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Performance Indicators for Higher Education: A Critical Review with Policy Recommendations

by

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ABSTRACT

This paper reviews the current use of performance indicators in higher education institutions in industrialized and developing countries, and examines the factors that influence the use of indicators. The paper also assesses the usefulness of performance indicators in policy making in terms of measuring quality and efficiency, and guiding resource allocation and reform direction. It places particular emphasis on the limits to their use in inter-system and inter-country comparisons. Recommendations are offered for policy-makers and users.

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EXECUTIVE SUMMARY

Definition and Purposes

Performance indicators are defined as factual or opinion information gathered from existing data bases or de novo, about the functioning of organizations or their constituent units. They provide signals for achievement in relation to goals, and for deviation from expected levels of activity. They are useful for monitoring and evaluating performance, and for guiding management and policy decisions.

Performance indicators in higher education are complex and often controversial in nature. At issue is the need to balance the legitimate demand for information and public accountability with the autonomy of higher education institutions. There are also technical questions on the validity and reliability of the use of proxy measures to reflect performance.

History

Information support systems (but not specific nationally agreed indicators) have been used extensively in North American higher education institutions, where a relatively strong university corporate culture has led to the development of university information systems. In Europe, by contrast, the lack of corporate cultures in universities and the former lack of pressure from government to be efficient and competitive, delayed the development of performance indicators. Power and information were concentrated in government ministries or in funding/planning bodies complemented in a few by a separate statistical service, or in the separate faculties of the universities. It was not until the financial crises of the early 1980s and the rise of the conservative leadership in the Western democracies, that a movement began to develop performance indicators in the higher education sector.

In universities of developing countries, the information capacity was less developed. Lack of funds, trained leaders and managers and isolation from the developments in the mainstream of Western countries resulted in a dearth of information and very few useful indicators of performance.

A Basic Taxonomy

There are two general types of indicators--government and institutional indicators. Indicators for government, now highly developed in Europe, are composed of nationally defined measures of institutional responses to government goals or policies. Examples would be measures of length of study, access rates, staff and student diversity, and student progress in the system.

Indicators for institutions can be divided into (i) institutional management indicators (e.g. workload measures, student enrollment and financial trend data); and (ii) teaching/learning, research and service indicators (e.g. student evaluation of teaching, achievement and aptitude tests, publication and citation analysis, and peer reviews of research proposals or finished product quality).

The Contextual Factors

(1) Higher education institutions as organizational entities:

It is not easy to measure cause and effect when the system contains variable input influences, goals, structures, programs, critical mass levels, and external influence. Because of the contextual subtleties and complexities, indicators should be, at best, a starting point for judgement in the policy making process, not the only deciding element. Agreement must be gained among the parties involved on the purpose of assessment, on the element(s) to be assessed, the nature of the assessment data, and how indicators will be used. Trend data should be used wherever possible. Consideration must be taken about influence of contextual factors in the interpretation of the data.

For cross institutional and cross country comparisons, even more care must be taken. Comparison should only be made with those units with very similar goals, input variables (cf. access rates), programs and structures, general sizes and levels of support. A single influential factor can lead to large differences in the results for otherwise similar systems. For example, cost and efficiency are influenced by salary levels; isolated campus structures affect service costs; and administrative costs and staffing ratios across systems are affected by government funding.

(2) The relationship between evaluation purposes and means

The use of indicators for evaluation involves judgement about the extent to which a program or institution has achieved goals, or how it relates to the normal range of activities. Measures should involve quantitative and qualitative aspects (such as facts and opinions), and be attuned to the nature of the unit to be evaluated and its goals.

Mismatch often exists between the purposes of the evaluation and the methods employed. If the evaluation is conducted for purposes such as public assurance about general productivity, minimum standards or financial probity, or if it deals with progress on the achievement of government goals, then the performance indicators and level of aggregation of the data should be well understood by the universities and the results can be publicly reported. Most of these measures will probably permit comparison across institutions, if the basic goals of the institutions are similar.

(3) **The nature of information in organizational life**

Performance indicators can be used in one of three major ways: to explain organizations to others; to make internal management choices on an ongoing basis; and to fuel periodic self-assessment and planning processes. The basic information that constitutes performance indicators is a product of the normal operation of the universities concerned or is purposefully collected by them. It therefore is owned by institutions, and any government or other agency that seeks to gather information must respect ownership.

The Use of Indicators in Industrialized Countries

The OECD countries formed a Performance Indicators Workgroup in 1989 in response to the dramatic increase in interest in performance indicators. Australia, Finland, The Netherlands and the United Kingdom have actually pursued the development of indicators on a national basis. Finland, Norway and Canada (with Denmark arguing the matter) are focusing primarily on their data bases. Few, except the United Kingdom, publish comparative information, particularly at the less than institutional level, and few intend to have the indicators affect funding.

The Australian case is perhaps the most interesting case for other countries to analyze. The dramatic increase in enrollment in the last 15 years gave impetus to improve public accountability. The measures include student preferences, entry scores, graduation and employment rates, student opinions of teaching quality, staff publication and consultation rates, and provision of continuing education programs. Performance indicators

have some influence on the distribution of less than 10% of total government funds, by way of incentive funding for outstanding performance in particular areas of activity.

The Finnish system of research and higher education since the 1960s has been characterized by organized science policy and rational planning. While each university has some degree of autonomy in its internal affairs, the Ministry of Education is the central unit of state administration of the research and higher education system. The Higher Education Development Act of 1987 guaranteed a 15% annual increase in research funding during a five year period, on the condition that the performance of the universities is accounted for and evaluated. While the economic conditions in Finland have now changed dramatically, resource planning, efficiency, flexibility, leadership, and accountability have become key words in current science and university policy. Indicators are regarded as useful tools, to be used with care and thoughtfulness.

In The Netherlands, the higher education system is under some financial stress. Higher education expenditures have been reduced in the last decade, but without catastrophic damage to the higher education system. The government encourages the universities to supply science and industry with the manpower they need, and to generate new knowledge and technology that can benefit the economy. A system of quality assessment of teaching and research is being introduced through the joint efforts of government and higher education institutions. The Dutch program review system is the most advanced in Europe and information plays an increasing role in self-evaluations, peer reviews, and ministry oversight's. The judicious use of such evaluations including some performance indicators has enabled the government to steer the higher education system at a distance.

In Canada, education is primarily a provincial responsibility and most of the effort has been to develop descriptive indicators. The level of aggregation of the data in the bases is at the college level and upward, rather than the program or department level.

In Denmark, the growing decentralization of authority in higher education requires more frequent evaluation of results. This entails establishing a useful data base that both government and institutions can use. However, cooperation between government and institutions in a system that has not had a history of planning, evaluation and effective management controls takes time to develop.

The French higher education system is large, differentiated and highly centralized. In the last half of the 1980s, an institutional evaluation system was established. It operates independently and reports directly to the President of the Republic. It is a system based largely on external peer review but which employs

descriptive information that is submitted by the institutions to be evaluated. At the same time, a planning system is being implemented by the government that employs four year negotiated funding contracts to universities after they have been reviewed by the Committee. The results of the contracts will be reviewed as part of the subsequent cycles of institutional evaluation by the Committee.

In Norway, higher education is highly decentralized and state financed. In recent years, the emphasis has been shifted from enrollment expansion to qualitative improvement, and governance has also been changed from the use of detailed regulations to management by objectives. This entails closer monitoring of performance. External evaluators have been involved in peer review of research and continuing evaluation of student examinations, doctoral programs, employment of personnel, and applications for research funding.

In Sweden, higher education policy has been driven by two major concerns: to reduce differences in status between different types of tertiary education institutions and the needs for rational planning with concomitant evaluation of all reforms. Self-evaluation with reference to goal achievement, efficiency and capacity for renewal has been encouraged. Universities and colleges are asked to send in documentation concerning their previous year activities, including data on resource utilization and results, together with remarks on the year's results and events. At the National Board, this material is synthesized and analyzed at national level and published as the annual report. National evaluations have taken the form of international peer-reviews. A Government Bill by 1988 specified that indicators be developed to show how Swedish higher education and research are placed by international comparison. Local experiments using indicators of various kinds are being developed.

In the United Kingdom, the Conservative government's emphasis on economy, efficiency and effectiveness led to the development of performance indicators. The focus has been on input (primarily costs) and output/outcome measures (such as destinations of graduates and completion rates). These indicators are more useful in assessing efficiency than effectiveness, and are limited in monitoring the process for management of research funds and for assurance of teaching quality. These indicators are used to guide funding decisions largely without taking into consideration contextual factors: resources are awarded to institutions which ranked high on efficiency measures and removed from those which ranked low on the scale. The conditions in the UK has resulted in the financial insolvency of some institutions, a highly touted commercialization of the system, a massive drain of professional talent, a pressurizing of the management ethos, and a widespread reported deterioration of morale. They have also resulted in greater throughput of students at a lower unit cost and a sizeable targeting of research funds through the differential quality judgements.

In contrast, Sweden, Norway, The Netherlands, and Australia eschew indicator systems with direct influence on the core of the funding for universities and heavy use of published ranked or rankable information. They have chosen to rely heavily on peer reviews and subjective judgement rather than heavily on reductionist indicators. It is clear that contextual factors deeply influence this whole picture and that the managerial style and choices must be appropriate if one is to ensure accountability without damaging the higher education system in the process.

General Policy Recommendations

Performance indicators are less important than the quality of the managers in the system. The first priority should be to invest in selecting and training good leaders, sustaining them in the system, then giving them the tools with which to operate, including good data systems.

Leaders should focus heavily on the development of goals for the system and for institutions. This is a glaring weakness in most countries. Very often, the tendency to fall back on heavy reliance of often destructive, norm-based, indicators to fund systems is related to a failure to define purposes and goals and then make choices in the light of the goals with the aid of indicators.

Recommendations for Government

1. Purposes for the system must be carefully explored, clearly stated and consensus for them must first be sought with the institutions which will be supplying most of the data and be evaluated.
2. Means should follow purposes. The data sought should enable the users of the system to accomplish the purposes and the data should be limited to those needs. Trust between providers and users of information must be maintained, or the system will break down.
3. Performance indicators are best used to monitor progress over time. They should not be developed in order to systematically remove resources from a system or to make dramatic shifts. They are aids to management, not levers to restructure the system. Expert, managerial and subject matter judgement should dominate managerial choices.

4. When databases are used, particularly in national or state-wide formats, the following issues must be addressed: the terms are defined in exactly the same way for all institutions involved; the data must be verified at the source, the data must be correct and reproducible; the size and therefore the cost of the system must be kept within manageable bounds; all data should not be accessible by all users without prior categorical or instance approval; data should be only aggregated and published for agreed upon uses; data should be presented as much as possible in trend format (time sequence) when monitoring progress on the achievement of goals set forth in state plans.
5. The extent of publication of performance indicators and comparison of institutions and programs must be very carefully considered by policy makers.
6. The use of indicators should relate to marginal funding and to the use of incentives. The worst way to use indicators is to assume that they can be summed up to explain all of the functioning and outputs of a system as well as the costs and, therefore, can be used to drive the major funding choices for teaching and research.

Recommendations for Institutions

1. Institutional leaders should participate in the discussion concerning the development of any national, government sponsored system. Institution's interests must be protected.
2. Indicators should be developed and used as an adjunct to management.
3. The institution's database should be linked to the important management levels and put under the care of a professional institutional research officer (or staff).

Recommendations for Developing Countries

1. The pace of introduction of the use of information in management in developing countries will, and probably should, be relatively slow and stepwise. It involves a fundamental change from the culture of administering to one of managing. It involves the selection and training of managers who can use

information well, before one develops or introduces a data system. The priority must be on people, not indicators.

2. Systems to measure reliably what happens will come only if the international agencies invest sizeable sums in training managers (to use the figures well), training data specialists (to build and maintain the systems), and in building the national and institutional (particularly the latter) systems.
3. There are several examples where bold efforts to develop information capacities (to 'make the system more transparent') in Latin America have been met with threats to immediately withdraw, sometimes dramatically, resources from the universities. It would be better for governments to redress inequities gradually.
4. Little of the rhetoric of performance indicators has to do with learning, client satisfaction, or achievement of goals. We would be better off if the terms 'information systems' and 'institutional studies' were used.
5. Finally, it is very important not to link the indicators to funding as a core or central determinant. Such uses will turn the universities in country after country against the system. The sound policy is to use indicators as adjuncts to management, as aids not determinants of decision making and funding and in choices, to build up the weak elements in a system, to reward success, to provide incentives and to instill competition and solid performance by helping to distribute marginal funds.
6. Indicators that might relate to national goals include access indicators of under-represented groups; indicators of university projects to stimulate local economic development; indicators of development of new sources of income; indicators of stimulation of entrants and graduates in needed disciplines; and indicators of general productivity and overall efficiency.

INTRODUCTION

The subject of performance indicators for higher education is of considerable interest to government officials, to university leaders and to staff members and policy makers in donor agencies. Performance indicators are complex and controversial in their nature and the reasons for the interest of these diverse constituencies vary considerably. They range from concerns about the quality of institutions and programs and the utilization of resources, to the ability of governments to monitor progress on the achievement by universities of social, economic or political goals. The interests also include the enhancement of the internal managerial decisions of universities, including the improvement of their programs and services. The actual use of indicators that, according to proponents, can serve as proxies for institutional or program performance, also varies greatly across the higher education landscape and is affected by several important factors. Finally, there are vocal opponents to their use, and there is considerable confusion and a genuine lack of information about the subject.

This report will explore the nature, development and use of performance indicators for higher education in an effort to provide for the staff of the World Bank and for its clients some perspective and some useful information on the matter. The terms of reference presented for the writing of the report included: (1) the exploration of the current use of performance indicators in industrialized and undeveloped countries; (2) the consideration of indicators for cross-country comparisons; and (3) the consideration of their use in policy making (quality and efficiency, improvements, resource allocation, support of reforms). To accomplish these intentions, the report presents a critical review of the major literature with particular emphasis on the factors that have been identified as influencing the use of performance indicators, an analysis of selected case countries and institutions; an assessment of the possible use of performance indicators in developing countries and a set of policy recommendations relating to this matter.

The report is an attempt to present a balanced and realistic view of this complex and politically charged topic. Over the centuries, universities have resisted undue interference by governments and other agencies in the life of the institution. At a time when governments and the general public want more information about the utilization of scarce resources and the performance of universities in general, there is an understandable increase in the requests for such information from coordinating, control and funding agencies, just as there is an increased need for information of all kinds on the part of managers who work within the higher education institutions. The facts that much desired performance information is perceived as not available in many instances and that the last ten years has seen both an increasing clamor for such information and difficulty and argument about the nature of the response, indicate that there are inherent problems and influencing factors that must be explained and understood by policy makers. One of the key issues seems to be how to meet legitimate needs for information while safeguarding the autonomy of the institutions that are intended to be the training grounds for our leaders, the reservoir of culture and needed social criticism, the

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intended to be the training grounds for our leaders, the reservoir of culture and needed social criticism, the bastions of basic research and, increasingly, the stimulus for regional or even national economic development.

This report will also attempt to provide for the topic of performance indicators some useful definitions, some taxonomic assistance, an elucidation of inherent technical as well as the apparent historical and political determinants of their use, a review of some lessons learned in the industrialized world in recent years, some caveats for policy makers, and an exploration of some of the implications for use of performance indicators in both developed and developing countries. It is based on the literature available on the topic, much of it fairly recent material, and on the experiences of the author over the last three years as consultant to the OECD/IMHE project on performance indicators. It also reflects the experience of an organizational analyst and institutional research professional over the last quarter century in North America and more recently in Europe, and as visitor and consultant in the last year in Africa and South America. The sources of the information are clearly identified, but the interpretations are solely that of the author and he alone is responsible for them.

SOME HISTORY, DEFINITIONS AND BASIC TOXONOMY

Forces and Differential Development

It is important to recognize that the understandable needs of institutional managers and government leaders for information about the functioning of higher education institutions individually and collectively, a need expressed in some countries for several decades, has been responded to differently in different settings. These responses have, over time, also been transformed, complicated, professionalized, reduced and somewhat confused by a succession of historical, political, professional and even personal influences. In Europe, largely in the 1980s, and particularly in Britain (and therefore beginning to be reflected in the underdeveloped world as well), the performance indicator 'movement' is a result of these forces. Beneath it all, clearly, is a strong need, differentially expressed across the world of higher education, for at least some (in some countries), for more (in other countries), and for better (in yet others) information about the full range of characteristics of the higher education world (context, market, inputs, programs, personnel, services, facilities, finances, outputs), both 'snapshot' and trend information. All institutions need information to assist decision making, resource allocation, evaluation and planning efforts.

In North America, where a relatively strong university corporate culture and executive managerial functioning has always existed, the coming of the managerial revolution and the information age over the last twenty years has seen the steady growth of university information systems, of institutional data in general and of dedicated offices of institutional research and decision support in colleges and universities of any size. While this development has not been perceived as uniformly successful by institutional leaders in North America, it has developed substantially for more than a quarter century, with for instance, a professional Association of Institutional Research operating since 1965. Data for institutional decision making and, subject to the usual

political forces and barriers, for monitoring, budgeting, resource allocation and master plan development by state governments, have been generally available. There exists, therefore, in North America, despite the coming of conservative governments (with the push for privatization, deregulation, enhanced market competition, concern for efficiency) no massive additional effort or movement to secure special performance information, but rather an increased focus on 'outcomes' analyses within the already existing evaluative frameworks. Information, there, has always been seen as necessary and as constituting a special form of power. Both 'hard' (facts) and 'soft' (opinions; particularly from clients) forms have been regularly used in decision making processes at the better managed institutions, in dealings with accrediting agencies (extensive, regular self-assessment processes have been required of all institutions in the U.S. for thirty years) and with state governments. While the nature of the requests for information change as the state leadership changes and as the economic setting evolves, the data systems and information capacities of the managerial schemes evolve apace. The term 'performance indicator' in North America has no widely appreciated connotation. The need has not been to designate specific performance indicators across the system, but to build the data systems that could be used in this and other ways, as needed.

