Errors in Government - Decision Influencing - Documents, their Causes and Remedies

J. Diandas

Errors in decision influencing documents can no doubt result in poor decisions and also cause embarassment to and mislead those who rely on them. This could happen even at the highest levels of the Government decision making process as revealed here. In this paper, originally presented at the annual sessions of the Sri Lanka Association for the Advancement of Science in December 1982, John Diandas, a chartered accountant by profession and keen student of the transport and energy sectors, conjectures why this happens and considers some remedies. His main conclusion is that there ought to be more awareness of the fallbility of decision-influencing reports and other documents and a greater recognition of the need for verifying them.

INTRODUCTION

Government is an amorphous conglomerate body of people, and it is sometimes difficult to identify who the real decision makers are. Proposals are originated at various levels in various places. Whether they become decisions or not depends on a multiciplicity of processes and procedures.

Some decision-influencing papers contain serious errors that have or could have caused or influenced poor decisions.

The purpose of this paper is to conjecture why this happens, and consider some remedies. In order to do this some examples of errors in decision-influencing documents are described.

METHODOLOGIES OF GOVERNMENT DECISION-MAKING

Among the motivating factors for decisions are inertia i.e. do the same as before; bright ideas; open or covert aims of interest groups; serious study of alternatives; component needs of overall plans or perspectives; patent or apparent failures in existing programs; and crises.

Among the process and procedures leading to decisions are discussion and debate; interest and media pressure; position papers of varying formality and length; and gossip, anecdote, and hearsay

Among the seats of substantial decisions are key interest groups; key administrators, minister, committee of development secretaries; cabinet; and President.

Sometimes a position paper, cabinet paper, memorandum, feasibility study, statement of alternatives, sessional paper, call it what you will, is the real basis for decision; and sometimes it merely gives support for a project or program, or policy or policy reversal already decided upon. In this case, if the paper is adverse to the real proposal, it may be shelved or contraverted by a more amenable paper.

However, written evaluations do play an apparently important role, so the question arises of who writes them, on what basis of facts and forecasts, with what degree of understanding of the implications, and so on. Some papers are very competent. Others patently less so. Even competent ones sometimes incorporate errors of fact or computation. Yet unlike historical financial or accounting statements hardly any such papers are put to the test of formal independent verification.

EXAMPLES OF CARELESS EVALUATION

A 1979 Central Bank Report on energy[1] gives a table showing very clearly that petroleum products grew to 90 per cent of total commercial energy consumption (excluding firewood) in the late 70s, and that the relative share of (hydro) electricity remained below 10 per cent.

The next paragraph of the report was a lengthy caveat approving Sankar and Fernando to the effect that 70 per cent of the heat inherent in oil or coal is lost in thermal conversion to electricity or motive power, and that when this is accounted for the relative share of (hydro) electricity goes upto 30 per cent. This is illustrated in Figure 1.

A Minister used this Central Bank report as basis for an address to an important seminar[3]. He cited the whole table and the averment that "over 90 per cent of energy consumption (excluding firewood) is met from petroleum products, and electricity forms less than 10 per cent", but did not observe, or was not guided to observe, the caveat ding Central Bank paragraph.

The Minister's speech was reported in the press, with emphasis upon "Electricity's 10%, and a condensed version of his whole speech was published in a Sunday newspaper shortly thereafter.

Obviously the Minister's mind was impressed by the small (10%) contribution by hydro electricity, and many of his listerners and readers would have been similarly impressed. The question here is not that a particular decision was about to be made or influenced by this misinformation, but that a whole series of attitudes towards the energy problem and its solution may have pervaded political and cabinet thinking until some opportunity arose to dispel the mis-impression.

Obviously if hydro-electricity produces only 10% of commercial energy, then even doubling hydro output by means of large investments would only raise hydro's share to 20% and therefore not have much impact on the big problem.

1. Report submitted to the Energy Committee by the Study Committee headed by Dr K S E Jayatilleke, Central Bank of Ceylon undated probably 1979.

2. Towards an Energy policy in Sri Lanka. T L Sankar & G B A Fernando SLDP Apr.78

3 Impact of High Oil Prices and the Economy. Hon. L Athulathmudali in "Energy in Sri Lanka" SLAAS PROCEEDINGS Jan 80 ed M Munasinghe 1981.

4. Effects of the Oil Crisis, excerpts from L Athulathmudali Sunday Observer 20 Jan & 9 Feb 80

On the other hand if hydro share is 30 per cent, then doubling could increase its share to 60% and perhaps save over one third of oil imports.

One must not blame Minister; for taking economists' paragraphs at their face value without searching for later caveats. Yet the wrong impression created about hydro's small share might well have played its part in a later Cabinet "commitment" (since de-committed) to nuclear power, itself largely based on incomplete information.

Oil impact on external trade and balance of payments

The same Minister's address[5] (which was in many ways an excellent treatise), and the excerpts in the Sunday newspaper[4] cited Central Bank data to show that 1976 oil imports abstracted 24% of total value of exports, a very serious position indicating that one quarter of exports goes to sustain usage of energy in the country.

However, whereas oil imports in 1976 amounted to Rs Mn 1,219, re-exports realised Rs Mn 514, so the net energy cost was only Rs Mn 705. On this basis oil usage cost only 16% of exports. If all export earnings are included(i.e. the "Invisibles" such as tourist earnings and remittances from West Asia) the percentage would be even lower.

