
- VI-2. Subdivision of cost estimates
- VII-1. Cost centres
- V II-2 Overhead costs
- VIII-1. Human resource planning
- VIII-2. Computation of surcharges on wages and salaries
- IX-1. Sample breakdown of project implementation costs

VIII. Human resources

- A. Categories and functions
- B. Socio-economic and cultural environment
- C. Project-related requirements
- D. Availability and recruitment
- E. Training plan
- F. Cost estimates

IX. Implementation planning and budgeting

- A. Objectives of implementation planning
- B. Stages of project implementation
- C. Implementation scheduling
- D. Projecting the implementation budget

X. Financial analysis and investment appraisal

- A. Scope and objectives of financial analysis
- B. Principal aspects of financial analysis and concept of investment appraisal
- C. Analysis of cost estimates
- D. Basic accounting statements
- E. Methods of investment appraisal
- F. Project financing
- G. Financial and efficiency ratios
- H. Financial evaluation under conditions of uncertainty
- I. Economic evaluation

Schedules for financial analysis

- I. Case-study
- II. Outlines of general opportunity studies
- III. Outline of pre-feasibility study
- IV. Types of decisions to be taken during different pre-investment stages
- V. Status of an existing industrial enterprise
- VI. Demand forecasting techniques
- VII. Sampling principles
- VIII. Field surveys

Tables

- 1. Computation of net-present-value ratios
- 2. Example of cash flow discounting
- 3. Comparison of project alternatives
- 4. Example of different rates of return
- 5. Annual rate of return on equity capital.
- 6. Net profit of project alternatives
- 7. Example of investment outlay and structure of finance
- 8. Calculation of weighted IRR
- 9. Minimum days of coverage for computation of net working capital
- 10. Coverage of fixed costs
- 11. Production costs factors
- 12. Income and demand projections
- 13. Forecast of petrol consumption





X-91/. Discounted cash flow - total capital invested
X-92/. Discounted return on equity capital invested
X-10. Net income statement from operations
X-1 1. Projected balance sheet

Certificate Program:

COMFAR III

Published by :



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

WHAT IS COMFAR III



The United Nations Industrial Development Organization (UNIDO) has been working with governments, business associations and individual companies to solve industrial problems – and equip them to help themselves – for more than 30 years. One of the tools developed by UNIDO to serve this purpose is COMFAR, the Computer Model for Feasibility Analysis and Reporting.

In 1983, the first version of the software was released. Since then, UNIDO has been constantly working on development and improvement of this tool. The third generation, COMFAR III Expert for Windows, was released in 1995. Since then, in order to meet the technical developments as well as users requests, it has been upgraded yearly. This software is based on the experience, recommendations, comments and needs of more than 3,000 users in 140 countries and is complementing the UNIDO Manual for the Preparation of Industrial Feasibility Studies (2nd ed., 1991).

COMFAR III Expert is a valuable aid in analysis of investment projects. The main module of the program accepts financial and economic data, produces financial and economic statements and graphical displays and calculates measures of performance. Supplementary modules assist in the analytical process. Costbenefit and value-added methods of economic analysis developed by UNIDO are included in the program, with allowance made for the methods used by major international development institutions.

The program is applicable for the analysis of investment in new projects and expansion or rehabilitation of existing enterprises as, e.g. in the case of re-privatization projects. For joint ventures, the financial perspective of each partner or class of shareholder can be developed. Analysis can be performed using a variety of assumptions concerning inflation, currency revaluation and price escalations.



THREE PRODUCTS TO SERVE DIFFERENT NEEDS

COMFAR III Expert : facilitates financial and economic appraisal of investment projects. It permits the user to simulate the short- and long-term financial and economic situation of industrial and nonindustrial investment projects.

COMFAR III Business Planner : enables the user to carry out financial analysis of investment projects. The economic appraisal module is not included in this product.