In Europe, by contrast, and of course in many developing countries that have universities and higher education schemes that are copies or reflections of the European systems, a very different situation has existed with respect to the availability and use of management information, particularly at the top of universities and in the government ministries. The lack of highly developed corporate cultures in universities, the lack of a concentration of executive power and goal-directed management at the top of the organization, and the lack, until recently, of any substantial government pressure to be competitive and make strategic managerial choices, to be efficient and effective and to demonstrate same, yielded little by way of development of institutional research and decision support systems, as was seen in North America. Power and information (such as it did exist) were concentrated in government ministries (or in the case of the U.K. in funding/planning bodies complemented by a separate statistical service) or in the separate faculties of the universities. There were voices calling for institutional analysis and for what was thought to be the major need, 'performance indicators', as early as the mid-1970s in Europe (Sizer, 1989). But it was not until the coming of the financial crises of the early 1980s and the rise of the conservative leadership in the western democracies with its concomitant 'entrepreneurial culture', that a movement began, differentially to be sure and spearheaded in the United Kingdom, to secure readily available, reliable, simple measures of institutional and program performance in the higher education sector. These circumstances produced very strong forces that propelled the movement. It developed rapidly, led by government officials (those with a need for simple, hard, reliable, comparable information and less concern for complexity and less tolerance for ambiguity and complicating factors) and assisted by those trained in the procedures of industrial accounting who were sure they could reduce the complexity about university performance in just the way the politicians and government leaders required.

So the thrust of the performance indicators movement described so well by Cave et. al. (1991) followed from several factors:

1. Universities in Europe had developed neither management information, decision support or institutional research capacity, nor goal-directed management systems.

2. Governments and funding agencies found themselves with considerable need for information so that choices could be made in the absence of adequate information capacity at the institutional level.
3. In those countries and systems where norm-related evaluation schemes, in contrast with more individualized goal-related ones, were preferred, the need for simple, reliable, comparative information across universities became a pressing need as economic conditions worsened, particularly in countries where the costs of the higher education sector had risen to unacceptable levels and where centrally controlled funding mechanisms were developed which sought to operate at least partially in relation to such data.

In developing countries and in the universities therein, with very few exceptions, the information capacity developed far less than was the case in Europe. The information developed within European ministries and university faculties (if not at the top of the university) was not mirrored in developing countries. Lack of funds, trained leaders and managers and a profound isolation from the developments in the mainstream of western and northern countries resulted in a dearth of information and very few indicators of performance. In recent years, some developing countries are being assisted by certain developed countries (the United Kingdom, The Netherlands and the United States most prominently) to begin the development of an information capacity.

If one considers the innate organizational complexities of universities, the cultural and other forces at play, and the pressures on the overall system in the last decade, it is not surprising that the subject of performance indicators, particularly those related to or emanating from government or other funding agencies, is a topic of considerable debate. Indicative of the situation is the following excerpt from the opening paper at the most recent OECD seminar on the topic:

'Performance indicators are controversial, with several of their characteristics or potential uses, even their desirability and the term itself being the subject of active debate and the focus of considerable political activity. To their many proponents, performance indicators are clearly needed by governments and by institutional managers. They are intended to be useful, simple, reliable and objective and they are intended to be used with care lest they be harmful to the institution's programs and systems they are intended to serve. To others they are a less than welcome, reductionist mechanism that often disregards central matters in university life, invades university autonomy and may do serious harm to the academy if, or inevitably when, the 'health warnings' appended to the various formulations are ignored, if they are used for public, inappropriate comparisons or to steer in any significant way the funding for or within institutions.' (Kells, 1991; see also Kells, 1989)

In any event, for the reasons mentioned and for some others to be explored in the next section of this report, there has been a greatly varied interest in and actual development and use of performance indicators across the various countries and even across the industrialized, and ostensibly similar, countries. This will be explored in considerable depth later in this report.

Definition

Until recently, those who have worked to formulate performance indicators and to study their use, did not focus very much effort on the matter of definitions. The definition that accompanied the OECD survey in the mid-1980s was

'An indicator is defined as a numerical value used to measure something which is difficult to quantify. (They are) numerical values which can be derived in different ways. They provide a measurement for assessing the quantitative or qualitative performance of a system.' (Cuenin, 1987)

This relatively unrefined and relatively incomplete offering was considerably improved by the presentation in the Morris Report (1990) in Great Britain.

'Performance indicators are statistics, ratios, costs and other forms of information which illuminate or measure progress in achieving the mission and corresponding aims and objectives of the government (or agency) or of a university (or other institution).'

The definition provided by Martin Cave and his colleagues (1991) in their recent complete and useful review of the subject elaborates the attributes further, but does not mention the aspect of use.

'An authoritative measure, usually in quantitative form, of an attribute of the activity of a higher education institution. The measure may be ordinal or cardinal, absolute or comparative. It thus includes the mechanical application of formulae (where the latter are imbued with value or interpretive judgements) and such informal and subjective procedures as peer evaluations or reputational rankings.'

This writer has attempted to capture the experiences and perspectives of the current OECD Working Group in the following definition. It attempts to take cognizance of the ambiguities of institutional or country context and the technical complexities (in an organizational and psychometric sense and in terms of differences in prevalent evaluation models) and it attempts to give more weight than have previous definitions to the uses of indicators and the needed balance between objective and subject information.

Performance indicators are factual or opinion information gathered from existing data bases or de novo, about the functioning of organizations or their constituent units and for various purposes (monitoring, decision support, comparing, evaluating, improving). They serve as signals to institutions or governments to explore the reasons for deviation from normative or expected levels of activity or achievement in relation to goals or standards.

This definition captures the spirit as well as the complexity of the issues presented in this report.

A Basic Taxonomy

The OECD/IMHE Workgroup on Performance Indicators surveyed the development and use of the indicators across eleven OECD countries in 1989-90. This group of government officials, professors and institutional managers determined quite early in their work that the higher education indicators being requested or used in the countries studied fall into three categories across two general types. The two general types are government and institutional indicators, and the latter type can be fairly easily subdivided into two further categories, namely, institutional management indicators and those that have to do with teaching/learning, research and service .

It seemed to the Workgroup that the first type, indicators for government, perhaps the most highly developed (in Europe particularly but not exclusively) and the most heavily analyzed (see Sizer, 1991, and Spee, 1991), was composed of nationally defined, but, unfortunately, not often very comparable, measures of institutional responses to government goals or policies. Examples would be measures of length of study, access rates, staff and student diversity, and student progress in the system. Of course, these measures are of considerable interest to many governments because the length of study for fully supported students has, in some countries, become very lengthy and certain groups seem to be little represented in the student bodies and faculties. The group of institutional management indicators is a very large, much more idiosyncratic one, about which the OECD Workgroup could only make very general assumptions because it involves the ambiguous inner workings of thousands of institutions. A previous survey (Cuenin, 1987) of institutional uses in Europe yielded a great diversity of indicators and variation in the use of information in institutional management and policy making. It also encountered considerable definitional and taxonomic problems. Nonetheless, there obviously is extensive regular use in institutions of such information as workload measures, student enrollment and financial trend data. If the emerging European use of management information and eventually that of the institutions in developing countries become anything like that in the United States, then the data bases will be large indeed, and the categories of program and other measures used inside institutions will number in the dozens or even more.

The category of performance measures about teaching/learning and research is of considerable interest to many leaders within and outside the higher education community. Once again, a different attitude and emphasis has evolved on the different sides of the Atlantic. In North America, particularly in the United States, there is a long experience with student evaluation of teaching by written survey with various items (or measures) about the process of teaching, the arrangement or management of the learning experience, and the perceived progress on achievement of learning objectives (Cave, et. al. 1991), as well as a fairly heavy use of attempts to assess acquired knowledge through normed, subject matter, national testing programs and measures of aptitudes for learning, including some higher order cognitive measurements and measures of general educators or liberal learning. With respect to research in the U.S., some use of citation analysis and other bibliometric techniques are made, but peer judgement of research proposals or finished product quality is the primary method of analysis. It is, of course, possible to use individual aspects of these measures as 'performance indicators' whether or not one so signifies. Clearly, also, certain aspects of accumulated average student achievement (basic

skill proficiency is a good example) are reported to state governments and regularly reviewed at various levels of U.S. institutions.

In Europe, particularly in the U.K., and in Australia, the governments have asked that there be developed measures of teaching effectiveness. To date in the U.K., the working parties that have reported on this matter have recommended that institutions study teaching and student progress locally with special attention to already existing and country-specific methods of grading standards (use of external examiners, for instance) and that no new summative generic indicators be constituted and applied (Sizer, 1990). The Australian Study Committee has just recommended, after extensive consideration, some quite general proxy measures such as those related to the analysis of student completion rates in light of entering student characteristics, and in so doing to emphasize the normal range of results across similar programs as starting points for analysis of these complex organizational processes. They have also recommended a qualitative measure, student perceptions of teaching effectiveness. (Linke, 1991).

The foregoing is by way of a brief summary of the types of indicators or to attempts to construct same, in each of the categories of the basic taxonomy. In the sections that follow, the influence of contextual factors will be explored, as will be the general development of performance indicators and the controversies surrounding their use. A summary of some specific case experiences on a country-by-country basis will also be analyzed.

THE INFLUENCE OF CONTEXT ON THE DEVELOPMENT AND USE OF PERFORMANCE INDICATORS IN ALL COUNTRY SETTINGS

In order to understand adequately the possibility of developing performance indicators for higher education in both developed and developing countries one must explore and seriously consider several major contextual factors. Such is necessary if one is to understand the reluctance of some institutional leaders to respond positively to such suggestions, particularly to certain proposed uses, such as: heavy emphasis on simplistic quantitative ratios, often concerning costs; published institutional comparisons; cross country comparisons; and the use of convenient proxies for complex phenomena of central importance to institutions. The major contextual factors are: (1) the basic nature of higher education institutions as organizational entities; (2) the motivations for and possible approaches to evaluating such organizations, and the relationship between evaluation purposes and means; and (3) the nature of information needs and use in these organizations, only part of which relates to what has been called performance indicators.

Universities as Organizations

Probably the most neglected subject in the discussion of the assessment, and particularly the comparative assessment, of organizational performance is the fundamental nature of the system about which the analyzers and policy makers wish to make judgements. Major policy mistakes can flow from the use of simplistic assumptions about the ability to observe cause and effect relationships between particular process (or treatment) steps and a purportedly measured outcome, or from the assumption of comparability across these immensely complex, multivariable and often very different systems. Here we are not talking about the nature of the indicators and whether they can be used reliably, but whether the system to be described has clear, accessible basic elements (goals, structures, processes and outputs), and whether they are similar enough across the institutions and systems of institutions (countries) to permit useful interpretation, and whether, for instance, the differences between programs within a given institution on a particular measure are greater than across the institutions of interest. Finally, there is considerable difficulty created for attempts to measure cause and effect (more use of 'x' will cause greater learning or effectiveness or efficiency) when the system contains multi-variable influences including variable input influences (skills and motivation of incoming students), variable goals mixes (particularly across country settings), variable structures and programs (think about the differences between baccalaureate based systems and more with none such programs), different critical mass levels, and vastly different levels of external influence (political, economic, competitive). We know relatively little about the extent to which each of these variables explains the variance in such systems. Table 1 is an attempt, in greatly oversimplified fashion, to list some of the basic organizational characteristics of higher education institutions, and to indicate the relative influence that these characteristics have on the ease with which one can manage and evaluate them (for any purpose) and on the ability to compare performance across institutions and across country boundaries. While the impacts on the first two aspects (management and evaluation) should not need explanation to any experienced manager, it is particularly important to note the interactions in the 'Comparisons' column. The simple message is that it is not easy to compare performance across institutions and systems with different intentions (purposes and goals) structures and programs, with poor information systems, with great variation in the influential input variables and particularly when critically important efficiency (cost) measures are highly dependent on influential and variable wage elements and maturity factors. Again, these factors are related to the system being measured, not the measures per se. When one adds difficulties such as the validity of measures, the extent of reduction of the proxies, the issue of reliability and other aspects of measurement, one can begin to understand why the subject of performance indicators, particularly the comparative use of such techniques, is technically difficult and controversial.

This point of view has been recently and convincingly confirmed by the studies of Johnes and Taylor (1991) with respect to U.K. universities through regression analysis with the four most popular performance indicators (completion rates of students, degree results (level), first destination of graduates, and research ratings) proposed for these institutions. They concluded that input variables explained 80% of the variance in measured performance across the universities and that no indicator could be used convincingly to compare institutional performance. This may not hold, of course, for other countries and systems, many of which are more varied than that of the U.K.

Table 1: Basic Organizational Characteristics of Universities and Their Relationship to Difficulties in Managing and Assessing Performance

Characteristics	Areas of Extent* of Difficulty		
	Gen. Management	Evaluation	Comparison
Power is dispersed in the system and variable**	XX	X	X
Extent of development of the executive function is variable**	XX	XX	-
Complex, multiple, varying,** partially stated goals	XX	XXX	XXX
Highly professional bureaucracy with permanent status	XXX	X	X
Labor intensive production function (costs highly related to wage variable)	XX	-	XXX
Complex, variable**, delegated decision-making	XXX	X	-
Decentralized, variable** production function	XX	XX	X
Underdeveloped data systems and variation** in basic terms	XX	XX	XXX
Variable**, influential input variable	XX	XXX	XXX
Relatively low sequence and interdependence in the production scheme	X	XX	-
Activity and production processes vary across institutions and systems	X	X	XXX
Highly influenced by external variables (which vary across settings)	XX	XX	XX
Outputs only partially measurable	XXX	XXX	XXX

* X = somewhat; XX = considerable; XXX = very high

** = varies across institutions and countries or systems

Some Policy Advice

The policy advice to be gained from this discussion is that if one wishes to assess performance within an institution one must gain agreement among the parties involved on the purpose for the assessment, on the element(s) to be assessed and the nature of the assessment data, and then one must be sure to use trend data wherever possible and to be very careful about influence of contextual factors in the interpretation of the data. Because of the contextual subtleties and complexities involved, indicators should be, at best, a starting point for the judgement in the policy making process, not the only deciding element. For cross institutional and cross country comparisons even more care must be taken, and there is reason to question the validity and usefulness of such comparisons in all situations save those where there is careful selection of (and total agreement on) comparator institutions and systems. Such selection should seek to compare only those units with very similar goals, input variables (cf. access rates), programs and structures, and perhaps general sizes and levels of support. To compare measures, for instance, of large, elite, residential research universities with no baccalaureate programs to other universities which differ from these characteristics or to smaller, vocationally oriented, teaching institutions with a regional mission, an undergraduate orientation and no residential capacity, makes no sense. The data are largely meaningless. Even more apparently comparable situations can yield questionable data because of only one influential factor. Good examples are salary levels as an influence on cost/efficiency, service costs to isolated campus structures, comparisons and administrative costs and staffing ratios across systems that differ greatly in level of government funding, or in the fundamental cultural expectation of the extent of self-sufficiency of students in the system. Comparative assessment must be done with great care and there is reason to view the results of all but the most rigorously selected comparisons with considerable skepticism. This is so in the industrialized and the underdeveloped worlds.

Approaches to Evaluation

A second contextual factor that influences the development and use of performance indicators is the nature of the evaluation scheme or system in which they are being used. While much has been written about evaluation and the range of processes used across institutions and national systems is very wide (see Kogan 1988), what is of importance here is the place of performance information in evaluation and how the nature of the evaluation scheme affects the requirements for such information or sets boundary conditions on its applicability and use.

The types of evaluation that are of most importance in the context of this report is what evaluation experts would call programmatic and institutional evaluation, the evaluation of programs (academic or administrative units) and of entire institutions. Such evaluation is usually a process that involves judgement about the extent to which a program or institution has achieved either pre-determined goals, standards or other expectations, or how it relates to the norms or normal range of activity or achievement. There are two implications for the development and use of indicators for such processes.

1. measures should involve quantitative and qualitative aspects (facts, enumerative and other, and opinions); and,
2. measures must often be specifically attuned to the nature of the unit to be evaluated and its goals and may therefore not be generic enough to be comparable to other settings.

The major implication for the use of performance indicators follows from a more fundamental consideration in evaluation, the mismatch that often exists between the purpose or purposes of the evaluation and the methods employed in the process. Evaluation can be conducted for a range of purposes (general assurance of the public; monitoring progress on government's goals for the institution; assessment against guild or professional criteria; accountability - are stated intentions being achieved?; rationalization and financial retrenchment; improvement of the program or services; and formation of a base for planning choices.) There are fundamentally different procedural attributes necessary to achieve some of these purposes that will not work well with or will even seriously impede the achievement of others. For example, an evaluation for purposes of accountability or public assurance that does not involve an external validity check through unbiased peer assessment is not a believable process. An evaluation to achieve improvement must include self-assessment and the potential for psychological ownership of the results or sustained change will not occur. In addition, the results can rarely be published widely until after the improvements have been made or damage will be suffered by the program or institution in question and improvement negated or prevented. For further explanation of this matter see Kells (1992.)

