

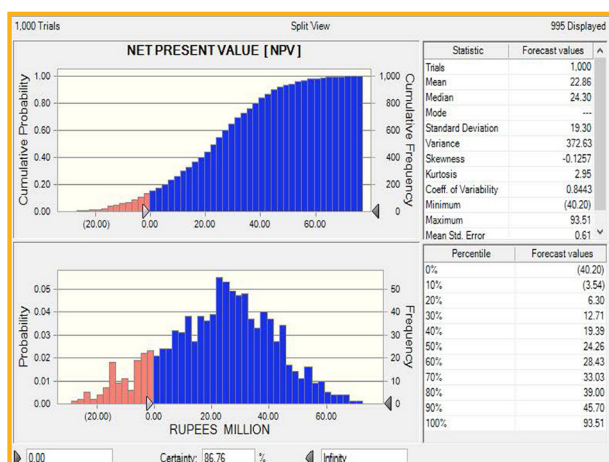
# PROGRAMME ON “QUANTITATIVE RISK ANALYSIS AND RISK MANAGEMENT IN PROJECTS”

PROJECT APPRAISAL CONSULTANTS will conduct a Training Programme on “Quantitative Risk Analysis and Risk Management in Projects” as mentioned below

**Dates:** 03rd December to 05th December 2014 [09:30 AM to 5:00 PM]

**Venue:** Lecture Room 1 (Annexe) India International Centre, 40 Max Mueller Marg, New Delhi

This programme will cover all aspects of financial appraisal of projects/Investments, sensitivity analysis and identification of sensitive/risk variables, scenario analysis and quantitative risk analysis and risk management in projects. Monte Carlo simulation would be used for quantifying risks and management of risks by use of Crystal Ball software.



The case exercises would also include the following areas:

- Sensivity Analysis and identification of risk variables.
- Scenario Analysis from different perspectives.
- Monte Carlo simulation and interpreting project output.
- Development of Risk Management options.

This programme has been designed for senior Central/State Government Officials including members of IAS, Central Civil Services, State Civil/Finance Services, officers/professionals from Central and State PSU’s, private sector organizations, Banks/

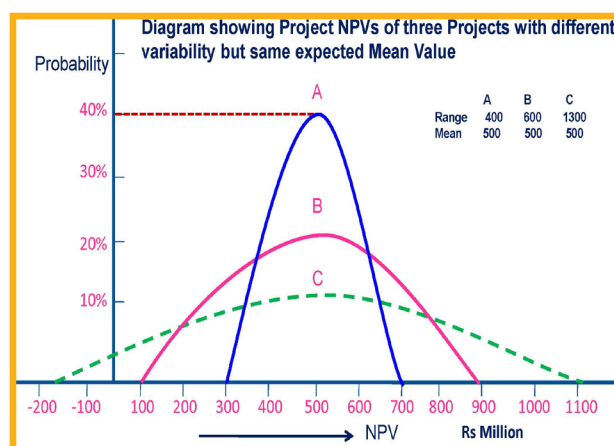
Lenders etc. who are involved in the process of decision making. This programme will help the decision-makers in understanding the exogenous and endogenous risks associated with projects and the opportunities as well as the constraints they face. This programme will equip the participants with skills for decision making in marginal projects and development of efficient risk management options.

## Quantitative Risk Analysis:

Quantitative risk analysis is a technique in which a mathematical model is subjected to repeated simulation during which the key variables are randomly selected from the multi value probability distributions which define their ranges. During risk analysis, the risks are identified and quantified by putting prices on each risk so as to help the decision makers decide whether these risks are worth taking or not.

## Risk Management:

All stakeholders in projects are interested in risk management and want to understand how to quantify the trade offs of risks against the potential returns. The principle aim of risk management is to achieve the maximum reduction in risk for a given amount of investment in terms of time, money, people etc.





