# From Costing to Financing: Medium Term Expenditure Framework Four Case Studies

These case studies are designed to provide practice in analysis of expenditure, costing and analysis of benefits and costs relating to a proposed project. They are all based upon real data from Pacific Islands countries, though the information has been made anonymous and slightly modified. The techniques used in each case study form a toolkit for financial analysis typically required.

Each case can be completed as a separate exercise, yet the four cases provide varied tools so that doing all four cases provides practical skills useful for the difficult decisions typically faced by planners and budget managers. The four cases are:

1. **Analysis of Financial Information - Facts from Figures: Primary Education Expenditure**
   This case provides skills in picking patterns and trends. It provides guidelines on gathering information and describes analysis techniques. The case itself requires using data on primary education operating expenditure to identify trends.

2. **Making forward projections of expenditure - Projecting Primary Education operating expenditure**
   This is a short case providing experience in the calculations for calculating the cost of staff, based upon an agreed policy. The example is primary education teachers.

3. **Analysing for Budget Savings - Fisheries Expenditure program**
   This case provides practice in analysis of a budget program to identify potential areas of saving, so as to free up funds for higher priority items, i.e. how to make sensible budget cuts. The example is Fisheries, but the techniques could apply to any program.

4. **Justification of a bid for a new project, program or activity - a project to increase root crop production**
   The case is for a project for root crop production, but the same approach can be used for any new program or activity, not just a project and it would not need to be donor-funded.

## Case Study 1:
## Analysis of Financial Information – Facts from Figures
## Primary Education Expenditure

# Introduction

1. Analysis of financial information is about finding patterns – **Facts from Figures.** This is made much easier by the use of spreadsheets such as Excel since calculations can be made quickly and charts produced easily. This case study will demonstrate some simple analysis techniques suitable for looking at Vote Analysis.

2. The quality of the raw data and its availability will have a big impact on the results from your analysis. This is very much the old computer system saying – **Garbage In = Garbage Out.** Some hints are provided about gathering data, but this is something that you will need to deal with on a case by case basis.

3. This case study uses data on Primary Education. It is not possible to teach spreadsheet techniques at this conference, so calculations and charts have already been prepared. These are used by participants to answer some questions.

# Gathering Data

### *Basic Principles*

4. Gathering data is time consuming and often difficult. There are always trade offs between time/cost and the quality of the data gathered. There are some important concepts to consider:

   a. Relevance – is the data going to help with the problem you are trying to analyse?
   b. Reliability – is the data accurate? Is it complete? Does it seem realistic? For example, if the data for the cost of telephone calls for three years is 100,000 then 5,000 then 110,000 this suggests that the middle year figure is wrong.
   c. Comparability – has the data for each period been recorded on a similar basis?

5. It is generally better to be approximately right rather than precisely wrong. This means that relevance and comparability are more important than sticking to the data recorded or reported, which may be suspect. For example, the telephone call cost data is probably wrong because of a coding error. Unless this is the most important aspect of your analysis, it might be better to assume that the middle year data is 105,000 and move on to something else.

6. More data, especially over a period of years – called a time series – is better for picking patterns. But, more data takes more time to gather and the problems with getting accurate data that is a few years old is likely to have greater risks of error or lack of comparability. Data gathering is full of trade offs.

### *General Ledger Data*

7. The General Ledger is the prime source of data, especially as data can be summarised and extracted into Excel from most accounting systems. However, using accounting data requires care and knowledge. There may have been changes in the Ministry and Programme structures between financial years. Older data may not have been recorded by programme, just items.

***Learn about the target organisation and data***

8. It is essential to understand the organisation and Programme being analysed as well as the data about it. Every organisation and function has special features, even if much appears to be similar. Good analysis depends upon being able to pick out what matters. Analysis that follows a routine approach is less likely to be useful.

## Analysis

***Define your aims***

9. Analysis is about finding patterns. But for what purpose? What is the problem you are trying to identify or solve? Spend time defining the aims of the analysis. Is there a problem with growth in the level of expenditure? Are there more customers or a growing demand for services? Are costs per unit growing? Is the quality of service falling?

