PRIME MINISTER

THE PEARCE REPORT

Referred to obliquely in the personal note from Chris Patten (also in your box tonight) is the report to Government by Professor Pearce (who is now Chris Patten's Special Adviser) on sustainable development. This report caused a favourable stir in the media when it came out whilst you were in Austria.

I attach the executive summary of the report which you might like to glance through so that you are familiar with it if Chris Patten refers to it when you next meet. I have a copy of the full report which I have read but I would not recommend your doing so: it is in the tradition of learned economic tracts - fairly turgid and repetitive. Its philosophical basis is right: price must be a better mechanism than armies of regulators to secure a sound environment. But for the rest I think the media stir was over done. The report addresses the common - though never easy - question of how to put a price (or how to create a market) in a public good like the atmosphere or the environment's "waste sink" capacity. Some of the detailed methodology in his report will be of interest to the Treasury group which is charged with following up and developing the G7 paper on economics and the environment. But Pearce's conclusions are weak. He proposes simply looking further into fiscal incentives (e.g a carbon tax) or transferable permits to pollute (which Nick Ridley made reference to in your earlier Ministerial meetings and, while they introduce a greater market discipline, are still a variant on the command and control means of enforcing environmental standards).

DOMINIC MORRIS
22 August 1989

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EXECUTIVE SUMMARY

from the report of the

LONDON ENVIRONMENTAL ECONOMICS CENTRE

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INTERNATIONAL INSTITUTE FOR ENVIRONMENT AND DEVELOPMENT

LONDON ENVIRONMENTAL ECONOMICS CENTRE

UNIVERSITY COLLEGE LONDON
UCL

SUSTAINABLE DEVELOPMENT, RESOURCE ACCOUNTING AND PROJECT APPRAISAL; STATE OF THE ART REVIEW

EXECUTIVE SUMMARY

from the report of the

London Environmental Economics Centre

June 1989

1. The terms of reference for the authors of this report was:

> 'to review the state of the art on the relationship between the sustainable development concept, national accounting, resource accounting, satellite accounting and project appraisal procedures' and 'to provide an authoritative position statement drawing on national and international experience, where relevant, as a background to developing a UK programme of work in this area.'

2. The Bruntland Commission firmly established the concept of 'sustainable development' as the basis for an approach to economic policy in which the maintenance and improvement of environmental quality play a fundamental role[1].

3. In this report it is shown that sustainable development does have implications for the way economic progress is recorded (resource accounting), for project appraisal, for the pricing of inputs and outputs of goods and services in a free market economy and for macroeconomic policy relating to growth, trade, foreign investment and foreign aid. Conversely, the economic analysis of sustainable development sheds some useful light on the concept itself and provides a framework for implementing it.

(Preface)

4. Sustainable development involves a substantially increased emphasis on the value of natural, built and cultural environments. Furthermore it involves a concern with the longer time horizon than is conventionally looked at in economic analysis. In this way it places an emphasis on intergenerational equity and on the fair treatment of future generations.

5. The issue of intergenerational equity is at the heart of sustainable development. Future generations should not be left worse off as a result of present policies. To ensure this does not happen they must be left with at least as much capital wealth as the present generation. Moreover, the form of this wealth may be important. A distinction is made between man-made capital wealth and environmental capital wealth. Whereas some economists have argued that sustainable development can be achieved by ensuring that total capital wealth does not decline over time, others have taken the position that, in addition, environmental

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[1] World Commission on Environment and Development, Our Common future, Oxford university Press, London, 1987.

Future generations have the right to the fair treatment that we look for ourselves

capital must also be transferred in its entirety to future generations to ensure sustainable development.

6. Sustainable development emphasises the interaction between the economy and the environment. The way the economy is managed impacts on the environment and environmental quality impacts on the performance of the economy. This interaction is absolutely fundamental to sustainable development thinking.

7. If these concerns are to permeate practical decision-making and policy analysis, resources and environments have to be valued in terms of their economic functions. Moreover these values have to be correct, credible and integrated into economic policy.

8. The policy pursued with regard to the environment can be viewed as either anticipatory or as reactive. As the terms suggest, the former involves anticipating problems and incurring costs in advance of the problems occurring, whereas the latter involves waiting until the problem has surfaced before taking a decision as to what to do. The philosophy of sustainable development tends to favour strongly the anticipatory approach to environmental policy. But reactive policy is not wholly bad. It can sometimes be justified by reference to the expected gains in information and improved policy effectiveness. However, delay is only justified if the benefits outweigh the costs: good scientific research needs to accompany delay.