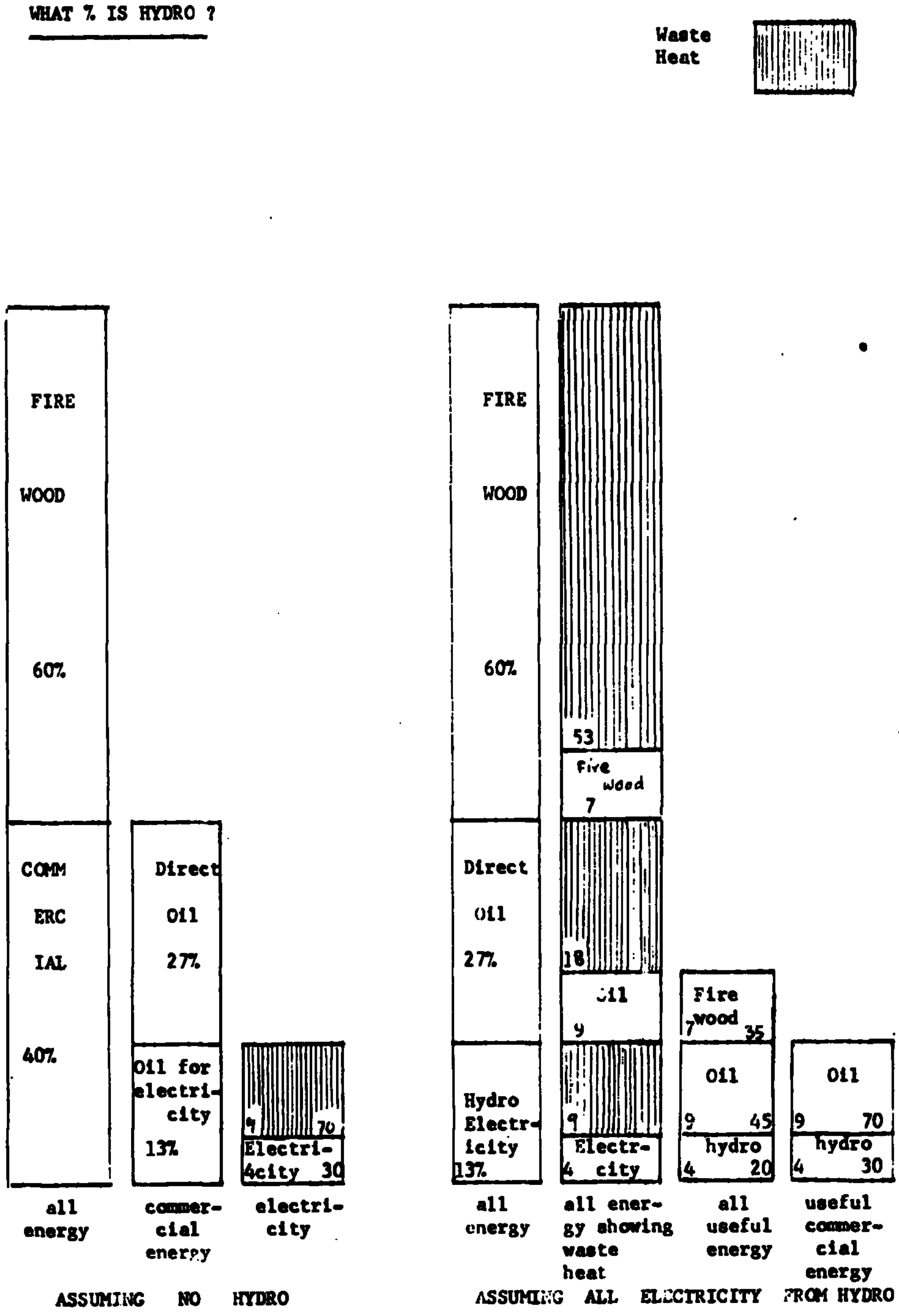
The same error of perception continues to this day. Many people believe that 1981 oil imports were 48% of exports, yet with adjustment for oil re-exports and invisible exports the percentage is about 27%.

Not that such lower figures should have been or should be a basis for complacency, yet clearly wrong perspectives could arise in the minds of many decision-makers influenced by the higher figures of 24% in 1976 and 48% in 1981.

FIG I

LANKA ENERGY SOURCES

WHAT % IS HYDRO ?



Cost of electricity

Somewhat earlier in energy history, a DGEU (Department of Government Electricitu Undertakings) annual report which received press publicity nearly[6] 20 years ago gave the cost of electricity at 9.88 cents per kwh.

However, an analysis of the department's accounts from which the cost figure was derived was published in a professional journal[7] This analysis made several adjustments for capital expenses, amortisation, interest etc and concluded

5. Petroleum Statistics of Sri Lanka 1970–1980. Planning and Economic Section of CPC (Ceylon Petroleum Corporation) Sep 81

6. Administration Report of DGEU (Department of Government Electrical Undertakings) for 1963/64.

that the real delivered cost for different modes of generation was 03.79 cts/kwh hydro, 04.85 cts/kwh Gal Oya purchases, and 10.63 cts/kwh thermal, with an average of 05.24 cts/kwh.

Thus not only was the overall cost shown to be a little over half the reported figure, but the disaggregation showed a cost for hydro (then and still the main source of generation) at just over one third of the cost reported.

In this case, too, specific decisions may or may not have been influenced by an inflated perception of cost, yet very probably some decisions about pricing electricity, some prospects about hydro investments, and some proposals to electrify tea factories or the railway, may have been adversely swayed by this mis-impression.

Today there are better studies and papers (though less official publications) about electricity cost. Yet there is still a danger that individual project proposals take into account postulated average costs and prices rather than the marginal costs that ought to be applied to particular cases.

Prospects for a coal power station

Another example is a consultant's report[8] discussing the logistics of generating electricity in a large (1080 MW) coal burning thermal power station.

In a set of calculations he estimates the need for coal ships of 60,000 tons capacity as growing from 3 ships yearly at stage 1 (60 MW) to 36 ships at the final stage (1080 MW).

