

PREPARATION OF VETERINARY STRATEGIC PLAN AND COST–BENEFIT ANALYSIS

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Summary: *The performance of the official Veterinary Services is determined by a number of factors, including, among others, the interaction of three different but complementary types of knowledge: (A) biological and veterinary science (including epidemiology); (B) organisational knowledge; and (C) economic knowledge. This paper argues that knowledge types (B) and (C) will be of increasing importance in order to allow knowledge type (A) to reach its full potential. Indeed, in many cases the problem faced by the OVS is that organisational and economic ‘frictions’ hinder efficient action.*

This paper uses a wide and non-conventional definition of cost–benefit analysis (CBA). In this definition, all economic evaluations of alternatives, either in the choice of projects to be carried out, the magnitude of resources of these projects or the specific means of carrying them out, are suitable candidates for CBA. The paper argues that ‘internal’ or ‘organisational’ issues are significant in relation to benefits resulting from a given budget effort. Human factor issues, traditionally analysed by specialists in public administration and general organisational theory, are of crucial importance for organisational performance.

This paper also presents the results of a survey made in the Member Countries of the World Organisation for Animal Health (OIE) in the Middle East. This survey was conducted by sending a questionnaire to all the OIE Delegates in the Region. The analysis of answers to the questionnaire is used to illustrate selected organisational and economic issues facing the official Veterinary Services. The survey shows that challenges faced by the OVS vary widely among countries. Although generalisations are difficult to make, it appears that the priorities for all countries include improved ‘forward looking’ capabilities, as well as increased use of CBA for the allocation of resources. In addition, in the lower-income countries in the region, the priorities of the official Veterinary Services include a wide variety of issues: improved linkages with policy makers and producer organisations, surveillance and disease control methods, improved data-handling capabilities, etc. The official Veterinary Services of the two lowest income countries in the region have annual budgets of EUR 0.02 and EUR 0.4 / animal equivalent unit, respectively. These figures clearly give an idea of the difficulties these official Veterinary Services face.

The results of the survey also show that priorities regarding the use of the official Veterinary Services resources vary according to per-capita income levels. Indeed, higher per-capita incomes were associated with increased allocation of resources to investment as opposed to operational activities and to an emphasis on increasing the salaries of employees. These patterns are presented here for discussion purposes only.

Lastly, it is argued that additional efforts should be directed towards understanding resources used by the official Veterinary Services at the worldwide level, and that efforts to create and maintain databases related to this issue would be of considerable value to researchers.

Key words: *cost–benefit analysis – official Veterinary Services – OIE PVS Evaluation – OIE PVS Gap Analysis – Middle East*

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1. Introduction

Throughout this paper, the term 'cost-benefit analysis' (CBA) will be taken to include all types of economic evaluations of costs and returns done with the objective of improving animal health. This broad definition thus includes the economic impacts of animal health projects (e.g. eradicating brucellosis) as well as narrower evaluations of alternatives, for example allocating funds to hire additional personnel instead of investing in additional information technology. This (non-conventional) definition of CBA allows the inclusion of important issues relating to the economics of the official Veterinary Services (OVS) organisation. In this document, the term 'OVS' will be used to designate the governmental organisations (public sector) of the Veterinary Services (VS) as per the *Terrestrial Animal Health Code* definition [1].

CBA may be done with several objectives in mind: (i) lobbying for increasing funds; (ii) deciding alternative uses for resources; (iii) exploring the possibility of doing more with current resources; or (iv) doing what is done now but with fewer resources. Unfortunately, in many cases CBA is seen only as a tool for (i) above. Indeed, the danger exists for CBA to be transformed into a tool for convincing ministers to hand over more money. If this is the case, the usefulness of CBA will be severely compromised. Moreover, economic analysis and CBA will lose all credibility.

The results of a survey, based on a questionnaire sent to the Delegates of the 20 Members of the OIE Regional Commission for the Middle East, will be used to illustrate some issues reflecting the situation in the Middle East Region. A total of 14 questionnaires were returned, of which 2 were incomplete. The results presented below are therefore based on the remaining 12 completed questionnaires. These results do not constitute a 'diagnosis' of the challenges faced by the OVS in the region but should instead be considered as a preliminary description for discussion purposes only. The survey results are discussed in Section 4 below.

2. Cost-benefit analysis (CBA)

Understanding the impact of OVS requires counterfactual thinking: what takes place when the OVS exist, as compared to the situation where the OVS do not exist or exist in a different form.

In order to understand the different scenarios where CBA may be called into play, the following cases should be considered:

Situation 1: As shown in [Figure 1](#), the dramatic increase in Brazilian livestock exports that occurred from the mid 1990s was the consequence of an equally dramatic drop in the number of foot and mouth disease (FMD) outbreaks. Clearly, when policy makers are shown a graph such as this, they will not need more convincing arguments to allocate resources to the OVS. Even in this clear-cut case there still exists the problem of deciding on *the magnitude of resources* to allocate to the OVS. Important organisational issues must also be addressed: How is responsibility shared between federal and state (i.e. provincial) governments? Will vaccination be done by veterinarians employed by the OVS, or by private sector non-profit agencies (as in the case of Argentina) supervised by the OVS? The issue then is that even if agreement exists on the need to eradicate FMD, there are many alternative ways to do it. These alternatives result in different costs and benefits, and as such need to be evaluated.