9. The essential issue here is one of uncertainty. There are really no rules for choosing which policy to undertake in the face of uncertainty. However considerations of risk aversion, and the fact that current environmental problems could involve very large losses, mean that, in many cases, an anticipatory policy is likely to be favoured over a reactive one.

10. One area where environmental effects could entail large losses is with regard to global pollution. This presents a special problem for several reasons. If its worst effects are realised, some countries will experience catastrophic damage. No one country acting alone can do much to prevent or contain these impacts. Only coordinated international action can be effective. However, the costs of such action are high and it is not in the interests of all countries to participate in such action; some countries may even gain from some developments such as global warming.

11. Global warming, or climate change in general raises issues of uncertainty at the scientific and socio-behavioural level. It is not known what the average global temperature change and sea level rise will be, nor what the spatial and regional distribution of these impacts is likely to be. The effects of these changes will, in turn, depend on how people respond to climate warming and sea level rise and on the kinds of actions that governments take. All this suggests strongly that there has to be a great deal more scientific and socio-economic research on climate change.

12. International cooperation to contain greenhouse effects to an 'acceptable level' is vital and urgent. The urgency arises because of the nature of the risks if the worst outcome occurs; because the longer the delay the more the world is 'committed' to increased warming and hence increased damage; because future adjustment is likely to be expensive; and because the only form of containment is through international cooperation which will be complex and difficult to secure. Global pollution problems underline the need for anticipatory policy.

13. Apart from formulating policy in the context of specific environmental issues, sustainable development contributes to the major debates on the future course of economic development. One such debate, which was initiated in the 1970s is the one on growth versus the environment. Reviewing this debate in the light of this concept reveals that a number of the initial premises were false. Sustainable development tells us that environmental quality frequently improves economic growth. Hence the two are not always in conflict as was originally suggested. Secondly sustainable development shifts the focus from economic growth as narrowly construed in traditional attitudes to economic policy. It speaks of development rather than growth, of the quality of life rather than real incomes alone. Thirdly it recognises that where there is a real trade-off between economic growth and environmental quality it can be resolved by valuing the environment properly. In other words the choice is not between higher or lower rates of growth but between different ways of attaining growth in the economy.

(Chapter 1)

14. If the sustainable development is to be useful it needs to be defined carefully. It is important to define the term development first. Here it means something much wider than economic growth. It includes all factors that lead to increases in well-being and the preservation of existing freedoms, self-esteem and self-respect. Hence development and growth are not the same and so sustainable development and sustainable growth will not be the same.

15. Nevertheless economic growth, being a major source of increases in welfare or well-being, is an important component of economic development. In this regard it is important to note that, on the basis of historical experience, environmental protection has been comparatively 'cheap' in terms of forgone economic growth. If this remains true in the future, the implication is that, to the extent environmental quality is a vital feature of economic development, the objectives of growth and development can be compatible.

16. In the phrase sustainable development this then leaves the definition of the word sustainable. The term has been used in a variety of ways, which are reviewed in this report. However, it is defined here in two ways: either as meaning a non-declining welfare, or 'utility' for a society or as meaning a non-declining set of 'development indicators' over time. The distinction is

essentially one between the use of a single indicator of welfare and the use of a multi-dimensional indicator of that welfare.

17. Whichever of these definitions is chosen, there are a number of key implications of the term that need to be spelt out. First, if development is to be sustainable it must encompass a full appreciation of the value of the natural and built environments in terms of their contributions to people's well being. Second is its implication for intergenerational equity. As stated above sustainable development requires future generations to be left with at least as much capital as the present generation. Here, however, there is a distinction between those who define this to mean that the total value of capital must not decline over time and those who interpret it to mean that both environmental and man-made capital must each be non-decreasing over time.

18. Whichever definition is used one thing is clear: the valuation of environmental capital must be undertaken correctly so that the full value of the services provided by it are recognised. But, even if this is done, there are strong reasons for thinking that sustainable development will require environmental capital not to decline over time. This is the interpretation of sustainable development adopted in this report.

19. There are, however, a number of theoretical issues and problems of measurement which need to be addressed if the notion of the constancy of the capital stock is to be translated into practical terms.

20. Finally there is one direct implication of the definition of sustainable development that is often ignored. This is to do with the region over which the definition is applied. It may be that the industrialised countries are following a sustainable development path in the sense defined above, but that this path is sustained only because they are importing goods from poorer countries where the development is clearly non-sustainable. This suggests that some attention needs to be paid to the implications of the country's trade and aid policies on the sustainable development of its partners.