But assuming no change in load factor, a simple multiplication by 18 (divide 1080 by 60) reveals a need for 54 ships, which is 50% more than proposed, and also changes other logistical needs such as handling a ship every 7 days instead of 10.

In this case it appears that one typing error at a draft stage of the report has led to an aggregation error in the next draft, and so on. It is easy but unwise to laugh at an engineer's error, because we all make such errors unless we devise cross-cheks in our tabulations, or plot per unit comparisions or get an independent person to check our working.

I recall a textile technologist on a really big project working all night in his hotel room to reconcile his figures with that of the financial consultant, and finally admitting a million mistyped as a crore, leading, as he characterised it to, well, just "an error of a nought".

In the coal study, the report was sent after its delivery to the power that be, to a reviewer in a different profession for opinion, and one hopes that corrections were sent early enough to the coal-dock designing consultants to plan the appropriate coal unloading capacities.

Electricity demand forecasts

In yet another look at electricity position papers, a World Bank/UNDP draft Report[9] forecasts electricity annual demand growth at various sub-sectoral growth rates ranging from 4% to 24% based on a 1981 estimate of 2,112 gwh generation yielding 1,795 gwh sales. The forecast for 1980 was for sales 4,342 gwh needing generation of 5,108 gwh.

In turn this forecast of demand was used, with and without conservation measures, to postulate power station investment programs.

The 1981 estimate and the forecast were no doubt taken from a CEB forecast made in August 1981. Yet the World Bank /UNDP Draft Report was issued in February 1982, by which time it was easily ascertainable that the actual sales for 1981 were only 1,492 gwh which is 17% less than the August estimate, although generation at 1,872 gwh was only 11% less, system losses having leapt up to 20% in 1981. Even if the Bank's mission had to write up their report in October and November 1981, there was ample opportunity to ascertain that the sales for 1981 would fall well short of the CEB prediction.

However that may be, at least one analyst, to the knowledge of this writer, advised the Bank's team of the error during the discussion period. Yet the Final Report[10] issued in May 1982, long after the end of 1981, contains the same figures in the same tables, used for the same discussion of the same projection of need for thermal power stations, and of the oil and coal needed to fuel them.

Now this report, carrying its World Bank impress, will not disturb the Electricity Board who know their own figures well enough, but it can influence analysts, advisers and others in other ministries, and their attitudes towards, coal, electricity, hydro-electricity etc.

If one applied to the 1981 actual sales the growth rates year by year as in the report (although these ought perhaps to be lowered or otherwise adjusted in the light of 1981 actuals) and the same estimate of 15% system losses, then the electrical energy required in 1990 would be only 4,235 gwh as against 5,108 in the report's "base case", and 4,023 against 4,853 in the "conservation case".

The energy requirements in the World Bank /UNDP Report are tabulated against hydro capacity to give deficiencies of 1,574 gwh and 1,323 gwh in the two cases, which deficiencies would be only 701 and 493 respectively based on 1981 actual sales.

The deficiencies are used in the Report to display the need for 80 MW diesel plants and 120 MW coal plants by 1990; and the fuel need would be

7. What is the True Cost of Electricity. J Diandas The Accountancy Journal Jan 66.

8. Guidelines for Planning the Ceylon Electricity Board's Power Stations beyond Randenigala in 1987. E C Fernando Feb 82.

9. Sri Lanka: Issues and Options in the Energy Sector. Ahmed et al World Bank/UNDP Feb 82

10. Sri Lanka: Issues and Options in the Energy Sector. Ahmed et al World Bank/UNDP May 82.

300,000 tonnes coal and 246,000 tonnes oil the latter reducing to 169,000 tonnes oil in the conservation case. But with the reduced computation of gwh demand there would be no oil need in either "case" (and hence no need for the new diesel plant) and coal would reduce to 286,000 tonnes and 201,000 tonnes in the two "cases".

Interestingly a locally developed report[11] issued in early March 1981 for the ADB (which the World Bank /UNDP Report mentioned as "a good overview and description of the sector") takes in an earlier February 1981 CEB forecast giving a much higher 1990 need for 5,722 gwh, but it very wisely describes this as 'tentative'. The World Bank/UNDP team should either have used the same term for the August 1981 CEB forecast, or as behoved them in February 1982, should have ascertained the actual 1981 figures.

Now the World Bank/UNDP Final Report, which is more attractively printed and bound than the ADB one, is, as said earlier, not likely to bother the CEB people(who know their own figures) unduly. They may in fact use it to demand investment funds ahead of need as a hedge against unpopular power cuts in 1990 or so. Even so is it correct for other analysts, advisers etc in other ministries or financing institutions to be swayed by figures so significantly deviant from reality or by or by poorly based forecasts.

Using hindsight not available to the World Bank team even in May 82, it is interesting to note that 1982 actual electricity generation, which was unrestricted by power cuts based on supply constraints, will be only 2,050 gwh, somewhat less than 2112 gwh adopted by the World Bank team for 1981, and this despite conjectures of growth rates of the order of 25%.

Petroleum product data

The Petroleum Corporation has recently and commendably started publishing an annual statistical abstract. The first covering the period 1970–1980. The second issue, due soon, will take the figure forward to 1981.

The first issue[8] on its first page, sets out sales, cost, profit and volume in a table of overall performance which also includes unit revenue per tonne and cost per tonne. Typically for 1980 the revenue per tonne is given at Rs Mn 4.9 and the cost Rs Mn 4.8. It should be clear to most readers of this publication that the figures should be Rs 4,900 and Rs 4,800 per tonne.

The danger here is not so much that immediate users of the table would assume that oil costs a thousand times as much as it does ("a matter of 3 noughts") but that researchers using this report as a source would perpetuate the error and extend it in their own findings.

