OUTCOME COSTING

A significant advancement for determining public-sector cost-effectiveness
By

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INTRODUCTION

National Performance Framework
The devolved Scottish Government has responsibility for a substantial proportion of the country’s public services. They have developed a National Performance Framework (reproduced at Annex A) (http://www.gov.scot/Resource/Doc/933/0124202.pdf) (NPF), which underpins delivery of this political agenda and is intended to support an outcomes-based approach to funding and performance analysis. It has five objectives designed to create a more successful country through increasing sustainable economic growth. Sixteen National Outcomes related to these objectives outline what the Government wants to achieve over the next ten years. A further 50 National Indicators track progress towards the achievement of National Outcomes and ultimately the delivery of objectives. The principles of this type of framework could be applied to strategic management in the public sector by any nation, with suitable adaptation to meet local needs.

One of the National Outcomes relating to public services requires that they, among other criteria, “provide value-for-money and are continually improving”.

Outcome Costing
A key component in determining value-for-money, also known as cost-effectiveness, of an outcome is to know how much resource was allocated to its achievement. The Strategic Objective Costing (SOC) model (Macnab, Mitchell & Carr (2010); Macnab & Mitchell (2012, 2014)) is based on calculating the staff effort (allocated by percentage time of staff cost) and non-salary expenditures (attributed by appropriate coding structures) allocated to activities that directly supported a specific strategic objective. By aggregating the staff and non-salary cost allocations the total cost of the objective is calculated. By tracking the cost chain from input through output to outcome objective it is possible to determine outcome costs (Macnab & Mitchell, 2014).

The Outcome Costing Model is depicted below in Figure 1.
Outcome costs can be seen as a proxy for effort allocated to the achievement of the specified outcome and the generation of information of this type and its subsequent analysis is the focus of this paper. In determining outcome costs difficulties have arisen over consistent outcome definitions, coherent approaches by multiple government bodies, and costing methodologies. Some of these have been addressed in Macnab & Mitchell (2014) but further work remains to be done. The aim of this paper is to devise a methodology which can analyse and, therefore, determine whether value-for-money is being achieved from the outcomes being delivered by the public sector.

**Outcome Cost-Effectiveness Analysis**

The Outcome Cost-Effectiveness Analysis (OCEA) methodology described later in this paper is distinctive in that it is multi-dimensional. Firstly, it addresses organisational effort by analysing what the specific outcomes are and how they have been derived from output activity. Secondly, by having a thorough understanding of how resources are attributed throughout the value chain to the final delivery of the desired outcomes, relevant costs can be determined. These objectives are usually described in a strategy map and often contained in four or five perspectives which, in the case of the public sector, are likely to include the Government’s political ambitions. Thirdly, by associating the costs to performance (non-financial and financial), effectiveness can be determined. Finally, the time dimension for delivery of the objectives is taken into account.

**The Barriers to Achieving Outcome Costing**

Despite its great attractions, the implementation of outcome-based costing (and budgeting) has proved to be challenging. Table 1 summarises the numerous factors already identified as problematising the design and use of outcome-based costing systems.
The barriers outlined above have been experienced across a range of countries where implementation of outcome budgeting has been attempted. They have proved to be extremely difficult hurdles to clear and many have, to date, precluded the emergence of comprehensive and fully functioning systems of outcome costing.

Output/Outcome Definitions and Linkages
Outcomes and their definition have often been unclear or too broad to make any measurement meaningful or, indeed, possible. For example, in Scotland the NFP defines the following National Outcomes:
● **Business:** We live in a Scotland that is the most attractive place for doing business in Europe.
● **Children:** Our children have the best start in life and are ready to succeed.

While these may represent aspirational and visionary statements from a political perspective, they are framed in a manner where it is difficult to realistically determine their successful attainment. Consequently, these statements may need to be translated into more practical aims first and then broken down into achievable and measurable milestones so progress can be judged.

Thus, it is critical to the implementation of outcome costing to have clear definitions of both outputs (activities) and outcomes (impacts) and to establish the causal linkages between them. If public sector managers better understand what their organisations are trying to achieve (and for what purpose), they will be better able to ensure that satisfactory outcomes can be delivered. Stakeholder engagement is essential for developing these outcome definitions so that there is a clear consensus understanding of what is being
Lack of clarity in linkages makes it difficult for public sector organisations to ensure that they are measuring and describing the same object (e.g., activity, objective). Clarity is also needed because costs are more readily allocated to outputs than outcomes and clarity enables alignment of purpose, which in turn permits a greater degree of accuracy when applying costs to outcomes. For example, in the Strategic Objective Costing Model (Macnab & Mitchell, 2012) staff effort and non-salary expenditures were allocated to activities that directly supported a specific strategic objective. This type of model encourages measures to be developed which also relate directly to the activity that is being costed and enables measurement of progress in a consistent manner i.e. achievement of organisational objectives (Macnab & Mitchell, 2014). By having improved knowledge about the relevant costs, better decisions can be made about effective resource allocations.