(Chapter 2)

21. If sustainable development is to be attained there is a critical need for the environment to be valued correctly. The difficulty with this is that many of the services provided by the environment are not valued through the marketplace. Although this makes the process of valuation more difficult, it by no means renders it impossible.

22. At its simplest what is being sought in the valuation of these services is some expression of how much people are willing to pay for them. Such measures automatically express not just the fact of preference for the environment but also the intensity of that preference. Instead of 'one man one vote', monetization quite explicitly reflects the depth of feeling contained in that

vote. It also permits comparison of those benefits with other benefits and other costs.

23. The framework within which such a valuation is carried out is referred to as cost-benefit analysis. Cost benefit analysis (or CBA for short) makes operational the very simple, and rational idea that decisions should be based on some weighing up of the advantages and disadvantages of an action.

24. There are several techniques for valuing environmental goods and services when these are not directly provided through the marketplace. This report reviews them and provides examples of their application in the valuation of particular environmental facilities. Although the numbers obtained can be criticised, and are often no more than orders of magnitude, there are extremely useful in a policy context. First they establish that environmental services are not free. Second, by trying to value the environment, the policy maker is forced to think in terms of gains and losses. This provides a rational framework for decision making. In this context the environmental values can be important in determining the scope and design of certain key investments.

25. The process of valuing the environment also makes one aware that some items cannot be valued in money terms. However, that is altogether different from saying that they are 'priceless' or have infinite worth.

(Chapter 3)

26. Two key sources of information for recording economic progress and evaluating sustainable development are the national accounts and the environmental statistics. In UK the former are reported in the United Kingdom National Income Accounts which measure GNP and its constituent parts. These accounts say little or nothing, however, about the environment. The latter are surveyed in the Department's Digest of Environmental Protection and Water Statistics. Although these statistics are very useful as guides to some of the trends in the environment, they say little or nothing about the economy.

27. Since sustainable development is about integrating the environment and the economy, it is noteworthy, therefore, that the two main sources of information in this country fail to develop the important linkages between the two. In chapter 4 the ways in which these linkages might be presented are discussed.

28. Adjusting the national accounts would mean constructing a measure of sustainable income. This would require the careful measurement of : (a) the 'defensive' expenditures undertaken by households and firms to mitigate the consequences of environmental pollution, and not treated as intermediate expenditures in the construction of the national accounts, (b) the costs of the pollution that exists but is not mitigated and (c) the depreciation that has taken place in the environmental and natural resource base but not accounted for. Such a measure

measure of sustainable income is worth pursuing, to be calculated and presented alongside the conventional measures on net national income. Attempts to do this have been made, in one form or another for the United states, Japan, and Indonesia. The exercises are all interesting and show, in some cases a significant difference between the 'sustainable' income measure and the normal net national income measure.

29. There are, however, a number of theoretical and empirical issues regarding the measurement of defensive expenditures and of depreciation that are still not fully resolved. Hence any attempt to measure sustainable income would have to take a position on these questions before such an exercise can be undertaken.

29. An alternative approach to presenting the environment-economy linkage is to construct a system of physical environmental accounts. This has been done in France, Norway and, to some extent, in Canada, and presents stocks and flows of environmental variables in physical units. Developing such a system of accounts in this country would require considerable resources. Although the outcome could be of considerable benefit in forecasting environmental pollution and natural resource use, it is unclear, on the basis of the experience of the countries cited above, whether it would be worth the cost involved.

30. Supplementing the existing environmental statistics, to show more clearly the linkages between the economy and the environment, could achieve to a considerable extent what a system of physical accounts would do. Some recommendations in this regard are made in Chapter 4.

(Chapter 4)

31. As far as project appraisal is concerned, the implications of sustainable development are fairly straightforward. The first implication repeats the message that environmental economists have been familiar with for a long time and which has been carried forward to a sophisticated level in the USA. This is that environmental costs and benefits must be included in all project appraisals and that a major effort be made to place monetary values on environmental services and damage.

32. In fact this recommendation is not that novel and appears to have been assimilated in a modest way in various public agencies. It would, however, be advisable for the Treasury to update its guidelines with more explicit advice on ways in which monetary valuation techniques can be used to assist project appraisal.