The additional implications for the use of performance indicators that follow from this analysis are:

1. If the evaluation is conducted for purposes of public assurance about general productivity, minimum standards or financial probity, or if it concerns the reporting of progress on the achievement of government goals, then the performance indicators and level of aggregation of the data should be well understood, if not agreed to, by the universities and the results can be publicly reported. Most of these measures will probably aggregate at a level to permit them to be comparable across institutions, if the basic goals of the institutions are explained.
2. If the evaluation is being performed in relation to performance against institutional goals, then the measures will be very specifically related to the institution or program concerned and may not be comparable across institutions. Depending upon whether improvement is intended, the timing and nature of information to be reported publicly should be carefully considered.
3. If the evaluation is related to professional or guild standards, public reporting of overall results is usually appropriate, but not the detailed reporting of specific data. They should be used internally as a basis of improvement.
4. If the performance indicators are to be used internally in the organization to monitor performance, to spur improvement and/or to be the basis of planning choices, then they will be specifically

related to the idiosyncracies of the organization and to the style of management. They should be kept on a confidential basis and selectively and only occasionally shared with trusted, carefully matched partner organizations and will usually consist of qualitative as well as quantitative aspects (the former usually heavily related to client opinions about performance.)

5. Finally, the evaluation model to be employed will deeply affect the nature and use of information employed, including performance indicators. If the evaluation is internally oriented and goal directed then the measures will be related to those goals, will function against locally determined criterion levels of acceptability and will largely not be comparable to other universities or units. If the evaluation is normative in nature, rather than goal related, then the entire orientation of the data is intended to be comparative and individual data elements are evaluated against the norm (the average across all of the comparator institutions or units) or, preferably, the normal range of data (those data constituting the usual range of results.)

The goal related and the normative evaluation processes are very different and have somewhat different data needs and uses. The prevailing uses of these systems seem, to this researcher, to some extent to be culturally bound. In North America where access levels to higher education are high and there are great differences across institutions in quality and expectations, the goal-directed scheme dominates the evaluation systems. In Europe, and particularly in the United Kingdom, where access is limited and where programs, student performance on and quality of the degree are presumed to be equivalent, normative systems of evaluation employing publicly displayed, comparative data are the system of choice. Hence, one could argue, the general (although reluctant, per Cave et. al.) acceptance in the U.K. of the performance indicator of movement over the last decade.

In any event, one can easily see that the relationship between purposes and means in evaluation can have a profound impact on the development and use of performance indicators.

The Nature of Information in Organizational Life

The final contextual factor that must be considered pertains to the nature of indicators as part of the information used by and about organizations. Organizations use information in three major ways: to explain themselves to others (external relations; assurance); to make internal academic and non-academic management choices on an ongoing basis; and to fuel periodic self-assessment and planning processes. It should be clear that performance indicators, according to the prevalent definitions and taxonomy (see previous section of this report,) may be used in each of these three ways. However, they may not be so used if the managerial style or circumstances do not require it. That is, many universities and external agencies just ask for or provide information (facts and opinions) without designating it as performance, without reducing it to ratios or other numeric configurations or without relating it to goals, standards, policies, or norms.

One critical point in all of this is that with very few exceptions, the basic information that constitutes the indicator is either a product of the normal operation of the universities concerned (or derived from it) or it is purposefully collected by them. In any event, it therefore is owned and controlled by them, and any government or other agency (for that matter, any institutional leader) that seeks to gather to demand performance or other information must be concerned about and act so to ensure verifiability, psychological ownership and willingness to respond or the information will not be provided or not be reliable.

The obvious but critical technical issues of validity, reliability, reductionism and the nature ('hardness' or 'softness'; numbers vs opinions.) of performance indicators are additional aspects of the performance indicator debate. (For a detailed technical review of these innate characteristics of performance indicators, the reader is directed to the works by Johnes and Taylor (1991) and Cave et. al. (1991.) However, the issues of ownership (including access, control of use, potential misuse and the like) and comparability of performance indicators follow primarily from the basic contextual factors. Both sets of factors will be explored further in the sections that follow.

THE DEVELOPMENT OF PERFORMANCE INDICATORS IN INDUSTRIALIZED COUNTRIES.

The development of performance indicators, particularly by government, and the national data systems that permit their derivation, are fairly complex matters, with greatly different motivations, primary emphases and stages of maturity being seen in these developments across countries in recent years. Certainly this has been perceived through the interesting and informative work of the OECD/IMHE Performance Indicators Workgroup formed in 1989. The following sub-section is adapted from a presentation made by the author to an OECD seminar on the topic in April, 1991 (Kells 1991.)

The Workgroup was initiated in response to the recent dramatic increase in interest across quite a few OECD countries and particularly reflected by their governments in the subject of performance indicators or, for some, in the creation of national data bases from which they can be derived or from which other information for planning or decision-making can be secured. The Workgroup concluded that not every country (there were twelve represented) has the same interest or enthusiasm concerning and reaction to the concept of performance indicators. The stage of development of the indicator systems, the perceptions as to their need and, certainly, their use, varies greatly and the acceptability of term, similarly, varies across the countries involved. Clearly some see the term as a 'loaded' one that tends to set off or stimulate opposition in the academic community. The situational context was seen to be of considerable importance to explain the general findings of the OECD effort.

Certainly there has been a greatly increased activity and interest level in the last two or three years in the twelve countries studied and as reflected in the interest across a wider group of countries as well.

However, there is wide variation in the level of activity, primary motivation(s), specific areas of interest and potential or actual uses of performance indicators. Countries like the United Kingdom and Australia are far advanced in their rationales for using indicators, in technical competence and experience with indicators and in access to reasonably reliable national data bases. Countries like Canada, Norway, Denmark and Finland are primarily focusing on the development of data bases with relatively little or no (as the case may be) direct interest in the use of performance indicators per se or in the use for particular purposes, such as their relationship to funding. In some countries, published, comparative, normative data at the department or discipline level is of interest to government and institutions; in some, only to government. In others, the term 'performance indicator' is not used and, apparently, may never be used. In some, government and university officials work collaboratively. In others, there is fear, disagreement and/or distrust about these matters and particularly concerning their impact on institutional autonomy.

Motivations and relative progress.

The interest of government in performance indicators has propelled the increased activity and explorations seen in the last few years. While, in some countries, university officials want access to normative data on a range of issues, in most others the government's interest in establishing processes for selectivity in resource distributions, in efficiency and effectiveness and, increasingly, in the impact of universities on national or regional economies and/or the demonstration of value for public funds invested, has driven the activity or, at least, the interest or curiosity about it to its current levels.

Clearly much more progress has been made with respect to the development of national data bases from which indicators can be derived in some countries than in others, and with respect to measures of research performances than with those relating to performance of teaching and learning. Overall, as one would expect, the most progress has been made on the indicators for monitoring performance on government policies or areas of concern. In several countries there has developed the expectation by government that the institutions develop three to five year plans with goals the achievement of which can be monitored by performance indicators.

Concerns and Controversies

Several aspects of the performance indicator movement are receiving serious attention and some issues are hotly debated. These include:

1. The reliance on available, verifiable, "hard" or objective data derived from the operation of the institution and, perhaps, reported to or recorded in an accessible data base vs the use of qualitative 'soft' opinion or subjective information. Of interest is the recommendation in The Netherlands to develop, maintain and use both kinds of information. See the case exposition, later in this section, and the appropriate Appendix.

2. Access to any national data base is an area of considerable debate in some countries. This involves the issues of ownership (legal and psychological), of selective or differential access and of confidentiality. It confronts the notion of autonomy of institutions with the use of public funds and, therefore, access by the public. It also joins the issue of verifiability of the data since, unless higher education institutions feel that they can 'own' the data and control access to some of it, there is reason to question the reliability of the information they must provide to a system to which there will be unlimited access. They certainly would be unwilling to provide certain kinds of information if it can be taken totally out of context and used to harm the reputation and/or financial status of the institution.
3. The publication of data, particularly comparative data and certainly ranked information (actually and potentially) by indicator, by department and/or by university, is a controversial issue. This is so because, ostensibly, the information can be taken out of context, can be displayed at a level of aggregation that masks significant explanatory elements, or because it is so temporal in nature as to be misleading for the general period of use. Such use, it is argued, could injure by, in effect, destroying the client market of some of the institutions included in the comparisons. Opponents argue that the public has the right to know what the indicators show and that some institutions want comparative information beyond that which they, themselves, can collect and use privately. This issue is a critically important one and relates to the relative reliance on norm based comparisons in the culture of evaluation and to the potential for use of the indicator information for improvement purposes.
4. The use of indicators by government, to influence funding level of (or within) institutions is, perhaps, the most uniformly negative reaction across the OECD countries. Clearly this is the interest of some governments but, in most of the countries, such use is vehemently opposed by the universities. Only in the United Kingdom and, to a minor extent (partially, marginal uses) in Australia and Finland, at this point, is the issue considered favorably at a national level, that is, beyond the obvious internal university use of information to assist in resource allocation directly or in the internal redistribution of marginal resources. The direct use at a national level of performance indicators (or other selectivity schemes employing indicators) for such purposes is a very controversial topic. Opponents consider such use to be very detrimental to the university systems since heavy use of indicator-driven funding will inevitably cause large, dramatic and destructive swings in the funding levels. In Australia, the committee currently studying the matter has recommended only marginal and incentive (positive) use of indicators to influence funding (Linke, 1991.)
5. The use of indicators to measure 'value added' in the teaching - learning process is hotly debated in several countries. It has been proposed by some in the United States and the United Kingdom but opposed strongly by the majority of participants in those debates on technical grounds [since cause and effect is neither clear nor demonstrable and where dynamic influences abound and, particularly in those cases, such as in the U.K. where the measures (grades or levels of degrees

received) proposed may not be directly related to learning or other impacts] Warren, 1984; Wagner, 1990. Since very large differences exist among countries in the content and structure and even level of awards, comparisons between them would be difficult. Surely interest in the concept of value added varies greatly across countries and most would strongly oppose its direct use to influence significantly the funding of institutions or programs.

Any government or other agency advocating the use of a system of performance indicators for higher education, then, has quite a number of policy choices and possible approaches to consider. Again, purposes and means must be properly aligned and the 'health' of the university system carefully considered as the choices are made.

The question now becomes, what approaches and indicators, if any, have been chosen by various countries? Since there are great variations in the country needs, settings and choices, a group of representative countries will be chosen for examination in this report. They represent a wide range of interest, policy choices and activity with respect to the development of performance indicators.

Selected Country Case Descriptions with Some Analysis.

In this section, the experiences of selected countries will be presented in summary form and analyzed. Nine OECD countries were selected from those being monitored by the OECD/IMHE Performance Indicators Workgroup (see Kells, 1990.) They range from those, such as the United Kingdom, in which the subject is of considerable interest and the experience with development and use of indicators is extensive, through those with moderate activity levels such as Australia and Finland, to those such as Norway and Sweden where performance indicators per se are not of particular interest but where collaborative development and use of information for planning, policy development and improvement-oriented evaluation has been the primary intention and where it has been carefully pursued with particular reference to the autonomy and health of the universities.

The case presentations in their descriptive elements are extracts from materials presented by country representatives to the OECD Working Group and published by OECD (Kells, 1990) The original author is indicated. The analysis sections are new and written for this report.

*Australia**

Higher education in Australia has changed dramatically in recent years. Over the last fifteen years or so the number of higher education institutions has been reduced drastically from more than 100 in the early 1970s to around 35 at present. In the same period the total number of students has almost doubled to around 450,000. The reduction in number of institutions has occurred through a progressive process of mergers, based on characteristics of minimal institution size, educational diversity and distance from other comparable institutions determined by the Federal Government as conditions of eligibility for funding, which since 1974 has come solely from the Federal Government. The current institutions are clearly much larger than those in earlier years. At the same time institutions have been largely freed from the influence of state coordinating authorities which in previous years had maintained a considerable degree of control over the non-university sector. Almost all of the current higher education institutions resemble and are called universities and form part of the unified national system of higher education institutions which since the beginning of 1989 has replaced the former binary system. Funding for higher education institutions is based on a three year cycle with a guaranteed funding commitment. The primary basis for government funding is determined by student load with a differential weighting for different discipline areas and levels of academic award. At present there is no formal appraisal of institutional performance involved in the process of funding, other than that relating directly to achievement of the agreed student load.

The development of performance indicators in Australian higher education has been a gradual process evolving from the general pressures for institutional accountability and efficiency which began in the early 1970s. The initial focus was on improvement of teaching and learning through the establishment of institutional centres for staff development and course evaluation and on the introduction of regular departmental reviews using external as well as internal reviewers and covering in a systematic way both the teaching and research activities of the department being reviewed. A national enquiry into education, training and employment (chaired by Professor Sir Bruce Williams) which was established in 1976 and reported in 1979, recommended a checklist approach to this process of periodic review which would help to provide a common set of characteristics to be evaluated but which did not define any specific indicators for evaluating these characteristics. Subsequent reports on measures of efficiency and effectiveness commissioned by the former Commonwealth Tertiary Education Commission in the early 1980s made some advance in defining possible indicators and in exploring the general process of institutional evaluation, but did not attempt to establish a comprehensive set of indicators that could be applied at the system level.

The first systematic attempt to use performance indicators at the system level for departmental and institutional comparison was made in 1988 in a review of Australian engineering. The measures were student preferences, entry scores, graduation and employment rates, student and graduates opinions of general teaching quality, staff publication and consultation rates, and relative provision of continuing education programs.

* This is an abstract from the statement prepared for the OECD by Professor Russell Linke, Dean, Faculty of Education, University of Wollongong, N.S.W., Australia (Linke, 1990).

Further discussions were stimulated in 1987 and 1988 by government discussion papers calling for funding systems related to institutional performance and achievement of agreed upon goals. The Australian Vice Chancellor's Committee formed a Working Party with representatives of Advanced Education as well to establish a range of possible indicators. The group provided a list of some 47 context and performance indicators in 1988 (see Kells, 1990, and Appendix A). A subsequent Research Group headed by Professor Russell Linke was established and is to report in 1991. It is to build on the 1988 work to enable comparison across institutions, to refine the indicators, to give interpretive guidelines and to conduct limited trials to explore practicability and conditions of use with an eye toward use in internal institutional review and any influence on the funding process. The Australian Research Group is grappling with the major issues of availability of adequate, reliable data, the problem of comparability and the problem of applying indicators so that they, rather than the educational processes, don't receive attention. They will be recommending both quantitative and qualitative indicators for use in the teaching and research areas, according to Professor Linke (1991).

At present the Government has no intention of applying performance indicators in a simple formula way to determine the general funding of higher education institutions. It is likely, however, that whatever system is used for general funding purposes will have some discretionary component (probably amounting to less than 10 percent of total Government funds), and it is possible that performance indicators could have some influence on the distribution of this component, perhaps by way of incentive funding for outstanding performance in particular areas of activity. It is likely, too, that indicators will be used by institutions themselves in monitoring their achievement against the goals defined in their respective development plans.

Analysis

The Australian case is perhaps the most interesting case for other countries to analyze. The forces from government to simplify, to compare and to differentially fund have been constructively modulated to protect the institutions as much as possible. Indicators (indeed some very thoughtful ones) and interpretative assistance will be recommended later in 1991 by the Linke Group. The tone of the whole exercise is responsibility to the public and more transparency for the system, balanced by positive, incremental, incentive, marginal funding impacts, as opposed to, say, the British mode of more dramatic, core directed, funding impacts (Linke, 1991). Linke is the premier, experienced analyst of performance indicators, in this writer's judgement. He is an ex-government official who is an academic and he is a superb teacher, analyst and negotiator. The Linke Report will be a most useful document for use by a wide range of other countries.

Canada*

Canada does not have a uniform system of education. Each province has exclusive authority over education in its jurisdiction and, therefore, has its own unique system of higher education. Canada has 82 degree granting institutions with a full-time enrolment in 1987-88 of 486,062 and over 160 publicly funded non-degree granting institutions of higher education with a full-time enrolment of 319,136 in 1987-88. The total expenditures on universities in 1987-88 were \$7.7 billion and on colleges \$3.1 billion. Funds for about 70 per cent of these expenditures come from the provinces; federal funds account for 12 per cent; student fees for 9 per cent; and the remainder comes from other sources. Universities are highly autonomous institutions in Canada; each generally operates under its own charter. Colleges also have significant amounts of autonomy but generally less than universities. Various social and economic factors have created a climate of change in Canadian post-secondary systems. An aspect of this climate is an increased interest in such things as rational planning, institutional accountability, and so on. This, in turn, has led to a growing interest in performance indicators.

To date, formal performance indicators have not been widely used in the management of Canadian post-secondary institutions, but interest in education indicators in Canada is developing at both the national and provincial levels. At the national level, the federal and provincial governments are seeking comparable indicators to monitor the performance of the post-secondary system in relation to national objectives. At the provincial level, governments have an additional concern with the general management of their systems. The most significant national level program is a joint Statistics Canada/Council of ministers of Education, Canada, project which will produce descriptive indicators for post-secondary education in Canada. Several provincial governments are undertaking reviews of their post-secondary systems. A desired outcome for many of these reviews is the implementation of mechanisms for monitoring system performance and achievement of public goals and objectives for post-secondary education.

Since 1987 two major national data base projects, one building on the other, and several provincial efforts have been undertaken. The lists of data categories, rather than any specific performance or other indicators in Canada are included in the 1990 OECD report (Hawkins, 1990).

In sum, currently, performance indicators are not widely used in Canada, at least not by governments. However, issues such as institutional accountability and efficiency, fiscal restraint, the need to monitor accessibility, rising participation in post-secondary education, demands for the rational utilization of post-secondary resources in the meeting of public objectives have created an atmosphere in which governments are beginning to turn to the use of performance indicators in the management of post-secondary education. To date, most of the effort has been to develop descriptive rather than purely performance indicators. Because education is primarily a provincial responsibility, it is most likely that provincial governments will show the greatest interest in performance indicators which could be used to assess the ability of post-secondary systems

* This is an abstract of the statement prepared for OECD by Stephen Hawkins, Coordinator of the Research and Analysis Unit, Ontario Ministry of Colleges and Universities, Toronto, Canada (Hawkins, 1990).

to achieve publicly declared goals and objectives. The federal government, on the other hand, will probably continue to monitor developments in post-secondary education using more descriptive types of indicators.