**Outcomes and the Need for a Framework**

Bouckaert, Geert et al (2010) agree that the outcomes for the public sector are often produced by a number of separate public sector bodies and a range of considerations (e.g., political) are taken into account in their determinations that are beyond the influence of the individual co-ordinator or the final consumer. More often than not, it is government machinery which determines what its desired outcomes should be. Public services, often delivered in isolation by individual public bodies, may only provide an outcome when the outputs of these separate bodies are coalesced. This last issue can often be problematic if no coherent inter-organisational performance management framework is in situ at individual, multi-organisational, and governmental levels. A suitable framework permits multi-organisational strategic alignment from the costed outputs of single bodies to the overarching goals/outcomes of the national government. A proposal for such a framework is offered in Macnab & Mitchell (2014), reproduced at Annex B.

**A More Relevant Methodology**

The ability to cost outcomes has, until recently, relied on input-based cost information. While that type of data has been the only source of reliable financial data available it suffers from the defects identified by KPMG (2011) who stated in their report that: “Governments around the world often rely on line item and input-based budgeting. The narrower focus of this approach can lead to ad hoc spending, unclear oversight and disjointed results.” Although KPMG refer to governments the same criticisms can be levelled against individual public sector organisations attempting to identify outcomes costs.

To overcome the deficiencies identified by KPMG the SOC model was developed (Macnab, Mitchell & Carr (2010); Macnab & Mitchell (2012)) to support the Royal Botanic Garden Edinburgh (RBGE) in its strategic planning activity. This was done by matching actual costs to each of its strategic objectives. The RBGE had also connected its activities to a high number of Scottish Government’s National Outcomes (11 out of 16). However, a further challenge was to develop a model to attribute resources to cost objects that will enable outcomes to be determined in relation to resource use. The strategic objectives contained in the Governance and Resources Perspectives shown in the revised RBGE strategy map (http://www.rbge.org.uk/assets/files/about_us/Corporate_Info/RBGE_Corporate_Plan_2015.pdf) (Annex C), which could loosely be termed “overhead” objectives, were re-allocated to the output objectives using an ABC methodology. The model so far had been only concerned with costing outputs. By applying the costs of performing the tasks that contribute to the outputs and, thereafter, to the relevant outcome an outcome cost can be derived (Macnab & Mitchell, 2014). Annex D provides a schematic of the RBGE process, which reflects Figure 1 above. Clear and consistent alignment of output activities to outcomes is a key ingredient of this development.

Thus, a preliminary model for costing outcomes at organisational level has been achieved and this can be the basis for developing a model for costing outcomes from a number of organisations with a common purpose (Macnab & Mitchell, 2014) and Annex B refers.

The RBGE tested this model during FY 13/14 and has produced actual data for FY 14/15 (see Annex E). It is important that any outcome costing information should be married up with qualitative assessments from the performance management system, as well as non-financial indicators, to provide an integrated perspective of organisational performance for effective, evidence-based decision-making. Outcome costing information will also be used in the model described below to determine cost-effectiveness/value-for-money.
**Capital Investment Costs**
The costs included in SOC exclude capital costs. In the public sector it is usual for capital funding to be provided from separate funding streams and hypothecated for specific purposes. Such funds are depreciated in the normal way over the projected lifespan for the resource and accounted for in the financial accounts. Capital funding cannot be transferred into revenue funding allocations. Cole & Parston (2006) argue that the amortised cost of such capital investments should be included in the cost of delivering an outcome as by including these additional costs it will demonstrate whether the investment does in reality provide substance to a business case that suggests improved outcomes as a consequence of the investment, or not. Their point has considerable credibility. However, not all investment decisions are designed to improve specific outcomes. Some may be to restore a building that does nothing for delivering a particular outcome as it is a joint resource which simply provides a location for staff engaged on a variety of projects. Due to jointness in resource provision, there is no direct correlation between the investment decision and the specific outcomes. However, where this is the case then such costs should be allocated to the Land & Buildings Objective (in the case of RBGE) and then those could be reallocated using the ABC methodology. However, a case may be made to invest in expensive equipment (e.g. a scanning electron microscope) on the basis that outputs will increase, leading to improvements in specific outcomes. It is, therefore, appropriate to include the cost of such an investment in that specific outcome’s cost-effectiveness analysis. Thus, there need to be clear rules developed on how and when to include capital investment costs. The primary purpose of the cost-effectiveness analysis is to determine whether greater effort or expense should be allocated to a particular activity to improve outcome delivery; information systems should be designed to support this purpose.

**OUTCOME COST-EFFECTIVENESS**

**Measuring Public Sector Effectiveness**
In times of financial austerity achieving value-for-money becomes increasingly important to politicians, public sector managers, and the voting public in general. All of these stakeholders want to extract maximum value from our taxes. The problem is that there is no agreed methodology for calculating whether value-for-money is being achieved and then for it to be applied consistently across the public sector. A reason for this is that there are a number of services being provided to the public for which there is no price paid at the point of delivery to determine market efficiency. The National Audit Office (NAO) (http://www.nao.org.uk/successful-commissioning/general-principles/value-for-money/assessing-value-for-money) uses three criteria (the three “Es”) to assess the value-for-money of government spending i.e. the optimal use of resources to achieve the intended outcomes:

- **Economy**: minimising the cost of resources used or required (inputs) – spending less;
- **Efficiency**: the relationship between the output from goods or services and the resources to produce them – spending well; and
- **Effectiveness**: the relationship between the intended and actual results of public spending (outcomes) – spending wisely.

