Chapter 11. Case study 2: Implementing Logframes on construction projects

11.1 Introduction

The aim of this chapter is to incorporate the logical development approach and evaluation approach using specialist modules on a construction project. This chapter is thus the implementation of the constructs handled from Chapters 1 to 10.

Logical development models and Logframes were originally developed to serve as design, implementation and evaluation tools to ensure development effectiveness in development projects. The aim of this chapter is to illustrate especially the use of the Logframe on a construction project.

In line with the schematic design of this thesis presented in Chapter 1, Chapter 10 handled the Logframe mainly on the project design and implementation level while Chapter 11 is also proposing a Logframe model on the evaluation level.

11.2 Background

The Pretoria Technikon construction of a +R50m administration building is used as a case study. Technikon Pretoria needed an administration building because the administrative functions were accommodated in decentralised buildings designed for academic purposes. The project consisted of an 11 436m^2 building with six levels and a basement. Building operations commenced on 5 November 1999, and the first staff started occupying the building during March 2001. The contract documentation was completed before the funding was available. The Technikon and contractor made special provision to meet the development conditions. More than 800 unskilled people were employed and trained. The site and new building is a focal point among the buildings on the Technikon's Campus. The slope was difficult to deal with but the multi level design successfully integrated the new building with the rest of the buildings. Aesthetically the building is the flagship of the Campus and engenders a sense of excitement similar to that of an airport terminal. The building and the landscaped areas are coping effectively with large numbers of people daily. Cognisance has been taken of the needs of the handicapped and that access for people in wheelchairs and suitable toilets have been provided. The quality achieved in the construction of the building is high despite the fact that some compromise on quality was inevitable given the SMME developmental approach that was adopted. The building incorporates many features to improve its thermal performance.

11.3 Methodology

As there is usually much sensitivity surrounding evaluations, this project was chosen as it was a straightforward project completed and evaluated several years ago. The specific information is not as important as the methodology designed to incorporate the logframe information with the modular development approach for evaluation.

The information was obtained from the annual reports of the Technikon, project information and several interviews with the Rector during that time (Van Rensburg 2001: Interview). He was pleased with the fact that an evaluation model based on Logframes will be developed with the Technikon as case study. As this building is regarded as the flagship of the campus, information regarding it is freely available.

The full evaluation report is a lengthy document therefore only the application of the logframe in evaluation will be illustrated.

11.4 Project Logframe Goal or expected impact description

The Goal or expected impact derived from the appraisal report is:

'The creation of a better-trained technician level that will have spin-offs in terms of increased efficiency of workers. This in turn will facilitate economic growth and ultimate job creation.

Given the fact that the Technikon also provide other training besides 'technician level', a broader goal was formulated by the evaluation team:

The goal of the Technikon Pretoria Project is that it will contribute to economic development by providing qualified person power to the economy.

The Key performance indicators (KPIs) to quantify this goal could be:

- ✓ Marginal (or extra) Income of the trained students.
- ✓ Marginal Income of the trained Technical Level Students
- ✓ Development impact on the Geographic Gross Product (GGP) of the area.
- ✓ Manpower needs fulfilment of economy due to student output.
- ✓ Job opportunities created during construction.
- ✓ Job opportunities to continue after construction.

These KPIs could normally be found and verified in:

- ✓ Tracer studies of alumnae students.
- ✓ Economic development studies and reports.
- ✓ Manpower studies.
- ✓ Employment records.

Some of these indicators can only be fully quantified by means of impact studies between 5 and 10 years after completion of the project. In this evaluation only proxies could be used in order to provide some proof of impact.

11.5 Purpose, Objectives or Outcomes description

The Purpose, Objectives or Outcomes derived from the appraisal report are:

That the project will be accepted and utilised by the client and all the stakeholders.

Some of the Key performance indicators (KPIs) to quantify these are:

- ✓ Outcomes on Higher Education policy fit and delivery
- ✓ Acceptable performance management
- ✓ Acceptance of building by occupants and workers
- ✓ Acceptable achievements as a world class University of Technology.

These KPIs could normally be found and verified in:

- ✓ Department of Education Policy Papers
- ✓ Proof of linkages with international institutions.