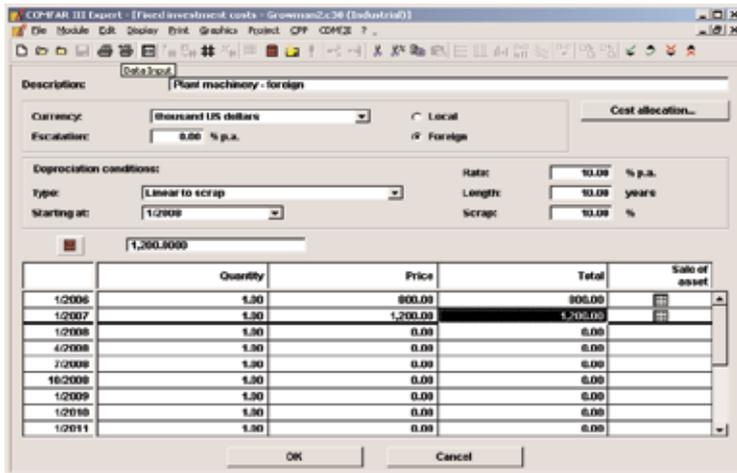
COMFAR III Mini Expert : has been developed for preliminary assessment of investment opportunities from a purely financial point of view.

	<i>Expert</i>	<i>Business Planner</i>	<i>Mini Expert</i>
Opportunity study level	✓	✓	✓
Financial Appraisal	✓	✓	✓
Feasibility Study Level	✓	✓	—
Economic Appraisal	✓	—	—

GENERAL DESCRIPTION OF COMFAR III EXPERT SOFTWARE

Easy to access – easy to operate

COMFAR III Expert's graphical user interface makes it very userfriendly and, therefore, ideal even for those with no special computer knowledge. At the moment, it is available for MS Windows 98/ME and MS Windows 2000 / XP / 2003.



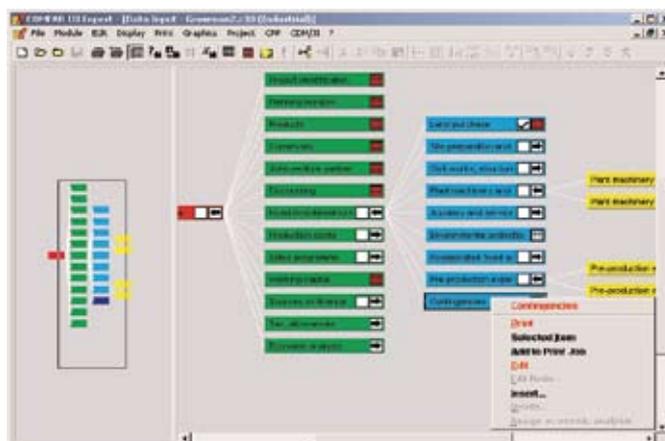
After having specified the project type (industrial, agro-industrial, infrastructure, tourism or mining) and the level of analysis (opportunity or feasibility study), the user is guided through data entry, data saving, calculations, display and printing of result schedules and graphical charts.

User-defined flexibility

COMFAR III Expert allows users greater flexibility in specifying how detailed an analysis they require. The main features are :

- new or expansion/rehabilitation project option
- Joint-venture project option
- CDM/JI project option (Kyoto protocol)
- variable planning horizon: up to 60 years
- variable time structure: construction and start-up
- up to 20 products can be specified
- data may be entered in up to 20 currencies
- direct costing option
- price escalation/inflation option
- economic analysis option

The standard structure of investment, operating and marketing costs may be expanded to allow the entry of sub-items. Sources of finance include equity, long-term loans, short-term finance and definition of conditions of profit distribution.





With these facilities, COMFAR III Expert can be applied to all kinds of investment projects, small- and medium-scale business investments and analysis of large-scale projects or complex production units, e.g. chemical plants.

COMFAR III Expert – Cash Flow Model

The COMFAR system distinguishes cash flows in domestic and foreign currencies while allowing for changes in exchange rates. A number of standard functions are available to compute net working capital, debt service, annual depreciation of fixed assets and corporate tax. From a variety of financial and efficiency ratios, the user may select those needed for project appraisal. Direct costing, allocation of indirect costs to profit centres and analysis in constant or current prices are also available. An auxiliary module supports project developers seeking to develop CDM or JI projects in those sectors, where projects aiming at reducing GHG emissions can take place.