Situation 2: 'Productivity' is defined as the ratio of outputs obtained to inputs used. Productivity may be measured in relation to *one input* (e.g. output per animal equivalent unit [AEU] or per ton of feed) or in relation to *all inputs* (the output/total input or total factor productivity [TFP] measure). The productivity of a livestock herd depends on many factors: overall management (e.g. milking or grazing practices), feed availability, genetics and of course animal health. A reduction in productivity growth will have —over time— dramatic impacts on output.

The animal health/productivity linkages are particularly difficult to analyse because of inter-country differences in productivity: for example, FAOSTAT data show a (meat) output per AEU of 450 kg for the Netherlands, 250-300 kg for Canada and the United States of America, 60-80 kg for Argentina and Uruguay and less than 15 kg for Ethiopia, Sudan and Tanzania. In absolute terms (which are the ones relevant for economic analysis), the per-AEU impact of slower productivity growth will vary substantially among countries. A case-by-case analysis is thus necessary.

Situation 3: In a presentation delivered in 2007, Dr Lonnie King discussed the potential impacts of the *third historical epidemiologic transition* [2]. The argument is that the conjunction of several factors results in the increasing importance of, and threat from, emerging and re-emerging diseases, affecting not only animal health but also human health. Microbial adaptation, climate change, human demographics and behaviour and other factors result in a substantial change in the probability and potential severity of epidemics. Dr King points out that many microbes are “ecological generalists” and states that 60% of all human pathogens are zoonotic. Many human health risks are better controlled by focusing on animal populations. Poverty in particular is seen as a critical factor that increases the potential threat of many kinds of diseases. The enormous increase in livestock production that is expected to occur in developing countries in the next decades [3, 4] is an additional factor contributing to the ‘epidemiologic transition’ mentioned by Dr King.

The three examples mentioned above indicate the considerable difficulties involved in analysing costs and benefits of animal health programmes in general, and of the OVS in particular. In the case of FMD in Brazil, it is clear that eradication is justified; however, the question remains as to what resource mix and resource level will better contribute to meeting this objective. In the case of impacts of animal health on TFP growth, in order to pin down costs and returns to expenditures considerable expertise is needed to disentangle the relative importance of animal health vis-à-vis other factors. Finally, the increasing importance of zoonotic diseases pointed out by Dr King indicates that economic analysis must take into account scenarios which in some cases can only be speculated on. Low-probability but high-potential loss events (such as an epidemic threat to the human population) may justify relatively ‘high’ expenditures on prevention or early detection: as in a conventional insurance policy, the ‘best’ decision may be to invest sums even if these are greater than the ‘actuarial value’ of losses.

3. The production of animal health services

An analysis of the organisation of the OVS involves three inter-related sets of issues:

- (A) Veterinary and epidemiological knowledge: main tasks to be performed, design of tasks, necessary inputs and expected outputs.
- (B) Organisational knowledge: coordination of individuals with the aim of furthering organisational (OVS) objectives; issues related to ‘organisational architecture’: partition of decision rights, human motivation and evaluation of individual and group performance [5].
- (C) Economic knowledge: estimation of social costs and benefits associated with alternative public (in this case OVS) interventions.

A. Veterinary and epidemiological knowledge

Considerable progress has been made in relation to item (A) as compared to item (B) and especially item (C). That is, more is known about “what has to be done” in relation to animal health, then “how much is to be done” and “how to overcome constraints” (financial, human and political) to carry plans through.

B. Organisational knowledge

Organisational knowledge related to the OVS has of course been improved by the use of tools such as the OIE PVS Evaluation and PVS Gap Analysis. In the case of the OIE PVS Evaluation, a blueprint for the organisation of the Veterinary Services is produced, with an emphasis on, among others, technical aspects, human aspects, interactions with the private sector and access to markets. The OIE PVS Gap Analysis enables the process of change from the current situation to the desired situation to be planned. Details of the financial requirements for these changes are also included. Despite the above, different kinds of ‘frictions’ may hinder the proposed changes. The extent to which the PVS Gap Analysis ‘blueprint’ is followed through is thus critical.

The problems involved in organisational design and change have been subject of considerable attention. In a classic text, Simon, Smithburg and Thompson analyse general principles related to administration in a public sector setting [6]. It is worth listing some of topics on which attention is focused:

- a. characteristics of human behaviour, groups and the role of leaders and values;
- b. specialisation and assignment of tasks;
- c. authority and status;
- d. communication and conflict;
- e. tactics for organisational survival;
- f. evaluation of administrative efficiency, formal and informal controls.

The point made is that organisational effectiveness (and thus the costs and benefits of organisational intervention) is critically linked to a host of *human factor issues* many of which in general receive only cursory analysis. Analysis of organisational performance, both in the public and private sector, shows considerable differences in efficiency: the same total resources invested can have very different results according to how the *human factor issues* mentioned above play out. This topic is of particular importance when constraints make it difficult or even impossible for significant budget increases to be obtained.