These relationships are depicted in Figure 2 below.
This section contains an outline of the requirements to develop a system for measuring public sector effectiveness and considers a number of dimensions: timeliness, value-for-money/cost-effectiveness, measurement and analysis, interpreting, and advantages and weaknesses. Cole and Parston (2006) provide a possible solution for measuring and analysing public sector effectiveness. Their Public Sector Value (PSV) model evaluates data from each of the years under examination and compares them against the average for those years. This compares to perhaps more traditional types of analysis which looks at performance measures that review absolute performance for a given year. What the PSV model attempts to do is to show where improvements can be made in cost-effectiveness. They propose that both outcome and cost-effectiveness scores are calculated and assembled in a matrix to emphasise relationships. This methodology provides a baseline for evaluating performance by indicating relative changes in performance. A dynamic assessment for each outcome can be produced by comparing relative changes to metrics on a period-on-period basis. The primary purpose of such an analysis is to encourage and demonstrate the existence of continuous improvements to performance through ongoing appraisal of progress towards outcomes.

Carrying out this type of analysis highlights the relationships between outcomes (and their metrics) aimed at improving overall performance, their associated costs and, consequently, evaluating cost-effectiveness. Managers can, therefore, determine areas of performance which merit further investigation or redistribution of effort to effect improvement. Consequently, what this means is that the decision-makers are being asked to consider “the rate of change (increase or decrease) of costs compared to the rate of change in outcomes” (Cole & Parston, 2006, p96). If outcome delivery (measured by the indicators) increases at a faster rate than the cost of the resources allocated, or if the resources cost decreases at a faster rate than the outcomes delivery reduces then cost-effectiveness increases. Obviously, the converse is true. The PSV methodology (Cole & Parston, 2006) measures how organisations deliver their outcomes cost-effectively over a number of periods. This is achieved by comparing the current period’s performance against average performance over a number of periods. In this way, management can compare their performance against their own and others (by mutual agreement) carrying out similar work. Baxter (2003, p2) quotes Frank Knight of Chicago who stated that: “Every valuation is a comparison,” and so there is a similarity in concepts (comparisons) being adopted. What is
critical is that intelligent comparisons are made and that sensible benchmarking, if desired, is carried out. This makes the necessity for clear and agreed definitions of what outcomes are being measured absolutely critical for the model to have utility.

A problem with the PSV model is that it uses input costs, which do not necessarily reflect the effort expended in delivering the outcomes (Macnab & Mitchell, 2014). An adapted version of this methodology, Outcome Cost Effectiveness Analysis (OCEA), makes use of an existing outcome costing methodology (Macnab & Mitchell, 2014).

Outcome Cost-Effectiveness Analysis
Outcomes can have several measures/indicators attributed to them. A more in-depth analysis employing outcome costs and looking not only at the average outcome measures/indicators but also at the individual outcome measures/indicators is likely to lead to better-informed decisions being made about how to deploy resources for maximum benefit. The ultimate purpose of the model is to ensure that resources are directed to leverage maximum benefit from the scarce resources allocated to the attainment of each outcome and, where necessary, adjust the resource allocations to realise maximum benefit overall from the agreed strategy. Each of the dimensions mentioned in the introduction to OCEA on p5 will be examined in turn.

Value-for-Money/Cost-Effectiveness. Like many terms used in business environments, the term “cost-effectiveness” can have different meanings, particularly to those in the private sectors compared to those in the public sectors. This paper is concerned with the public sector only and, therefore, for the sake of clarity “cost-effectiveness” is defined as the outcomes achieved by an organisation(s) for the costs incurred delivering those outcome(s) (Cole & Parston, 2006). This is consistent with the NAO definition above (Figure 2).

An important consideration is how to determine whether an organisation is cost-effective. Caution must be exercised to ensure that organisations do not simply reduce the input costs in the belief that there will be an improvement in cost-effectiveness. Cost-effectiveness needs to be viewed as a ratio of outcomes produced to resources employed. Using a cost analysis model only would inform an organisation which in delivering the outcomes (Macnab & Mitchell, 2014). The framework could assist with collating multiple outputs from a number of public bodies at either intermediate or final stage. Macnab & Mitchell’s (2014) proposed framework would constitute the cost of the outcome. By applying costs on percentage completed basis then it may be possible to also predict likely final costs for the outcome, where appropriate or desired. This approach overcomes the difficulty of costing an outcome which may take several periods to be delivered. When necessary, the costs can be standardised should inflation, for example, be a factor requiring consideration.

Timescales. Measuring value-for-money in the public sector has proved challenging due to a lack of reliable outcome data and, indeed, a consensus on how such measurements should be selected and calculated. These difficulties are further compounded by the elongated timescales between delivering an output and recognising benefits (i.e. the outcome), which are attributable to the output. The challenge, therefore, is to devise measures which deal with the short, medium and longer term. This emphasises the need to be clear about what is expected from the output activities and at what point they should be delivered on the journey towards the final desired outcome. Measurable milestones should be agreed and set. This means that these measures/indicators may need to be of a qualitative nature, but should include an assessment of progress (for example, % of project achieved against target of y%).

Measuring Value-for-Money/Cost-Effectiveness

A CIMA FM Special Report | Outcome Costing
Measurement and Analysing. Cole & Parston’s (2006) PSV model calculated cost-effectiveness by normalising outcomes and dividing those normalised scores over an adjusted cost per user. Standardisation and normalisation of data is necessary to permit comparability of raw data. When comparing data across multiple years’ standardisation is required (e.g. adjustments for inflation) and normalisation permits comparability of data with different base levels. To normalise data the calculation is:

Normalised Score = data point/Average of all data points across data set.