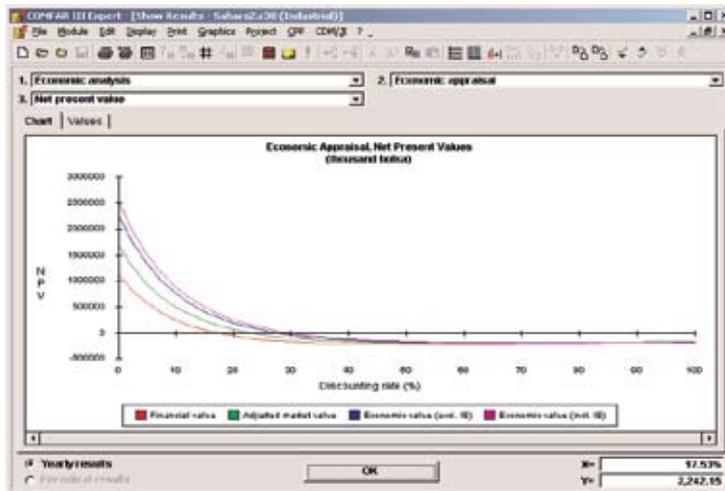
Financial analysis (enterprise level)

For financial analysis, COMFAR III Expert produces, the following result schedules: Summary sheet, Investment costs, Production costs, Production and sales program, Sources of finance and debt service, Business results (financial cash flow, discounted cash flow, income statement, balance sheet (with ratios), data on direct costing and product profitability), Financial and efficiency ratios and Break-even conditions. User-defined sub-items may be displayed and printed within the standard schedules.

	1991	1992	1993	1994	1995
TOTAL CASH INFLOW	3,348.00	5,016.20	7,948.00	5,433.52	11,301.39
Inflow funds	3,348.00	5,016.20	1,073.00	28.52	51.39
Inflow operation	0.00	0.00	6,875.00	5,375.00	11,250.00
Other inflow	0.00	0.00	0.00	0.00	0.00
TOTAL CASH OUTFLOW	3,319.00	5,293.30	7,873.53	5,684.11	11,232.00
Increase in fixed assets	3,291.00	4,727.00	0.00	0.00	0.00
Increase in current assets	0.00	390.00	1,281.84	355.65	293.40
Operating costs	0.00	0.00	5,681.69	6,907.50	7,947.00
Marketing costs	0.00	0.00	302.50	382.50	385.00
Income (corporate) tax	0.00	0.00	0.00	0.00	0.00
Financial costs	28.80	276.30	567.69	600.15	409.21
Loan repayment	0.00	0.00	0.00	1,153.02	1,341.02
Dividends	0.00	0.00	0.00	255.29	807.07
Equity capital refund	0.00	0.00	0.00	0.00	0.00
SURPLUS (DEFICIT)	29.00	482.00	125.38	-230.59	69.00
CLIMATE-CORRECTED CASH BALANCE	29.00	482.00	617.36	316.78	425.45
Foreign surplus offset	-71.00	-10.00	121.13	-205.20	-69.49
Local surplus offset	100.00	490.00	14.23	-88.21	138.18
Foreign cumulative cash balance	-71.00	-87.00	24.13	-191.26	-259.74
Local cumulative cash balance	189.00	889.00	883.23	810.01	856.29
Net flow of funds	3,279.00	5,580.00	516.29	-2,177.04	1,596.91

Economic analysis (macro level)