Little published work exists comparing the resources and budgets used by the OVS in different countries worldwide. Comparisons are of course plagued with difficulties: salaries of professional and support personnel vary widely across countries, thus 'similar' financial resources in two countries may result in considerably different human resource inputs. Notwithstanding these issues, [Figure 2](#) shows the ratio between OVS financial resources per AEU (horizontal axis) and OVS financial resources per person in the human population (vertical axis) for a sample of Latin American countries. In order to preserve anonymity, both metrics for one of the countries (country 'X') are assigned a value of 100, and all countries are compared to this. Of course, the 'ideal' situation (at least from the point of view of animal health) would be for all OVS to have resource availability comparable to that of the country in the upper right-hand corner: 650 per AEU, and 320 per person. But this is not the case: in the lower left-hand corner several countries show resource levels of less than 100 per AEU and less than 100 per person. As shown in the figure, in the sample of Latin American countries resources per AEU vary by a factor of 6 and resources per person vary by a factor of 3.5 to 7. These are significant differences.

C. Economic knowledge

The complexity of undertaking CBA increases for organisations with multiple objectives, and in particular for organisations that produce *public*, as compared to *private* goods. The author's experience in CBA applied to animal health is derived from his participation in *an OIE project conducted in collaboration with the World Bank*. The project's objective was to apply CBA methodology to the analysis of animal health problems in Latin American countries.

Highlights of the project included the following:

- ✓ In 2006 and 2007 an overview report was prepared in order to understand basic issues surrounding animal health economics in the Latin American and Caribbean region. In this period, two CBA workshops were undertaken. Participants in these workshops were asked to present a summary of the problems and opportunities faced by their VS.
- ✓ In early 2008, invitations were distributed to countries in the Latin American and Caribbean region to participate in a CBA of a specific animal health issue of their choice. The invitation stated that:
 - The objective was to carry out a practical CBA of a specific animal health issue.
 - The work was to be done in collaboration between local professionals and the project coordinator (economist).
 - The project was designed in such a way as to maximise input from local professionals: the objective being to develop hands-on capabilities.
- ✓ Case studies began in 2008 and were completed in late 2009.

The project resulted in the completion of 11 case studies. These included brucellosis (5 studies), FMD (3 studies) and avian influenza, bovine tuberculosis and classical swine fever (1 study each). An additional paper was presented on the use of decision-support systems in the OVS.

All studies achieved the objective of putting numbers to animal health problems. In some cases, the rates of return on resources invested in OVS action were extremely high (e.g. FMD in Bolivia and Brazil, bovine tuberculosis in Chile). In other cases (e.g. brucellosis in Argentina and Uruguay), the rates of return, while still attractive, were considerably lower. Careful project design is in these cases a critical issue.

The following are some conclusions of the project:

- ✓ Participating in a CBA forces one to think through aspects that are frequently overlooked: What data are needed to understand the economics of a specific disease? What time-lags are involved in a project? What are the critical factors determining success or failure in the investment of public funds?
- ✓ CBA allows the setting of priorities. This is particularly important in situations where the OVS face significant resource constraints.
- ✓ The CBA may provide a measure of the returns resulting from *different levels* of expenditure in a given project.
- ✓ CBA forces participants to think in terms of *efficiency in resource utilisation*. A narrower, technical perspective is replaced with one that takes into account both the ends produced and the means used in producing them.
- ✓ Finally, dialogue between OVS representatives and representatives of other sectors are improved as a result of attention given to economic and organisational issues.

The FMD study carried out in Bolivia illustrates the importance of CBA for analysing the impact of different resource levels on benefits resulting from OVS action. The comparison was made here between three levels of expenditure on VS activities:

- In Scenario 1, no significant OVS activities exist and producers decide themselves what disease control strategy they will use (if any).
- In Scenario 2, the VS undertake activities with significant resource constraints.
- In Scenario 3, there is an improved situation where additional resources allow VS activities to be upgraded.

A historical analysis of livestock production in Bolivia allows the impacts of Scenario 1 to be ascertained. These are severe, not only for Bolivia but also for neighbouring countries. Indeed, Scenario 1 was the *de facto* situation until the early 1990s. However, what is relevant to analyse is not a return to Scenario 1, but rather the impact of 'correctly functioning' OVS (Scenario 3), as compared to 'cash constrained' OVS (Scenario 2). In the case of Bolivia, and for the Beni region, a significant part (70–75%) of the total cost of the programme is accounted for by vaccination by producers, with OVS costs accounting for the remaining 25-30%. The interesting point here is that 'penny pinching' on OVS may result in a considerable loss of effectiveness of vaccination efforts made by producers, and thus in large economic losses. Resources in Scenario 3 are 65% higher than those of Scenario 2. The difference appears quite large in percentage terms; however, in absolute terms the difference (some USD 400 000) is *less than 15% of total expenditure on vaccines undertaken by producers*.

Figure 3 shows the impact of upgrading the OVS from the Scenario 2 situation to the Scenario 3 situation: the cost increases are modest, while increases in returns are considerably larger¹. Having resource-constrained OVS may be a poor decision, therefore: the OVS consume

1 The figure does not show actual figures. The results of the Bolivia study are reported in Gallacher and Barcos [7].

considerable resources but cannot ultimately carry out their task. The injection of relatively modest amounts of resources may then have a significant impact.