This writer has seen several world-wide publications with similar stray errors used to produce spurious findings by authors seated in such eminent centres as the Brookings Institution[12] with at least one nought out, if not three.

Likewise there is a UNDP Report[13] with many criticised conclusions the criticisms published in New Scientist[14] and elsewhere being fortified by at least one mistaken use of some earlier research report's error.

Vehicle population of Sri Lanka

Moving to the world of transport, a recent Department of Census Bulletin publication[15] asserts as inter alia as follows (emphasis mine):

"The incessant demand for Motor Vehicle Statistics from diverse sources in recent years reflects, at least partly an increasing awareness of the need for improving the National Transport system to serve the requirements of a rapidly expanding economy. **This Publication which up-dates the available information** will in some measure satisfy this demand. The transportation of both consumer goods and the finished products of local industry has a profound effect on the life of the people. **Statistics of the National Lorry Transport Fleet are therefore presented herein.** Similarly, all passenger transport vehicles .... **It is hoped that this information will be of considerable use** in the planning, implementation and evaluation of programmes for the development of goods and passenger transport services in the country. The period prior to 1977, was characterised by a severe paucity in the imports of transport equipment. With the liberalization of imports towards the end of 1977, there has been an unprecedented increase in the importation of motor vehicles, spare parts and accessories. **The material furnished in this publication will, therefore, be useful** in the evaluation of the impact of that policy on economic growth in this field."

The Bulletin lists in its first table what is described as "Total vehicle population as at 31.12.81." Thirteen categories of vehicles are given and the total is 337,382 vehicles. This figure is in fact the Registrar of Motor Vehicles' total for "motor vehicles on the registers as at 31.12.80." As at the later date 31.12.81 the Registrar's figure is 374,000.

Leaving aside the matter of the year to which it attaches, the difference in description "total vehicle population" and "Total vehicles on registers" is vital because a publication of the Ministry of Finance and Planning reproduces, from RMV records, the same list totalling 337,382 to which it subjoins the following note —

11. Sri Lanka Energy Sector Study. G B A Fernando, D Chandrasekera, D M Jayasekera, and B.P Sepalage for ADB Regional Energy Survey Mar 81.

12. Automobiles and Cities: Strategies for Developing Countries. Wilfred Owen, Brookings Institution for OECD Aug 73, relying on a graph distorted by oversight in a paper by Richard Rice in MIT's Technology Review Journal.

13. Review of the Impact of Production and use of Energy on the Environment and the Role of UNDP. (Known as the Usmani Report) unpublished 1975.

14. Nuclear Technocrat Tilts at Windmills. J Tinker in New Scientist 6 Nov 75

15. Bulletin on Motor Vehicle Statistics 1979. H Gunasinghe Department of Census and Statistics Mar 82

"the number of motor vehicles on the register is believed to be a significant overstatement of the number of vehicles which are active, as it is thought to include many vehicles which have been scrapped but not removed from the register. example SLCTB has approximately 7,500 buses in its fleet, but 15,000 still on register."

The discrepancy is measured by the fact that the number licensed in 1980 was only 221,827 vehicles.[17] The gravity of this discrepancy, which has persisted in the statistics over several years is illustrated in Fig 2 which is extracted from a recent Transport Sector Study.[18]

The only concession to this grave statistical problem in the Census Bulletin is a footnote (on the list mentioned earlier) against the 15,000 figure for CTB buses which reads as follows:

"CTB running fleet as at 31.12.80 -7531."

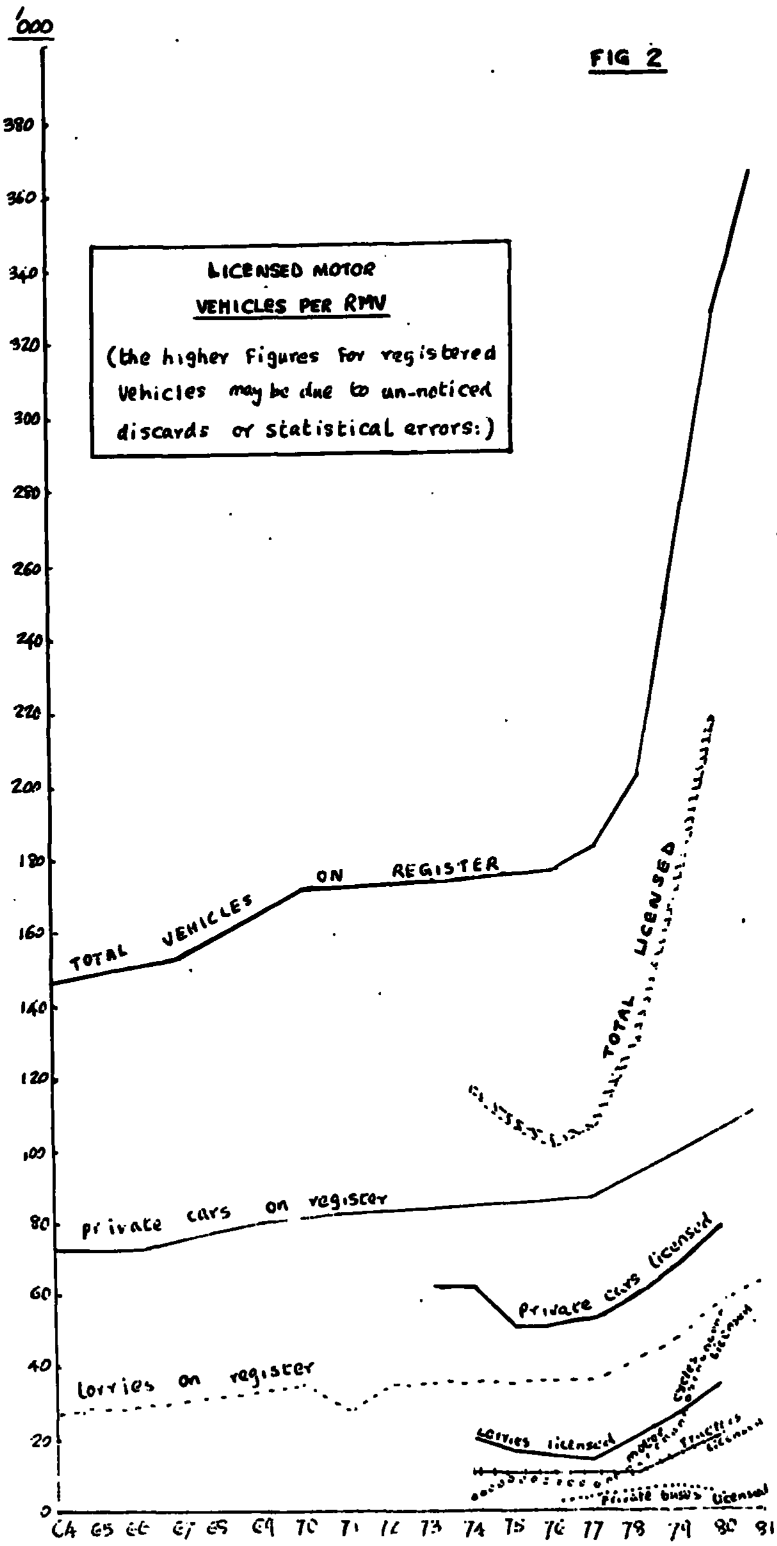
The rest of the Bulletin goes on to give very detailed analysis of "the motor vehicle population", and especially motor lorries as at 31.12.79. The total as at 31.12.79 is not given, but if one cares to add the totals analysed in tables, it comes to 167,503 lorries, light commercial vehicles and cars, which is close to the 31.12.79 RMV figures for similar vehicles "on the register", in respect of which the corresponding "licensed" figures are much lower at 109,000 odd.