***Trend analysis***

10. The most likely aim is to identify trends over time. Growth or decline. Changes in composition. Changes in unit costs. While some people can pick patterns from looking at tables of numbers, most people need to do calculations or use graphs to visually show patterns. Some of the common methods are:

- Bar or line graphs of raw data
- Bar or line graphs of totals (or sub-totals of categories)
- Calculating growth (or decline) either over a particular period (last three years) or from year to year
- Analysis of the composition of items making up a total, especially over different time periods
- Using a price index to convert data into “Real” spending power terms, i.e. taking out inflation
- Calculating unit price or cost
- Calculating unit price or cost in “Real” terms

19. The case study asks you to analyse expenditure looking at trends and changes in patterns of resource allocation, especially personnel costs relative to operational expenditure, relating these trends/changes to any changes in performance indicators.

## Analysis of Primary School Expenditure

On the following page is data gathered on Primary School expenditure (excluding capital expenditure), together with the number of students and teachers and the consumer price index, followed by some charts using this data.

You have been asked to analyse Primary School Expenditure and make comments on key trends over the period from 1996 to 2005.

**Required:**

Review the data and answer the following questions:

1. What has the trend been for expenditure on Primary Education?

2. What has been the trend in Pupil/teacher ratio?

3. Is the trend in the Pupil/teacher ratio reflected in other data? If so, what data and what is the relationship.

4. What has the trend been in expenditure on School Supplies and Text Books? Is this a desirable trend and do you think it is sustainable? What does it suggest about expenditure trends for families with students at primary school?

5. Real expenditure per primary student has been rising – True or False?

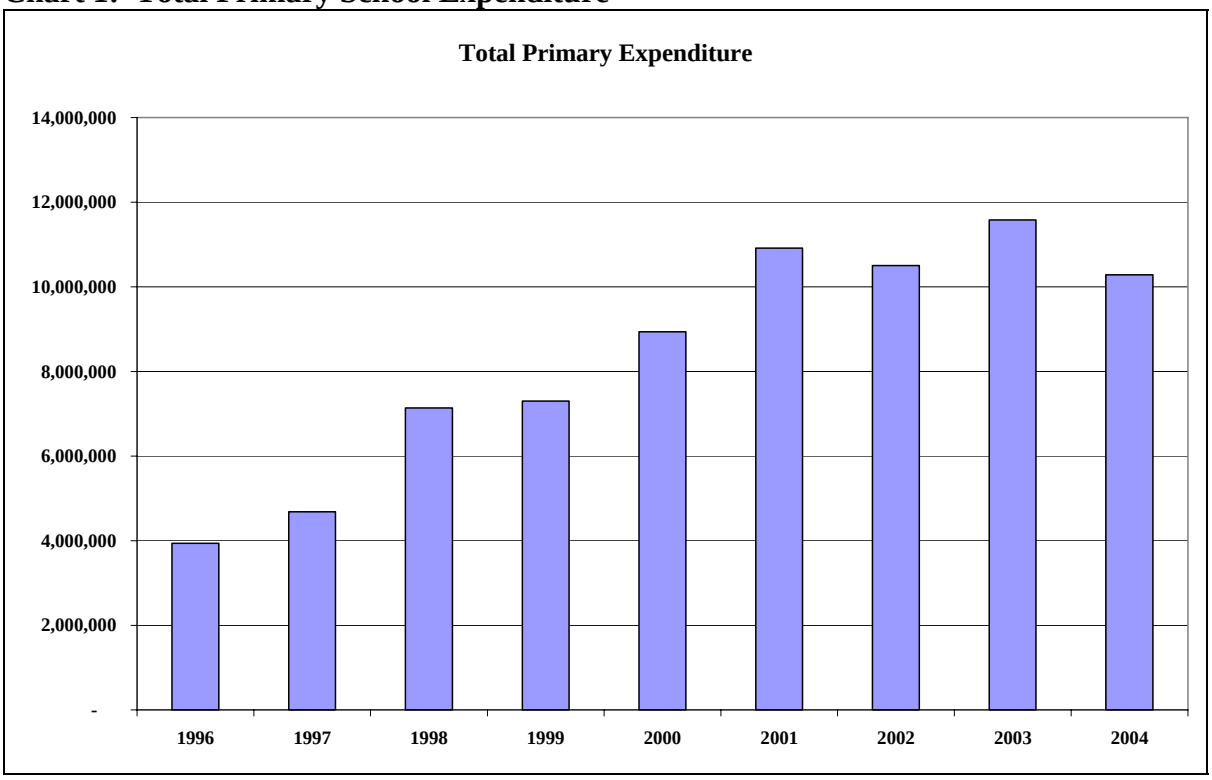
6. What is the main driver for the cost of primary education?