As in the instance of impact, some of these indicators can only be fully quantified by means of impact studies between 5 and 10 years after completion of the project. In this evaluation only proxies could be used to provide some proof of outcomes.

11.6 Outputs (or Deliverables) description

The Outputs (or Deliverables) derived from the appraisal report are:

- ✓ The building of an 11 500m^2 admin building,
- ✓ Landscaping and parking,

which will be done in line with the:

- ✓ Technical,
- ✓ Environmental,
- ✓ Institutional,
- ✓ Social, requirements set in the appraisal report.

The Key performance indicators (KPIs) to quantify these are:

- ✓ Output regarding square meters built
- ✓ Output regarding quality
- ✓ SMME involvement
- ✓ Institutional output and capacity regarding relevant staff appointed

These KPIs can be found and verified in:

- ✓ Minutes of meetings

- ✓ Site visits
- ✓ Salary and wage statements

11.7 Activities: (& inputs) description

In order to provide the above output the following activities were necessary:

Institutional, Budget, Finances, Consultants, and Social activities

The Key performance indicators (KPIs) to quantify these are:

- ✓ Successful loan agreement signed
- ✓ Consultants' appointment and delivery
- ✓ Social meetings held to solve problems

These KPIs can be found and verified in:

- ✓ Minutes of meetings.
- ✓ Site visits.
- ✓ Level of labour unrest and number of disputes.
- ✓ Feedback at meetings.
- ✓ Progress, Annual reports.
- ✓ Audit.
- ✓ Publications.
- ✓ Database.

The SMME involvement on this project was crucial. At one stage the financing was stopped in order to bring the SMME involvement and the development approach in line.

11.8 Logframe 4x4 matrix for Technikon Pretoria Project Phase 1

As a logical framework was not originally done at the appraisal phase of the project, the following logframe was constructed from the information that was available. The information collected and included into the design and implementation logframe are used to evaluate the project. The framework proposed in Section 11.9 was developed to take into account the needs for an evaluation based on logframe.

Table 11.1: Logframe matrix for a project's design and appraisal phase

The Goal and Purpose are demand driven formulated from the beneficiary & clients' viewpoint

Description & Qualification	Indicators KPIs	Means of Verification.	Assumptions & Conditions
Goal: (or Expected Impact) The goal of the Technikon Pretoria Project is that it will contribute to economic development by providing qualified person power to the economy The creation of a better-trained technician level will have spin-offs in terms of increased efficiency of workers. This in turn will facilitate economic growth and ultimate job creation.	# Job opportunities % courses in line with economic needs	=Tracer studies. =White Paper. =Education and econ.	+ Economic growth. + Attitude of Minister of education.
<u>Purpose</u>: (or Objectives & Outcomes) That the project will be accepted and utilised by the client and all the stakeholders, specifically regarding the following modules: *Socio-economic *Institutional *Social *Educational *Environmental *Technical *Financial *Economic	<u>Non-quantifiable:</u> *Stakeholder feedback. *Demand for education & training. Acceptability of outputs for each module. Utilisation of outputs by each module. <u>Quantifiable:</u> # Qualified graduates. # satisfied staff. # problems experienced.	=Feedback at meetings minuted. =Progress, Annual reports. =Audit. =Publications . = database.	+Political, Managerial support & commitment. +Sufficient funds allowed for efficiency. +Commitment inhabitants. +Community participation.