4. Analysis of the results of the questionnaire

An important issue to be addressed is how the required budgets (organisational costs) change when the output produced, input prices and technology change. For example:

- A OVS is considering upgrading the services provided, from “Level of Advancement 3” (as described in the OIE PVS manual) to “Level of Advancement 4”. Can this be achieved only with better management of existing resources or are additional resources necessary?
- The increase in computer and information technology suggests that organisational change is needed if this technology is to be used effectively. What changes are called for? What cost reductions or, given constant costs, what service expansions are possible?
- An economic development agency wants to compare the cost of improving or running OVS services in different countries. What adjustments have to be made to enable OVS budget comparisons between countries faced with very different salary levels for professional and other categories of personnel?

A survey questionnaire was sent to Members of the OIE Commission for the Middle East to obtain a regional perspective on the use of CBA and the VS strategic plan. The objective was to gather preliminary data in order to explore the priorities of the OVS and the organisational challenges facing them. The survey did not attempt to make a diagnosis of courses of action as this would require a much more detailed analysis. Instead, the questionnaire was used here for exploratory and discussion purposes. A total of 14 countries (out of the 20 Members of the Regional Commission) duly returned the questionnaire. A total of 12 of the 14 questionnaires were completed in full and constituted the sample on which this analysis is based.

This paper focuses on strategic planning in the OVS. The answers provided in the questionnaire returns highlight the difficulty in applying the generic concept of strategic planning to the OVS of different countries, given the dramatically different environments in which they operate. In particular, the sample includes countries characterised by:

- Per-capita income varying from less than EUR 500 to more than EUR 25 000 per year (World Development Indicators).
- Total animal population, expressed as AEU, ranging from less than 0.5 million to more than 50 million (Question I.1); human population ranging from less than 1 million to 40 million (Question I.2).
- Number of full-time equivalent (FTE) veterinarians employed by the OVS ranging from fewer than 100 to more than 6 000 (Question II.1).
- Total OVS budget ranging from less than EUR 1 million to more than EUR 140 million (Question II.2).
- Poultry production (which poses particular problems for the OVS) varying in importance: countries answering the questionnaire reported that poultry production, as a proportion of total AEU, ranged from less than 10% to more than 80% (Question I.1).
- Differences in funding sources: at least two countries reported significant transfers from donor countries (Question II.3). One country reported that user fees account for an important portion of funds. Differences in funding sources most likely result in different challenges as well as differences in opportunities.

Clearly, it is only to be expected that there are wide variations not just in the problems faced by the OVS but also in ways of solving problems. Smaller OVS organisations are unlikely to rely on costly specialist-based CBA; moreover, in these organisations much of the strategy is devised via face-to-face encounters and other informal procedures. Not only do the larger OVS have access to additional financial resources. Their larger size allows them to tap into highly specialised human resources. Thus, additional ‘division of labour’ takes place, allowing considerably more

sophisticated CBA. Also, in larger OVS, considerably more effort goes into improving organisational performance via standardisation of procedures.

Table 1 shows the budget ratios of selected countries in the region. The data for this table are derived from answers to the question on the total operating budget allocated to the OVS (Question II.2; answers related to the most recent 12-month period and were expressed in Euros). Selected budget ratios were then calculated. An analysis of the results suggests significant variation in OVS budgets, expressed per AEU, per population, etc. Countries included in the top half of the table are those with a per-capita income of EUR 11 000 or less. The bottom half of the table includes countries with a per-capita income higher than EUR 11 000 ('PPP' or 'purchasing power parity' figures [i.e. corrected for domestic prices] are used). The minimum, maximum and median values of several budget ratios are reported.

As can be seen, there is significant variability in all of these indicators: for the group of countries with a per-capita income lower than EUR 11 000, the OVS budget per capita varies by a factor of 50, the budget per veterinarian by a factor of 30, and the budget per AEU by a factor of 540. In turn, animal-equivalents per veterinarian vary by a factor of 94. Variability in OVS budget ratios is still high if the calculations are made not by comparing maximum with minimum values, but by comparing the maximum with the median values of the various budget ratios. Furthermore, these variations are still large even among countries within the higher income group.

Caution is needed when interpreting these findings as the available data do not provide evidence of the level of service produced by the OVS. However, the available evidence seems to suggest that—if these results can be extrapolated on a worldwide level—enormous inter-country differences exist in the resources allocated to animal health. Diseases, however, do not take into account borders. Thus, it may well be that improvement in global animal health status is thwarted by the difficulties that some countries have in mobilising the necessary resources. In consequence, efforts should be made to understand the reasons for these inter-country differences, as well as the resulting implications for efforts aimed at improving animal health status. A database listing for every country the resources used for animal health (classified in 6-10 categories) would be a useful addition to our knowledge on the subject. The results of the questionnaire also allow other issues to be addressed. In particular, Delegates were asked the following question:

Question III.1 asked the following: "Suppose the *current annual operating budget* of the VS was *increased by 30%*. Please indicate what portion (in percentage) of this budget increase should in your opinion be allocated to". This was followed by a list of eight different uses of funds, such as increasing personnel salaries, hiring extra personnel, increasing funds for mobility and purchase of new equipment. When it comes to *increasing salaries*, it should be borne in mind that salaries and working conditions are clearly an important factor in human productivity and thus can influence the benefits of OVS action. The responses varied from 0 to 30%. Figure 4 reports the results (a log scale for income was used in order to facilitate comparison between countries with very different income levels). As shown, the portion of the hypothetical budget increase allocated to increasing salaries increases with the per-capita income of the country: in the less developed economies, the income gap between private and public employment may be lower than in economies with a higher income level¹. This points to the following:

- Priorities for allocating a hypothetical budget increase vary substantially among countries. The priorities reported here result from a rough-and-ready evaluation of returns on resources in alternative uses selected by survey respondents. A rough CBA has been carried out.
- A substantial 'disequilibrium' may exist in some countries (but not in others) in terms of professional prospects between those working in the OVS and those in alternative occupations. This may result in considerable difficulties in retaining qualified personnel. Or, if personnel are retained, organisational performance is likely to suffer because of low morale. In contrast, in the lower income countries of the sample, OVS priorities may be to increase staffing and investment in technology.

¹ Only countries with a per-capita income of EUR 11 000 or lower are included in the figure.

Figure 5 shows additional results related to budget allocation priorities in the countries of the sample. Here, answers to Question III.1 (How to allocate a 30% budget increase) are reported, dividing uses of funds into two groups: (i) operating activities and (ii) capital investment (durables). The figure shows how the allocation to these two categories of 'uses of funds' changes with changing per-capita income. *A pattern seems to emerge from the data:* as per-capita income increases, allocation of additional funds to operating expenditure falls and allocation to investment increases. For the lower income countries, some 80% of the additional budget would be allocated to operating expenditure (the remaining 20% to investment). In contrast, for the higher income countries, operating expenses would claim 60% of the additional budget, and investments the remaining 40%. Note that in higher income countries in particular, additional investments could well result in OVS activities taking on an increasingly 'capital intensive' character. This use of capital would result in additional computers, laboratory equipment, monitoring devices, etc. Changes in capital intensity result in a corresponding shift in educational and training requirements of OVS personnel: as has frequently been pointed out, capital inputs (computers, laboratories, etc.) are complementary with 'human skill' inputs: i.e. productivity of either one is positively associated with the availability of the other. Figures 4 and 5 analysed jointly seem to bear this out: as per-capita income increases, an additional portion of a hypothetical budget increase is allocated to capital investments. But this calls for improved incentives in order to attract and retain qualified personnel.

Of course, the point made here is not to take these results at face value, but instead to use them as motivation for the need, when undertaking CBA, to analyse organisations in all their complexity. Indeed, relatively small changes in incentives, information flows and controls may well result in relatively substantive differences in performance. The point also raised is that, to reduce the risk of error, further efforts are needed to try to understand the general patterns underlying the various economic and organisational aspects of OVS activity. *Single-country case studies are necessary but are not enough.* In particular, inter-country comparisons need to be made regarding the impact on OVS resources and budgets of factors such as the cost of professional services and capital inputs, the characteristics of the geography of the area in which the OVS operates as well as the characteristics of the prevalent production activities (e.g. poultry vs cattle) and the human population in the country.

An important aspect of OVS 'strategy' concerns priorities for action. Question III.2 asked the following: "In a scale of 1–5 (1=lowest, 5=highest) please indicate the *degree of priority* of the following actions aimed at improving the overall effectiveness of the VS of your country". Actions were classified in five basic groups: (i) improved information; (ii) improved linkages; (iii) improved organisational practices; (iv) professional development/incentives; and (v) strategic planning. Table 2 reports the results. Countries are classified according to whether per-capita income is less or more than EUR 11 000. An additional column is included for the two countries with lowest per-capita income (less than EUR 700). The table highlights the one or more actions that achieved the highest score.

Two results deserve to be singled out. First, independent of income levels, the actions "Disease and risk trends" and "Resource allocation and planning" are included in the two most important actions. This points to the importance of *forward looking* activities in the OVS. Secondly, the OVS of the countries with the lowest income place greater emphasis on improved communications of the OVS with producer organisations and policy makers. Finally, as one might expect, these countries also place a higher number of actions in the "highest" level of priority.

5. Conclusion: strategic planning and CBA

Consequently, what does CBA have to offer for strategic planning undertaken by the OVS?

The expression 'strategic planning' brings to mind concepts such as 'forward looking', 'important', 'long range', 'partly irreversible' (or at least 'difficult to modify') and 'contingent on future events'. Also, it suggests *a general framework into which other actions can be integrated*. Strategic thinking in organisations has always been considered important; however, as pointed out by Mintzberg [8], 'strategy' can take the form of top-down plans carefully laid out in advance or, in contrast, it can include the 'emergent' or 'adaptive' response of the organisation to changing demands and opportunities. Veterinary Services will use a mix of both approaches.

A CBA ‘mindset’ may be more important for strategy formulation than specific CBA quantitative results *per se*. The results (e.g. rates of return in specific projects, or predicted impacts of organisational change) frequently depend crucially on the choice of that assumption. The ‘final number’ then may be in some cases less relevant than the process by which the number was arrived at.

It is highly improbable that every significant OVS action will be preceded by a careful CBA evaluation —‘paralysis by analysis’ could well result. This is done only in a few countries, and even then only for projects with impacts or costs above a certain threshold. However, substantial benefits will probably result from increasing interdisciplinary collaboration in data-gathering and analysis, as well as discussion, for a wide variety of efforts related to economic and organisational evaluation of OVS activities. These efforts will lead to a sounder evaluation of resource allocation in OVS, and thus improved strategic planning. In many cases, this planning will not reside in the procedures manual of the organisation, but will instead be embedded in the behavioural patterns of the organisation’s members.