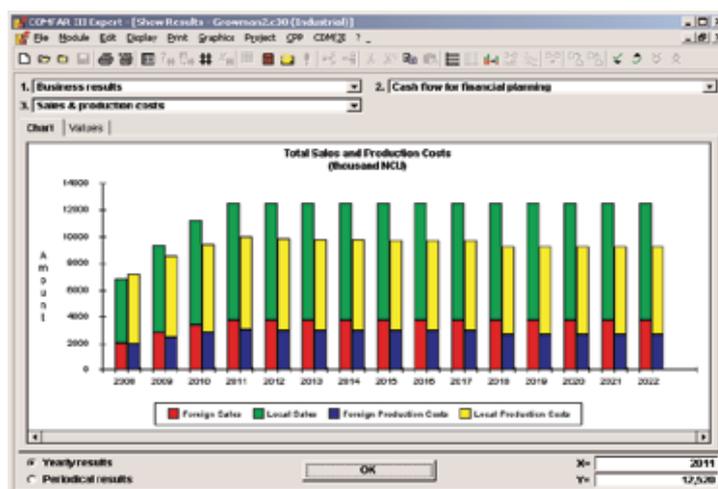
The economic analysis option allows the user to introduce shadow prices (to express project inputs and outputs in terms of economic prices) and to compute economic rates of return, value added, foreign exchange and employment effects. All results might be calculated including or excluding external economic effects.



The economic analysis module of COMFAR III Expert supports methodologies described in the Guide to Practical Project Appraisal (UNIDO,1986), in ("Little, I.M.D. and Mirlees, J.A."), Project Appraisal and Planning for Developing Countries (OECD, 1982) and in ("Squire, L., and van der Tak", H.G.), Economic Analysis of Projects (World Bank, 1984). Value-added methodology follows that of the Manual for Evaluation of Industrial Projects (UNIDO, 1984) but is modified to include decomposition of intermediate inputs suggested in the Manual of Economic Evaluation of Projects by (M. Chervel and Michel le Gall) (Paris, 1989).

Graphic presentation of results

COMFAR III Expert gives the user the ability to generate graphic presentations of ratios as well as structures of cash flows, costs and revenues.

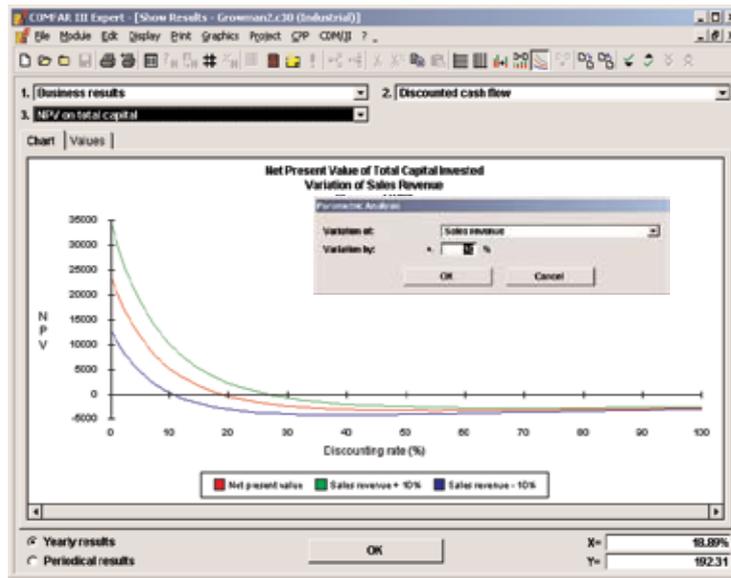


Sensitivity analysis

With the help of sensitivity analysis, it is possible to show how net cash returns or the profitability of an investment alter with different values assigned to the variables needed for the calculation (sales prices, unit costs, sales volumes, etc.). COMFAR III Expert facilitates assessment of alternative

