

Advanced Training on the Appraisal of Infrastructure Projects with Private Participation

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PPIAF joined together with the Southern African Development Community-Development Finance Resource Center (SADC-DFRC), the Development Bank of Southern Africa (DBSA), and Queen's University to offer an advanced, state-of-the-art training workshop focused on quantitative aspects of PPI projects.

Held at the Eskom Training Centre in Midrand, South Africa from May 11-29, the "Program on the Appraisal of Infrastructure Projects with Private Participation," one of the first of its kind to take place in Africa, was attended by over 25 infrastructure technicians from government ministries, development finance institutions, finance, and the legal sector.

The program concentrated specifically on cost-benefit analysis of PPI projects, including financial and economic appraisal and risk analysis. In doing so, the program built on the research of Francois Bourguignon, formerly the Chief Economist of the World Bank. In May 2006 Bourguignon drew attention to the precipitous decline in the use of cost-benefit analysis in the preparation of infrastructure projects over the preceding 20 years. Bourguignon suggested that "failed projects" may have resulted as much from failures in cost-benefit analysis as from inherent limitations in the projects themselves.[1]

Related research conducted by Bent Flyvbjerg in 2005 documented the extraordinarily high level of misinformation about costs and benefits that is typically generated in the analytical preparation of infrastructure projects. In a survey of 58 rail projects, Flyvbjerg found that costs were underestimated by an average of 45% and demand forecasts were overestimated by an average of 51%. Flyvbjerg labeled this failure of cost-benefit analysis a combination of "optimism bias" and "strategic misrepresentation." [2]

Additional research by Chris Shugart highlighted the emergence of new approaches to cost-benefit analysis for PPI projects.[3] Shugart argued that the central notion of any sound PPI project should always be that the project provides net benefits to society, or "value for money." However, Shugart's report commented on the weak institutional capacity in sub-Saharan Africa to handle all aspects of the PPI process. Thus, the May program aimed at enhancing the technical skills of those working in PPI projects evaluation and appraisal.

Theoretical Underpinnings of Cost-Benefit Analysis

The first week of the program covered the theoretical underpinnings of a cost-benefit analysis approach to investment appraisal and risk analysis generally, and also within the context of PPPs. The lecturers discussed a list of concepts and theories, beginning with cost-benefit incrementality, project cycle, stages in project appraisal and approval, and distribution and risk analysis. Further advanced themes included the fundamentals of micro-economics for economic evaluation, principles underlying economic analysis of projects, the economic opportunity cost of capital, the economic valuation of project outputs in non-competitive markets, and the economic cost of foreign exchange and shadow prices of non-tradable outlays.

Though focused on the fundamentals of cost-benefit analysis in the context of PPIs, the first week's activities were rounded out with the use of several case studies to clarify the themes. The Manila South Water Distribution project was discussed with reference to PPPs sustainability, including improving cash flows in lean years and how to access bridge financing, when necessary. A further case study on the Manila Waterworks and Sewerage Systems helped to unpack the main principles underlying the economic analysis of projects, and their impact on society as a whole.

Cost-Benefit Analysis and Project Finance Best Practice

Week two of the program was divided between morning lectures and afternoon practical sessions which largely involved

computer laboratory work on financial modeling. Concepts and themes were again supplemented by case studies. An analysis of the costs and benefits of electricity investments, specifically the issue of additional electricity in off-peak periods, included a class presentation on the appraisal of the El-Kureimat Combined Cycle Power Plant in Egypt.

More definitional work was done on Private Participation in Infrastructure (PPI) and the Public Sector Comparator (PSC). Lecturers examined the interests of the public sector vs. the private sector in doing PPPs, project finance and managing project risks, definitions, structures, and types of contracts, and loan agreements.

During the afternoon sessions, participants analyzed and prepared presentations on two fictional case studies drawn from real-life examples, an economic and stakeholder analysis of a water project in the country of "Samz," and a financial and sensitivity analysis of an electricity generation project in the country of "Adukki."

Financial and Economic Analysis, Risk, and Stakeholder Concerns

Week three began with a focus on transportation investment. The workshop analyzed the supply price of labor, conducted a detailed cost-benefit analysis of the Buenos Aires Colonia Bridge Project, and completed a case study of a toll road project in the country of "Kalahari," which looked at financing units, exchange rates, and toll design. A further stakeholder analysis of the M12 Toll Road Project addressed the concept of cost effectiveness and cost-utility analysis using a cost-effectiveness analysis (CEA).

The final two days of the workshop looked at the concept of risk and how to introduce the subtleties of risk into a cost-benefit analysis. A key message of the sessions was to understand the expected value of a project's outcome, with the outcome seen as a time series of probability distributions of expected value.

Finally, the workshop looked at managing contingent liabilities and fiscal risk, in terms of managing and reducing government risk exposure.

The conclusion of the workshop brought with it a greater understanding of the government and private sector roles in infrastructure investment, and a more complete picture of stakeholder interests. The evolution of governments' role in infrastructure provision, no longer pouring concrete but now designing contracts, requires properly equipped civil servants who understand the role of the private sector in fulfilling governments' development mandate.

The workshop's focus on adequate scrutiny of projects – is the project financially viable and economically sound? – was designed with the future in mind, when public-private partnerships combine to create a win-win dynamic for infrastructure development in Africa.

For more information on the course description and agenda of this training, please see this document. If you need additional information on any of the materials used at this training please contact us at ppiaf@ppiaf.org.

[1] Francois Bourguignon, Closing Remarks, "Rethinking Infrastructure for Development," Annual Bank Conference on Development Economics, Tokyo, Japan, 30 May 30 2006.

[2] Bent Flyvbjerg, "Policy and Planning for Large Infrastructure Projects: Problems, Causes, Cures," World Bank Policy Research Working Paper 3781, December 2005.

[3] Chris Shugart, "Quantitative Methods for the Preparation, Appraisal, and Management of PPI Projects in Sub-Saharan Africa," Final Report, 27 August 2006.