A CASE FOR STATE ASSISTANCE TOWARDS THE COST OF AIR POLLUTION CONTROL

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SYNOPSIS

In the final analysis the man in the street pays for the cost of Air Pollution Control. It would appear as though the public are not receiving value for the money which has been spent on their behalf in respect of Air Pollution Control.

The State has to make its decisions within a conflict situation but if it were to place a higher priority on Air Pollution Control, ways and means can be found. A posssible method is proposed and discussed which will provide an incentive for Company Shareholders, whilst at the same time enabling a better control function in order to ensure that the public gets a better deal.

INTRODUCTION

The Government as the ultimate controlling authority must resolve the conflict between:

a) The citizen who wants clean air;

b) the entrepreneur who wants to make profits;

c) the employee who wants to be insured of employment;

d) the overall need for national prosperity.

In resolving this conflict the South African Government has to face the following facts (some of which are unique to South Africa):

a) The bulk of our population and industries are situated at an altitude of 1 500 meters above sea level;

b) our geographical latitude (25 – 28° south). These latitudes are notorious for poor atmospheric dispersion;

c) We have a high occurrence of severe atmospheric temperature inversions which have a net effect of keeping pollution down at a low level for longer periods;

d) existing air pollution control measures tend to favour the collection of coarser partiulates whilst finer particulates containing an enrichment of heavy metals (many of which are carcinogenic) are still released to the atmosphere;

e) South Africa has one of the most heterogenic populations in the world;

f) during an upswing in the business cycle, industry normally has a shortage of qualified manpower to sensibly control expenditure on air pollution, whereas during a downturn shortage of cash is a major problem.

g) the South African economy is a unique combination of a first world economy and a third world economy.

I believe the stage has now been reached that the public are going to show far greater interest in the quality of the air which they breathe. We can therefore expect an escalating demand from the public for clean air and proper implementation of The Atmospheric Pollution Prevention Act. In a democratic system, the will of the public becomes translated into government action. If the government would place a higher priority on air pollution control, ways and means will be found to promote cleaner air. The question of who will foot the bill, still remains.

COST OF AIR POLLUTION CONTROL

The cost of proper air pollution control can be very high, for example the Federal Republic of Germany estimates that some R900 million per annum is spent on control. In the USA the expenditure on air pollution control absorbs some 2% of their gross national product. It is common for large new industrial developments to devote 15% of investment to environmental protection. In South Africa the following estimated amounts* were spent on air pollution control.

1978 – R 35 000 000
1979 – R 46 000 000
1980 – R 40 000 000
1981 – R139 000 000
1982 – R133 000 000
1983 – R 91 000 000
1984 – R105 000 000

If one were to assume that 10% of the capital investment is spent on operating costs annually then the cumulative operating and maintenance cost since 1978 would be as follows:

1978 – R 3,5 million
1979 – R 8,1 million
1980 – R12,1 million
1981 – R26,0 million
1982 – R39,3 million
1983 – R48,4 million
1984 – R58,9 million

The recent experience which Johannesburg has had of sulpherous odours and the concern which has been expressed over acid rain could lead to an accelerated programme to-

wards desulphurisation in South Africa. In Sweden for example the authorities estimate that a recurring cost of more than R4 500 million per annum would have to be spent to halve European sulphur dioxide emissions. This could put up the electricity generating costs by 25 - 30% . A recent South African cost estimate indicates that were Escom to install fluegas desulphurisation equipment at a new power station, the selling price of electricity as generated by that station would increase by roughly 15%. But as a new station would only represent only part of Escom's total generating capacity the nett impact initially would be an overall increase in price of the order of 1%. As more and more new stations are equipped with fluegas desulphurisation equipment, the selling price of electricity will rise until the eventual overall increase in cost wil be ± 15%. This rise will however be gradual and spread over a period of roughly twenty years and thus will not have a tremendous inflationary impact.

WHO IS CURRENTLY PAYING FOR AIR POLLUTION

In the example as shown in Annexure A, two sets of income statements and balance sheets are given for a typical small foundry operation. (It must be stressed however that this is only a hypothetical example).

i) without air pollution control equipment;

ii) with R100 000 worth of pollution control equipment included;

In order to maintain the same profits, the foundry would have to increase the selling price of its product by roughly 10%. In addition to the 10% price increase, there is also an additional depreciation allowance in the form of an investment allowance which amounts to 20% on the capital cost of plant and equipment in the first year on 10% in the second year. As this is only taken into account in the tax computation, it is not shown in the example. This would however in the first year reduce the taxable income by R20 000 and R10 000 in the second year.This depreciation allowance represents a loss of R15 000 over two years to Receiver of Revenue, who, to balance his books, must recover it from somewhere. The overall nett effect is that the consumer must pay for both the 10% price increase and the loss of revenue which the Receiver of Revenue experiences as the Receiver will recover his losses in the form of additional direct taxation. Thus in this particular example the consumer is paying either directly or indirectly R65000 in the first year. The general public pay this premium regardless of whether or not equipment is maintained and operated properly. The question that comes to mind is: is the public receiving value for money which has already been spent on their behalf? The answer is probably not, particularly if we take into consideration comments made by Rear Admiral Sharpe at a recent international conference on air pollution control. In his paper he mentioned that one of the pitfalls observed in developing countries (South Africa must be considered a developing country) is that investment in control equipment falls into disuse through lack of repair, lack of parts and lack of effective technical maintenance.

AVENUES OPEN TO THE GOVERNMENT

In the normal course of events, air pollution control equipment is completely unproductive and thus the industrialist has little direct incentive to invest in this equipment. Consequently when it comes to maintenance, the air pollution control equipment has a very low priority and is often totally neglected. The government can assist by offering more attractive incentives to the industrialist and at the same time give the Chief Air Pollution Control Officer a stronger hand in enforcing more effective control. This will ensure that the public obtains value for the money which has already been spent on their behalf. A proposed framework to achieve the above is discussed below.