Abbreviations: # : Number of; = : To be found in; + : Positive assumption

Supply driven: Products of the project

Description & Qualification	Indicators KPIs	Means of Verification.	Assumptions & Conditions
Outputs: (or Deliverables) The following outputs will be delivered: 1. The building of a 11436sq m admin building 2. Landscaping and parking in line with the: -Technical -Environmental -Institutional -Social requirements set in the appraisal report. It will also include: Recommendations on allocation of funds; Reports on progress of reconstruction process Recommendations in respect of structures, processes and legislation to handle similar operations in future.	# sq m built # sq m landscaping R disbursed successfully R paid to contractors Technical aspects Financial	=Minutes of meetings. =Technikon database and info. =Legal Documents. =Auditors report	+Successful obtaining of funding and support which will produce the adjacent Output, in order to support the above Objectives & ultimate Goal.
<u>Activities</u>: (& inputs) In order to provide the above output the following activities were necessary: 1. Institutional arrangements 2. Budget 3. Finances 4. Social aspects ✓ Gather information ✓ Verify ✓ Assess capacity of line Departments & Provincial / Local Government to undertake construction; ✓ Compile recommendations on allocation of funds; ✓ Monitor and prepare reports on various stages of construction process	# Meetings held # Successful budgeting by team # Key performance indicators (KPIs) Quantification of all activities per module	=Feedback reports. = =Financial records. =Minutes of meetings.	+ Creation of infrastructure, funding

Abbreviations: #: Number of; =: To be found in; +: Positive assumption
Source: Van Rensburg 2001: Interview

11.9 Evaluation of Key Performance Indicators (KPIs) for the Before, Envisaged and After situation

Please note that not all the indicators can be directly linked to the specific project investment. Although a modular approach was followed as far as possible, some overlaps occurred between the modules. The Parameters and Key Performance Indicators (KPIs) used were identified by the Evaluation Team and summarised in the Logical Framework. The **Before** situation is the situation with the client before the Development Bank's intervention (±1997), the **Envisaged** situation is the expected impact planned or envisaged by the appraisal team (±1998), while the **After** situation is how the Evaluation Team found the situation (April 2001), with the Evaluation Team Rating (ETR). The following CORE ratings were used for the ETR:

 =Highly satisfactory;  =Satisfactory;  Not applicable;  Unsatisfactory;  =Highly unsatisfactory

Table 11.2: Logframe matrix for a project's evaluation
Technical inputs (activities), outputs, outcomes and impact

KPIs (Key Perf. Indicators)	BEFORE (Before 1997)	ENVISAGED (Planned, 97/98)	AFTER SITUATION (At evaluation, April-May 2001)	ETR
Input (or activity) indicators (refer to the Logframe approach)				
Cost per Sq M for Building	-	±R2000/m²	±R3000/ m² More than planned but saved on other costs.	
Total building & landscaping cost	-	R45.1m	R42.9m at 95% disbursement. No cost overruns on total.	
Use appropriate technology	Received limited attention in the past	Within capability of Technikon staff	Maintenance cost low & carried out by own staff. Some minor problems	
Use of local resources	Received limited attention in the past	Local content important	90% building material, 60% labour, 40% equipment from Tshwane	
Output indicators (refer to the Logframe approach)				
Coped with Topography	Slope of site difficult to deal with	Overcome by the form of the building	A multilevel approach overcame this problem successfully	
Affordability of building	Fragmented admin services inconvenient	Positive assessment	Project represents value for the standards achieved	
Integration of other buildings	No building on that site before	Admin to integrate other buildings	Buildings successfully integrated with covered walkways & paving	
Outcome indicators (refer to the Logframe approach)				
Acceptability of Aesthetics	Campus had no focal point	To establish a focal point	Admin is the flagship of the campus & adds to the ambience.	
Acceptability of landscaping	Campus had no focal point	An integrated focal point	Landscaping and water features integrated successfully with admin.	
Acceptability to staff & students	Fragmented admin services inconvenient	To rectify the situation	Staff & students highly pleased with the end result	
Impact indicators (refer to the Logframe approach)				
Impact on SMMEs	Large firms mainly used on their projects	DBSA to change situation	Successful: E.g.15 SMMEs with ±829 jobs & training	
Training spent on SMMEs	None	Training during building	Training budget = R254 260 which involved 110 people training places	