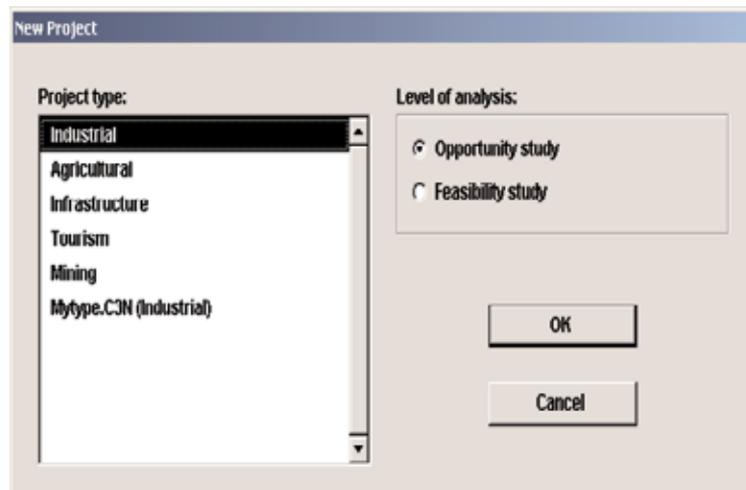


project scenarios and determination of critical variables. A variety of graphic charts is available to analyse the structures of project inputs and outputs, e.g. the structure of annual production and sales programme, or variable and operational margins and break-even sales volumes. Furthermore, COMFAR III Expert offers Incremental Analysis in order to facilitate the calculation of the impact of project expansions or rehabilitations..



Non-industrial investment projects

For appraisal of investment projects in other sectors of the economy, such as agro-industrial development, mining, infrastructure and tourism projects, COMFAR III Expert offers corresponding data input formats and output tables.



COMFAR III Expert allows the user to create his own project type based on the above mentioned standard types.

MULTILINGUAL SOFTWARE

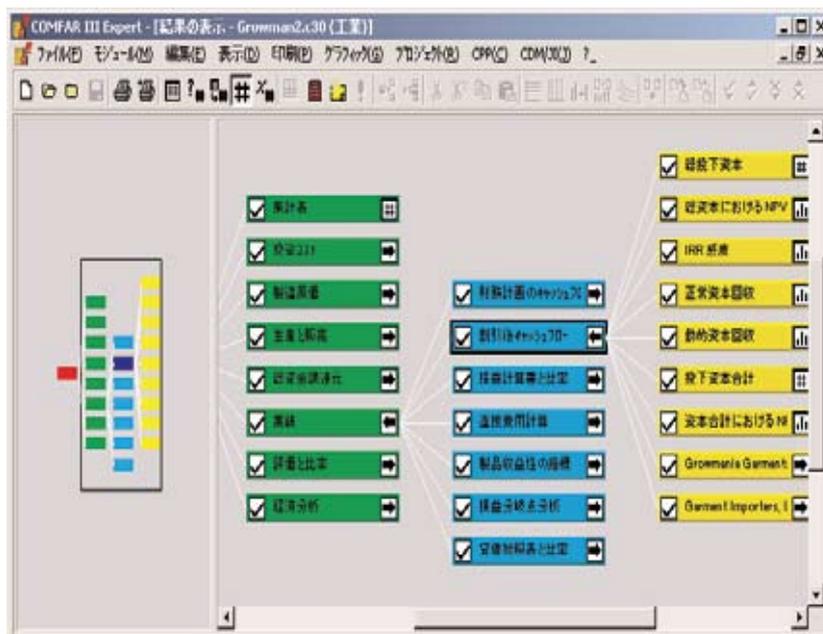


The financial analyst might choose to work in his/her language but might need to present the results, print-outs, charts of the analysis in a different language, which is often the case in international negotiations. Time and money has to be spent in translations. UNIDO has solved this problem by offering COMFAR III software in different languages and providing full compatibility among the programs in the different languages.

All COMFAR III programs are delivered in the language selected by the user. It is possible to acquire and install, at any time, one or more additional language sets. This will permit the analyst to operate COMFAR III in one language (e.g. English) and print all tables and charts in a different language (e.g. French).

COMFAR III is currently available in the following languages:

- Chinese, Croatian, Czech, English, Farsi, French, German, Indonesian, Italian, Japanese, Korean, Polish, Portuguese, Russian, Serbian, Slovak and Spanish.



Other language versions will follow depending on demand.