The Census Bulletin tables break down lorries into age, year of registration, fuel used, fare, payload, series, ownership, horse-power etc.etc. But one has to question whether any of these analyses is "useful to the evaluation of the impact of policy on economic growth."

On the contrary, the analysis may positively mislead the users of this Bulletin.

Whether any unsuitable decisions are made in this case would largely depend on secondary analysis of the Bulletin by Ministry analysts or researchers.

FIG 2



Exports of Tea

The Ministry of Planning publication "Transport Statistics in Sri Lanka"[16] is a commendable recently launched annual issue, yet it too is not free of gross errors. In tabulating port cargo handling, it includes metric tonnes of tea loaded at figures ranging from 368,000 tonnes in 1974 to 420,000 tonnes in 1980. Anybody in this sector would know that production and export of tea ranges around 200,000 tons (200 Mn kg or 400 Mn lb) per annum; or about half the figures given in "Transport Statistics".

It is unlikely that decision-makers dealing with tea would be misled by this mistake, yet the figures go significantly into the make-up of total port "loading" and total "loadings plus unloadings", which can lead to mis-decisions in matters of transport capacities needed to bring goods into the port.

A recent publication of the ports Authority confirms the total figures for exports, but does not give the breakdown into commodities.

On the other hand a historical work on the Colombo Port[20] gives pre-war figures rising to 100,000 tons (220 M lb) of tea yearly, which is in the correct range.

This particular mistake is due to the Port's use of "freight tons" (1 ton tea = 1035 lb), which term is not narrated or defined in "Transport Statistics" or in "Port Statistics" from whence the figures were obtained.

Other examples

The above examples to some extent overlap the matters relevant to the Government reviewing process which should properly belong to the section of this paper on 'Examples of Careless Review'. However in Government as elsewhere there is no clear demarcation between reviewing past achievements and trends and deciding on future policies, programs and projects.

Other examples clearly within the arena of decision-making are those relating to the urea project, and the commitment to nuclear energy in the 1970s.

In the urea case, a failure to understand that one ton of naptha produces more than two tons of urea led to the proposal to cancel the project on the grounds that it would be more profitable to export naptha at a typical Rs.1,000 per ton then and import urea at the seemingly lesser cost of Rs.700 per ton.

In the case of nuclear energy it appears that the cabinet made a formal commitment to plan for a nuclear reactor as soon as it was satisfied on the material presented to it that the health and hazard risks involved were acceptable (whether this aspect was adequately considered is not in issue here) but that adequate material on costs and economic risks. After scientists held a panel-discussion on the subject[21] Government established a committee whose careful report[22] covered many aspects of the proposal and apparently persuaded government to loosen its commitment.

THE METHODOLOGIES OF GOVERNMENT REVIEWING

As with decision-making, performance review by government tends to be spasmodic rather than systematic, notwithstanding the existence for many years of a Ministry of Plan Implementation.

The Budget, which is government's spending program for the ensuing year rightly gets full parliamentary debate which is well reported in the press. But the draft or final national accounts for the immediate past year, the Central Bank annual reports, and the quarterly performance reports of the Ministry of Plan Implementation get little attention. Hence political review of the past often takes the form of subjective comments during the budget debate which ought to be addressing the future rather than the past.

On the opposite hand, past national and departmental accounts are subject to financial (if not performance) audit; but the Budget is not so subjected.