Environmental inputs (activities), outputs, outcomes and impact

Input (or activity) indicators (refer to the Logframe approach)				
Dust control during work	Dust problems experienced	Planning to limit dust problems	Team satisfied that dust problem was managed well	
Waste management	Construction waste foreseen	Appropriate arrangements	Waste was used as infill. No toxic waste was encountered	
Output indicators (refer to the Logframe approach)				
Handicapped accessibility	Inconvenient	To rectify the situation	Now accessible to handicapped people & suitable toilets provided	
Flood control interventions	Steep slopes gave problems	To provide for drainage	General flood control has been well-managed	
Outcome indicators (refer to the Logframe approach)				
Blending in with existing buildings	Several existing structures	Blending	Blend in & integrate successfully with other buildings	
Sick building syndrome	-	With open halls, no problem envisaged.	Open halls. Full Fresh Air HV System installed for the rest	
Impact indicators (refer to the Logframe approach)				
Environmental impact	Impact and integration limited	Environmental impact and integration	Whole project has successful environmental impact.	
Plants: Impact and sustainability	-	To use indigenous plants	Successful as minimal irrigation, pest control & chemicals needed.	
Impact on safety measures	-	Violence and crime prevention	Open designs have a positive impact against crime	

Financial inputs (activities), outputs, outcomes and impact

Input (or activity) indicators (refer to the Logframe approach)				
Loan conditions and period	Limited to 10 years by commercial banks	Loan-period of 20 years required	Loan approved by DBSA over 20-year period	
Investments: unit trusts, shares,etc	R8.2m in 1996	-	R18.8m on 31 Dec 2000	
Investment in sinking funds	R25.1m in 1996	-	R42.0m on 31 Dec 2000	
Cost of the building alone	-	Loan request= R24m Later budget=R33,9m	R32,3m (95% disbursement)	
Cost of the landscaping	-	Loan request=R11m Later budget=R1.4m	R2.8m	
Cost escalation	-	R3 260 000	R818 753	
Professional fees	-	R4 834 000	R6 041 093	
Output and outcome indicators (refer to the Logframe approach)				
Solvency ratio: Debt cover	44% in 1998	50% = DBSA norm	74% on 31 Dec 2000 (is high due to long term pension liabilities)	
Solvency ratio: Debt ratio	37% in 1998	80% = DBSA norm	61% on 31 Dec 2000	
Solvency ratio: Debt equity	35% in 1998	70% = DBSA norm	96% on 31 Dec 2000 (due to long term pension liabilities)	
Liquidity ratio: Debt collection	24.8 days	45 days = DBSA norm	16.8 days (due to improvement in student fee collection admin.)	
Liquidity ratio: Creditor payment	24.4 days	30 days = DBSA norm	45.3 days (good, but only as long as creditors are willing to wait)	
Liquidity ratio: Current ratio	0.66 : 1 in 1998	1.5 : 1 = DBSA norm	0.26 : 1 on 31 Dec 2000 (Year end low, fees flowing in Jan)	
Liquidity ratio: Cash+ivestm/liab	0.3 : 1 in 1998	0.5 : 1 = DBSA norm	0.16 : 1 on 31 Dec 2000 (Year end low, fees flowing from Jan)	
Total revenue increase	R352.6m in 1998	-	R501.2m in 2000	

Government contributions	R175.2m	-	R251.8m	
Student debt carried over	R 0 in 1994 R23,2m in 1997	To effectively admin. student debt	R 18m in Dec 2000 R 10,7m in Jan 2001	
Risk	-	Low risk investment	Low risk investment	

Institutional inputs (activities), outputs, outcomes and impact

Output indicators (refer to the Logframe approach)				
Capacity on max students	Maximum of 32000 on-campus students	Accessible to larger number of students	Admin capacitated to accommodate 64 000 students.	
Space occupied by Registration	Scattered all over the campus.	To rectify the situation	Cost-effective centralized cubicle system	
IT and computer capability	Limited IT capability	Admin increased IT capability	Teaching material distributed electronically cost-effectively.	
Integrated IT network	Limited integrated IT network	Better integrated IT network	All Faculties & satellites linked into an integrated IT mainframe	
Outcome and impact indicators (refer to the Logframe approach)				
Independency as institution	Legislation proposed amalgamation	Appraisal team did not comment on this	Now no need to amalgamate with other institutions.	
Communication with satellites	Time-consuming	To improve the situation	Considerably improved through new administration building	
Electronic linkages	Limited electronic linkages	Better electronic linkages	Linkages established with local and foreign universities.	
Student racial composition	Up to 1993 predominantly white	Transform in line with demographics	In 2000: Black : White = 81 : 19	
Staff morale and productivity	Not always desirable due to fragmentation	To rectify the situation	Improved considerably due to new working environment	
Outsourcing of services	Some functions were already outsourced	Outsource further non-core functions	Canteen/restaurant in new building, Catering outsourced	
Registration time per student	Up to 6 hours, often spread over 2 days	To expedite the registration process	New admin. registration time less than 10 minutes per student.	