Graphical illustrations of this concept are shown in the worked example below (Figure 3). What is shown in Figure 3 is the outcome cost for delivering the RBGE’s Tourism and Recreation Outcome objective and the associated Key Results Indicators (KRIs). Due to the large variation in base numbers they have been normalised, using the mechanism described above, to facilitate meaningful analysis.

Figure 3. Outcome Cost-Effectiveness Model – Tourism & Recreation Impact
This example shows the outcome costs over a period of five years and the fluctuations in the values in RBGE’s Key Results Indicators (KRI) over the same period.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost</th>
<th>KRI 1</th>
<th>KRI 2</th>
<th>KRI 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>£4,265,864</td>
<td>825,026</td>
<td>248</td>
<td>1,253</td>
</tr>
<tr>
<td>Year 2</td>
<td>£4,267,782</td>
<td>795,642</td>
<td>252</td>
<td>1,261</td>
</tr>
<tr>
<td>Year 3</td>
<td>£4,283,571</td>
<td>815,728</td>
<td>273</td>
<td>1,223</td>
</tr>
<tr>
<td>Year 4</td>
<td>£4,301,927</td>
<td>835,421</td>
<td>281</td>
<td>1,426</td>
</tr>
<tr>
<td>Year 5</td>
<td>£4,352,847</td>
<td>855,498</td>
<td>298</td>
<td>1,387</td>
</tr>
</tbody>
</table>

Cost = activity costs attributed to our Tourism & Recreation Impact.
KRI 1 = Number of Visits to the Four Gardens.
KRI 2 = Number of people engaged as Volunteers.
KRI 3 = Number of Visitors to the Exhibitions in Inverleith House.

By using normalised values for the costs (we have ignored inflation for the purpose of this example, hence no standardisation has been applied) and the KRIs we can provide comparability between different measures with very different base levels and can plot charts to show the correlation between variables.

Using NORMALISED VALUES to show our Tourism & Recreation KRIs compared to OUTCOME COST

The discussion above explains why it is necessary to normalise the scores. As cost-effectiveness is defined as “the rate of change (increase or decrease) of costs compared to the rate of change in outcomes” it is, therefore, reasonable to derive a cost-effectiveness score by using the normalised scores for the average outcome performance (KRIs) and the normalised outcome cost.

Cost-Effectiveness Score. Cost-effectiveness is determined by “the outcomes that an organisation(s) has achieved against the cost incurred” (Cole & Parston, 2006; p 95).
This means that:

\[
\text{Outcome cost-effectiveness score} = \frac{\text{average of all KRI normalised scores}}{\text{Normalised outcome cost score}}
\]

Indeed, if it was possible to trace costs to the individual KRI then it would also be possible to calculate the KRI cost-effectiveness score on the same basis. A worked example using the same data as used in Figure 3 above is shown in Figure 4 below. Because we are not able to trace the outcome costs to individual KRI it is necessary to average the normalised KRI scores. Once the cost-effectiveness scores have been calculated they can be plotted on a graph.

To provide an example of using this methodology to compare one outcome objective with another the data from the RBGE’s National Collections Outcome objective has been utilised (Figure 5, below). Equally, if another organisation was employing the outcome costing methodology and was contributing to a similar higher level (national) outcome then this scoring mechanism could be used for comparison purposes on a similar basis. Again, the KRI’s differ markedly in base levels and so normalisation is necessary to make meaningful comparisons.
In summary, because we are using normalised scores we can look at:

a. Relative performance of an outcome over a period of time.
b. Compare the cost-effectiveness scores of different outcomes over a similar period(s) and, therefore, their relative performance (Figure 6 below provides a graphical representation of this comparison).
c. Compare similar outcomes from different organisations that are contributing to higher outcomes (e.g. a number of public bodies contributing to a specific Government National Outcome).
It would be extremely important for all participants to have agreed definitions of the outcomes under examination and to understand that the purpose of using the scores is to assist with better allocations and utilisation of scarce resources. This process should not, therefore, be used to reward/penalise performance or gaming will occur. Obviously, to make such a scheme feasible the participating bodies need to be collaborating for the greater good rather than competing against each other.

Interpreting. Like any process of evaluation care must be taken to ensure that valid deductions are made from data presented. In Figure 6 above it appears that the National Collections Outcome is much more cost-effective than the Tourism & Recreation Impact. However, care must be taken as in this case there was an innovative way of digitising specimens thereby increasing online availability leading to significant increases in downloads (two measurable KRIs). What may be more interesting in such cases is to look at the forecast of future performance to determine whether such a dramatic improvement is sustainable in the longer term. Importantly, the question can be asked. It is pertinent to remember that the purpose of this analysis is to review the performance of an organisation in order to determine whether that performance is improving in terms of cost-effectiveness, a common goal of government bodies. This analysis needs to be conducted over a period of time as it is relative and not absolute performance that is useful in this analysis. Equally, cross-organisational analysis can be performed if comparative and sufficient data is available. This means that public bodies would need to adopt a collaborative perspective with their work and not a competitive one. This type of analysis can also lead to identifying duplication of effort and permit sensible benchmarking – all of which aims to improve overall cost-effectiveness and the delivery of value-for-money within the public sector. Those organisations that need to improve their outcome management should see the exercise as a positive learning experience and not an exposure of failure on their part.