**PRIMARY SCHOOLS EXPENDITURE 1996 - 2005**

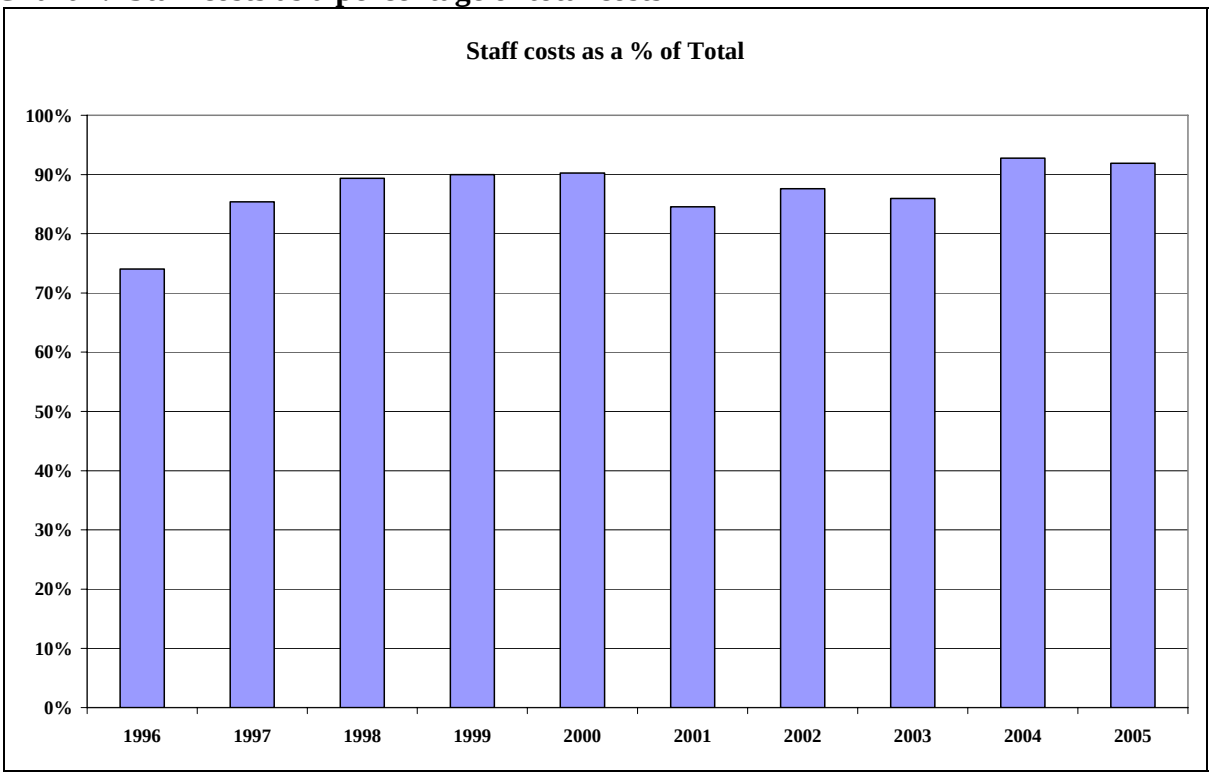
| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|---|---|
| Staff costs | 2,917,161 | 3,997,577 | 6,376,295 | 6,568,036 | 8,062,381 | 9,227,067 | 9,194,298 | 9,952,965 | 9,537,554 | 9,393,508 |
| Travel & Subsistence | 91,198 | 58,041 | 72,757 | 138,025 | 153,919 | 153,864 | 194,290 | 168,234 | 168,206 | 180,000 |
| Telecom & Internet | - | - | 38,000 | 33,970 | 65,555 | 101,500 | 194,752 | 190,520 | 195,345 | 198,622 |
| Equipment Maintenance | 7,446 | 15,123 | - | - | - | - | 156,427 | 354,629 | 29,115 | 250,000 |
| Cleaning Supplies | 4,003 | 14,466 | 8,196 | 20,076 | 25,600 | 44,800 | 93,200 | 32,000 | 26,400 | 27,500 |
| Text Books | 244,281 | 32,968 | 21,720 | 80,645 | 56,250 | 1,059,988 | - | - | - | - |
| School Supplies | 136,443 | 78,207 | 186,660 | 211,915 | 226,117 | 322,960 | 299,946 | 220,812 | 314,450 | 170,505 |
| Sports Equipment/Gear | - | - | - | - | - | 4,400 | 193,008 | 500,000 | | |
| Training | 539,047 | 484,937 | 433,992 | 246,463 | 345,789 | - | 172,147 | 160,675 | 9,000 | |
| **Total Primary Expenditure** | **3,939,579** | **4,681,319** | **7,137,620** | **7,299,130** | **8,935,611** | **10,914,579** | **10,498,068** | **11,579,835** | **10,280,070** | **10,220,135** |
| Primary Students | 16,855 | 17,455 | 18,211 | 17,399 | 19,400 | 17,988 | 16,411 | 18,599 | 18,933 | 18,935 |
| Teachers | 599 | 788 | 900 | 922 | 985 | 986 | 990 | 992 | 993 | 995 |
| **Pupil/Teacher Ratio** | **28** | **22** | **20** | **19** | **20** | **18** | **17** | **19** | **19** | **19** |
| **Primary Expenditure per Student pa** | **234** | **268** | **392** | **420** | **461** | **607** | **640** | **623** | **543** | **540** |
| **Primary expenditure per student (real)** | **234** | **264** | **382** | **397** | **419** | **544** | **546** | **514** | **438** | **411** |
| **Staff costs per teacher** | **4,870** | **5,073** | **7,085** | **7,124** | **8,185** | **9,358** | **9,287** | **10,033** | **9,605** | **9,441** |
| **Staff costs as a % of Total** | **74%** | **85%** | **89%** | **90%** | **90%** | **85%** | **88%** | **86%** | **93%** | **92%** |
| **School supplies and Text Books per student pa** | **23** | **6** | **11** | **17** | **15** | **77** | **18** | **12** | **17** | **9** |
| CPI deflator | 1.00 | 1.02 | 1.02 | 1.06 | 1.10 | 1.12 | 1.17 | 1.21 | 1.24 | 1.31 |

