



SIP/2009-WP/13

Business case

Financial Analysis and Funding

**CHAOUKI MUSTAPHA, Economist,
International Civil Aviation Organization**

**Workshop on the Development of Business Case
for the Implementation of CNS/ATM Systems
(Antigua and Barbuda, 28 September –
2 October 2009)**



Objective of the financial analysis

- To provide the proof of the financial viability and profitability of a project

Content of a financial analysis

- The financial analysis section of a business case shows the expected cash flow implications of the project proposal, in terms of both revenues and expenditures
- It includes assumptions, methods and rationale for the estimation of revenues and expenditure



Expenditures ...

- Lifecycle costs are to be considered



Expenditures ...

- **Capital costs:**
 - Land
 - Facilities
 - Equipment
 - Software

- **Other non-recurring costs:**
 - Project staff, consultants and contractors including studies, procurement, travel, documentation, etc.
 - Training costs



Expenditures

- **Recurring costs:**
 - **Operation**
 - **Maintenance**
 - **Lease and rental costs**



Revenues

- For air navigation service providers, revenues correspond to the user charges collected from airspace users
- For airspace users, the cost savings resulting from flight efficiency are considered as a cash inflow (revenue)



Methods & techniques

- Net Present Value (NPV)
- Benefit-to-cost ratio (profitability index)
- Pay-back period
- Accounting rate of return (ARR)
- Internal rate of return (IRR)



Net Present Value (NPV)

Net Present Value = Difference in the present value of the cash inflows and outflows associated with a project



Benefit-to-cost ratio (profitability index)

Benefit-to-cost ratio = Ratio of the present value of the cash inflows to the present value of the cash outflows associated with a project



Pay-back period

The time required to recover the original investment

Pay-back period = Original investment / Annual cash inflow



Accounting rate of return (ARR)

The accounting rate of return measures the return of a project in terms of income, as opposed to using a project cash flow

Accounting rate of return =
Average income / Investment



Internal rate of return (IRR)

- The discount rate which equates the present value of cash inflows to the present value of cash outflows



Analysis process ...

- **Main assumptions and parameters**
 - **Project time horizon**
 - **Analysis base year**
 - **Traffic forecasts**
 - **Cost of capital**
 - **Efficiency rates**
 - **Average a/c operating cost**
 - **Cost-recovery period**



Analysis process ...

- **Air navigation service provider**
 - Cash flow streams of expenditures
 - Cash flow streams of revenues based on the expected user charges
 - Net present value
 - Benefit to cost ratio
 - Pay-back period



Analysis process

➤ **Airspace users**

- **Cash flow streams of expenditures**
- **Cash flow of streams of benefits based on the expected flight efficiency**
- **Net present value**
- **Benefit to cost ratio**
- **Pay-back period**



Sensitivity analysis

- To examine how variations in the parameters of the analysis affect results
- Uses the extreme values (maximum and minimum) of the range of each parameter separately



Funding



Funding requirements

- The cash flow analysis provides an excellent forecast of when funding is needed
- Typically, cash disbursements are high at the beginning of the project life cycle and diminish gradually



Sources of funds

- **Government funds**
- **Accumulated profits**
- **Bonds**
- **Loans**
 - **Public (World Bank, UNDP, etc.)**
 - **Private (private banks & financial institutions)**
- **Equity capital (institutions, individuals, etc.)**



Outcome of the analysis

- **Statement of financing needed**
 - **Amount of funds**
 - **Timing**
- **Sources and application of funds**