33. The second implication of sustainable development is not so clear. Recall that sustainable development is to do with maintaining a constant environmental capital stock over time. To ensure that project appraisal is consistent with this objective one should proceed in two stages. First a project is acceptable if it passes the standard 'cost-benefit' test (i.e. that benefits exceed costs). Second, the programme of which the project is a

part should itself be subject to a constraint that it does not, overall, produce a net reduction in the value of the stock of environmental capital. At the policy level it means altering the balance of investments so that, included in the programme of investments, are some that compensate for any environmental loss caused by the others. Note that this requirement is additional to the first one that the project be properly valued and that it satisfy the cost-benefit test. Both requirements are needed if the sustainability objective is to be honoured. How such a double requirement would work should be the subject of further work.

(Chapter 5)

34. No discussion of sustainable development would be complete without mention of the discount rate. The discount rate seems to discriminate against future generations, yet it is their interests that are to be protected in a sustainable development approach to economic policy. This has given rise to many proposals to lower discount rates on environmentally beneficial projects (e.g.afforestation) and on projects where there high potential future environmental costs (nuclear waste storage, climatic effects of coal-fired power stations etc.). Although these concerns have considerable validity, adjusting the discount rate is probably not the best way of meeting them.
Lowering discount rates for all investments could encourage more overall investment compared to current consumption. This might seem to satisfy the desire to leave future generations a higher total capital stock, but it will also 'drag through' more materials and energy in the economy, causing more environmental degradation.

35. An alternative solution that has been proposed is to have one discount rate for environmentally beneficial or damaging projects, and another for projects without significant environmental consequences. In this case, however, there are formidable problems of deciding which projects to select. More seriously, how much of a change should take place would be horrendously difficult to decide.

36. In Chapter 6 it shown that neither of these alternatives is desirable. Furthermore, altering discount rates should not be necessary as long as the valuation and sustainability conditions are honoured in project appraisal. If, for reasons of practicality or otherwise, that can not be the case, then a further investigation into the practical ways in which discount rate policy might be modified is the second best option. However, at a time when there are other arguments for raising discount rates (i.e. the higher private rate of return on capital now being enjoyed) the preference to opt for the valuation and sustainability approach to project appraisal remains strong.

(Chapter 6)

37. Finally, this report addresses the issue of incentives for sustainable development. If sustainable development is about safeguarding environmental quality, then there is a case for making a stronger commitment to the setting of stricter environmental standards. That is already taking place as the concerns about acid rain, CO_2, ocean pollution and loss of habitat growth.

38. The UK approach to standards setting is, somewhat incorrectly, described as 'command-and-control'. This is unfair because in the UK there is a regular interchange of views and advice between polluter and regulator, whereas command and control tends to imply a somewhat more severe approach to offenders.

39. However, very little use is made of economic incentives in the UK, which stands in contrast to the particular virtues that markets have in environmental policy. In particular, using the market means reaching the ultimate polluters - the consumer. For in a market economy it is the consumer who dictates what is produced. The rise of the 'green consumer' indicates just what power the consumer has to influence the polluter to curtail pollution. But consumer cannot always be easily informed about the 'pollution content' of the goods and services he or she buys. The best way to signal that to the consumer is to make the polluter pay which means setting charges on products and resources so that their social cost is reflected in the price. Clearly designing 'optimal' taxes of this kind is complex and controversial, but progress in this area of market-based incentives is long overdue. Ideally such changes should relate to the monetary value of the damage done, but even if that cannot be estimated reliably, charges still have another vital use: they may be cheaper than the approach which sets standards and then tries to regulate the polluter.

40. One such tax that is discussed in some detail in the report is a carbon tax as a means of combatting global warming through the release of greenhouse gases. There are several complex issues to consider with such a tax and the ideas involved are new in the area of public policy. However, they need to be given careful consideration, in view of the potential seriousness of the problem.

41. The 'cheapness' of charges is a potential feature of market-based incentives which is shared by another approach: marketable permits'. Here the polluter is granted a permit to pollute and the number of permits is related to the environmental standard set. The particular feature of such permits is that they are cost-effective. They keep down the cost of complying with environmental standards. There are powerful reasons for being concerned about this cost-effectiveness attribute in respect of sustainable development. Future environmental problems threaten to be more costly to resolve than past ones. The prospect of costly clean-up and preventative measures could readily mobilise legitimate concern about those measures, constraining environmental policy and preventing it from being effective. Yet

if it is possible to secure environmental quality objectives, while at the same time minimising the cost of achieving them, much of the potential objection to improved quality could be removed. For this reason alone a much more serious consideration of market-based incentives, as an additional approach to achieving future environmental quality, is recommended.

(Chapter 7)