## Charts using data in the table:

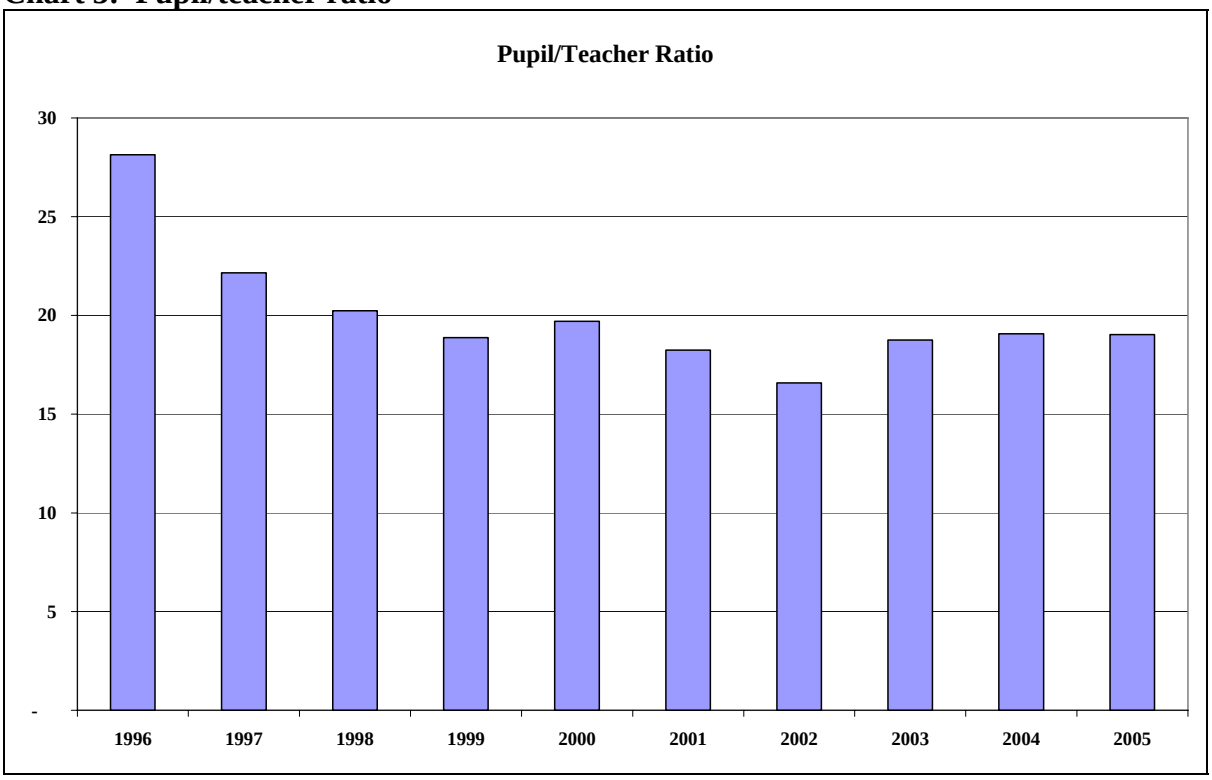
### Chart 1: Total Primary School Expenditure