Analysis

Canada is a good example of a large, complex (federated) country without dramatic financial problems, but with a solid interest in monitoring of performance of institutions against goals and government policies, and in accountability and efficiency issues. The focus is on data base development and mostly descriptive at this point. The level of aggregation of the data in the bases is at the college level and upward, rather than the program or department level.

Denmark*

The Danish higher education system expanded dramatically during the sixties and seventies. New institutions were built, there was rapid growth, general prosperity and a democratic ideology in the society.

The University Administration Act of 1973 under which institutions operate is founded on two basic principles giving the Board of Studies in the university the responsibility for the study programs and the Faculties the responsibilities for the funds, the employment of academic personnel, awarding academic degrees etc. This division of responsibility gives rise to certain internal problems of coordination and many, yet unsuccessful, attempts have been to change the Act.

In 1973, the Treasury published a long-term forecast of the most likely developments in the different major sectors of the public economy in light of current trends. The report showed quite clearly that the rise in the expenses of higher education and in other sectors of the public economy could not continue and had to be better controlled. In 1974, the Ministry of Education presented a general plan for improving the management of the higher education system. Later in 1974 the Directorate for Higher and Further Education was established with its first and main objective to carry out the plan. The central elements in the plan were: (1) regulation of access to higher education, which meant restricted access to a number of educational areas and a more conscious planning of the student numbers in relation to broader study program areas on the basis of societal needs and present labor market experiences; (2) better information on student trends and labor market statistics. The words 'performance indicators' were not used at that time, but in many ways it was information of that type that was wanted and to be used in the planning process; (3) budget reform which could improve efficiency and make the Ministry better able to control expenses; and (4) general study reform introducing bachelors, masters and Ph.D. degrees.

* This is abstracted from the statement prepared for OECD by Hugo von Linstow, Research Consultant, Danish Ministry of Education and research, Copenhagen, Denmark (von Linstow, 1991).

It was, however, in 1976 that the Parliament finally adopted a law that gave the Minister of Education the power to regulate access to higher education and fix the student numbers within broader study program areas. To that end labor market statistics and unemployment statistics were employed to provide better indicators of the present situation and needs for academic labor. The general theme for the redirection of the system was to change the interest of the students from program areas with poor labor market employment prospects to those with good prospects. This campaign had some effect and the regulation of access did the rest.

In 1980, a general budget reform was introduced based on the overall principle of ensuring transparency and comparability in the budgeting process. The reform intended that the total budget of each institution should be based on developments in teaching, research and other activities. The key element in the budgeting process should be the number of scientific personnel. Due to the fact that the requirements for technical staffing and other cost differs significantly within disciplines, the budgeting is based on the faculty level with rather different standards by faculty. Also, teaching and research was budgeted independently.

The Ministry has so far managed to fulfill the overall policy objectives of controlling the budget and have brought the education system in better balance with the needs of the labor market. A system of professional long-term planning has also been implemented with special reference to research planning and allocation of posts to specific areas. There are, however, a number of weaknesses that flow from the lack of accurate information and a need for evaluation and control.

It is the general view that the growing decentralization of authority in Danish higher education should be combined with more frequent evaluation of results. Self-evaluations, site-visits and other external evaluations demand good information of both qualitative and quantitative character (performance indicators). Lack of relevant quantitative information will make it difficult for the evaluations, and if the information is not at hand, it is time-consuming and costly to collect. That will again reduce the effectiveness of the monitoring process.

For these reasons and in order to achieve a more effective administration and management of the institutions of higher education, the Ministry has proposed to develop a general computerbased information system. The new system is supposed to be the general tool in the daily administration of the institutions but designed in a way that important information for the overall management of the institutions is provided at the same time. The system is planned to be an integrated system and shall be developed in cooperation with the institutions of higher education. The primary purpose is to provide the institutions with new technology so that the normal administrative activities can be handled more effectively and at the same time strengthen the internal resource allocation and quality control in the process of managing the institutions. From these systems information in the form of actual statistics and performance indicators will be transmitted in an aggregated form to the Ministry and other governmental administrative bodies.

The project to develop the information system has already been criticized by the institutions with respect to the requirements for more relevant information on research activities and concerning the time used in actual teaching and research. With respect to other parts of the system, there is a general agreement between

the Ministry and the institutions. At the moment it is not clear how this critique will influence the final design of the system.

Analysis

The Danish case is a particular elaboration on two themes: the need for government to steer a system that has not had a history of planning, evaluation and effective management controls; and, the need to establish a useful data base that government and institutions can use. The lesson, however, from the Danish experience concerns the need to proceed with such collaboration in a manner that will establish positive cooperation (and therefore verifiable data), control on access to certain data, a proper level of trust. The circumstances of the last twenty five years have produced in Denmark a most difficult situation from which to fashion such a collaboration.

Finland*

Finland has twenty university level institutions, about 100,000 enrolment corresponding to almost 20 per cent of the age cohort. Organized science policy and belief in national planning have been characteristic to the development of the Finnish system of research and higher education since the 1960s. Regional expansion of the higher education system, democratization of the university administration, mission-oriented research promoting social progress, and a 'syllabus reform' intended to narrow the gap between traditional academic and vocational education were the key ideas of the 70s. While each university has some degree of autonomy in its internal affairs, the Ministry of Education is the central unit of state administration of the research and HE system. Research expenditure has grown rapidly during the 80s. The plan is to increase during the next ten years. The most rapidly growing part of the research system has been applied research and development in industrial enterprises or institutes.

A new Higher Education Development Act came in force in 1987. It guarantees that the funding of research will grow by 15 per cent annually during a five year period, but on the condition that the performance of the universities is accounted for and evaluated. Resource planning, efficiency, flexibility, leadership, and accountability have thereby become the key words of the current science and university policy.

The Academy of Finland has started a series of evaluations of scientific disciplines in Finland. The evaluations use international experts who make site visits to research groups in different universities and give an assessment of the quality of their work and its promise for the future. The evaluation reports written by the international experts have, among other things, focused on the level of international cooperation among Finnish scientists, the extent to which Finnish researchers publish research results in journals with an international

* This statement was abstracted from that prepared for the OECD by Professor Ilkka Niiniluoto, Department of Philosophy, University of Helsinki, Helsinki, Finland (Niiniluoto, 1990).

audience, and the length of study needed to complete the doctoral dissertation. The first of these evaluations in 1983 created anxiety among those evaluated. But by now it is quite generally accepted that such an extended version of peer evaluation may be useful and informative, even a necessary complement to quantitative science indicators, which cannot alone indicate the quality of research. However, as the third Basic Research Committee observed in 1989, evaluation by international groups is expensive and time consuming, so that they felt that reviewing all fields of basic research within 5 - 10 years was unrealistic.

The universities have taken some initiative in developing and using performance indicators. The University of Helsinki started a reform of the Rector's Annual Report: it now contains statistical data about the activities (personnel, finances, teaching, examinations, research output, other scientific activities) on the departmental level.

In a working group of the Ministry of Education on Improving the Methods of Evaluating the Performance of Universities, several proposals were made in 1985 for methods of evaluation and follow-up of university performance. The Group felt that evaluation of the performance of higher education is necessary and, if properly carried out, will help universities to direct their activity according to current or expected needs, to improve the quality of performance, and to make up deficiencies. The results of evaluation should be used primarily for decision making within an individual university or its various departments with respect to their own activities.

Until 1986 the allocation of resources for higher education was based on an Act dating back from the 1960's. The development of new legislation includes increases in funding for research and post-graduate studies in universities by 15 per cent annually between 1988 and 1991. The government required that a performance evaluation system be set up in all universities which will provide comparative information about the results in research and in teaching as well as about the costs. The universities are required to report on their activities and the summaries will be included in the higher education development plans. The allocation of funds will be based in part on the results achieved in teaching and in research, and there will be a reallocation of funds depending on the changing needs.

The KOTA database

The Working Group on Improving the Method of Evaluating the Performance of Universities proposed that a system be established which would rationalize the scattered and partly overlapping collection of information and data. The Ministry of Education maintains the resulting KOTA database. It is stored in the VAX 8650 mainframe of the Ministry at the State Computer Centre. All the institutions of higher education have access to it. The database can be reached through FUNET (Finnish University Network), and it is linked with some foreign computer networks as well. All the data contained in KOTA are public statistics. The KOTA database does not contain data by departments or about individuals. Such information is available in the annual reports of the universities. The KOTA definitions relating to content, concepts, classifications, and compilations are available in the database. The basic concepts and definitions to be used by the institutions in their own data

files for purposes of the national data collection are defined in a KOTA manual published and annually updated by the Ministry of Education's Department for Higher Education and Research. The database has included mainly simple indicators of teaching, but research indicators were also added to it in 1990. The information is provided by the universities.

The database contains the following higher education data by institution and by educational field from 1981 onwards:

- number of students
- number of degrees conferred (masters, licentiate, doctorate)
- staff by rank
- costs
- supplementary training courses
- space, facilities

The information content and the applicability of the database is being further developed. The information on the year 1988 contains details on sources of income other than budgeted funds. The next compilation includes information on scientific publications, and Finnish research fellows working abroad.

Universities are also asked to develop databases and methodologies which will enable the evaluation and planning of research activities. The universities are also asked to consider the basis for the distribution of funds between different units, departments and projects. The working group has suggested that the basis for distribution of funds be research project proposals, an evaluation of their purpose and feasibility as well as the previous performance of the research team. The indicators describing the previous performance in research will inform the decision makers more about the state of the research activities and possible problems. It is still understood that the numerical values will not permit an evaluation of the quality of research. That has to be done in the research community according to its own principles.

The Council for Higher Education has published in 1989 a small book *Indikaatto reita, indikaattoreita, indikaattoreita* which calculates from KOTA 88 for each major field (humanities, social sciences, natural sciences, ...) in each university the following relative performance indicators:

- students/teachers
- degrees/teachers
- costs (salaries, consumption, equipment)/students
- costs/degrees
- post-graduate degrees/professors
- post-graduate degrees/basic degrees
- other personnel/teachers
- consumption/students
- consumption/new students
- consumption/teachers

- consumption/professors
- equipment allocation/students
- equipment allocation/new students
- equipment allocation/teachers
- equipment allocation/professors

Also some faculties in the University of Helsinki have calculated indicators on the departmental level and used them informally in decision making. For example, the Faculty of Humanities is preparing a report of its activities, where, for example, the load and achievement in teaching is expressed relative to the number of teaching staff. This report will be used as a tool of planning the distribution of resources in the 90s.

The idea that indicators could provide a mechanical or 'blind' method for deciding how to allocate resources has generally been rejected, both among the state bureaucrats and the scientists. Still, it is quite generally thought that they may be useful tools, if developed and applied so that the scholarly interests for high quality in university teaching and research are properly respected. Therefore, the new evaluation procedures are now acknowledged as a 'matter of fact', with the reservations that the evaluation should be motivating and activating the scientific community and that the universities should be able to benefit from the evaluations. It is easy to invent or construct performance indicators, but it is more difficult to interpret their significance and to measure them in a reliable way. Partly as a reflection of the current need to investigate the possibility, nature, and effects of performance indicators and bibliometric methods, there are now several proposals for establishing new research centres for science studies in Finland.

Analysis

Finland is not under great financial stress. Rather it is expanding its support for higher education. The Finnish case is interesting because, contrary to much experience elsewhere in expansive situations, the Finns are currently and carefully developing approaches to using data. They have a high tolerance for ambiguity, are cautious in their use of indicators (marginal impact on funding, at best) but are genuinely interested in monitoring achievements, guiding investment and developing their system intelligently.

France

The French higher education system is large, differentiated and, with respect to planning and development aspects, highly centralized. There are three major sectors, the Grandes Ecoles, composed of some 300 diverse and independent schools of professional education, a university sector of more than 100 institutions, and a massive separate section of over 1000 institutions. More than 40,000 teachers and 20,000 researchers are employed in the overall system. (Friedberg and Musselin, 1987.)

In the last half of the 1980s there were initiated two significant developments in the French higher education system. The first was the establishment of an institutional (as opposed to program or discipline level) evaluation system, operating in an independent way and reporting directly to the President of the Republic. It is a system based largely on external peer review but which employs descriptive information that is submitted by the institutions to be evaluated. The initial reactions of university leaders to the evaluation by the *Comite Nationale d'Evaluation* is generally positive and the intention has been to develop a set of indicators to use in the system (Staropoli, 1988) but progress on the indicators has not yet been publicly reported (Cazenave, 1991). There are, however, significant university data bases and information systems being developed within many of the institutions in France (Staropoli, 1986, 1988).

The second recent major development in France is a planning system being implemented by the government that employs four year negotiated funding contracts to universities after they have been reviewed by the *Comite*. The results of the contracts will be reviewed as part of the subsequent cycles of institutional evaluation by the *Comite*.

*Norway**

Higher education in Norway is highly decentralized, consisting of approximately 200 public and private institutions, of which only 10 (including the four universities) have more than 1,000 students each. The system consists primarily of the 4 universities and of a large number of mostly small sized regional colleges operating under 17 regional boards. A few more specialized institutions also have university status. The other colleges mostly offer education of shorter duration, normally two to three years, although a few have the right to grant degrees in specific fields. A few colleges of art and performing arts with a nationwide responsibility may be said to belong to the non-university sector, but without being administered under the regional boards. By 1989 the total student number was approximately 112,000. The objective of Government policy had been, however, a capacity of 105,000 student places by the mid 90s. This proposal was put forward in a long-term program presented to Parliament in spring 1989. The vast increase in student numbers was caused by the lack of quantitative regulation of access at some faculties in the universities.

It is an objective for the Norwegian Government to change the way of governing from the use of detailed regulations to a system of governing through setting up objectives for the different public sectors and expecting certain results. This change is followed by an expectation that all State institutions use a system of planning for a short-term (the budget year) and a middle range term (3-4 years or more). All state institutions must also formulate their objectives in dialogue with the responsible Ministry and establish a system for following up their results. The establishment of a system like this is in its very beginning in the higher education sector.

* This is an abstract of the statement prepared for OECD by Toril Johansson, Assistant Director General, Royal Ministry of Culture and Scientific Affairs, Oslo, Norway, (Johansson, 1990).

The state finances practically all of higher education in Norway. The total funds to be granted directly by the state are determined by Parliament as part of the annual budget. In addition, about 10 per cent of institutional expenditure is covered by external sources, through contract research and research foundations. To all intents and purposes, higher education in Norway is free. The students pay only a minimal fee which is used for welfare activities carried out by their own organizations. According to the Government's budget proposal for 1990, the total budget for higher education institutions will increase by 20 per cent from 1989 to 1990. The budget increase is mainly due to a 73 per cent increase in capital investment, particularly in new buildings. The institutions have not been given a full compensation of the expenses linked to the unusually high increase in the number of students. The expenses per student have decreased 9.2 per cent in the university sector from 1979 to 1987 and 5.9 per cent in the regional sector in the same period. In the ordinary budget for higher education institutions, funding for teaching and research is not separated. Usually additional funding must be obtained from research councils which allocate money according to judgement on research quality.

Norwegian planning of higher education is intended to meet the needs of the labor market, as well as individuals' interest to seek knowledge and competence through the higher education system. Our experience is that except for some of the professionally oriented studies, there has been no clear link between prognostics of future needs and educational planning. A well-educated labor-force is none the less seen as an important productive force. Knowledge is supposed to be of even higher importance in the time to come and this will also have consequences for the adult learner and continuing education.

In the past years, the governmental aim has mainly been to increase the number of students but the time has now come for consolidation. No new institutions of higher education are to be established, and there is a need for merging of existing institutions. The quality of the existing teaching programs is under discussion, as is also the reason for certain examination results, the question of drop outs and the slow progression of students through the education system. In the public debate these questions are usually linked to the discussion about aid to students.

Performance Indicators and Institutional Evaluation

At the national level, this evolution is in its very beginning. The need for development of performance indicators and institutional evaluation is linked to the changes in the management of higher education institutions. Increased self governance in financial as well as other matters has forwarded a discussion of how to create a national policy of higher education in a decentralized system. How will central government allocate resources to the institutions based on a system of allocation of lump sums instead of giving detailed instructions on how to use the money? Also the institutions themselves have questioned the legitimacy of the Ministry's allocation of resources and asked whether they are based on historical differences or on real needs. In Norway we do not foresee a system of resource allocation strictly related to certain key figures such as student numbers, passed examinations and published research results, but we do hope to establish a more transparent system of resource allocation. And we hope to establish a system helping us to pose better questions related to productivity as well as quality.

A higher education system ruled partly by a lot of decisions taken in the Ministry secures for the Ministry information about the institutions, even though the information might be fragmentary. A self-governing system deprives the Ministry of this kind of information. A movement toward the latter accentuates the need to seek alternative information. Motives for a new orientation in the Ministry may be said to be a need for information, as well as assessment of productivity and quality. Preliminary work is being done on the requirements to establish a data-base on higher education statistics. To make this to an instrument of management, the developmental work is being done with close contact between the Ministry and higher education institutions. Institutions in the university sector have established a working group to develop a set of parameters to compare institutional resources and results. This is being done in close contact with the Ministry and the institute that works with the already mentioned database.