Strategic planning in the OVS will involve activities of very different types. Some are routine procedures, and as such need to be designed with the objective of reducing costs consistent with a certain service delivery standard. Standardisation of procedures and control are key issues to focus on. Other activities require participation of increasingly trained professionals and scientists. Here, the quality of the professionals, and the environment in which they work are crucial determinants of results. Yet other activities require adaptation to new and sometimes confusing scenarios. Here, professional quality is also important, but additional factors enter the picture. A premium is put on increasing teamwork and information exchange, as well as flexibility in setting up temporary task forces to deal with new challenges that suddenly arise. In summary, strategic adaptation will require a multi-pronged approach.

Improving prevention, early detection and response to animal-related diseases does of course require an approach based on solid veterinary, epidemiological and human health science. The PVS Evaluation and Gap Analysis tools developed by the OIE provide a unified approach for using these tools in real-world settings. These tools also allow progress to be made in addressing organisational and resource allocation problems faced by the Veterinary Services and especially the Veterinary Authority.

Countries in the Middle East region face challenges for which organisational and economic analysis can offer solutions. For some, the issue is how to operate OVS severely constrained by financial resources, in an environment where severe poverty is prevalent. Rough-and-ready solutions and adaptation is of paramount importance. Other OVS face a very different set of problems: organisations with thousands of employees and ‘mature’ protocols and procedures need to think through how to design work and decision flows so as to improve coordination. Provision of adequate incentives, improvement of information flows and controls are key issues related to efficiency in these complex organisations.