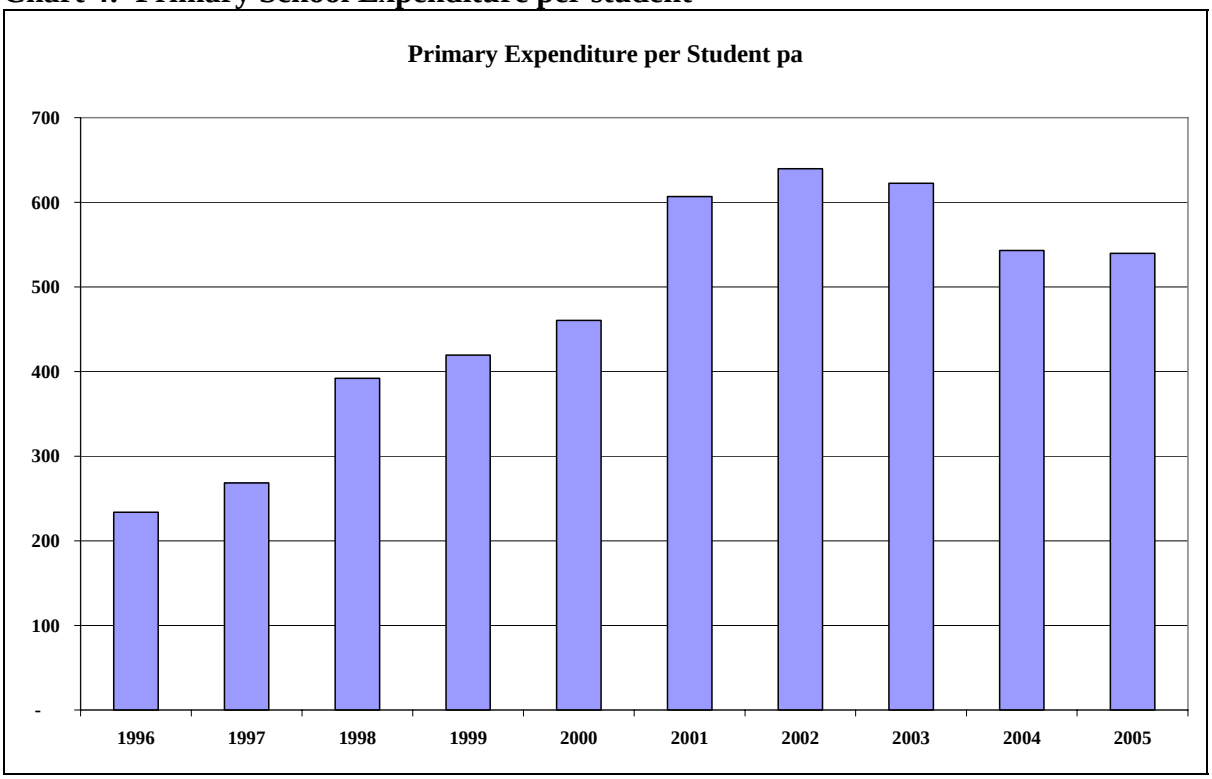

### Chart 2: Staff costs as a percentage of total costs



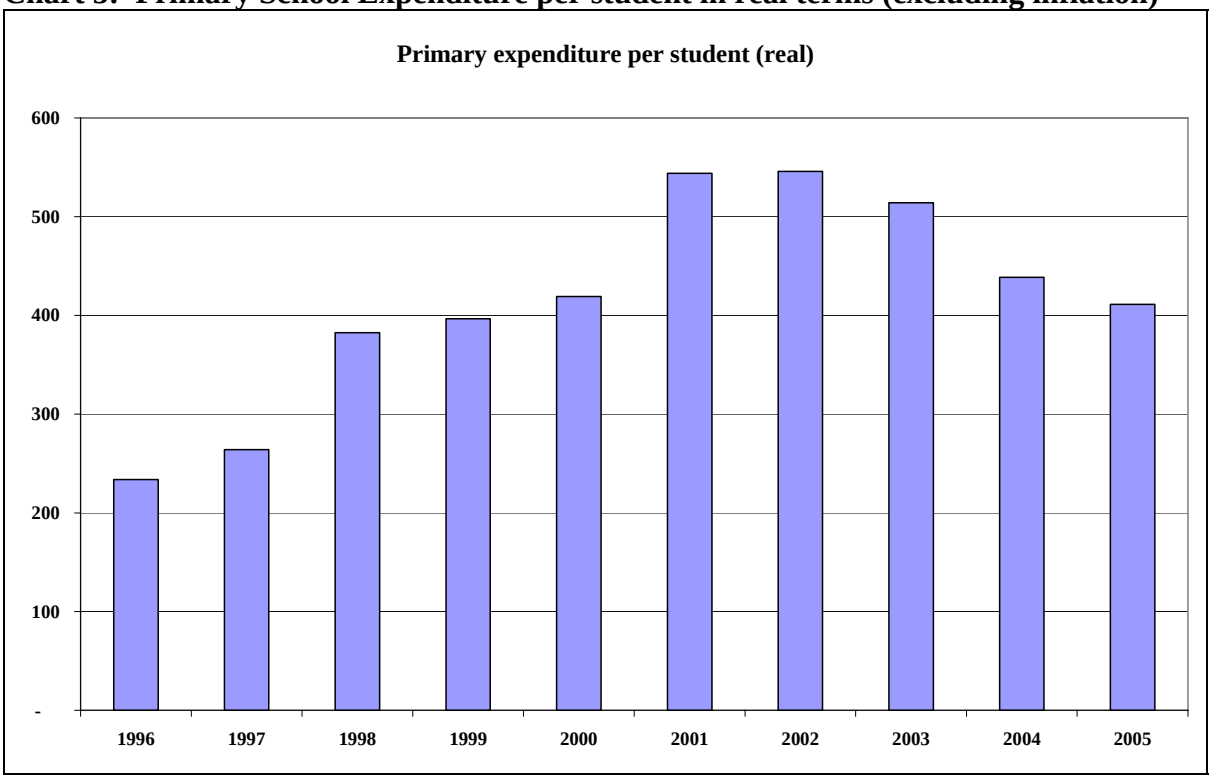
## Chart 3: Pupil/teacher ratio



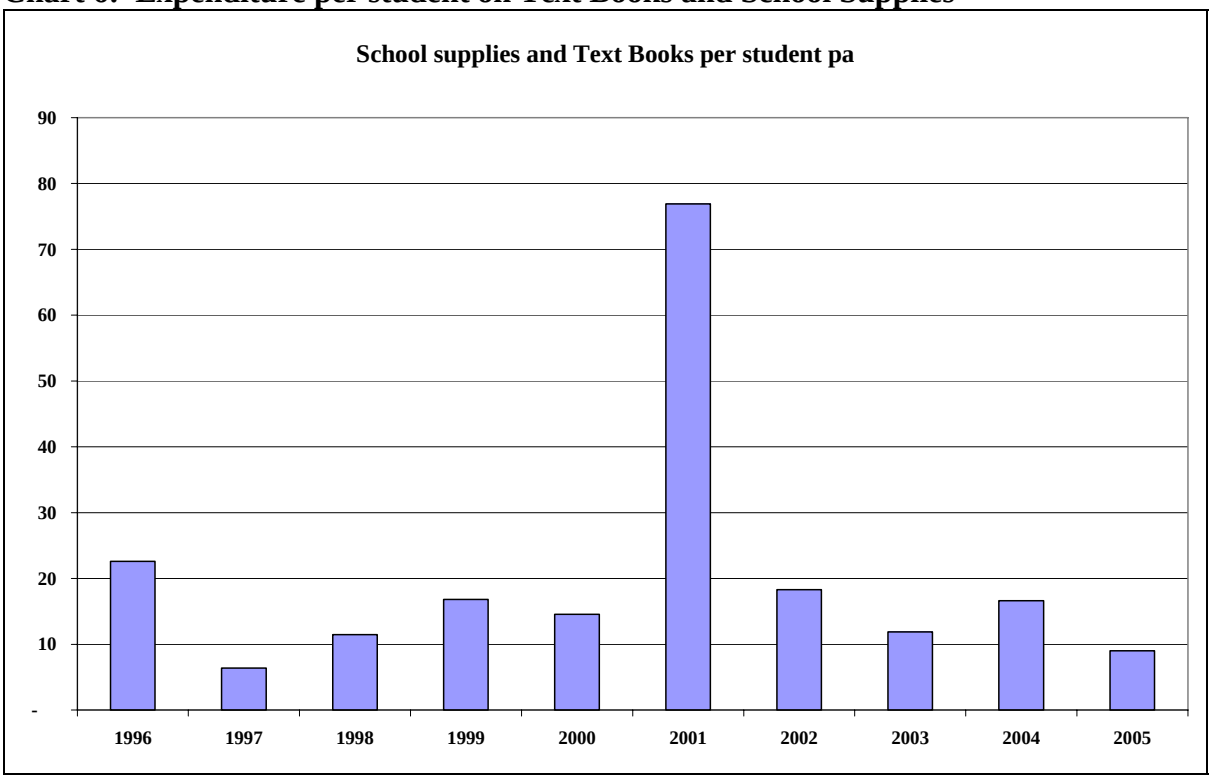

## Chart 4: Primary School Expenditure per student



## Chart 5: Primary School Expenditure per student in real terms (excluding inflation)




## Chart 6: Expenditure per student on Text Books and School Supplies



## Case Study 2:
## Making forward projections of expenditure
## Projecting Primary Education operating expenditure

A new programme is to be introduced to encourage a higher proportion of girls to attend primary school, to address the disparity in attendance between girls and boys.

You have been asked to project staff costs for Primary Education for the next 3 years (2006 – 2008), using data from the past 10 years, and the following information and proposed policy decisions:

1. Primary student numbers in 2006 are 19,000. They are expected to grow to 20,000 and 21,000 in 2007 and 2008 respectively.