**Advantages and Weaknesses**

There are many approaches to public sector performance management and measurement. The approach outlined in this paper seeks to focus management’s attention on the benefits to society that their organisation(s) is trying to deliver. By providing cost-effectiveness analysis, decisions can be taken to improve the utilisation of scarce resources, particularly in times of public sector austerity. The argument is made that this model can apply to individual public sector bodies and to groups of public bodies acting in concert to deliver government outcomes. To do so would be contingent on having a satisfactory performance management framework to aid focus and alignment of purposes. Conversely, all methodologies have their weaknesses. This model is dependent on having agreed definitions of both outcomes and measures/indicators and varying opinions on these may abound. Additionally, to make the model manageable there could be a temptation to reduce the complexity of the outcomes and objectives to a level that is too simple to be useful.

![Figure 6. Comparison of Outcome Cost-Effectiveness Scores](image-url)
CONCLUSION

Governments have had long-held ambitions to improve cost-effectiveness and deliver value-for-money for their taxpayers. In recent times, focus has turned from outputs (activities) to outcomes (benefits). Moving to an outcomes-based focus has highlighted complex challenges in respect of definitions, coherent management frameworks, timescales, and costing. Hitherto, outcome budgeting has been based on input costs, often derived from the financial accounts. Outcome costing can provide superior information on costs directly attributable to their delivery and is a key ingredient of Outcome Cost-Effectiveness Analysis, the model discussed and proposed in this paper. By using this proposed model and calculating Outcome Cost-Effectiveness scores an improved assessment of the relative use of scarce resources when delivering outcomes can be made, thereby improving public sector governance and value-for-money.

In order to develop the system outlined in this paper many of the hurdles to outcome costing, listed at the start, had to be tackled. Table 2 below summarises where progress was made and explained in the paper.

Table 2. The problems of implementing outcome-based budgeting – have they been addressed by this paper?

<table>
<thead>
<tr>
<th></th>
<th>Problem</th>
<th>Solution</th>
<th>Page No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Identifying, selecting and evaluating outcomes in terms of success achieved.</td>
<td>Visionary outcome statements to be broken down into achievable, measurable objectives/milestones.</td>
<td>7</td>
</tr>
<tr>
<td>2.</td>
<td>The usefulness of outcome-based information due to responsibility and controllability issues in relation to performance.</td>
<td>By using a framework alignment responsibility for the delivery of outcomes can be managed and reviewed through judicious use of KPIs.</td>
<td>7</td>
</tr>
<tr>
<td>3.</td>
<td>Taking action based on the system’s output e.g. should success be rewarded and failure penalised?</td>
<td>Purpose is to better understand allocations of resources and how that process can be improved. To avoid gaming the system should not be used to reward/penalise.</td>
<td>14</td>
</tr>
<tr>
<td>4.</td>
<td>Outcome definition may involve subjectivity, coping with multi-dimensional performance characteristics not susceptible to single measures, societal as opposed to organisational level outcomes and lack of definitional agreement across bodies.</td>
<td>By having clearly articulated and stakeholder agreed definitions of outputs and outcomes causal linkages will be possible. An outcome may have more than one measure relating to its different dimensions.</td>
<td>6</td>
</tr>
<tr>
<td>5.</td>
<td>Timing differences between resource use and outcome delivery.</td>
<td>Outcomes may be delivered in short/medium, or long term. A KIPA provides a milestone measurement system to which costs can be attributed and totalled over the whole period of delivery to provide the final outcome cost, if appropriate.</td>
<td>10</td>
</tr>
</tbody>
</table>
## Problem

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
<th>Page No</th>
</tr>
</thead>
<tbody>
<tr>
<td>The absence of costing systems that can function with outcomes as the cost object.</td>
<td>Input-based cost systems provided unclear oversight and disjointed results. Outcome costing overcomes that deficiency and leads to improved resource allocations based on an understanding of desired results.</td>
<td>7</td>
</tr>
<tr>
<td>The new transparency of these systems can create problems by exposing performance failures.</td>
<td>Having a system that compares effectiveness either internally or between organisations exposes existing weaknesses in management. Providing enabled-learning occurs that can be seen as positive but if “punishment” occurs there will be a disincentive to participate.</td>
<td>14</td>
</tr>
<tr>
<td>Traditional budget reliance means change resistance is strong.</td>
<td>People are used to and comfortable with cost centre budgeting, which is input-based. To manage outcomes on a cross-divisional basis requires new levels of collaboration and apparent loss of control. Any change in operational procedures can give rise to resistance due to discomfort with novel working practices.</td>
<td>No*</td>
</tr>
<tr>
<td>Bureaucracy in adopting organisations creates a further barrier to change.</td>
<td>Bureaucracy often exists for control purposes, including budget allocations. By introducing any form of outcome budgeting inevitably means that a budget holder will need to coordinate usage of resources outside his/her direct control – a novel way of working and another barrier to change.</td>
<td>No*</td>
</tr>
<tr>
<td>Outcomes may only be one factor among many that are relevant to evaluating performance success.</td>
<td>Outcomes are usually related to the specific purpose of the organisation. However, other factors such as reputation, financials, risk management, talent management, environmental consideration may all contribute to evaluating success.</td>
<td>No*</td>
</tr>
</tbody>
</table>

*Note: Although this paper does not address items 8 -10 specifically they have been covered in Macnab, Mitchell & Carr (2010) and Macnab & Mitchell (2012) – both these papers provided the foundation for Macnab & Mitchell 2014 and this paper builds on the latter.