Guidelines for the new system of institutional planning is another instrument in governmental reorientation. All institutions of higher education are now implementing the new system of short-time and medium range planning. Since the planning system includes establishment of a system to follow up results, there is a widespread activity to find measures for what is quantitatively measurable, but also to find systematic ways to report results that must be qualitatively described. Some institutions both in the university and the non university sector have programs where students evaluate their lecturers. A longer tradition relates to peer-review evaluations of the research at a university or other research institution. Finally, there is continuing evaluation performed in higher education institutions related to student examinations, doctoral programs, employment of personnel and applications for research funding. In these evaluations external evaluators play a prominent part.

While there is now no established system of performance indicators in Norway, one can say a few things about likely operating dimensions. Interinstitutional comparisons have hardly ever been used in Norway. The same is to be said about rankings of institutions. The University sector working group has issued a preliminary report on their work. One of the outspoken aims of this project is to see if it is possible to establish a system which is more transparent than the existing system and thereby also facilitate interinstitutional comparisons when it comes to allocation of resources.

A closer review of institutional performance will probably be a result of the changes in the system of governance of higher education. Whether Central Government will have a role in the assessment or only 'assess the assessment' is not decided yet. Which role performance indicators will play in the assessment is also unknown. Some work on this topic is being performed in some of the higher education institutions, whereas the Ministry has concentrated on ways of improving information about higher education, specially related to statistics. How this information will be used and how resource allocations will be affected is still to be seen.

Analysis

The Norwegian case describes a relatively small country not under great financial stress, but one that wants to initiate certain carefully considered policy changes involving greater steering of the system within a policy of decentralizing the decision-making. There is deliberate and sensitive development of the capacity to enact changes and due consideration of cultural and historical inclinations, for instance, not until now to use

institutional comparisons, published rankings, or use of the term 'performance indicator'. Database development is being discussed, as it is in most of the other case countries.

*Sweden**

Since the higher education reform of 1977, Swedish higher education has been an integrated system which includes not only traditional university studies but also those of a various former professional colleges, as well as a number of study programs previously offered by the secondary school system. Two main ideas were fundamental to the policy of a single comprehensive system of post-secondary education: the urge to reduce differences in status between different types of post-secondary education and the strong requirements, at the time, of rational planning.

The six universities and the 30 or so university institutes and university colleges in the comprehensive system offer essentially the same types of study programs and separate courses, ranging from the largest universities with their full range of faculties and programs to the smallest regional university college with only a small set of study programs within one or two faculties. Only the universities and university institutes of technology and medicines have a permanent research organization and post-graduate programs for doctoral studies.

A 1977 higher education reform, which had the effect of integrating practically all post-secondary education with the higher education system, also included a central admissions system and after a few years, the total volume of all study programs came to be specified by the Riksdag (Parliament.) Since then the number of first-time enrollments has remained practically constant, at the same time as there have been variations in the distribution of student numbers between study programs within these total frames. Thus volume of Swedish higher education in the past 20 years, despite the generally dynamic tenor of national development, has not been allowed to increase. This is now being reconsidered.

A decentralization process has been going on for some considerable time and has now entered a particularly intensive phase. Universities and university colleges are in various ways being given greater autonomy and, accordingly, increasing responsibility for planning, resource allocation and development. Important changes are being made to funding and budgeting systems, with the result that State funding of universities and colleges will be more on lump-sum basis. This decentralization of power to universities and university colleges does not mean that the Government and Riksdag intend to relinquish all control. A change is being made from management by directive to management by objectives and in order for the latter system to be viable, activities have to be followed up and evaluated more systematically than has previously been the case in Swedish higher education. Quite logically, responsibility for follow-up, quality control and activity auditing is

* This is an abstract of the statement prepared for OECD by Marianne Bauer, Head of the R & D Unit, National Board of Universities and Colleges, Stockholm, Sweden (Bauer, 1990).

also being mainly entrusted to each individual higher education unit. In addition the National Board has the task of following up developments at national level, acting as a supervisory authority for higher education activities and helping to establish a viable system of follow-up and activity auditing within the higher education sector. This being so, evaluation questions naturally have a high priority in Swedish higher education, one such aspect being the development and use of performance indicators.

Sweden has been a strong believer in rational planning with concomitant evaluation of all reforms and the encouragement of self-evaluation at all levels of the system in recent years to augment the capacity of the higher education authorities for critical analysis and evaluation of their own activities, with reference, among other things, to goal achievement, efficiency and capacity for renewal. The growing realization, aroused in many quarters, of the need for evaluating one's own activities has not, however, invariably resulted in action. One reason is that there was previously no demand for the results of these evaluations. This situation is changing now that the Government and Riksdag are switching to management by objectives, with the demands it implies for systematic follow-up and evaluation.

Characteristics of the Intended System

Sweden will not introduce a completely new, uniform system of follow-up and evaluation for higher education but will build on and develop further the forms of evaluation already existing. We regard research and higher education, compared with other social sectors, as to a great extent "self-evaluating systems" with many in-built quality checks and incentives, albeit referring mainly to research. This system, then, needs to be supplemented in various ways, but it is essential for the methods then applied to support, strengthen, stimulate and challenge the in-built self-auditing and the pursuit of quality which are distinctive characteristics of an efficient professional organization.

A fundamental component of this system would be the annual report on higher education activities published by the National Board. All universities and colleges send in documentation concerning their activities during the previous year. This comprises recurrent statistical data on resource utilization and results, together with remarks on the year's results and events. At the National Board this material from all the universities and colleges is synthesized and analyzed at national level and published as the annual report. The statistical data which, for six years now, have been regularly collected and presented in the annual report, are as follows for under-graduate studies:

- no. student equivalents provided
- no. student equivalents utilized
- no. annual student equivalents provided
- no. annual student equivalents utilized
- total credit (point) production

- total expenditure
- total no. graduations.

The activity auditing that was previously initiated, especially at subject department level in connection with the follow-up of the higher education reform, should now be capable of revival and of playing a more important part in the new steering systems. The subject department as an organizational base unit and a physical and social environment for both research and teaching has a vital bearing on the qualities and results of these activities. But other types of service units, such as libraries, information processing centres and administration, should also follow up and evaluate their own activities.

The National Board will doubtless also be taking the initiatives to bring about national evaluations of study programs and research fields but every university and college can and should take initiatives of its own to bring about common evaluations of different parts of its activities. Examples of such projects already exist but they need to be multiplied several times over. Apart from comparisons between Swedish universities and colleges, it is also desirable that certain comparisons should be made with corresponding study programs in other countries. Co-operation is now being developed, primarily with the Netherlands.

Where research is concerned, national evaluations have also been conducted in Sweden, partly by the Natural Science Research Council in certain fields, and also with reference to entire disciplines, viz history and sociology, by the National Board in collaboration with the Council for Research in the Humanities and Social Sciences. These evaluations have taken the form of international peer-reviews. No specific demands have yet been presented for the reporting of research results, but a Government Bill from 1988 concerning the structure of higher education policy, stated that 'departmental boards, study program committees and higher education governing bodies, as well as the National Board of Universities and Colleges, must develop reasonable yardsticks of results showing, in a manner intelligible to the general public, how Swedish higher education and research are placed by international comparison'. Local experiments using indicators of various kinds are now being developed and have been in use for several years in some quarters. Indicators of research productivity and quality, e.g. in the form of publication and citation index frequencies, have also been used in special evaluative projects.

As regards questions concerning the reliability and comparability of these data, a lot of work has been devoted to preparing distinct definitions of the nature of the data and instructions as to how they are to be delimited. There is also the matter of the criteria to be applied to any new data on which the common annual report is to be based. Even if these definitions and instructions are fully complied with, the data will inevitably reflect differing conditions and situations in different types of higher education establishments and in different faculties and subject fields, so that they cannot be directly used as a basis for decision-making or combined into more complex information unless one is closely familiar with the special circumstances of a field or unit.

With a more systematic follow-up and evaluation of the Swedish higher education system still under construction, it is too early to pronounce on the outcomes of this process. In discussions hitherto, the prevailing attitude has been that the system of indicators developed must not be directly linked to resource allocation at

central levels. The basic statistical information described above is intended to supply continuous description and overview of available resources and of quantitative results of higher education and its development over time. This basic information must also be capable of serving as a signalling system at both central and local levels so major deviations in any respect or an undesirable tendency can occasion closer investigation of the underlying causes. Even if certain basic data can be linked up with aspects of quality, the quality control of both research and education must be conducted with different procedures and in direct contact with the active process concerned. The basic information collected at central level is not designed to place Sweden's universities and colleges in ranking order but to help all units to maintain an internationally good standard of productivity and quality.

Analysis

The Swedish case is important because of the strong tradition of national planning and the links between government goals and the new evaluation (including self-evaluation) and planning system being developed. At the same time there is the intention not to link any system of indicators and evaluation results directly to funding at the central level. As the financial conditions worsen for Sweden in 1991, it will be interesting to observe how the system evolves.

The Netherlands*

There are two streams in Dutch higher education. Twenty (including seven theological) universities prepare students for independent scientific work in an academic or professional setting. The 87 HBO institutes concentrate on applied science, and provide their students with the knowledge and skills they will need for specific occupations. The Open University is a relative newcomer. It offers fully accredited university and HBO degree programs, plus other courses, largely in the form of distance education.

The government allocates annual budgets to the universities and HBO institutes which account for about 90 per cent of their income. The government also sets the educational policy framework within which the universities and HBO institutes must operate. At the same time, however, there is a longstanding and highly valued tradition of academic freedom and institutional autonomy. The content of courses is never dictated from above. Since the beginning of the eighties, the Dutch government has been trying to reduce its budget deficit by cutting public spending. The universities and HBO institutes have been among those to feel the effects of policies of austerity.

* This is a considerable distillation of a lengthy statement prepared for OECD with contributions from a group of Ministry staff members and university professors including: M J G Bormans; R Brouwer; F J R C Dochy; O C mc Daniel; F J H Mertens; C M M Paardekooper; M G R Seegers; A A J Spee; H S S Tseng; R J in't Veld; and W H F W Wijnen. (Bormans, et. al. 1990)

One of the main shifts in government policy towards higher education is the increasing demand for greater relevance to society. The government is trying, without infringing on traditional academic freedom, to encourage the universities to supply science and industry with the manpower they need, and to generate new knowledge and technology that can benefit the economy.

The role played by the government in higher education, and its relationship with the universities and HBO institutes, is changing. At the same time that it is urging greater efficiency, the government is detaching itself further and further from any direct involvement in teaching, research and administration. It will be up to the institutions' own departments (vakgroepen and faculteiten) to develop systems for maintaining standards. Budgets in the higher education sectors will remain under severe pressure, at least for the time being. Universities and HBO institutes will be expected to respond to ever-changing demands of both science and society while their resources are shrinking. This means constantly weighing alternatives and setting priorities, which in turn calls for new instruments for assessment and decision-making.

A system of intensive quality assessment will be introduced and will lead to public knowledge on the quality of teaching and research of the separate institutions. The existence of reliable quality judgements will enhance competition between institutions. Because of the fact that government is ultimately politically responsible for the functioning of the higher education system, the ex post exercised governmental control should enable judgements about the developments. The government can only perform this task if methods and results of evaluation make it possible to a large extent to compare the performance of the different institutions. That is why, apart from general insight into the performance of the system, performance indicators form an important part of the tools to implement the proposed alignment of administrative relationships.

Characteristics of the Intended System

The responsibilities of the higher education institutions and the Minister of Education and Science are complementary in the Dutch system. Quality control by the institutions implies in the first place self-evaluation by the faculties. In a guide produced by the Association of Cooperating Dutch Universities (VSNU) to help faculties prepare for a visit from review committees, self-evaluation is described as follows:

- a systematic analysis of how a faculty or part of a faculty operates, describing the existing situation, strengths, problems and plans for the future;
- part of a continuous process of concern for internal quality;
- a stimulus for internal discussion about quality which can lead to the decision to take independent measures to improve standards;
- the synthesis of faculties' educational reports and development plans.

In the second place, quality control necessitates some comparison between faculties. This is done by visiting review committees composed of fellow academics (preferably not members of the faculties to be inspected but professors emeritus or scholars from abroad, for instance) and representatives of the 'market' and professional organizations. The composition of the review committees qualifies them to make an adequate

assessment of quality from both an academic and a social viewpoint. The committees study the basic data and self-evaluation of the faculties at the various higher education institutions and then visit the faculties. Their findings are presented to the executive board of the institution concerned. An overall report is drawn up for each discipline, which is made public, while a confidential report is sent to each faculty. The third element of quality control by the institutions themselves is that the latter must respond in an appropriate way to the findings of the review committee. The institutions are expected to indicate in their development plans what they intend to do about the committee's findings. The first, albeit experimental, national and interdisciplinary review committees started in 1988. In 1993 all university sectors will have been reviewed.

The results in the years to come will be the decisive factor in determining whether the government will assume an active role in quality control. Even if it is only by way of contra-expertise, the government is at liberty to form its own boards of inspectors, the threat of which acts as an inducement to the establishments to keep their systems in good order and not to ignore the results. The government's role in the process of monitoring standards is above all a complementary one.

One implication of this is that the performance of the establishments must be made visible. It is thought that performance indicators can play an important role here if they are meaningful and acceptable to both parties. That is why the government has been stressing the necessity of a dialogue about choice, form and method of application. An agreement in principle on this matter has been reached with the institutions but there is still much skepticism because of difficulties being encountered while trying to identify relevant and meaningful indicators. In the Higher Education and Research Plan 1988 a tentative list of education indicators was published by the Ministry. An example of information about performance was collected from computerized databases of the Ministry of Education and Science itself. The analysis on basis of performance indicators was only made for the universities. This is because extended databases were available only for the 13 general universities. These indicators, intended to compare the universities, were rejected by the universities and were not implemented.

In 1988, the Minister of Education and Science initiated a working group on performance indicators in which the ministry, the inspectorate, the universities and the HBO institutes participated. This group was asked to agree on the selection of useful indicators. The selection procedure may be described as a process of searching for a common language, in order to translate the abstract goals into concrete matters. Moreover, a Research Group of the University of Limburg was asked to evaluate the validity and reliability of possible performance indicators. The initial group of indicators recommended on The Research Group is printed in the Appendix. Since initial consensus is reached on these indicators, further reactions are being gathered and this proposal will be discussed further.

The results of institutionally based and collaboratively conducted quality assessment procedures in The Netherlands in the years to come will be the decisive factor in determining whether or not the government will assume an active role in quality control. One implication of this is that the performance of the institutions must be made visible. It is thought that performance indicators can play an important role here if they are meaningful and acceptable to the government and the institutions.

Analysis

The Dutch experience is, along with the British and the Australian, important for other countries to observe. The Swedish leaders, for instance, long known for their rationality and careful planning, look to the Dutch for experience. Holland is undergoing change and financial stress. Yet, it carefully pursues a balance of power between governmental and institutional prerogatives in a structured dialog in analyzing its system and making changes. Even the formulation of a set of indicators, as yet largely not implemented, was, eventually, a joint effort and resulted in a fascinating array of qualitative as well as quantitative indicators. The Dutch program review (quality assurance) system is the most advanced in Europe and information plays an increasing role in the self-evaluations, peer reviews and ministry oversights employed.

United Kingdom*

Institutional and departmental performance assessment and performance indicators attracted limited attention in United Kingdom universities during the 1970s. While most institutions produced internal management statistics and performance indicators, primarily input and process measures, there had been little systematic discussion of their strengths and weaknesses or of how they should be used to support planning, decision making and control. Nor was there any systematic exchange of management statistics and performance indicators between institutions on either side or across the binary university vs polytechnics line. While a Seminar on Institutional Adaptation and Change in the United Kingdom in 1981 provided an opportunity to place institutional performance assessment and performance indicators more firmly on the agenda for the 1980s, two events aroused interest in, and raised the importance of, performance indicators. Firstly, the election of a Conservative Government in May 1979 and, secondly, the highly selective approach adopted by the University Grants Committee (UGC) in implementing reductions in recurrent grants in July 1981. Though the UGC never published its criteria it was widely assumed that input measures such as student grade, level scores from secondary school, were employed. However, the more significant influence was Mrs Thatcher's arrival in Downing Street.

Since the election in May 1979, economy, efficiency and effectiveness, value for money, performance indicators, executive styles of management, devolved budgeting and accountability within institutions, and departmental and individual performance assessment have risen high on the agendas of the Treasury, the Department of Education and Science (DES), the funding bodies (UGC and NAB and their successors, UFC and PCFC), of Vice-Chancellors and Polytechnic Directors, and academics and administrators.

* This is abstracted from the statement prepared for OECD by Professor John Sizer, Loughborough University of Technology, United Kingdom (Sizer, 1990).

Framework and Mechanisms

The joint CVCP/UGC Working group (now the Joint CVCP/UFC Performance Indicators Steering Committee) was established in July 1985, and in its initial work was concerned with developing a sound conceptual basis for the subsequent development and publication of indicators. This conceptual stage was essential because of the initial suspicions of many vice-chancellors and academics concerning their use, and possible abuse. It was also necessary to proceed carefully and slowly in the early months, because of the need to consult with, and take account of, the views of universities.

The Working Group accepted performance indicators as an aid but not a substitute for judgement, as essential management information. It decided its work should be directed primarily to the major functions of teaching and research. In doing so it has had two broad purposes in mind: (i) to assist in better accountability; and (ii) to provide management tools for use at different levels within the system. It has sought to develop practical means for the identification of the strengths and weaknesses of individual indicators in order to facilitate effectiveness and efficiency. It has recognized that whilst judgement must count, in the end it must be based on objective measures of performance as far as possible.