Social inputs (activities), outputs, outcomes and impact

Outcome and impact indicators (refer to the Logframe approach)				
HIV/AIDS handling	Limited capacity to handle	To equip students with life skills	A well functioning HIV/AIDS centre established	
Male female composition	'94: 9109=62%males 5492 = 38% females	Gender equality	20379 = 54%males and 17271 = 46% females in 2000	
Student Racial composition	1994 = 75% White & 25% Black students	To be representative of population	2000 = 20% White and 80% Black (African, Coloured, Indian)	

Socio-Economic inputs (activities), outputs, outcomes and impact

Outcome and impact indicators (refer to the Logframe approach re utilization)				
NPV Benefit) @ 5% disc ratio	-	R681,5m	R68,4m (Although still high, it is much lower than the envisaged)	
NPV Costs @ 5% disc ratio	-	R63,8m	R35,9m	
NPV Total @ 5% disc ratio	-	R617,7m	R32,5m (Envisaged R617,7m NPV seems to be too idealistic)	
Cost benefit analysis: ERR	-	21%	14% (Although satisfying, it is lower than the envisaged)	
Cost benefit analysis: BCR	-	11:1	2:1 (Although still satisfying, it is much lower than the envisaged)	
Benefits during construction	-	Not calculated	R10,8m	

Job creation	-	Job creation. Not quantified	Project created 829 employment opportunities	
Monetary value of skilled jobs	-	Not quantified	R30,3m	
Monetary value of unskilled jobs		Not quantified	R 6m	
Multiplier effects on economy	-	Positive about externalities	Influx of capital, current exp created multiplier climate	

Educational inputs (activities), outputs, outcomes and impact

Outcome and impact indicators (refer to the Logframe approach)				
Academic space utilisation	Academic space occupied by admin	To free-up academic space	4600m² academic space freed-up	
Campus utilization	Departments fragmented	To eliminate fragmentation	No more fragmentation, own space per department	
Accessibility to future students	Maximum 32 000 students	Increase academic capacity	Technikon academic capacity increased to 64 000 students	
Training utilization	1994: 3284=23%, = Engineering students	To increase 'technical training'	2000: 3659 Engineering students = 10% of total 37650 students	
Technical vs. other training util.	1994:Economics 30% IT 15%,Other 32%	To increase 'technical training' utilization	2000: Economics 24%, IT 50%,Other 17%	
Foreign student recruitment	Focus only on SA students	A significant Southern African HE institution	Enrolling a large number of foreign students e.g. Botswana	
Academic utilization	Limited facilities to provide assistance	To assist students academically	Introduced vacation schools for failures, with 85% success rate	
Acceptable staff turnover	-	To create a good working environment	Staff turnover down to 5%	
Academic partnerships	-	Must keep pace with developments	58 formal partnerships with institutions in 20 countries.	

11.10 Conclusions

Please note that the Pretoria Technikon project was not originally designed with the Logframe in mind. The design Logframe was developed from appraisal information in order to illustrate the use of the evaluation logframe.

From the design and evaluation Logframes it is clear that the design of a project or endeavour is not only a technical matter. In the past tools such as PERT and CPM could be used to facilitate the technical process and ensure the timely output. This will no more be the case. It is important that the Logframe be accepted as a design tool for projects to ensure development logic. Logframes are not something to be done by evaluators at the end of the project cycle but should be reviewed throughout the project cycle. It is a way of thinking outcomes instead of outputs. The question What is being done should be enhanced by Why it is being done.

An endeavour of this magnitude needs a modular approach to look at all the facets including the technical module. The Logical Framework is an excellent tool to

facilitate the modular approach with indicators and evaluation concepts. Evaluators are interested in the before, envisaged and after situation of an endeavour. The above framework provides answers in a condensed format by making use of the Logframe and indicators.