# PROGRAMME ON “QUANTITATIVE RISK ANALYSIS AND RISK MANAGEMENT IN PROJECTS”

## CONTENTS

- Proforma Cash Flow Statements from different perspectives including pricing Issues, real prices, nominal prices, computation of depreciation expenses, liquidation value and computation of loan repayment schedules, different components of working capital.
- Opportunity cost of Public Funds, discount rates, Alternate Investment appraisal Criteria, Net Present Value (NPV) Internal Rate of Return [IRR] method, Benefit Cost Ratio (BC Ratio) method, Risk Analysis I (sensitivity analysis and identification of sensitive /Risk Variables).
- Case exercise on Risk Analysis I (Sensitivity Analysis) covering Proforma Cash flow statements from different perspectives ( Equity Holders, lenders, Government Budget, and Economy), Calculation of NPV , IRR and BC Ratio and Sensitivity Analysis to identify Risk variables for different stake holders.
- Incorporation of all effects of inflation in pro forma cash flow statements, Inflation and construction of inflation indices, computation of nominal prices/interest rates from real prices/interest rates & vice versa, calculation of nominal exchange rates based on Purchasing Power Parity (PPP) and inclusion of real appreciation and depreciation factor in the PPP model, evaluation of projects with borrowings in foreign exchange vis-à-vis currency appreciation or depreciation, estimating the cost of Risk premium while borrowing bank funds.
- All impacts of inflation on Project Viability through, financing project investment, Accounts Receivables, Accounts Payables, Cash Required for Operations, depreciation expenses, loan repayments and Interest Expenses, Inventory and cost of goods sold.
- Risk Analysis II [Scenario Analysis], best case, worst case, expected case scenarios, Decision Making Criteria based on Annual Debt Servicing Ratio (ADSR) for lenders.
- Case exercise on Risk Analysis II (Scenario Analysis) to be done by participants for a project from the perspectives of owners, lenders, economy and government budget.
- Risk Analysis III, [Monte Carlo Simulation], uncertainty and risk, value of information and cost of uncertainty, expected value of loss and expected value of gain. Expected loss ratio, Quantitative Risk Analysis and Monte Carlo simulation. Advantages of Monte Carlo simulation over sensitivity Analysis and Scenario Analysis, forecasting risk variables, assignments of probabilities to sensitive variables, defining correlations among variables, running simulations. Plotting results of Monte carlo simulation.
- Interpretation of project returns [NPV, IRR, BC Ratio, ADSR ] results of Monte Carlo simulation in terms of central tendency of project return, [mean, median and mode], spread of Project Return, [Standard Deviation and Coefficient of Variation], skewness of Project Return and its impact on decision making, maximum and minimum range and profiling the probabilities of project return.
- Participants to do case exercise on complete Risk Analysis-III, assign probabilities to sensitive variables, assign correlations, do Monte Carlo simulation, estimate risks for all stakeholders.
- Risk Management - Various Risk Management options such as - Do nothing, Reduce level protection or regulation level, obtain more information and data about project variables accurately, avoid high impact risks, mitigate risks, contingency planning create risk reserve, Insurance, Risk Transfer through contracts, How to evaluate risk management options ? Decision sensitivity. How to reduce or manage risks by using Monte Carlo simulation?
- Case exercise on development of most efficient Risk management options for different stakeholders by the participants.



# PROGRAMME ON “QUANTITATIVE RISK ANALYSIS AND RISK MANAGEMENT IN PROJECTS”

## FACULTY

The faculty who will teach this programme have taught in leading Universities such as Harvard University, Duke University etc., and have worked at top level positions in the States as well as Central Government in India. The lead faculties for this programme are:

Jarnail Singh is the Chief Executive Officer of Project Appraisal Consultants and is responsible for managing the entire operations of the Programme. He is a Master of Science in Electrical Engineering (Distinction) from Punjab University and Master in Public Administration from Harvard University (USA). As a member of the Indian Administrative Service, he has held several important positions in India including Secretary to Government of India, Chief Secretary of Manipur State and Joint Secretary to Prime Minister. He has been a Teaching Assistant for “Appraisal of Development Expenditure” course for graduate students in the Harvard University. He has also taught in the “Program in Investment Appraisal & Management (PIAM)” conducted by the Harvard Institute for International Development (HIID). While at the Harvard University he was associated with appraising of projects for different countries. He is a recipient of the “Prime Minister’s Award for Excellence in Public Administration” for the year 2007-08.



Dr. D. N. S. Dhakal is a senior fellow at Duke Centre for International Development (DCID), Duke University, USA. He has been working in Executive Programs of DCID on Project Appraisal and Risk Management and Fiscal Decentralization and Local Government since 2001. Dr Dhakal had taught the Program on “Project Investment Appraisal and Management” at Harvard Institute for International Development (HIID), and also teaches now “Economic Appraisal and Stakeholder Analysis for Investment Appraisal” in overseas countries for John Deutsch International Executive Program, Department of Economics, of Queen’s University, Kingston, Ontario, Canada, Social Cost Benefit Analysis at IDE Advanced School in Tokyo, Japan. Dr Dhakal is a partner of Project Appraisal Consultant in Delhi and also serves as a senior economist at Cambridge Resource International, a private international consulting firm based in Cambridge, Massachusetts, USA. Other Faculty Members include experienced civil servants who have studied this area in world class universities.