The Working group asked itself, 'What are performance indicators?' and concluded they are statements, usually quantified, on resources employed and achievements secured in areas relevant to the particular objectives of the enterprise. That the Group recognized the term 'performance indicators' is itself significant. The emphasis is on performance as distinct from intention, and on indicators as signals or guides rather than absolute measures. It concluded sound PI's should display certain characteristics:

They must relate to stated objectives of the organization; in the case of universities the Group has taken these to be primarily teaching and research. But there are many activities of universities which underpin their primary roles, or are even peripheral to them. It is proposed that indicators relating to all aspects of a university's activities be developed as soon as practicable.

They must be specific, quantifiable and standardized so that the information can be used for making valid comparison within and between institutions.

They must be as simple as possible consistent with their purpose.

They must be acceptable and credible in the sense of being free of systematic bias.

They must be useful and capable of acting as signposts to areas where questions concerning operations can and should be asked.

The Group drew a distinction between input, process and output indicators but concentrated on process and output measures, i.e. measures of efficiency and effectiveness. It also appreciated that universities are engaged in a variety of activities and pursue a number of objectives, and it is essential, therefore, to have

available a range of indicators, none of which should be seen as paramount, to cover the full sweep of an institution's activities. However, it also recognized that not all indicators will be equally useful for specific purposes, and the Working Group envisaged the development of some indicators primarily: (a) for use within institutions; (b) for inter-university analysis; and (c) for comparisons across the binary line, i.e. with polytechnics and other public sector institutions of higher education.

The initial discussions in the Group were elaborated in its first statement released to universities in July 1986. In this statement the Group emphasized:

1. Indicators can play a particularly useful role in the identification of trends in performance, giving signals of areas where action be needed and enabling comparison of actual performance with objectives.
2. Information derived from indicators should not dominate the management process. There are limitations to the use of performance indicators and dangers in an unsophisticated or thoughtless reliance on the signposts that they provide. For example, the undergraduate wastage rate is seen as being useful as a means of monitoring the success of an institution in the output of graduates and as a reflection of the quality of teaching. Yet the maintenance of academic standards may mean that a certain level of wastage is unavoidable.
3. The use of performance indicators is an aid to good judgement and not a substitute for it. It cannot be assumed that even a wide variation from a central value for a single indicator is either desirable or undesirable. There are dangers of considering individual ratios in isolation.
4. Performance indicators should not be used to impose standardization either within an individual institution or more widely. The diversity of the higher education system is one of its strengths.

For each indicator proposed the Working Group addressed itself to several issues:

1. **Definition**
Clarity is essential if a formalized construction which would permit valid comparisons within an between institutions is to be made.
2. **Applicability**
Individual performance indicators will not have equal relevance or value in all contexts. The Group has concentrated primarily on those indicators which would seem to have their greatest relevance at the intra- and inter-university level.

3. Usefulness

The usefulness of the indicator to decision-makers is examined, considering its use both to managers within the institution and to those concerned at the national level. Analysis of trends over time provide signals of changes in performance which may be investigated and halted or encouraged as appropriate.

4. Caveats

The Group considered the caveats which are relevant to interpretation and some comments and advice on their use in practice. These have focused on factors which may limit complete compatibility between cost centres within institutions, and between institutions.

The first set of University Management Statistics and Performance Indicators was published in Autumn 1987. 'Management Statistics' was included in the title in order to emphasize their usefulness to other management functions in addition to performance assessment, and to convey, even before the document is opened, the need to consider carefully the inferences that can be properly and usefully drawn from the figures. It states:

Warning to all users, whether in governn.ent, universities or elsewhere, uncritical use of these indicators may seriously damage the health of your university.

The joint CVCP/UGC Steering Committee oversaw the development of further indicators in 1987-88. Under the steering committee's auspices, the technical work has been undertaken by two groups, an editorial and development group, which prepared the 1988 volume of Management Statistics and Performance Indicators, and a sub-committee on research performance indicators. The sub-committee has been considering the methodology to establish research output indicators, which it recognizes will require considerable time and effort to bring into operation.

Summary of Progress to Date

The joint CVCP/UFC Steering Committee has concentrated on input, process, and only two sets of output/outcome measures (destinations of graduates after 6 months and number of successful leavers, i.e. completion rates) are included amongst the 54 indicators presented in 1989, because considerable, and difficult, work is still being undertaken on effectiveness measures, particularly in the area of research and the longitudinal impacts of teaching outputs. The indicators are, therefore, more useful in assessing efficiency than effectiveness but, of course, an institution can only be efficient if it is effective. Thus the work to date demonstrates that, whilst published indicators have a significant contribution to make to the external accountability process in the area of efficiency, and to the internal management of institutions, it is more limited in respect of the process of external accountability for effective management of research funds and for teaching quality assurance. However, as the PCFC and UFC have acknowledged, indicators will assist funding bodies in monitoring the implementation of funding contracts and institutional plans, particularly if each university will be asked to set its own objectives

in quantified terms wherever possible. Progress measures of performance can be developed to monitor outcomes against these objectives.

Publishable performance indicators of institutional teaching quality are very difficult to develop. The Joint CVCP/UFC Steering Committee has considered possible indicators, but concluded some which are used within institutions, such as classifications of honors degrees, are inappropriate for making comparisons between institutions. It considers there is a need for universities to undertake formal self-evaluation and appraisal of teaching as a matter of good practice, including the development of systems of individual teacher appraisal and student questionnaires. It will return to the issue of indicators of teaching quality, not only because of the CVCP's commitment to promote such indicators, but also because of its importance in a market orientated system as part of the process of accountability and in ensuring customers in the market place are fully informed. To date, limited progress has been made on publicly available indicators of comparative teaching quality.

Performance indicators, both publishable and internal, are only one input into the process of quality judgement, quality assurance accountability and performance assessment; peer review has a very important part to play. It occurs at every stage of a research project's life. The UFC's 1989 research selectivity exercise was essentially a process of 'informed peer review'. For teaching, it takes place when courses are accredited by the CNAA and professional bodies, externally examined, and inspected by HM Inspectorate.

It is difficult to envisage in the United Kingdom an annual publication of external peer review assessments, quality judgements, of departments and/or courses. It is doubtful whether the costs would outweigh the benefits, and it would be difficult to attract sufficient high quality people to undertake the reviews. The Times Higher Education Supplement peer review ratings are methodologically flawed, particularly in respect of teaching quality. Many universities have introduced periodic internal departmental reviews, every three to five years, and most, if not all, use external assessors. There is a strong case for a body similar to the CNAA for the university sector, which would accredit the institution and the processes that are in place for internal reviews. This appears to be one of the roles envisaged for the new CVCP Academic Audit Unit. Whilst it is difficult to identify output measures of teaching quality, such a process of evaluation of institutions procedures should raise the level of awareness of the importance of teaching quality assurance at the departmental and institutional level. CVCP evaluation would not cover the same ground as HMI reports nor of the Dutch external peer reviews of quality, and it is doubtful whether the CNAA accreditation procedures inform the market place about quality, i.e. they are concerned with minimum quality assurance not with comparative quality judgements.

If there is to be detailed external peer review of quality of departments or subject areas, it is thought that performance indicators should inform the peer review and help narrow the gap that has to be bridged by peer judgements. They provide one starting point for more detailed enquiry and questioning by reviewers. They indicate where performance differs, but not necessarily why it differs, or how to improve it. In the absence of performance indicators, the element of judgement may be too great; reliance on indicators in the absence of peer judgements is extremely dangerous. Peer review and performance indicators should, and must, complement each other.

As the Government is firmly committed to an entrepreneurial and market economy in higher education, as well as to further strengthening of accountability for use of public funds, it is to be expected that it will continue to press the CVCP and the UFC on these issues.

Analysis

The United Kingdom is the premier example of a country formally committed to use performance indicators both inside institutions and as instruments of government policy. Some would argue that they are used as instruments of structural and other adjustment. (Kogan and Kogan, 1983; Perkin, 1987.) The case statement is abstracted from a major piece written by Professor John Sizer, the major consultant to the body established by the Thatcher government to control funding for UK universities and many would identify him as the 'father' of the performance indicator movement, its major proponent and apologist over the last fifteen years. What the case statement doesn't say is that while UK universities entered the last decade badly in need of cost efficiencies, more access and better management in general, they have subsequently been subjected to a vast, often rapid, withdrawal of resources. The attempt to bring transparency to the system, despite the warnings applied to the reports produced by the Sizer group, have been used in an unbuffered, relatively drastic way to drive the government's efforts to reduce the unit of resource in the system. The aforementioned warnings seem to this writer to have been much like trying to assure the passengers on the Titanic as it entered the northern waters. The design of the system of protection was weak. The results of the overall efforts of the government in the U.K. have been correlated which increased rather than decreased the financial insolvency of institutions, a highly touted but not generally effective commercialization of the system, a massive drain of professional talent, a pressurizing of the management ethos, and a widespread reported deterioration of morale and, many fear, the overall quality of the system. Leaders in sister European countries look with skepticism at this process which was assisted by a use of performance measures, and published, ranked, cost and other data. (Spee, 1991; Bauer, 1991, Johansson, 1991.)

Sweden, Norway, The Netherlands, and even Australia, as the case statements indicate, eschew indicator systems with direct influence on the core of the funding for universities and heavy use of published ranked or rankable information. They have chosen to rely heavily on peer reviews and subjective judgement rather than heavily on reductionist, often questionable indicators. In this writer's judgement, the U.K. efforts are notable, the work done by Sizer and his colleagues was pioneering in many cases, but the U.K. context was a very threatening one, the protections built into the system too weak, and the attributes of the system too potentially dangerous to higher education institutions to be copied widely by other countries.

Analysis Across the Cases

In Table 2, a general summary of some of the primary characteristics of the development and use of performance indicators is presented for the eight case countries. There are, of course, considerable differences across the cases. Four of the countries have actually pursued the development of indicators on a

national basis - - Australia, Finland, The Netherlands and the United Kingdom. Several are focusing primarily on their data bases - - Finland, Norway and Canada, with Denmark arguing the matter. Few publish comparative information, particularly at the less than institutional level, and few intend to have the indicators affect funding - - Australia and Finland with marginal, largely incentive purposes in mind, and the U.K. with core funding effects having been already permitted. The UK system includes: published comparisons at the department level; heavy focus on cost information; government emphasis on efficiency; presumed equivalency across the universities and polytechnics with a predominantly norm-based evaluation model; and, recent reliance on competitive, entrepreneurial approaches. The most interesting cases for other countries to consider, including under-developed ones, would seem to be: Australia (where major adjustments have been made in the system, but with relatively subtle uses of performance indicator information intended); Finland and Norway with their focus upon strong governmental influence, heavy use of planning and solid, careful development of national data bases; and The Netherlands which, despite the need to drastically reduce expenditure in the last decade, has done it without catastrophic damage to the higher education system and while adopting a genuine and highly respected system of governmental 'steering at a distance'.

It is clear that contextual factors deeply influence this whole picture and that the managerial style and choices must be appropriate if one is to build a useful transparency to the higher education system while not damaging it seriously in the process. In the next section these factors and correlates and a set of related caveats will be presented and explored.

Table 2: Summary of Characteristics of the Development and Use of Performance Indicators in the Eight Case Countries

<i>Country</i>	<i>Stage of Development of Indicators at National Level</i>	<i>Stage of Development of a National Database</i>	<i>National Reliance on Planning</i>	<i>Are Performance Indicators Published Nationally?</i>	<i>Are They Used to Affect Funding?</i>
Australia	Largely developed Final stages in 1991	Developed; carefully defined	Moderately high	Some	Only marginally; mostly as incentives
Canada	Not developed at national level. Intended at provincial level	Being developed only to college level; provincial data bases developing also	Increasing; particularly at provincial level	Not at this point	Not at this point. Possibly some use at provincial level
Denmark	Very few measures developed	Proposed by Ministry; opposed by institutions	High	No	Not at this point; possible in future
Finland	Largely developed; not in all areas	Developed; more developments to come	Very high	Some; periodic	Only marginally
Norway	Not developed at this point; Work proceeding	Proposed; being discussed	Very high	No	No
Sweden	Not developed at this point; being discussed	Not clear; probably partial	Very high	No	No; but some use intended
The Netherlands	List proposed; being discussed	Partial; Ministry has database on universities	Very high	Not at this point	Not at this point; use intended
United Kingdom	Largely developed; some work proceeding	Developed; long standing	Rel. low	Yes, annually; down to programme level level	Yes, intended; large funding shifts experienced

SUMMARY OF FACTORS RELATED TO THE DEVELOPMENT AND USE OF PERFORMANCE INDICATORS

In this section an attempt will be made to pull together from the available literature and from the experiences of the OECD Working Group, and to present in summary form, three kinds of information relating to the development and use of performance indicators: - (1) factors that seem to be related to the willingness of universities and the interest of governments in creating national systems of indicators; (2) things that influence the ability to use indicators for comparative purposes, particularly across multinational and country boundaries; and (3) some summary of how technical considerations and innate characteristics of the indicators, and those areas to which they are to be applied, seem to limit the use of indicators. All of this will then be translated into a set of general policy recommendations.

Government and University Interest

In Table 3 are summarized the factors apparently related to the extent of interest by government and willingness of universities to cooperate in the development of indicators arrayed by general type of factor: contextual; government; and institutional. While much of this is quite obvious or apparent to experienced observers, each of the categories contains items that help to explain some of the large country differences reported in the previous section. A country such as the United Kingdom with a government deeply interested in efficiency and heavily steering the system, in a climate of reduced resources with deep institutional dependence on government funding, with a readily accessible national database and a culture that favors normative approaches to evaluation and published comparisons, will see a large and even dramatically applied set of indicators. A country such as Sweden with very autonomous institutions, with a studied, formal, rational planning system and a commitment to improvement-oriented, largely goal-directed, and self-evaluative control schemes, and with relatively little interest in driving the annual funding of institutions with indicators will have a much smaller interest in developing these systems. The context is different in each country and therefore any development of performance indicators, particularly national and comparison-dominated schemes, will vary greatly across the country settings.

Indicators and Comparability of Institutions and Countries

One of the primary interests of some governments and donor agency executives is the use of indicators to compare functioning and performance. As indicated in the earlier section of this report concerning major contextual factors, the use of indicators across institutional and country boundaries is fraught with difficulties. The major reasons are as follows:

Related to the nature of the organization(s)

- **Basic organizational characteristics of institutions of higher education. Fundamental elements either not clearly defined or varying considerably. (See earlier section on organizational variables.)**
- **Variable goal mixes. Different universities (or systems of universities) or other higher education institutions exist to do different things. Comparing their functioning or performance may not be valid across the institutions and systems.**
- **Differences in program structure and composition. The best examples are the differences between institutions and systems that are largely based on undergraduate structures or taught course postgraduate programs and those that are not.**
- **Differences in setting that may deeply affect staffing and expenditure patterns. The best example is the fundamental difference between isolated, largely residential, largely self-serviced campus settings and those that are not so characterized.**

Related to the data per se

- **Verifiability of the data. For many institutions and some countries we can put little stock in the reported figures. This perhaps is the most pervasive problem and of more moment than what indicators to use.**
- **Aggregation level and dispersion of the data. Regardless of the intentions of the analysts(s), sometimes the attribute of interest displays greater variation across the units within an institution or country to be compared than between them. This ought to, but rarely does, stop some of the ideologically bound, intrepid policy developers. What they don't know or sometimes seem not to care about can hurt the institutions or countries concerned when the differences between measures of central tendency are assumed to be significant (and really are not) and lead to simplistic policies to operate at the wrong level and sometimes in the wrong policy direction when the dispersion factor is compounded by an error in judgement about the validity of the indicators chosen.**
- **Differences in basic definition of the data elements concerned. This and the verifiability of the data are pervasive and amend technical problems that thwart many of the otherwise valid comparisons.**

This is a daunting list of factors and variables that must be considered, indeed controlled, if comparisons are to be used in a valid way across organizations and/or countries.

Table 3: Factors Related to Extent of Interest by Government and Institutions in the Development of a National System of Performance Indicators*

<i>Factors</i>	<i>Probable Correlation with</i>	
	<i>Government Interest in Indicators</i>	<i>University Interest in Indicators</i>
General Context		
Adequacy of resources**	strong negative**	mild positive**
General inclination to use normative information and comparative evaluative mode	strong positive	strong positive
Autonomy of higher education institutions (acknowledged by all)	mild negative	mild negative
Acceptance of government steering of higher education	strong positive	strong positive
Belief that differences do and should exist between institutions in access, content and quality	strong positive	strong positive
Reliance on government funding of higher education	strong positive	mild positive
Availability of reliable national database	mild positive	little
Government Attitudes/Positions		
Government interest in efficiency, effectiveness and competitiveness of institutions	strong positive	mild positive
Government interest in a national database with unrestricted access	strong positive	strong negative
Government interest in indicators to steer core funding	strong positive	strong positive
Extent of government trust in the higher education system	strong negative	strong positive
Government interest in use of indicators for marginal, incentive funding schemes	strong positive	strong positive
Extent to which indicators proposed by government are reductionist, convenient proxies for performance or worth	mild positive	strong negative
University Characteristics		
Presence of a strong, top level executive function	mild negative	mild negative
Presence of a well developed institutional information and research function	mild negative	mild negative
Possibility to restrict access to some information in any national or other database.	mild negative	mild positive

* This table adapted from that present in Kells (1991).

** The 'negative' or 'positive' is the correlation, not the interest *per se*. Example: If the adequacy of resources is low and government interest is high (and vice versa), interest of institutions is mixed, with some institutions wanting comparative indicators, but in most countries, fearing their use by government to injure the institutions.