More work remains to be done to gain experience in using outcome costing and meaningful value-for-money analyses. It is, however, work that can prove highly beneficial as this type of analysis can aid public sector governance and encourage evidence-based management decision-making by facilitating the evaluation of the success of different strategies followed.
References


KPMG Case Study Pack (2011) *Making the Transition to Outcome-based Budgeting: A Six Nation Study*.


ANNEX A
SCOTTISH GOVERNMENT’S NATIONAL PERFORMANCE FRAMEWORK

NATIONAL PERFORMANCE FRAMEWORK

THE GOVERNMENT’S PURPOSE

To focus government and public services on creating a more successful country, with opportunities for all Scotland to flourish, through increasing sustainable economic growth

HIGH LEVEL TARGETS RELATING TO THE PURPOSE

<table>
<thead>
<tr>
<th>Growth</th>
<th>Productivity</th>
<th>Participation</th>
<th>Population</th>
<th>Solidarity</th>
<th>Cohesion</th>
<th>Sustainability</th>
</tr>
</thead>
</table>

STRATEGIC OBJECTIVES

<table>
<thead>
<tr>
<th>WEALTHIER &amp; FAIRER</th>
<th>SMARTER</th>
<th>HEALTHIER</th>
<th>SAFER &amp; STRONGER</th>
<th>GREENER</th>
</tr>
</thead>
<tbody>
<tr>
<td>We live in a Scotland that is the most attractive place for doing business in Europe</td>
<td>We realise our economic potential with more and better employment opportunities for our people</td>
<td>We are better educated, more skilled and more successful, renowned for our research and innovation</td>
<td>Our young people are successful learners, confident individuals, effective contributors and responsible citizens</td>
<td>We reduce the local and global environment impact of our consumption and production</td>
</tr>
<tr>
<td>Our children have the best start in life and are ready to succeed</td>
<td>We live longer, healthier lives</td>
<td>Our children have the best start in life and are ready to succeed</td>
<td>Our young people are successful learners, confident individuals, effective contributors and responsible citizens</td>
<td>We reduce the local and global environment impact of our consumption and production</td>
</tr>
<tr>
<td>We have tackled the significant inequalities in Scottish society</td>
<td>We have improved the life chances for children, young people and families at risk</td>
<td>We live our lives safe from crime, disorder and danger</td>
<td>We have strong, resilient and supportive communities where people take responsibility for their own actions and how they affect others</td>
<td>We value and enjoy our built and natural environment and protect it and enhance it for future generations</td>
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<td>We reduce the local and global environment impact of our consumption and production</td>
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<td>Our people are able to maintain their independence as they get older and are able to access appropriate support when they need it</td>
<td>Our public services are high quality, continually improving, efficient and responsive to local people’s needs</td>
</tr>
</tbody>
</table>
### NATIONAL PERFORMANCE FRAMEWORK - MEASUREMENT SET

<table>
<thead>
<tr>
<th>Objective</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase Scotland’s economic growth</td>
<td>Increase the number of businesses</td>
</tr>
<tr>
<td></td>
<td>Reduce the percentage of adults who smoke</td>
</tr>
<tr>
<td>Improve productivity</td>
<td>Reduce the alcohol-related hospital admissions</td>
</tr>
<tr>
<td>Improve economic participation</td>
<td>Reduce the number of individuals with problem drug use</td>
</tr>
<tr>
<td>Increase population growth</td>
<td>Improve people’s perceptions about the crime rate in their area</td>
</tr>
<tr>
<td></td>
<td>Reduce reconviction rates</td>
</tr>
<tr>
<td></td>
<td>Reduce crime victimisation rates</td>
</tr>
<tr>
<td></td>
<td>Reduce deaths on Scotland’s roads</td>
</tr>
<tr>
<td></td>
<td>Improve people’s perceptions of the quality of public services</td>
</tr>
<tr>
<td></td>
<td>Improve the responsiveness of public services</td>
</tr>
<tr>
<td></td>
<td>Reduce the proportion of individuals living in poverty</td>
</tr>
<tr>
<td></td>
<td>Reduce children’s deprivation</td>
</tr>
<tr>
<td></td>
<td>Improve access to suitable housing options for those in housing need</td>
</tr>
<tr>
<td></td>
<td>Increase the number of new homes</td>
</tr>
<tr>
<td>Increase life expectancy</td>
<td>Widen use of the internet</td>
</tr>
<tr>
<td>Solidarity – reduce income inequality</td>
<td>Improve peoples perceptions of their neighbourhood</td>
</tr>
<tr>
<td>Cohesion – reduce inequalities in economic participation across Scotland</td>
<td>Increase cultural engagement</td>
</tr>
<tr>
<td>Sustainability – reduce greenhouse gas emissions</td>
<td>Improve the state of Scotland’s historic sites</td>
</tr>
<tr>
<td></td>
<td>Increase peoples use of Scotland’s outdoors</td>
</tr>
<tr>
<td></td>
<td>Improve the condition of protected nature sites</td>
</tr>
<tr>
<td></td>
<td>Increase the abundance of terrestrial breeding birds; biodiversity</td>
</tr>
<tr>
<td></td>
<td>Improve the state of Scotland’s marine environment</td>
</tr>
<tr>
<td></td>
<td>Reduce Scotland’s carbon footprint</td>
</tr>
<tr>
<td></td>
<td>Increase the proportion of journeys to work made by public or active transport</td>
</tr>
<tr>
<td></td>
<td>Reduce waste generated</td>
</tr>
<tr>
<td></td>
<td>Increase renewable electricity production</td>
</tr>
</tbody>
</table>