The formal mechanisms for Government review include:

1. Annual departmental administration reports (many of which have not been issued in recent years).
2. Annual accounts and reports of statutory corporations and other institutions (which are often issued very late).
3. Audit of annual acccounts (again often late, and in many cases the reports are too lengthy and arid to earn much serious reading by decision-makers or other.
4. Auditor-General's Annual Report (again a somewhat tedious document dealing often with long past matters)
5. COPE: Parliament's lively committee reviewing recent past performance of public enterprises. 6. P.A.C. - Parliament's Public Accounts Committee
7. Commissions of Inquiry and ad-hoc Committees.

There is little to compare with the British Parliament's special subject-wise Standing and Select Committees (these bodies continuously examine overall government functions with much penetration and insight, and publish their reports and proceedings) and with the US Congress' support bodies such as Congress Research Service, Congress Budget Office, Office of Technology Assessment etc. and the US Executive's overviewing organisations like Government Accounting Office, Office of Management and Budget etc.

Apart from the Government's formal reviewing methods set out in the para above, informal review processes include:

1. Exposure by interest-groups
2. Seminars run by do-gooder groups
3. Politically dedicated newspapers
4. Publications of scientific and research bodies
5. Investigative journalism
6. Ordinary journalism.

Both formal and informal review processes include prepared documents or writings, which, like project or program evaluation papers, have their quota of errors. These can and sometimes do distort government's view of the success or failure of existing programs.

16. Transport Statastics in Sri Lanka 1974–1980. National Planning Division, Ministry of Finance and Planning Jan 81
17. Registrar of Motor Vehicles. Personal verification.
18. Sri Lanka Transport Sector Study: a draft report. J. Diandas et al Friedrich Ebert Stiftung Aug 82.
19. Ports of Sri Lanka. Sri Lanka Ports Authority May 81
20. The Port of Colombo 1860 – 1939. K Dharmasena. Ministry of Higher Education Research Publications 1980
21. Should Sri Lanka go on nuclear ? Panel Discussion SLAAS section E –30 Aug 80
22. Report of the Committee of Inquiry on the proposal to use atomic energy for the generation of electric power in Sri Lanka. J A Gunawardena et al. National Science Council Apr 82

EXAMPLES OF CARELESS REVIEW

CTB's contribution to economic progress

A committee was established last year to inquire into the operation of privately owned buses and to advise government on methods of regulation or self-regulation which would improve their contribution to passenger transport needs.[23]

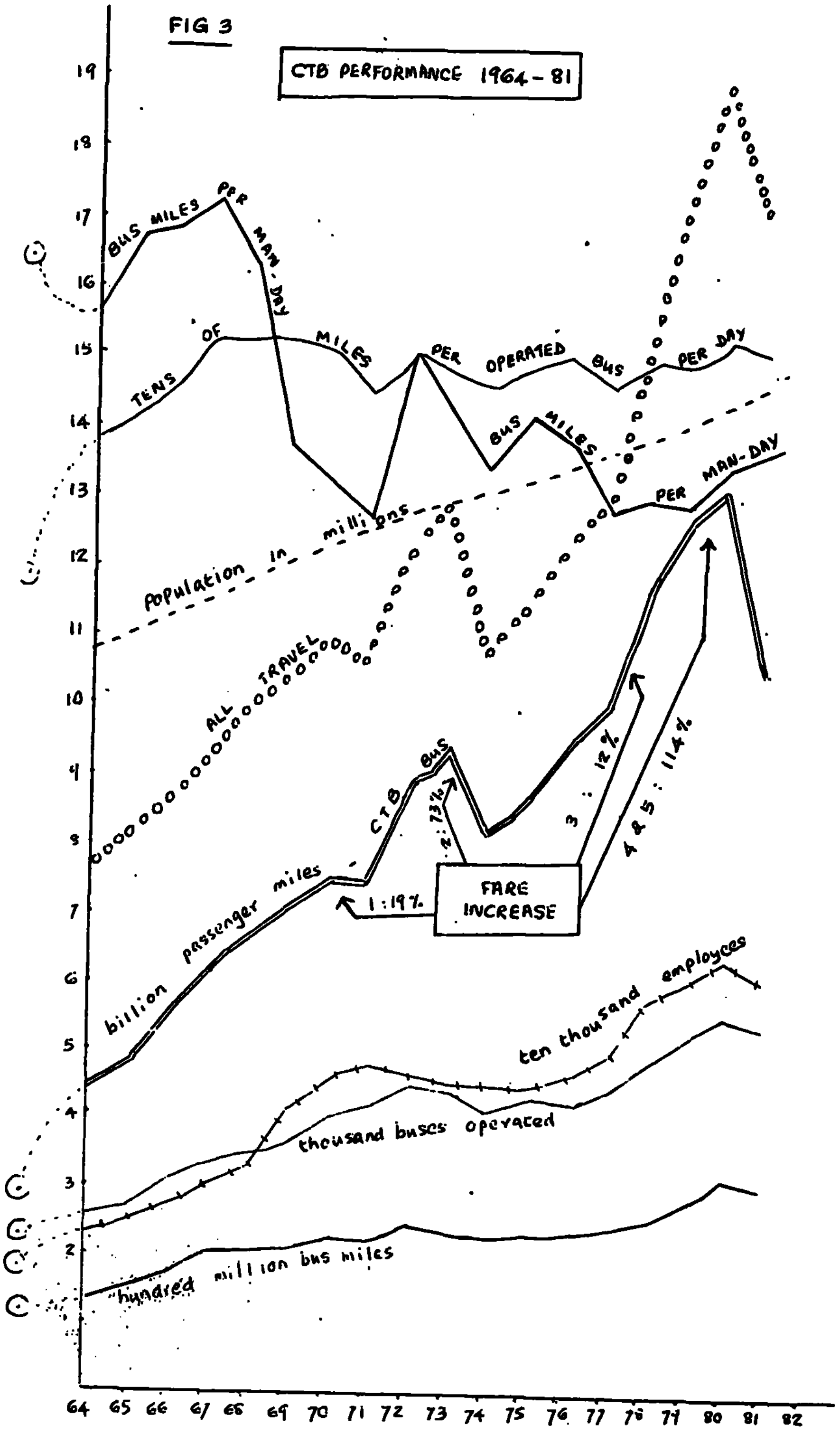
It was not part of this Committee's terms of reference to inquire into the past performance of the CTB (which acronym is used in this paper to represent the Ceylon Transport Board and its successor Central and Regional Boards), nor did it summon the CTB to obtain views on its own performance.