Figure 1.– Brazil: FMD outbreaks and beef exports

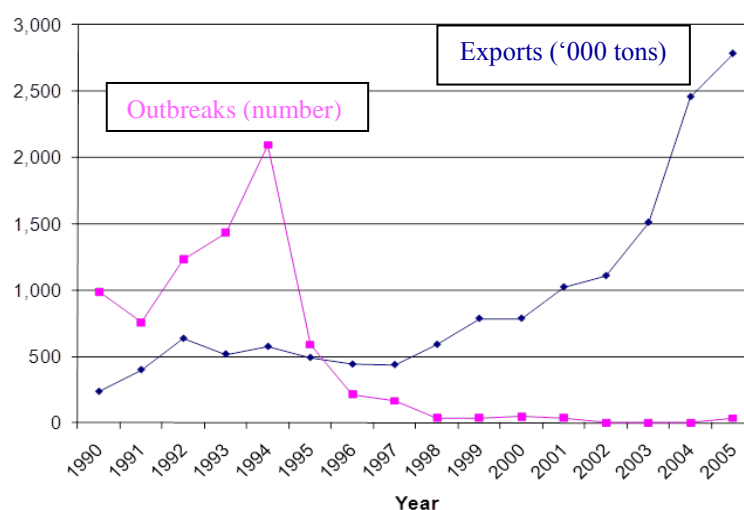


Figure 2.– OVS budget – Sample of Latin American countries

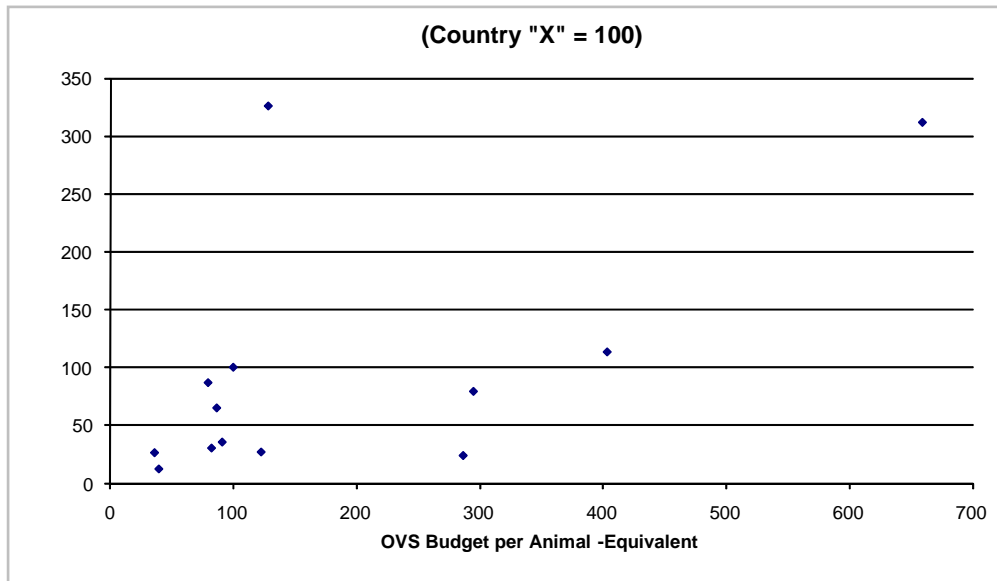


Figure 3.– Impact of upgrading OVS

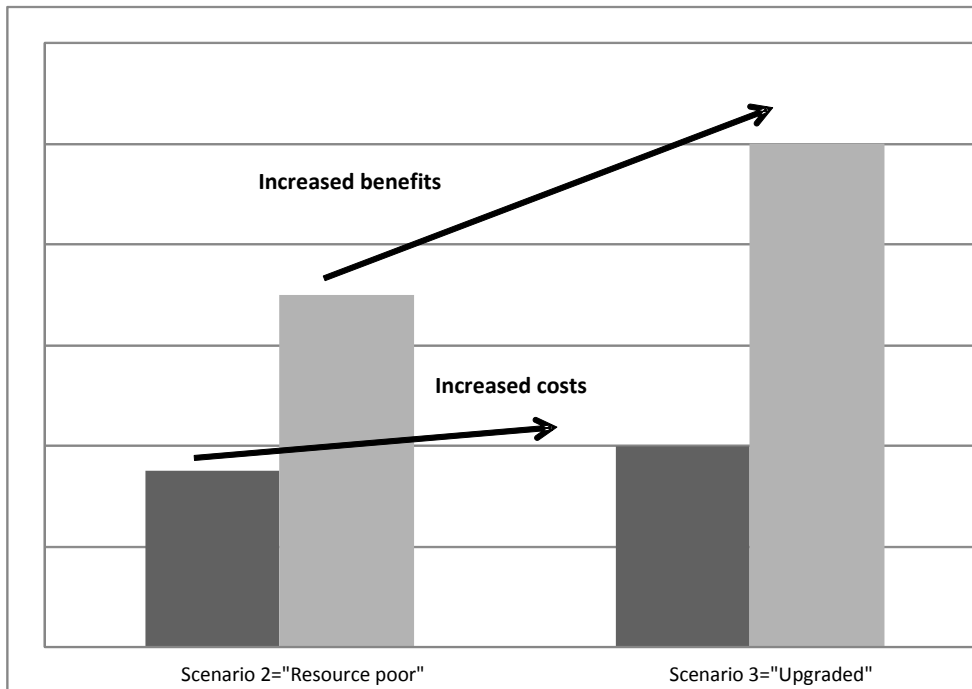


Figure 4.– Allocation of a hypothetical 30% budget increase: percentage to higher salaries (Middle East Region)

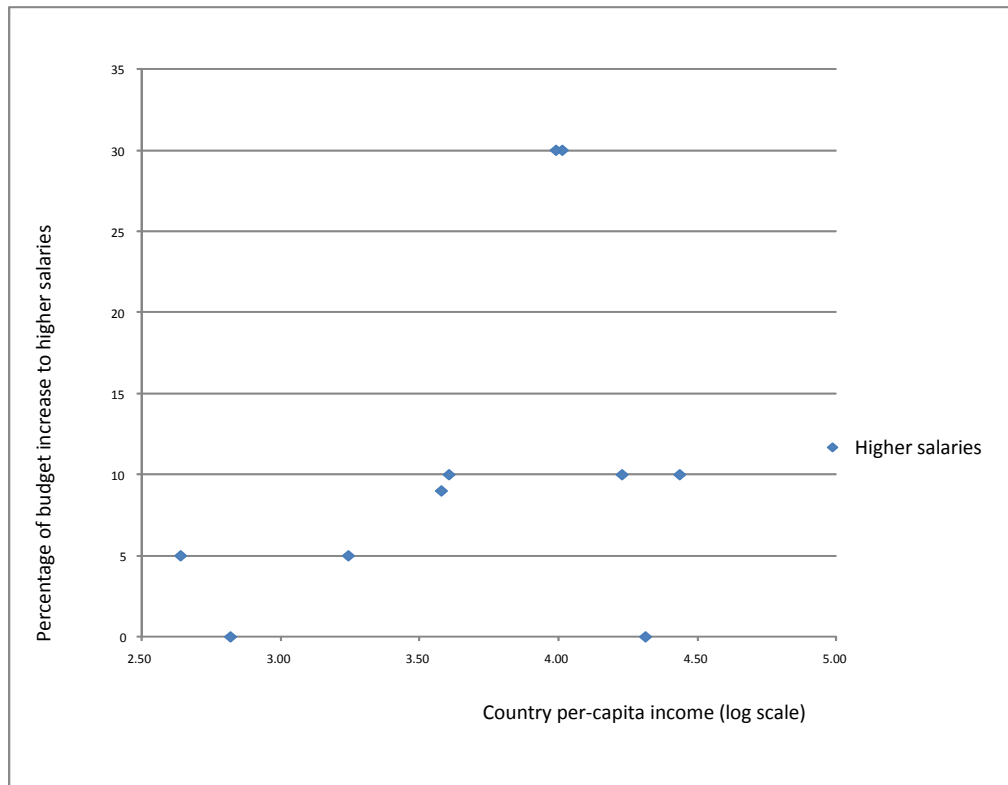


Figure 5.– Allocation of a 30% budget increase (Operating vs Investment) (Middle East Region)