### NATIONAL INDICATORS

- **Population – increase healthy life expectancy**
  - Increase the number of businesses
  - Increase exports
  - Improve digital infrastructure
  - Reduce traffic congestion
  - Improve Scotland’s reputation
  - Increase research and development spending
  - Improve knowledge exchange from university research
  - Improve the skill profile of the population
  - Increase the proportion of pre-school centres receiving positive inspection reports
  - Increase the proportion of schools receiving positive inspection reports
  - Improve the levels of educational attainment
  - Increase the proportion of young people in learning, training or work
  - Increase the proportion of graduates in positive destinations
  - Improve children’s services
  - Improve children’s dental health
  - Increase the proportion of babies with a healthy birth weight
  - Increase the proportion of healthy weight children
  - Increase physical activity
  - Improve self-assessed general health
  - Improve mental wellbeing
  - Reduce premature mortality
  - Improve end-of-life care
  - Improve support for people with care needs
  - Reduce emergency admissions to hospital
  - Improve the quality of healthcare experience

- **Solidarity – reduce income inequality**
  - Reduce the percentage of adults who smoke
  - Reduce the alcohol-related hospital admissions
  - Reduce the number of individuals with problem drug use
  - Improve people’s perceptions about the crime rate in their area
  - Reduce reconviction rates
  - Reduce crime victimisation rates
  - Reduce deaths on Scotland’s roads
  - Improve people’s perceptions of the quality of public services
  - Improve the responsiveness of public services
  - Reduce the proportion of individuals living in poverty
  - Reduce children’s deprivation
  - Improve access to suitable housing options for those in housing need
  - Increase the number of new homes
  - Widen use of the internet
  - Improve peoples perceptions of their neighbourhood
  - Increase cultural engagement
  - Improve the state of Scotland’s historic sites
  - Increase peoples use of Scotland’s outdoors
  - Improve the condition of protected nature sites
  - Increase the abundance of terrestrial breeding birds; biodiversity
  - Improve the state of Scotland’s marine environment
  - Reduce Scotland’s carbon footprint
  - Increase the proportion of journeys to work made by public or active transport
  - Reduce waste generated
  - Increase renewable electricity production
ANNEX B
Exemplar Performance Framework for Scottish Government

<table>
<thead>
<tr>
<th>SCOTTISH GOVERNMENT OUTCOMES-BASED FRAMEWORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scottish Government Vision: this Government’s vision for Scotland is a nation where people value the natural environment; have access to the services to thrive wherever they might live, and where every effort is made to ensure growth and opportunity exist across all of Scotland.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SCOTTISH GOVERNMENT NATIONAL OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>We live in a Scotland that is the most attractive place for doing business in Europe</td>
</tr>
<tr>
<td>We live our lives safe from crime, disorder and danger</td>
</tr>
<tr>
<td>We live in well-designed, sustainable places where we are able to access the amenities and services we need</td>
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<tr>
<td>We have strong, resilient and supportive communities where people take responsibility for their own actions and how they affect others</td>
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<td>We reduce the local and global environmental impact of our consumption and production</td>
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<tr>
<td>Our people are able to maintain their independence as they get older and are able to access appropriate support when they need it</td>
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<tr>
<td>Our public services are of a high quality, continually improving, efficient and responsive to local people’s needs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIRECTORATES OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raise educational standards</td>
</tr>
<tr>
<td>Enable procurement reform</td>
</tr>
<tr>
<td>Protect Scotland’s biodiversity</td>
</tr>
<tr>
<td>Reduce health inequalities</td>
</tr>
<tr>
<td>Balance climate change aspirations with sustainable economic growth</td>
</tr>
<tr>
<td>Increase access to all forms of cultural and creative activities</td>
</tr>
<tr>
<td>Implement the public services reform strategy and promote innovative ways of working</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIRECTORATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEARNING &amp; JUSTICE DIRECTORATE</td>
</tr>
<tr>
<td>FINANCE DIRECTORATE</td>
</tr>
<tr>
<td>ENTERPRISE, ENVIRONMENTAL AND DIGITAL DIRECTORATE</td>
</tr>
<tr>
<td>HEALTH AND SOCIAL CARE DIRECTORATE</td>
</tr>
<tr>
<td>LOCAL GOVERNMENT AND COMMUNITY DIRECTORATE</td>
</tr>
<tr>
<td>STRATEGY AND EXTERNAL AFFAIRS DIRECTORATE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INTERMEDIATE OUTCOMES (EXAMPLES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science and conservation</td>
</tr>
<tr>
<td>Flood protection</td>
</tr>
<tr>
<td>Water quality and environment protection</td>
</tr>
<tr>
<td>Small-scale farming regulation</td>
</tr>
<tr>
<td>Listed buildings protection</td>
</tr>
<tr>
<td>Aerial mapping</td>
</tr>
<tr>
<td>Digital mapping services</td>
</tr>
<tr>
<td>Tourism</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PUBLIC BODIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public bodies in the Learning and Justice Directorate</td>
</tr>
<tr>
<td>Public bodies in the Finance Directorate</td>
</tr>
<tr>
<td>Public bodies in the Enterprise, Environmental and Digital Directorate</td>
</tr>
<tr>
<td>Public bodies in the Health and Social Care Directorate</td>
</tr>
<tr>
<td>Public bodies in the Local Government and Community Directorate</td>
</tr>
<tr>
<td>Public bodies in the Strategy and External Affairs Directorate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUNDING</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>GOVERNANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Strategies and National Performance Framework</td>
</tr>
</tbody>
</table>
ANNEX C
RBGE STRATEGY MAP FY 2015/16