2. There are 1,000 teachers employed in 2006.
3. Policy is for the Pupil/Teacher ratio to be maintained at 19 pupils per student.
4. Salary policy is for teachers to receive pay increases in line with the rate of increase in the consumer price index. Inflation is expected to be 5% per annum.

The following table has been provided to assist the calculations:

| **Primary Education staff cost projections** | | | | |
|---|---|---|---|---|
| | **2005 Actual** | **2006 Projected** | **2007 Projected** | **2008 Projected** |
| Primary Students | 18,935 | 19,000 | 20,000 | 21,000 |
| Teachers | 995 | 1,000 | | |
| **Pupil/Teacher Ratio** | 19 | 19 | 19 | 19 |
| Average staff cost per teacher | 9,441 | | | |
| Expected rate of inflation | | 5% | 5% | 5% |
| **Staff costs** | **9,393,508** | | | |

## Case Study 3:
## Analysing for Budget Savings
## Fisheries Expenditure program

This case study is based upon data from a Pacific Islands country. You are asked to use the data to consider how the issue of looking for savings might be approached - something that is typical of the reality faced by budget managers.

**Background**
You are the Director of Fisheries and your Chief Executive has instructed you to consider how you might develop a proposal for saving 10% of the recurring budget for your Programme.

A summary of the Budget and Actual outturn for the past year is set out on the following page.

**Required:**

1. Identify the three largest expenditure items.

2. What percentage of "recurring" expenditure is made up from these three items?

3. Identify the three largest Sub-Programmes.

4. What percentage of "recurring" expenditure is made up from these three Sub-Programmes?

5. Where would you start when considering where savings might be made to a budget?

6. What impact on Fisheries operations might there be if you cut back on the budget for the second and third largest expenditure items?