Control equipment should be divided up into several categories or classes. The distinguishing characteristic between each class would be the ability of that particular equipment to generate income.

For example:

- Category A would be those plants where it is an economical proposition to install air pollution control equipment, for example gold smelters where the capital cost is paid for within a matter of weeks.

- Category B would be those plants where a marginal income is obtained from the investment, for example a steel melting arc furnace where the collected dust has a high zinc content which could be sold to a primary zinc producer as a raw material.

- Category C where there is absolutely no monetary benefit whatsoever in installing air pollution control equipment, e.g. a grit arrestor on a cupola.

Classification into definite categories would depend upon the judgement of the Chief Air Pollution Control Officer as it is possible that an industry situated in a certain region may not be able to sell their products, whereas in another region they have a ready market for their products.

This incentive should be based upon the audited annual expenditure consisting of the depreciation, running and maintenance costs directly related to air pollution control equipment. In addition this incentive should be in the form of a cash rebate. This rebate must be claimed separately from the Receiver of Revenue and must be accompanied by two statements. The one a signed statement from the company's auditors certifying expenditure on air pollution control equipment in the designated categories and a further statement from the Chief Air Pollution Control Officer certifying that the equipment has been operated and maintained satisfactorily for the tax year under consideration. As an indication the following rebates could be allowed:

Category A 10%

Category B 25%

Category C 40%

of audited expenditure. The effect of these proposals can be seen in the earlier example as shown in annexure B. Were this company to be classified as a category B company, then, it would receive a cash rebate of 25% of R35 000 which is R8 750. When added onto the after tax profits it would effectively increase the return on shareholders' funds to 36,6%. Similarly if the company were in category C the effective nett return would be increased to 40,1%.

It obviously now becomes an attractive financial proposition to the shareholders of the company, which could lead to them taking a keener interest in air pollution control. The company's management would thus be placed in a positiion where they will have to explain to their shareholders why they have not qualified for the cash rebate.

CONCLUSION

The above framework would give the government an equitable way of promoting air pollution control. In addition these procedures will give the Chief Air Pollution Control Officer some much needed additional muscle to ensure that industry keeps within the designated air pollution control limits.

* **NOTES**

a) Based on GCESASA figures

b) Actual figures increased by 40% to allow for sales of Non Member Companies and peripherals

c) In the above figures, ESCOM work amounts to approximately 60% and the expenditure on this work actually takes place over a period of seven years following placing of the order.

SMALL FOUNDRY (PTY) LIMITED
(A theoretical example)

ANNEXURE A

BALANCE SHEET (R x 1000)

	WITHOUT	WITH
Fixed assets at cost	114	114
Air pollution control equipment	–	100
	114	214
Accumulated depreciation	22	42
Fixed assets at book value	92	172
Working capital	106	106
TOTAL ASSETS	192	276
Creditors and bank	51	131
Shareholders' Funds	147	147
TOTAL FUNDS	198	278

INCOME STATEMENT

Sales	500	555
Cost of sales	160	160
Gross profit	340	395
Overheads	250	250
Additional depreciation	–	20
Additional operating expenses	–	15
Additional interest	–	20
Profit before tax	90	90
Tax	45	45
Profit after tax	45	45
Return on shareholders' funds	30,6%	30,6%
Return on assets	45,5%	32,4%

ANNEXURE B

THE EFFECT OF THE CASH REBATE ON PROFITABILITY OF SMALL FOUNDRY (PTY) LIMITED

BALANCE SHEET (R x 1000)

	CATEGORY A	CATEGORY B	CATEGORY C
Fixed assets at cost	114	114	114
Air pollution control equipment	100	100	100
	214	214	214
Accumulated depreciation	42	42	42
Fixed assets at book value	172	172	172
Working capital	106	106	106
Total assets	278	278	278

INCOME STATEMENT

Sales	555	555	555
Cost of sales	160	160	160
Gross profit	395	395	395
Overheads	250	250	250
Additional depreciation	20	20	20
Additional operating expenses	15	15	15
Additional interest	20	20	20
Profit before tax	90	90	90
Tax free rebate	3,5	8,75	14
Tax	45	45	45
Profit after tax	48,5	53,75	59
Return on shareholders' funds	33,0%	36,6%	40,1%
Return on assets	36,6%	35,5%	37,4%

IMPACT ON HUMAN HEALTH OF AIR POLLUTION IN THE EASTERN TRANSVAAL HIGHVELD

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A research programme addressing the above topic is currently under development in the Faculties of Medicine and Science at the University of the Witwatersrand, in collaboration with the CSIR and NCOH (National Centre for Occupational Health). The study which will run for two years will initially concentrate on white schoolchildren of the standard 2 and 3 age groups, resident in the Eastern Transvaal Highveld with the object of determining their respiratory health status vis a vis a similar control group in another non-industrial region.

Children in this age group are usually considered to be the best subjects in studies of this kind, as they have not been subjected to cigarette smoking, have no occupational exposure to health hazards, have not reached puberty, and have not migrated in from another region, all of which introduce variability into studies of lung function.
Measurements of various lung function and other physical parameters (such as body weight and height) will be correlated with pollution data in order to obrain a quantitative measure of the effect of community air pollution on community health.

The research team consists of specialists in the fields of epidermiology, respiratory medicine, medical statistics and physics, assisted by community health nurses in the areas of interest. Air pollution information is being collated by the Atmospheric Aciences Division of theNational Physical Research laboratory, CSIR. The study may be extended to black schoolchildren if the initial results indicate this is feasible.