## Schedule of Training Programme:

Date & Day	09:30-11:00 hrs	11:15-1:00 hrs	13:45-15:15 hrs	15:30 - 17:00 Hrs
3rd December Wednesday	Different components and preparation of Proforma Cash Flow statements from different perspectives	Opportunity cost of funds, Discount Rate, alternate investment criteria, Net Present Value method (NPV)	Internal Rate of Return (IRR), BC Ratio, Risk Analysis-I (Sensitivity Analysis and identification of risk variables)	Case exercise covering proforma cash flow statements, calculation of NPV and IRR, BC Ratio, Sensivity Analysis
4th December Thrusday	Effects of Inflation on project viability-I	Effects of Inflation on project viability-II, estimation of cost of risk premium	Risk Analysis-II (Scenario Analysis), decision making criteria for lenders	Case exercise covering all inflation effects on project viability, scenario analysis for owners, Lenders, Economy & Government Budget.
5th December Friday	Risk Analysis III Quantitative Risk Analysis (Monte Carlo Simulation)	Risk Analysis III- continued, interpretation of project output [NPV, IRR, BC Ratio] Results	Case exercise on Risk Analysis (assigning probabilities to sensitive variables, monte carlo simulation, Interpretation of simulation results) Risk Management	Risk Management & development of efficient Risk Management options for different Stakeholders.



# PROGRAMME ON “QUANTITATIVE RISK ANALYSIS AND RISK MANAGEMENT IN PROJECTS”

## INFORMATION, LOGISTICS AND REGISTRATION

### PROGRAMME DATES

The training programme will be conducted from 03rd December [Wednesday] to 05th December [Friday] 2014. Teaching schedule is 9.30 AM to 5.00 PM daily.

### VENUE

Venue is Lecture Room 1 (Annexe) of India International Centre, 40 Max Mueller Marg New Delhi 110003

### TEA AND LUNCH

The participants would be provided tea at 11:00 AM and 3.15 PM as well as lunch at 1.00 PM.

The participants would be required to make their own arrangements for stay in Delhi. The participants must bring their own laptops computers with Excel programme for doing case exercises. The participants would be provided lecture notes and required reading materials.

### TRAINING FEES

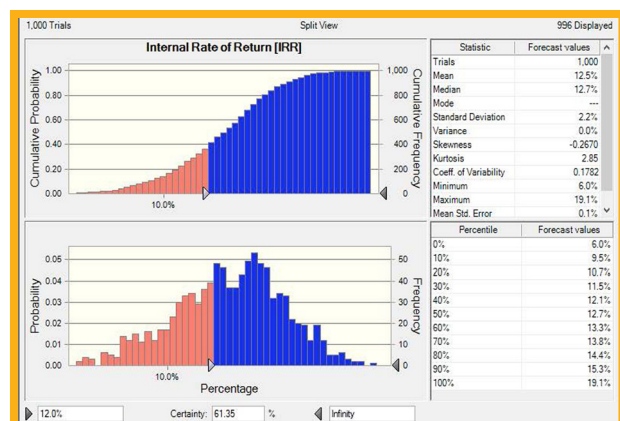
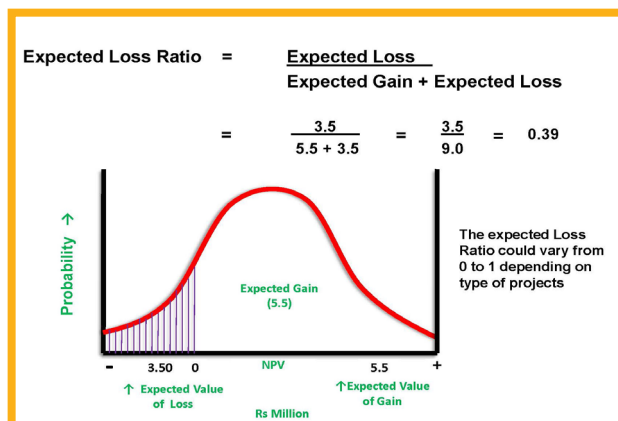
The fee for the training programme is ₹44,944 (₹40,000 Plus ₹4,944 as service tax) per participant. Training fee would be payable through Cheque or bank draft payable at Delhi to “Project Appraisal Consultants LLP” or can be transferred to bank account of “Project Appraisal Consultants LLP”, which can be obtained through email. The cheque/bank draft and nomination should be sent to following address:

**JARNAIL SINGH**  
B0/2 Welcomgroup CGHS Ltd.  
Plot 6, Sector 3  
Dwarka, New Delhi 110078

### LAST DATE FOR NOMINATIONS/APPLICATIONS

Last date for nominations/applications for the programme is 15th November 2014

For enquiries and registration contact: Email:- [jarnailsingh@project-appraisal.com](mailto:jarnailsingh@project-appraisal.com), [jarnail65@gmail.com](mailto:jarnail65@gmail.com)



**Project Appraisal Consultants**

B0/2, Welcomgroup C.G.H.S. Ltd, Plot 6, Sector 3, Dwarka, New Delhi 110078

P:+919868216710, +919818009365, 01145669365, [www.project-appraisal.com](http://www.project-appraisal.com), [www.projectappraisal.in](http://www.projectappraisal.in)