7. If you wished to propose a reduction in Staff costs, how might you suggest this could be achieved?

## Fisheries

| | Budget | Actual | Variances | | Proportions Percentages | |
|---|---|---|---|---|---|---|
| | $ | $ | $ | % | % Budget | % Actual |
| **Revenue** | | | | | | |
| Fishing Licences | 4,000,000 | 4,400,000 | 400,000 | 10.0% | 97.2% | 99.7% |
| Other Revenue - boat hire, etc. | 113,800 | 11,615 | (102,185) | -89.8% | 2.8% | 0.3% |
| **Total Revenue** | **4,113,800** | **4,411,615** | **297,815** | **7.2%** | **100.0%** | **100.0%** |
| | | | | | | |
| **Expenditure** | | | | | | |
| Staff | 2,679,690 | 3,157,505 | (477,815) | -17.8% | 76.2% | 79.5% |
| Travel & Subsistence | 60,000 | 65,055 | (5,055) | -8.4% | 1.7% | 1.6% |
| Telecom & Internet | 14,000 | 17,500 | (3,500) | -25.0% | 0.4% | 0.4% |
| Office Maintenance | 15,000 | 1,175 | 13,825 | 92.2% | 0.4% | 0.0% |
| Computer Maintenance | 5,000 | 131 | 4,870 | 97.4% | 0.1% | 0.0% |
| Equipment Maintnenace | 21,115 | 7,888 | 13,227 | 62.6% | 0.6% | 0.2% |
| Vehicle Maintenance | 10,000 | 5,121 | 4,879 | 48.8% | 0.3% | 0.1% |
| Boat Maintenance | 156,000 | 196,215 | (40,215) | -25.8% | 4.4% | 4.9% |
| National Observers Programme | 100,000 | 54,100 | 45,900 | 45.9% | 2.8% | 1.4% |
| Boat hire | 1,000 | - | 1,000 | 100.0% | 0.0% | 0.0% |
| Provisions | 90,000 | 95,300 | (5,300) | -5.9% | 2.6% | 2.4% |
| Petrol &Oil | 171,500 | 252,088 | (80,588) | -47.0% | 4.9% | 6.3% |
| Office Expenses | 10,000 | 12,052 | (2,052) | -20.5% | 0.3% | 0.3% |
| Office Stationery | 12,000 | 14,221 | (2,221) | -18.5% | 0.3% | 0.4% |
| Professional Services | 50,000 | 11,344 | 38,656 | 77.3% | 1.4% | 0.3% |
| Computer Supplies | 10,000 | 4,738 | 5,262 | 52.6% | 0.3% | 0.1% |
| Training Materials | 12,000 | - | 12,000 | 100.0% | 0.3% | 0.0% |
| Electricity | 80,000 | 77,568 | 2,432 | 3.0% | 2.3% | 2.0% |
| Safety gear | 1,000 | - | 1,000 | 100.0% | 0.0% | 0.0% |
| Engine spare parts | 20,000 | 2,047 | 17,953 | 89.8% | 0.6% | 0.1% |
| **Total Expenditure** | **3,518,305** | **3,974,046** | **(455,741)** | **-13.0%** | **100.0%** | **100.0%** |
| | | | | | | |
| **Expenditure Totals by Programme** | | | | | | |
| Policy formulation | 736,520 | 890,292 | (153,772) | -20.9% | 20.9% | 22.4% |
| Development of commercial fisheries | 342,487 | 362,197 | (19,710) | -5.8% | 9.7% | 9.1% |
| Applied research on economic potential | 346,080 | 590,820 | (244,740) | -70.7% | 9.8% | 14.9% |
| Expansion of outer islands fishing | 134,635 | 78,517 | 56,118 | 41.7% | 3.8% | 2.0% |
| Surveillance & control of foreign fishing | 791,628 | 736,713 | 54,915 | 6.9% | 22.5% | 18.5% |
| Mechanical services to outer islands | 319,110 | 350,537 | (31,426) | -9.8% | 9.1% | 8.8% |
| Resource evaluation | 640,730 | 784,234 | (143,504) | -22.4% | 18.2% | 19.7% |
| Maximising economic return from foreign fishing | 207,115 | 180,736 | 26,379 | 12.7% | 5.9% | 4.5% |
| **Total Expenditure** | **3,518,305** | **3,974,046** | **(455,741)** | **-13.0%** | **100.0%** | **100.0%** |

## Case Study 4:
## Justification of a bid for a project to increase root crop production

**Purpose and Objectives**
Rural people are largely subsistence farmers. It is proposed to provide farm machinery, such as tractors to farmer cooperatives to increase the production of root crops, creating a surplus that can be sold in the capital. The machinery will enable mechanised cultivation over a short time period at low cost so that total production of root crops will be increased.

The locations chosen have existing roads and wharf facilities to enable transport of the root crops to the market in the capital.

**Cost**
The capital cost is estimated to be $US 1,250,000.

**Benefits identified include**
- Lower labour input
- Additional volume of production
- Cash incomes for rural farmers
- People in towns having more reliable access to staple foods

**Discussion – issues and benefits**

1. What practical issues need to be considered for a project such as this involving provision of machinery to a rural location?
2. How do you suggest that ongoing operational costs should be financed?
3. How should benefits be measured?
4. What are the major risks for this project?
5. What are the steps you should take to logically consider a new project or programme?