ROYAL BOTANIC GARDEN EDINBURGH

Scottish Government Vision – this Government’s vision for Scotland is a nation where people value the natural environment, have access to the services to thrive wherever they might live, and where every effort is made to ensure growth and opportunity exist across all of Scotland.

RBGE MISSION: TO EXPLORE, CONSERVE AND EXPLAIN THE WORLD OF PLANTS FOR A BETTER FUTURE

OUR IMPACTS

SCIENCE & CONSERVATION

NATIONAL COLLECTIONS

TOURISM & RECREATION

EDUCATION & SKILLS

OUR ACTIVITIES

Biodiversity Research

Collections Management

Visitor Attraction

Formal Education

OUR RESOURCES

People

Land & Buildings

Facilities

Funds

OUR GOVERNANCE

Environmental & Financial Sustainability

Strategy

Management & Control
ANNEX D
RBGE ACTIVITIES COSTED TO SINGLE OUTPUTS AND OUTCOMES

Activities
- Taxonomic Research – UK & International
- Conservation Research – UK & International
- Evolution Research – UK & International
- Research Staff: Presentations
- Research Staff: Committee/review/advisory
- Publication of scientific research
- Edinburgh Journal of Botany
- Biodiversity informatics
- Collection Staff: Committee/review/advisory
- Collections Data management
- Herbarium Collection: Management
- Herbarium Collection Data capture
- Library Collection: R&D
- Library Collection: Management
- Library Collection: Data capture
- Living Collection: Management
- Living Collection: Data capture
- Horticulture Publications
- Horticulture Apprenticeship Training
- External Engagement – Public
- Living Collection (public garden) maintenance
- Visitor Communication & Interpretation
- Visitor Welcome
- Organisation of Exhibition & Events
- Publications: General Interest Publications
- Marketing & Media activities
- Teaching/Training: Schools
- Teaching/Training: Professional
- Teaching/Training: Adult education
- Capacity Building/Knowledge exchange
- Education administration

Outputs
- Biodiversity Research KPIs & Work Programmes
- Collections Management KPIs & Work Programmes
- Visitor Attraction KPIs & Work Programmes
- Learning KPIs & Work Programmes

Outcomes
- Science & Conservation KRIs & KIPAs
- Tourism & Recreation KRIs & KIPAs
- Education & Skills KRIs & KIPAs

Staff Costs + Non-Salary Costs Using SOC Applied to Tasks
(Governance and Resource Objective Costs allocated to Outputs employing ABC)
ANNEX E
RBGE IMPACT & ACTIVITY COSTS SUMMARY

A Strategic Objective Costing methodology is employed at the RBGE to illustrate the non-salary expenditure and the staff effort directed towards achieving our corporate objectives. These costs are derived from time sheets indicating the tasks that the staff members have engaged in, which support specific objectives, and from the finance system in which all expenditure is double-coded to show cost centre and activity allocations.

The objectives contained in the Governance and Resources perspectives of our strategy map are what could loosely be termed “overhead” objectives and these costs are allocated on an activity basis in addition to the direct costs to determine our Activity (Output) objectives. Through clear alignment of our Activities to our Impacts we are able to ascribe a cost to those Impacts. By matching performance (KPIs/KRIs) with resource allocations (objective costs) we can make evidence-based decisions on how best to deploy our resources in the future to meet our corporate aspirations.

FY 2014/15
* Objective Costs

- 2% Environmental & Financial Sustainability £216,323
- 11% Biodiversity Research £1,157,175
- 11% Collections Management £1,208,129
- 22% Visitor Attraction £2,305,381
- 6% Formal Education £673,810
- 2% People £215,978
- 25% Land & Buildings £2,725,738
- 8% Facilities £893,332
- 1% Strategy £89,461
- 12% Management & Control £1,305,701

* These costs are derived from staff time sheets and the finance system allocation to Objectives.
*** These costs are derived from the alignment of Activities to one or more relevant Impacts.

** Activity (Output) Objective Costs

- 12% Formal Education £1,500,000
- 24% Biodiversity Research £3,100,000
- 22% Collections Management £2,900,000
- 42% Visitor Attraction £5,500,000

** These costs are derived from re-allocating Governance and Resource costs to the principal Activities.

*** Impact (Outcome) Costs

- 9% Education & Skills £1,200,000
- 49% Science & Conservation £6,300,000
- 42% Tourism & Recreation £5,500,000

*** These costs are derived from the alignment of Activities to one or more relevant Impacts.