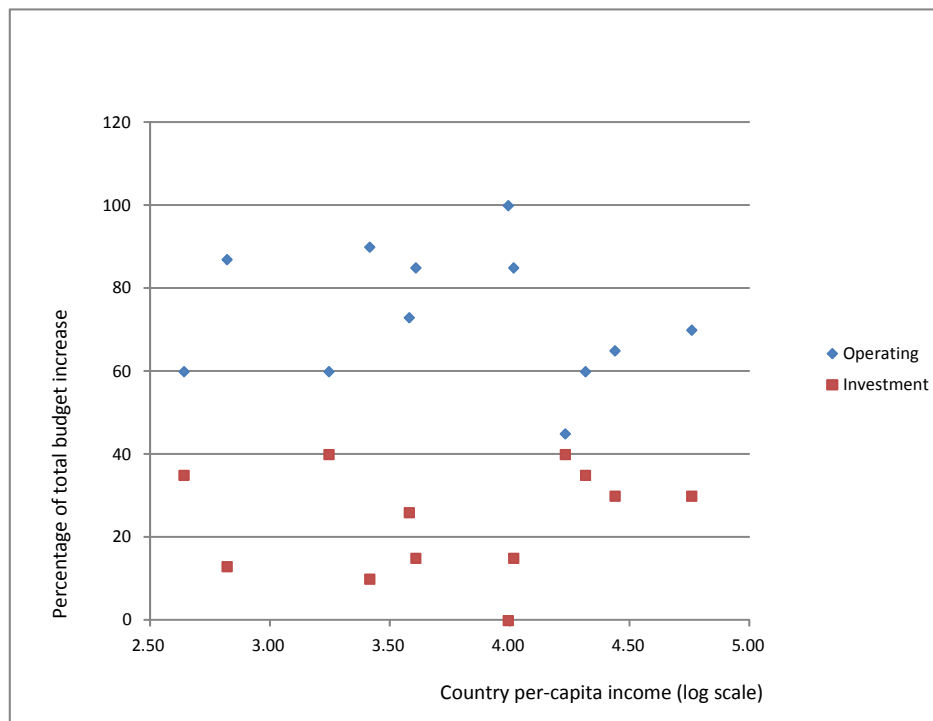


Table 1. "Budget ratios" of selected OVS - Middle Eastern Region

Countries with per-capita income ≤ € 11.000		Minimum	Maximum	Median	Max/Min
AE/Vet	AE/vet	3106	292609	11426	94
Budget/Pop	€/capita	0.04	2.07	0.39	54
Budget/Vet	€/vet	2584	78947	9390	31
Budget/AE	€/AE	0.02	13.33	0.62	542
Budget/Producti	€/Ton meat equivalent	0.5	247.9	7.2	500
Budget/Per Cap	€/€	290	21517	2972	74
Countries with per-capita income > € 11.000		Minimum	Maximum	Median	Max/Min
AE/Vet	AE/vet	4755	38414	17740	8
Budget/Pop	€/capita	0.64	10.70	4.88	17
Budget/Vet	€/vet	57213	110221	88734	2
Budget/AE	€/AE	1.49	20.77	11.08	14
Budget/Producti	€/Ton meat equivalent	15.98	129.40	69.03	8
Budget/Per Cap	€/€	417	1027	622	2

Note: PCI according to PPP measure, IMF figures converted to Euros

Data source: Survey results, countries belonging to the OIR Regional Commission for the Middle East (countries included = 12)

Table 2: Priority of alternative OVS actions

	Per-capita income level (Euros)		
	< 1000 (2 lowest)	< 11000	> 11000
Improved information on			
a. Disease impacts and cost on animal production	3.5	3.6	4.3
b. Disease and food safety issues impact on human health	4.0	4.6	4.0
c. New passive and active surveillance methods	4.5	4.5	3.7
d. New disease controls methods	4.5	4.3	4.0
e. Disease controls methods	4.5	4.1	4.0
f. Better on-farm animal health practices	2.5	3.6	4.3
g. Disease and food safety hazards in the food chain	4.0	3.9	4.0
AVERAGE	3.9	4.1	4.0
Improved linkages with			
a. Ministerial policy makers	5.0	4.4	3.7
b. Legislators	4.5	3.8	4.7
c. Producer organizations	4.5	3.6	4.0
d. Consumers	3.5	3.9	3.3
e. Private veterinarians	4.0	3.9	3.3
AVERAGE	4.3	3.9	3.8
Improved organizational practices			
a. Personal management	4.0	4.0	4.3
b. Data management	5.0	4.3	4.3
c. Physical resource management	3.5	3.4	3.0
d. Communication	4.5	3.9	3.3
e. Compensation fund for epizootics	4.0	3.6	3.7
AVERAGE	4.2	3.8	3.7
Professional development/incentives			
a. Field veterinarian incentives and career development opportunities	5.0	3.6	3.7
b. Field veterinarian training	4.0	4.1	3.7
c. Incentives and career development opprtunities for managers	4.0	3.6	4.0
d. Training for managers	3.5	3.8	4.0
AVERAGE	4.1	3.8	3.8
Strategic planning: improved information on			
a. Human and animal demographic trends	4.0	3.8	3.7
b. Food production trends	3.5	3.8	3.3
c. Food consumption, imports/exports, and trade trends	4.0	4.3	3.7
d. Disease and risks trends	5.0	4.6	4.3
e. Resource allocation planning and Cost/Benefit analysis of programs	4.5	4.5	4.7
AVERAGE	4.2	4.2	3.9

Data source: Survey results, countries belonging to the OIR Regional Commission for the Middle East (countries included = 12)

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