Technical Considerations and other Innate Factors

One must add to the foregoing list of factors several other considerations if one is to get a full picture of the state of the art - the possible array of valid, reliable and politically acceptable uses of performance indicators in higher education. These final factors have to do with the general ease or technical feasibility of using indicators with respect to particular domains of interest. These include:

- * **The element of complexity.** The ability to describe or to disaggregate costs with respect to some functions in some organizations. To illustrate: it is relatively easy to describe the teaching function and its cost elements (including library, equipment, staff and other costs) in a relatively small, teaching-only institution with a limited number of fairly discrete disciplines with little interdisciplinary behavior. It is a most difficult exercise, and generally not accomplishable with reliability and accuracy across institutions and countries if larger, complex research universities are involved, the UK attempts notwithstanding. In this writer's opinion, such simplistic attempts can contribute to inappropriate choices, serious policy omissions, unworkable control systems and even unexpected, egregious financial deficits.

- * **The nature of teaching and research.** Much of what is done in universities just simply defies adequate accounting and performance measure by quantitative means. Much more of this can be done than in the past and lately is being done at many universities, but the plain facts are that with respect to - -

research - because of its basic, internationally accepted and recognizable dimensions, many bibliometric techniques exist that attempt to quantify research performance, impact and overall research quality, but most are flawed and difficult to interpret with the range of populations encountered for policy choices in most universities. The standard way of proceeding on these matters is through peer review, informed by other data (Sizer, 1990, Niiniluoto, 1990) and preferably with a peer site visit to the department or program concerned and after a self-evaluation process (Kells, 1989).

teaching/learning - this, the central function of most of the institutions the World Bank must concern itself with, is even less quantifiable in terms of performance than is research. There exists no internationally or even nationally recognized measurable attributes for this multivariate interactive experience. The input variable is powerful, we know (and different countries, systems and institutions describe it differently). The purposes are many and the modes vary. Some of the short range outcomes are measurable. Knowledge by discipline for whole cohorts is measured in some fields in the US. Some 'general education' intentions are tested there, too (Cave et. al. 1991). Others, such as most key higher order cognitive attributes, are measurable psychometrically, but only by very expensive procedures and therefore are not employed regularly as performance measures. When one sorts it all out,

teaching/learning, like research, is best measured by multi-item, largely opinion instruments - that is, with qualitative but often summable indicators. It is best done in efforts to improve, not compare, institutions. The extensive considerations of the world-wide literature and the accompanying trials in Australia have confirmed these matters (Linke, 1991). The Linke group will recommend general proxies as indicators, including measures of productivity, not quality, such as the relationship between completion rates and incoming student characteristics, by program across institutions, but, only to be used in light of the normal range of productivity vs input 'scores' (looking at those cases that fall beyond the normal range), only as a starting point for discussion and only as an adjunct to expert judgement that takes fully into consideration the goals for the unit concerned, the local context and other factors (Linke, 1991).

- * Service activities. Little if any work has been done regarding indicators of performance in this area. The reason is, ostensibly, that other issues are more pressing in all of this. But, this writer believes that the kind of numeric gross indicators that have been occasionally suggested (see NCHMS, 1973), such as 'number of activities offered' or 'number of continuing education students served' are so general and descriptive as not to be of benefit as a basis for improvement, effective budgeting or policy determination. The only effective indicators of performance (including quality) are measures of achievement of the specific program goals and qualitative, detailed feedback about the quality of program offered and its relevance to market needs, including suggestions for improvement - that is, feedback from clients. There is no magic in numbers for much of these matters. There is value in solid feedback from clients for both institutional management and, by extension for system-wide planning and policy development.

RECOMMENDATIONS CONCERNING THE DEVELOPMENT AND USE OF PERFORMANCE INDICATORS FOR DEVELOPED AND DEVELOPING COUNTRIES

General Policy Recommendations

In light of the foregoing analyses and the country experiences summarized in the previous sections of this report, the following recommendations can be formulated and are presented in an effort to give advice to those who would seek to develop and use performance indicators for a national system of higher education or in an institution. The recommendations are of importance as well, it is thought, for donor or other funding agency executives.

Some general recommendations

- 1. Performance indicators, indeed information in general, while being important in aiding policy choices, are less important than the quality of the managers in the system. Good managers use judgement to create a good system, as far as one can in a given set of circumstances. They are aided considerably by good data. Poor managers can't achieve the same results even with good data. Indeed, they may damage the system considerably by making poor decisions with the data. The first priority should be to invest in selecting and training good leaders, then given them the tools with which to operate, including good data systems.**
- 2. Leaders should focus heavily on the development of intentions (goals) for the system and for institutions. This is a glaring weakness in most countries. Very often, the tendency to fall back on heavy reliance of often destructive, norm-based, indicators to fund systems is largely related to a failure to define purposes and goals and then for good managers to make choices in the light of the goals, informed, in part, by indicators.**

For Governments intending to develop a national system of performance indicators

- 1. Purposes for the system must be carefully explored, clearly stated and consensus for them must first be sought and achieved with the institutions to be described and who will be supplying most of the data.**
- 2. Means should follow purposes. The data sought should enable the users of the system to accomplish the purposes and the data should be limited to those needs. The uses should be clear from the start and trust must be maintained or the system will break down.**
- 3. Performance indicators are best used to modulate a system over time and to monitor progress. They should not be developed in order to systematically remove resources from a system or to make large and dramatic shifts. They are imperfect proxies at best and if they become perceived as the weapons of destruction they will be set aside or sabotaged. In the best light, indicators are just that, indicators to monitor progress on national or state goals, and to signal the need to examine and, ideally, to reward, to give incentive incrementally and marginally. They are aids to management, not levers to restructure the system. They should be used to promote organizational and system 'health' by helping to shape choices or indicating foci for choice. They should rarely be the sole deciding factors when choices are to be made. Expert, managerial and subject matter judgement should dominate managerial choices.**
- 4. The databases are often critically important in national systems, although it is quite possible to use efficient, verifiable annual reporting, particularly in smaller systems, with paper or electronic transfer of information, to enable monitoring, to share across carefully chosen partner institutions or programs, and to construct annual or other reports for the public or legislators. When databases**

are used, particularly in national or state-wide formats, then several issues become immensely important cornerstones -

definition:

it is vitally important that all institutions putting information into the system define the terms in exactly the same way.

reliability:

the data must be verified at the source, the data must be correct and reproducible - hence trust in the system (and its uses) and absolute probity and cooperation on the part of institutions is essential.

manageability:

the range of data put into the system must be limited to that needed to implement the agreed upon uses. The size and therefore the cost of the system must be kept within manageable bounds, and also the temptation on the part of government officials to publish other than agreed upon comparisons must be resisted.

accessibility:

the best way to ensure reliability in and cooperation with the system is to differentiate the data in terms of accessibility. All data submitted and held in the system should not be accessible by all possible users without prior categorical or instance approval. This will help to ensure appropriateness of use and help to build trust at the institutional level.

usual level of aggregation:

generally consistent with the above characteristics and the previously mentioned purposes (use) would be a system (such as is being built in Finland and Canada) that would limit the level of aggregation for most access and users to the higher than program level - that is data aggregated by university or by major schools or faculties. Data collected by program, discipline or department should be very carefully considered and only aggregated and published for agreed upon uses (such as is being proposed in Australia). The contextual influences and, consequently, the potential for misinterpretation and misuse is very high at this level of aggregation as are differences between departments within an institution and such size and salary related cost impacts.

mode of interpretation:

Here the true character of the system is displayed, that is, the link between purposes and means (procedures). It is recommended that data be presented as much as possible in trend format (time sequence) when monitoring progress on the achievement of goals set forth in state plans - or even in observing a general array of variables in institutional functioning (such as enrollments and costs). Any year-by-year institutional lows and highs that sometimes occur in reports on indicators can then be put in more useful perspective. And, finally and most importantly, rather than displaying and

observing individual data against the norm or other means of central tendency, whenever possible interpret the data for individual institutions or subunits against the normal range of data for properly chosen comparison institution or programs. The tendency to compare against the norm in data sets with large contextual influences can lead to spurious results, poor policy choices and a type of mad scramble for everyone to be positioned above the norm (!) Effective management of a system can only occur if most situations are seen as normal and explainable. Extreme deviations should be seen as potentially explainable on the short run until proven to be in need of assistance, other action, or to be justly rewarded with incentives. If potential fear of negative action, major shifting of resources or public derision drive the system, cooperation may fall away, but certainly any sustainable, planned change (improvement) will be difficult and institutional 'health' and morale will suffer for a large segment of the system.

5. The extent of publication of performance indicators and comparison of institutions and programs must be very carefully considered by policy makers. Consistent with the caveats delineated in the previous section, publication of data, particularly in comparative or potentially comparative formats, should (a) be limited to agreed upon monitoring, preferably in trend format, by institution against announced government policy goals; (b) keep the level of aggregation relatively high, that is, at the university level or other major level of organization; (c) use interpretative guides and warnings about the influence of context (cf. higher costs for separate, isolated campuses or regions of the country), and about the extent to which more production or lower costs is not necessarily better; (d) give the intended mode of interpretation by the issuing agency (normal range; norm-related; goal related;) and the relative reliance it intends to place upon the data in planning, budgetary and other uses, including the extent to which the indicators will be linked to funding (centrally by formula; marginally, as incentives, etc.).

6. With respect to relationship of performance indicators to funding of higher education, it should be no surprise that it is recommended that the use of indicators should relate to marginal funding, to positive effects as much as possible and to the use of incentives. The worst way to use indicators is to assume that they can be summed up to explain all of the functioning and outputs of a system as well as the costs and therefore can be used to drive the major funding choices for teaching and research. This is a fallacy. The result, as has been seen in several notable instances in the UK recently, is large, drastic swings in funding levels from one year to the next. The report of the Australian study group is the most convincing on this matter (Linke, 1991).

For institutions that intend to develop and use performance indicators, the following suggestions are made:

1. Institutional leaders should participate in the discussion concerning the development of any national, government sponsored system. Protect the institution's interests.

2. Develop and use indicators in the spirit described above - developmentally and sensibly as an adjunct to, not the dominant aspect of, management.

3. **Build the institution's database so that it is functional, linked to the important management levels and settings in the organization, under the care of a professional institutional research officer (or staff) and highly related to the following elements:-**
 - i) **the goals of the institution and its units and to the measures of achievement of the goals;**
 - ii) **the data needed to monitor, at the appropriate level, the functioning and performance of the submits and the overall institution (income, inputs, student characteristics, staff, teaching, workloads, research efforts and products, space, resources, costs, programs, and outputs);**
 - iii) **the opinions of clients (current students and graduates within 5 years);**
 - iv) **the markets and other environmental scanning elements;**
 - v) **the goals of government on which reporting must be made and the data for any national or state database;**
 - vi) **any standards of the guilds with institutional review responsibility relating to the programs of the institution;**
 - vii) **the ability to interrelate the above elements and provide information to assist decision making and to assure the public.**

Illustrative Indicators

In Table 4, examples of fairly common indicators (or institutional research information) provided by institutional research offices to the managers at universities and colleges in North America are provided. In Table 5 examples of special studies (or if you will, specially derived indicators) are given. There are of course common elements in all of this, and in North American, for instance, where these capabilities have existed in a substantial way for more than 20 years, there develops agreement about definitions so that institutions that decide, because of similar goals, clients, size, program types and other factors, to exchange and compare information can do so with some confidence. The characteristics of trust, definition, verifiability, accountability, level of aggregation, wise interpretation, and proper perspective on service to, not dominance of, management are the keys to successful development and use of indicator/information systems at the institutional level.

**Table 4: Some Typical Examples of Relatively Common Information Indicators
Used in Institutional Management in North America.**

Category	Indicator or General Information Used
Intentions (purposes, goals.)	<ul style="list-style-type: none">o opinions about the completeness, clarity and complementarity of institutional and program goals.o general knowledge of and consensus and priority on goals among the board members, managers and staff.
Input	<ul style="list-style-type: none">o source of students and access levels.o student characteristics on entrance.o sources of financial income.o qualifications of academic staff.o availability of physical facilities.
Process and Environment	<ul style="list-style-type: none">o student flow and length of studies.o various cost indicators and 'financial health' measures.o teaching and other workload ratios.o opinions about teaching quality and problems.o opinions about services provided to clients.o opinions about governance and access to decision making.o measures of intellectual and aesthetic aspects of the institutional environment.
Outputs and Impact	<ul style="list-style-type: none">o descriptions and numbers of graduates by field.o opinions of students, graduates, employers and others and other evidence about achievement of goals (institutional and program).o quality and type of research and service outputs.o opinions about general quality of graduates.o opinions about general quality of research.o opinions about general quality of community and other service provided.

Table 5: Some Special Examples of Derived or Specially Gathered Indicators (Decision Support Information) that Might Be Employed in Institutional Management

<i>Category</i>	<i>Indicator or Specific Information Used</i>
Intentions	<ul style="list-style-type: none">o level of agreement on a change in priority for a technical training goalo reactions by various sub-groups to a new goal concerning participation in governance.
Input	<ul style="list-style-type: none">o proportion of students enrolled from a particular country or gapo level of funds secured from a particular funding source.o proportion of academic staff from developing countries.
Process and Environment	<ul style="list-style-type: none">o cost of operation of specific research centres.o proportion of students that change from studies in humanities to studies in business.o occupancy rates of parking spaces as the nature of the student body changes.o availability of books in decentralized libraries and the university book shop.o opinions about language capabilities of overseas teaching assistants.
Outputs and Impact	<ul style="list-style-type: none">o opinions of employment supervisors of technical graduates in certain industries.o opinions of community cultural leaders about the role of the university in the cultural life of the community.o numbers of graduates employed by state or province (migration studies.)o opinions of graduates about quality of a particular service or program.o opinions about achievement of a specific program goal to internationalize the curriculum.

Specific Focus on Developing Countries

It would not be too far off the mark to say that while everything mentioned so far in this section applies fully for developing countries; the need for information in such settings is great, the experience with such matters is generally small, trained staff to do it are generally not available, and there are few funds to devote to it, despite the fact that some institutional and many government leaders and donor agency staff generally want such information. Universities in developing countries are generally thought to be inefficient (high cost per graduate or other measure of productivity) and to be overly reliant on a single source of support, invariably government. They are often accused of having a deteriorating quality, but the measures usually quoted in support of such assertions are descriptions of the process, such as student/faculty ratios, not measures of educational performance such as perceived quality of graduates, student learning and quality of research. So, both detractors and supporters of the institutions are interested in information on performance, particularly useful measures of quality, to support their claims and to stimulate any needed improvements. For obvious reasons, the information capacities of vastly underfunded countries and institutions are generally meager, usually paper-based and often unreliable. The range of information capacity across all developing countries, however, is very wide. There are a few notable exceptions to the given condition, institutions and national systems that have in the last few years made significant progress in the development of their information capacity. A prominent example is the state university in Sao Paulo, Brazil, that has developed a fourth generation information system with the help of industry. There also are examples of national evaluation systems being developed in Columbia and proposed in Chile and South Africa. In the latter instances, the institutions involved are, or will be, systematically collecting facts and opinions that, if handled properly, can be developed for use by government and by the institutions involved. In order for this trend to continue and to yield useful information, some policy advice should be considered.

- * The pace of introduction of the use of information in management in developing countries will, and probably should, be relatively slow and stepwise. It involves a fundamental change from the culture of administering (usually introduced by colonial governments) to one of managing. It involves the selection and training of managers who can use information well, before one develops or introduces a data system. The priority must be on people not indicators.
- * The issues of interest to some donor agencies and particularly the World Bank, such as structural readjustment policies, don't rely or wait for implementation on the access to reliable, valid indicators. They turn on the correctness of the policy. Either it is appropriate to raise fees and impose student loans or it is not. Most fees are now low and there are few loans. We can, over time, build systems to measure reliably what happens, and this will come if the Bank and other agencies invest sizeable sums in training managers (to use the figures well), training data specialists (to build and maintain the systems), and in building the national and institutional (particularly the latter) systems. This, of course, they should do whether or not currently favored policies are implemented. It is needed for a wide range of planning and other managerial choices.

- * Some caveats should be noted. There are several examples where bold efforts to develop information capacities (to 'make the system more transparent') in Latin America have been met with threats to immediately withdraw, sometimes dramatically, resources from the universities. It would be better for governments to redress inequities or otherwise balance the resource picture without tying it so obviously to the new or emerging data or 'performance indicator' system. In trying to justify their actions, they effectively eliminate the possibility that universities will cooperate further in building such systems.
- * Another problem has been the rhetoric about performance indicators. Much of what has been used on either side of the Atlantic and beyond has little to do with performance. It has to do with inputs, prices, sources of income and students, and with process and costs. Little of it has to do with learning, client satisfaction, or achievement of goals, all key performance indicators. We would be better off if the terms 'information systems' and 'institutional studies' were used.
- * Finally, as mentioned at length in the previous section, it is very important not to link the indicators to funding as a core or central determinant. They don't work well for that. They often do damage in such uses, and such uses will turn the universities in country after country against the system (see Henderson, 1990, about the recent reactions in France; Linke, 1991, for Australia; Johannson, 1990, for Norway; and Bauer, 1990, and Westling, 1991, for Sweden). Westing (1991) has spoken of the mistaken use of the 'anti-Robin Hood effect' for performance indicators - to drive funding with indicators that only reward the successful and the already well resourced. The sound policy is to use indicators as adjuncts to management, as aids not determinants of decision making and funding and in choices, to build up the weak elements in a system, to reward success, to provide incentives and to instill competition and solid performance by helping to distribute marginal funds.

Specific recommendations

Obviously, developing countries do need information capacity and some indicators, at the national level. Such indicators should be identified from the social and other goals put forth in the development or, perhaps, education plans of the country. These indicators should be used for monitoring purposes. They should be developed (defined, and procedures set) in concert with institution representatives. They should be carefully developed and used to promote achievement of the agreed upon goals, not to embarrass or punish institutions. If possible, they should be linked to incentive schemes, employing marginal funding enhancements.