At the time of this writing, the Committee's report is not yet publicly available. But one chapter of it was disgorged in the Sunday press in June[24] according to which the report said inter alia (emphasis mine): :—

> "We have so far reached the conclusion that the bus transport service, as a state monopoly, has failed to play its role in the economic progress of the country .... That the Transport Board did not, could not and would perhaps not meet these needs is evident from ....."

The report cites a list of needs, and some numbers allegedly as evidence of the sweeping "did not, could, not, would not" finding, but the Committee apparently did not care to look at CTB performance indicators over the whole period 1964 to 1981. These are displayed in Fig 3 extracted from a recent Transport Sector Study[25]. Fig 3 shows inter alia that the principal output of the CTB increased from 4.5 billion passenger-miles in 1964 to 12.3 billion passenger-miles in 1980 i.e. it increased by a factor of 2.7. Thereafter there was a sharp 30% decline in 1981 influenced by a massive fare increase and by the surge of private buses "creaming off" a lot of traffic.

The massive increase in performance from 1964 to 1980 shows clearly that the CTB did play a big role in the economic progress of the country, and



did (could and would) go a long way to meet the needs. Why the CTB did not meet the whole of the needs, and whether it could have been more efficient in doing what it did, are fit subjects for inquiry. Without objectively sought answers to those questions, the Committee's sweeping, obiter, ex-parte findings are completely misleading.

That the Committee's recommendations on how private buses should be operated and regulated, appear to be well considered and expressed, perhaps even extemplary, does not mitigate the wrong done in its sweeping mis-assessment of the CTBs role. The Committee's position was mildly criticised elsewhere.[26]

Here the question at issue is whether government's whole policy formulation process has been set off track by mis-impression, or perhaps whether government's predilection for a given line of policy has been unjustifiably confirmed by the report's mis-conclusions on the CTB

As a postscript to this case, one noted that Bradman Weerakoon at a Population Conference, made a different evaluation of CTB and rail contribution to progress, from that of the Committee. But his view[26] got less publicity and presumably will carry less clout. In offering multiple explanations for Colombo's comparatively low rate of urban in-migration:

"Mr Weerakoon, also credited the country's good system of roads and public transport as a major factor in sparing the capital from growing unmanageable"[27]

Manpower productivity in bus transport

It has become fashionable for societies where 80% of the workforce is engaged in the tertiary (service) sector to send researchers abroad to examine the affairs and activities in the third world. One such recent area of research is the bus business where data is either lacking or inaccessible to visiting research teams.

The easiest dependable data to pick up for such teams is number of buses" and "number of employees". From the relationship between these two has been developed an indicator "employees per bus".

In countries where labour is expensive and difficult to get, this indicator may be a reasonably useful measure, even though it puts one item of input against another and where output (measured in passenger-miles) is difficult to attract to public transport. But in a third world country the essence of transport productivity will be the following:

bus-miles or passenger-miles per bus per day.

bus-miles or passenger-miles per employee per day

Despite this, the international researchers' limited approach (limited by their own background and by inability to get at relevant data) has spread to the World Bank, where an appraisal report[28] states:

"There is clear evidence that labour productivity is low; as an indicator, staffing levels stand at 10.4 employees per TTR (time table required bus), which compares with an average 8.7 for a sample of Indian companies".

Similar findings are found in several consultants reports although most of them to mention other aspects of staff productivity

In fact, of course, buses that work two or three shifts and work full Saturdays and Sundays need more crews and stand-by crews than those, as in Europe, which work mostly a five day week and mostly go to the depot before dark. Likewise buses, which run more miles per day and run with heavier loads of passengers need more maintenance, which in turn entails more depot and workshop staff. Finally companies which do their own tyre maintenance and retreading, build their own bodies, and perform other significant engineering work, need more staff than companies which just run buses. These are some of the reasons why employees per bus, which is a measure of input per input, is of little value. Yet following World Bank influence, many serious economists, let alone politicians and administrators, have been summing up their assessments of CTB performance in terms of this catchy input/input measure.

In consequence I believe several grave decisions have been taken under considerable influence of this misleading mode of review.

Causes of Error

The causes of error or factors at work which lead to them are multiple. They must include the following factors, one or more of which may be co-present:

1 – inadequate collection of data

2 – inadequate understanding of the subject matter

3 – biased a-priori view point or unscientific approach

4 – willingness to report what is wanted

5 – lack of time to reconsider or discuss

6 – inaccurate calculations

7 – inadequate checking of typescript of printers proof

8 – inability of writer to check the print-out of his own work

The last point requires elucidation. The tendency of an author when checking his own work is to read what is in

23. Committee comprising A C Ameer, Chairman, Ernest Perera (DIG), S H. Munasinghe (GMT)and Ebert Silva (private bus operator) with K Kuhathasen as Secretary.

24. Rail, Bus, no help to progress. Prema de Mel. Sunday Observer 7 June 82

25. Ameer Report: good in parts. J Diandas Daily News 12 June 82

26. Lanka Concurs: urbanisation: excerpts from Bradman Weerakoon's address to 3rd Asian & Pacific Population Conference BMICH Sun 27 Sept 82

27. Against the trend of urban growth. Sun 30 Sept 82

28. Sri Lanka Staff Appraisal Report: road passenger transport project. E. Pogson et al World Bank Feb 80.

his mind rather than the written, typed or printed text; therefore he glosses over mistakes irrespective of whether they may have originated at dictation, script typing or printing stage.

A cursory analysis of the examples given below show a distribution of these types of factor as

Some Remedies

The examples given show that, in a limited spectra of activities, papers germane to reviewing the past and deciding upon the future have included errors of varying degrees of gravity which have or could have led to unsuitable nolicies, programs or projects.

Furthermore, budgets and project feasibility studies are not usually audited.

Hence two questions arise:

1. Is there a need for better verification, cross-evaluation, audit, call it what you will, of macro level papers which lead up to policy, program or project adoption, modification or negation ?

2. If there is such a need, should the need be performed by accountants, statisticians, economists, engineers or scientists or a mix of these people ?

On the question of need, this paper has described examples of errors in a narrow spectrum of economic functions namely transport and energy. There seems no reason to presume that other economic and social areas would be free of such errors, and therefore free of the risk of incept decisions. Hence the conclusion that there is need for secondary evaluation of papers involved in the reviewing, policy-formulation and decision-making processes. Such verificatory evaluation can take several forms such as: formal audit by internal or independent personnel; inclusion of professionally inhibited persons in the teams that draw up the key influence-bearing documents; and informal airing of proposals in order to attend informal criticisms.

On the question of who should play the overviewing role, one must consider the training and instinct of people in different disciplines. While statisticians and economists are well experienced in gathering, analysing, tabulating and explaining data, they lack one methodology, which is the process of balancing and cross-checking and they lack the experiential intuition for seeking independent sources of verification.

The accountant on the other hand sometimes lacks a macro or functional perspective and tends to look at figures or entities as if the figures exist for their own sakes. However, the accountant has a broad knowledge of the whole spetra of commercial, industrial and agricultural matters, and does not lack the talent and training needed for an independent and participatory evaluation role.

On the other hand again none of these people have a trained understanding of natural, technological, scientific and other physical processes. For this understanding engineers, chemists, biologists and so on are needed.

On the whole it is difficult to conclude which particular form of verification is suitable for a large range of circumstances; or which groups of people should be involved. There is clearly a need for verifying at several stages. This would include:

1. Conceptual checking
2. Data source checking.
3. Data process checking
4. Document production checking

Subject	1	2	3	4	5	6	7	8
Hydroelectric share		X						
Oil related to exports	X	X						
Cost of electricity								
Coal power station					X	X	X	X
Electricity forecase	X				X			
Petroleum cost per ton							X	
Vehicle population	X	X			X		X	
Tea export quota	X	X						
Urea project	X	X						
Nuclear power	X	X						
CTB performance	X	X	X					
Man-per-bus		X						

Yet perhaps the most important conclusion is that there ought to be more awareness of the fallibility of decision-influencing reports and therefore greater recognition of the need for verifying them. Once this need is recognised, the scale, scope and personnel for the verification could be easily determined on the basis of common sense coupled with scientific approach.

29. Sri Lanka Transport Board: Report on operation and traffic. M Heraty Nov 78 p. (iii).

30. Sri Lanka Central Transport Board: Appraisal Report]Mitchell Jan 79 p 21

31. Sri Lanka Central Transport Board: Financial Forecasting and Planning. Pak Poy & Associates Jan 81 p 28–30 and p 53.

Continued from Page 27

It is in pursuance of this approach of increased attention on the "demand" side that we in the ADA have helped set up a Market Research Unit. This unit is expected to develop market researchers who will ultimately be able to better identify consumer needs and priorities. The better identification of consumer demands should enable transmit appropriate signals of profitable market opportunities. Economic considerations on the "real income" side of post-harvest activities would induce the search for specific avenues for reducing P.H.L.L. in food.

REFERENCES

(1) National Science Council: *"Postharvest Food Losses in Sri Lanka"*; Report of a Workshop 11 – 16 Feb., 1980. National Science Council of Sri Lanka, Colombo, Sri Lanka.

(2) Sarath Illangantilleke, Allan Phillips, Merle Esmay: *"Post Rice Production Field Losses"* Agricultural Mechanization in Asia, Africa and Latin America Winter, 1981.

(3) L. Jayaratne and Ram Rao Vellanki: *"Milling Quality of Paddy Varieties In Sri Lanka"*, Technical Paper No.RPDC/4/78 of June 1978. RPDC Anuradhapura.

(4) Chandra Breckenbridge: *"Report on the: Effect of Processing Conditions on Milling and Grain Quality of Parboiled Rice"* Research Bulletin 5/76, PMB, Sep. 1976.

(5) K. B. Palipane and Rama Rao Vellanki: *"Hydration Characteristics Of Local Varieties of Paddy"*. Research Bulletin 7/77 of August, 1977, RPDC, Anuradhapura.

(6) Rama Rao Vellanki, K. Velupillai, J. Ramalingam and V.E.A. Wickremanayake *"A Continuous Steaming Process For Parboiling Paddy"*. Research Bulletin 6/77 of June 1977. PRDC, Anuradhapura.

(7) S. A. De Silva: *"A Study of the Effects of Parboiling and Drying Techniques on the Cracks and Checks of Rice"*: Department of Agricultural Engineering, Faculty of Agriculture, University of Peradeniya, 1980.

(8) Rama Rao Vellanki and J. Ramalingam: *"Hand Pounding Of Paddy In Sri Lanka"*. Technical Note RPDC/6/78 of Dec. 1978. RPDC, Anuradhapura.

(9) K. B. Palipane: *"Evaluation Of The Bissa – An Indigenous Storage Bin"* RPDC Report No.5/78, May, 1978.