Examples (that might relate to national goals) - -

- * access indicators concerning under-represented groups
- * indicators of university projects to stimulate local economic development
- * indicators of development of new sources of income

- * indicators of stimulation of entrants and graduates in needed disciplines
- * indicators about general productivity and overall efficiency

With respect to institutional uses of indicators and general information for decision making, in developing countries, all of the things said in the previous section of this report with respect to institutional uses and examples apply fully. The key additional elements would seem to be:

- * the need to train a stable cadre of managers and support staff who can build, maintain and use the system. This means that salary scales, incentives and working conditions must be addressed; a familiar but important recommendation. Without stability of experienced people, the system cannot be developed and maintained. The system must outlast the people, but continuity is needed.
- * the need to start small and to do some things, practical things, first, and to do them well. Select elements relating to goals, to national reporting needs and to the financial and workload questions that usually are the highest priorities. The point is to define the data elements well and to maintain the system at each stage so the quality of the data is high.
- * the system must be attuned to the emerging style, the capabilities and the needs of the users, and the actual and intended level of decentralization of effort and responsibility in the system.
- * The institution must begin to develop trend information for the selected data elements and experience with the normal range of data across the subunits of the institution. The influence of local context on the performances reflected in the data must be ascertained so the eventual choices made in using the data can be informed and wise ones.
- * Finally, comparisons across the institution and with other institutions must be carefully interpreted in the first case and very carefully selected in the latter.

Hundreds of examples could be listed for indicators in institutional management. The examples given in the previous section of this report (Table 3) are a good starting point. The specific data elements will of course be different in, say, British 'descendent' institutions from those in French or other type universities or colleges with different types of programs, organizational schemes, lengths of study, funding schemes and relative focus on research. The indicators will, indeed must, follow from the nature of the institution. How they are used has been the major focus of the recommendations in this report.

REFERENCES

- Bauer, M. (1990), 'Sweden', in Kells, H.R. (Ed.) *The Development of Performance Indicators for Higher Education: A Compendium for Eleven Countries*, OECD.
- Bormans, M.J.G. et.al. (1990), 'The Netherlands' in Kells, H.R. (Ed.), *The Development of Performance Indicators for Higher Education: A Compendium for Eleven Countries*, OECD.
- Cazanave, P. (1991), Comments made at the OECD Working Group Meeting, Danbury Park Conference Centre, U.K.
- Cave, Martin, Hanney, Stephen and Kogan, Maurice, (1990), *The Use of Performance Indicators in Higher Education: A Critical Analysis of Developing Practice*, 2nd Edition, London: Jessica Kingsley.
- Commonwealth of Australia, (1991), *Performance Indicators in Higher Education*, Department of Employment, Education and Training.
- Cuenin, S. (1987), 'The Uses of Performance Indicators in Universities: An International Survey', *International Journal of Institutional Management in Higher Education*, OECD, Paris, 11-2; 149-162.
- Davies, John, L. (1990) 'Introduction' to Kells, H.R., (Ed.) *The Development of Performance Indicators for Higher Education: A Compendium for Eleven Countries*. OECD.
- Davies, John L. (1991), 'The Use of Performance Indicators in Institutional Management: A Conceptual Framework', paper presented at the OECD/IMHE Special Seminar on Performance Indicators, Paris, 25 April.
- Dochy, Filip, J.R.G., et.al. (1990), 'Selecting Performance Indicators'. *Ibid* pp.135-153.
- Frackmann, E. (1987), 'Lessons to be Learned from a Decade of Discussions on Performance Indicators', *International Journal of Institutional Management in Higher Education*, Vol.11 No.2.
- Friedberg, E. and Musselin, C. (1987), 'The Academic Profession in France', in Clark, Burton (Ed.) *The Academic Profession*, Berkeley: University of California Press.
- Goedegeburre, L., Maassen, P. and Westerheijden, D. (Eds), (1990), *Peer Review and Performance Indicators*, Utrecht: Uitgeverij Lemma.
- Hawkins, Stephen, (1990), 'Canada', in Kells, H.R. (Ed), *The Development of Performance Indicators for Higher Education: A Compendium for Eleven Countries*, OECD.
- Henderson, Emma, (1990), 'Performance Tests Meet Stiff Opposition', *The Times Higher Education Supplement*, 20 July.
- Hufner, K. (1987), 'The Role of Performance Indicators in Higher Education: The Case for Germany', *International Journal of Institutional Management in Higher Education*, Vol.11, No.2.
- Johansson, Toril, (1990), 'Norway', in Kells, H.R. (Ed), *The Development of Performance Indicators for Higher Education: A Compendium for Eleven Countries*, OECD.

- Johnes, Jill and Taylor, Jim, (1990), Performance Indicators in Higher Education: U.K. Universities, Buckingham: Open University Press.**
- Kells, H.R. (1989), 'The Inadequacy of Performance Indicators for Higher Education: The Need for a More Comprehensive and Developmental Construct', Higher Education Management, Vol.2, No.3, pp.258-270.**
- Kells, H.R. (Ed.) (1990), The Development of Performance Indicators for Higher Education: A Compendium for Eleven Countries, Paris, OECD/IMHE.**
- Kells, H.R. (1991), 'An Analysis of the Nature and Recent Development of Performance Indicators in Higher Education', paper presented to the OECD/IMHE Special Seminar on Performance Indicators, Paris, 24 April.**
- Kells, H.R. (Expected 1992), 'Purposes and Means in Higher Education Evaluation', Higher Education Management, Vol.4, also given as a paper at the OECD General Conference, Paris, September, 1990.**
- Kogan, Maurice, (E.) (1988), Evaluation in Higher Education, London: Jessica Kingsley.**
- Linke, Russell, (1990), 'Australia', in Kells, H.R. (Ed), The Development of Performance Indicators for Higher Education; A Compendium for Eleven Countries, OECD.**
- Kogan, Maurice with Kogan, David (1983), The Attack on Higher Education, London: Kogan Page.**
- Linke, Russell, (1991). Comments offered at the OECD/IMHE Special Seminar, Paris, April.**
- von Linstow, Hugo, (1990), 'Norway', in Kells, H.R. (Ed), The Development of Performance Indicators for Higher Education: A Compendium for Eleven Countries, OECD.**
- Morris Report, (1990), Performance Indicators: Report of a Committee of Inquiry, London, Polytechnics and Colleges Funding Council.**
- Niiniluoto, Ilkka, (1990), 'Finland', in Kells, H.R. (Ed), The Development of Performance Indicators for Higher Education: A Compendium for Eleven Countries, OECD.**
- Perkin, Harold, (1987), 'The Academic Profession in the United Kingdom', in Clark, Burton, The Academic Profession, Berkeley: University of California Press.**
- Sizer, J. (1989), 'Performance Indicators and Quality Control in Higher Education', Keynote Address to an International Conference, Institute of Education, London, 27 September.**
- Sizer, J. (1990), 'United Kingdom', in Kells, H.R. (Ed), The Development of Performance Indicators for Higher Education: A Compendium for Eleven Countries, OECD.**
- Sizer, J. (1991), 'Lessons Learned in the Examination of Country Experiences with the Development of Performance Indicators for Government Use, paper prepared for OECD Special Seminar, Paris, April.**
- Spee, Arnold, (1991), Comments made at the OECD Special Seminar, Paris, April.**
- Spee, Arnold and Bormans, Ron, (Eds), (1991), 'Performance Indicators in Government-Institutional Relations', paper presented at OECD/IMHE, Special Topic Workshop, Paris, April.**

- Staropoli, Andres, (1987), 'The Comite Nationale d'Evaluation: Preliminary Results of a French Experiment', European Journal of Education, Vol.22, pp.123-131, also (1986) International Journal of Institutional Management in Higher Education, Vol.10, No.2.**
- Staropoli, Andres (1988), 'External Evaluation in Higher Education', Paper given at the Conference on Quality Assessment in Higher Education, Noordwijk, The Netherlands, May, 3-4.**
- Tapping, J.R. and Miyaki, T. (1973), Program Measures, Technical Report Nr.35, Boulder: WICHE/NCHEMS.**
- Wagner, L. (1990), Comments presented at the November, 1990, meeting of the OECD Working Group on Performance Indicators, Danbury Park Conference Centre, U.K.**
- Warren, Jonathan, (1984), 'The Blind Alley of Value'Added', AAHE Bulletin, Vol.37, No.1, pp.10-13.**
- Westling, H. (1990), Commentary made at OECD/IMHE Special Topic Workshop, Paris, April.**
- Vroijensteijn, Ton, I. and Acherman, Hans, (1990), 'Control Oriented Versus Improvement Oriented Quality Assessment', in Goedegeburre, Leo. C.J. et.al. (Eds), Peer Review and Performance Indicators; Quality Assessment in British and Dutch Higher Education, Utrecht: Uitgeverij Lemma, pp.81-101.**

from: REPORT OF A TRIAL EVALUATION STUDY COMMISSIONED BY
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AND TRAINING (1991)

General Recommendations on Implementation

The Research Group recommends:

- (1) that the collection and analysis of data required to generate the proposed range of context, performance and social equity indicators be undertaken by the Commonwealth in cooperation with higher education institutions and other relevant organisations.
- (2) that summary data on each of the proposed context, performance and social equity indicators, together with appropriate explanatory details, be published annually by the Commonwealth in consultation with higher education institutions and other relevant organisations.
- (3) that the Commonwealth initiate discussions with institutions and other relevant organisations as soon as possible with a view to implementing the proposed range of context, performance and social equity indicators within the next triennium. (Section 8.4)
- (4) that the Commonwealth recognise as a high priority and provide appropriate funding support for further research and development on performance indicators in higher education, including aspects of operational definition, application and potential impact on institutional activities. (Section 8.5)
- (5) that as soon as appropriate indicators are available the Commonwealth support as a high priority empirical studies on the relationship between educational input and outcome measures used in the higher education system. (Section 5.2.5)

Recommendations on Individual Indicators

In relation to the following indicators the Research Group recommends:

Indicators of Institutional Context

C1: Equivalent Full Time Academic Staff

- (1) that the EAS indicator be maintained in its present operational form as defined for this analysis, including all three categories of academic staff (teaching only, teaching and research, and research only) and each designated category of employment (full time, fractional full time and casual), calculated and reported at the individual AOU level. (Section 4.1.1)

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- (2) that the specification of individual AOU's and discipline groups associated with each teaching subject be reviewed by institutions in consultation with Commonwealth authorities to ensure that as far as possible the classification of AOU groups provides a consistent basis for comparison. (Section 4.1.1)

C2: Academic Support Staff Ratio

that two distinct indicators of support staff provision, one dealing with technical staff and the other with clerical/administrative staff, be examined in further empirical trials with a view to formal application at both the system and institution levels. These indicators should be defined primarily in relation to student load rather than to academic staff, and should in each case be based on an estimate of equivalent full time support staff (including full time, part time and casual) in each defined category. (Section 4.1.2)

C3: Equivalent Full Time Student Load

that the student load indicator be retained in its present form for application at both the minor and major AOU group levels. (Section 4.1.3)

C4: Student/Staff Ratio

that the SSR indicator be defined to include all categories of academic staff employed on general recurrent grants for teaching and/or research purposes, but to exclude research only staff employed on special purpose funds. (Section 4.1.4)

C5 and C6: Student Preference and Application Ratios

- (1) that the Commonwealth encourage the appropriate authorities to develop a consistent classification of student applications, and that institutions take steps to verify more carefully the associated student enrolment records by source of application in order to provide a more reliable basis for estimating relative student demand;
- (2) that the Student Preference Ratio be implemented on a national basis by higher education admission authorities as a measure of general student demand. (Section 4.2.1)

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C6 Student Application Ratio

- (3) that the proposed Student (Direct) Application Ratio be abandoned as a possible indicator of relative student demand;
- (4) that any measures of relative demand based on student applications should include in each case the proportion of commencing students to which they relate. (Section 4.2.1)

C7: Student Offer Ratio

- (1) that the Student Offer Ratio be implemented on a national basis by higher education admission authorities as a selective measure of student demand in association with the Student Preference Ratio for appropriate undergraduate programs.
- (2) that the Student Offer Ratio be redefined as the Student Acceptance Ratio and calculated as the ratio of enrolments to offers for students in each specified course and application category. (Section 4.2.2)

C8: Average Student Entry Score

- (1) that higher education institutions be requested to provide through State admission centres a standardised entry score (z score) for all applicants with appropriate State education certificates or equivalent Year 12 assessment results;
- (2) that the relevant score distributions be equated across the States; and
- (3) that for comparative purposes the indicator of average entry score be defined as the Mean Standardised Entry Score. (Section 4.2.3)

C9: Derivation of Recurrent Income

that the indicator be applied on a national basis as defined in the trial analysis, and that the Commonwealth take appropriate steps to improve the accuracy and reliability of information reported. These steps should include, at the Commonwealth level, clearer definition of reporting instructions and constituent data elements together with more effective screening of institutional returns, and at the

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institution level, more careful interpretation of general guidelines and data requirements, more effective monitoring and verification procedures, and closer attention to detail in the presentation of financial returns. (Section 4.3.1)

C10: Distribution of Recurrent Expenditure

that the indicator be applied on a national basis as defined in the trial analysis, and that the Commonwealth take appropriate steps to improve the accuracy and reliability of information reported. (Section 4.3.2)

C11: Academic Activity Cost per Student

that the indicator be applied on a national basis as defined in the trial analysis, and that the Commonwealth take appropriate steps to improve the compatibility of constituent data elements and the accuracy of institutional returns. (Section 4.3.3)

C12: Total Recurrent Cost per Student

that this indicator be applied on a national basis as defined in the trial analysis. (Section 4.3.4)

Performance Indicators - Teaching and Learning

P1: Perceived Teaching Quality — the Course Experience Questionnaire

- (1) that an appropriate indicator of perceived teaching quality, structured initially along the lines of that applied in the trial analysis, be included as part of any national system of performance indicators;
- (2) that the Commonwealth support further research and development on the structure and content of instruments designed to evaluate teaching quality on a broad departmental or discipline basis which have potential for national application. (Section 5.1.1)
- (3) that as a first step in the development of an effective indicator of teaching quality the Commonwealth seek to have an appropriate instrument, structured initially along the lines of the Course Experience Questionnaire, incorporated in, or administered in conjunction with, the GCCA graduate survey. (Section 5.1.1)

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- (4) that a dual classification of academic field be applied to the proposed indicator of teaching quality identifying both the major Branch of Learning and, where appropriate, the minor discipline group corresponding to the particular department or subject area in which the dominant part of the course was conducted. (Section 5.1.1.)

P2: Student Progress Rate

- (1) that the Student Progress Rate indicator be redefined as the ratio of passed subject load to total certified subject load, including all students formally enrolled and withdrawn irrespective of assessment grade, and excluding all subjects for which no final results are confirmed;
- (2) that in this form the indicator be implemented on a national basis. (Section 5.2.1)

P3: Program Completion Rate

- (1) that the Program Completion Rate indicator be defined as:

$$\text{Est PCR} = \text{IRR} (\text{ACR})^{n-2}$$

where IRR refers to the Initial (or first year) Retention Rate, ACR to the average Annual Continuation Rate, and n to the normal duration of the course in years.

- (2) that the classification of continuing students used for calculating IRR and ACR indicator values be defined to recognise continuation in any course;
- (3) that application of the PCR indicator be restricted to full time students and to courses in which there are at least 20 students in each defined stage of enrolment (commencing, continuing and completing);
- (4) that under these conditions PCR and its component indicators IRR and ACR be applied on a national basis, and that the Commonwealth and institutions take appropriate steps to improve the reliability of constituent data elements.

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- (5) that for courses of 2 years duration the estimated Program Completion Rate be defined as:

$$\text{Est. PCR} = \text{IRR.CSCR}$$

where CSCR (Continuing Students Completion Rate) is the proportion of full time continuing students in a particular year who complete the course in that year.

- (6) that for courses of 1 year duration the estimated Program Completion Rate be defined as:

$$\text{Est. PCR} = \text{ICR} + (\text{IRR.ICR})$$

where ICR is the Initial Completion Rate, equal to the ratio of students completing to those commencing in the same year. (This formula assumes that those students who continue into the second year complete at the same rate as those commencing.)

- (7) that for system level comparisons the estimated PCR and its component indicator values be identified separately for undergraduate and postgraduate coursework programs, and aggregated for courses of a similar kind within specified fields of study. (Section 5.2.2)

P4: Mean Completion Time

- (1) that further research be undertaken on possible methods for determining Mean Completion Time for coursework programs to establish whether an appropriate indicator could be implemented on a national basis.
- (2) that the Commonwealth, in collaboration with institutions, investigate the feasibility of establishing suitable data elements for determining research higher degree completion rates and associated mean completion times, with a view to incorporating the relevant data elements in the annual statistical collection. (Section 5.2.3)

P5: Research Higher Degree Productivity Rate

- (1) that the indicator be defined as the average number of research higher degree graduates produced for each 10 EAS in a single academic year;

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- (2) that it be calculated separately for Masters and PhD graduates; and
- (3) that in this form it be implemented on a national basis.
- (4) that wherever possible the indicator be produced in association with a corresponding two or three year average measure to improve the reliability of comparison. (Section 5.2.4)

P6: Graduate Employment Status

- (1) that the Graduate Employment Status indicator be implemented as defined in this analysis for systemic monitoring purposes, but not applied as an institutional performance indicator;
- (2) that the Commonwealth encourage and support further research on the nature and relative impact of institutional, individual and circumstantial factors in determining initial graduate employment destinations. (Section 5.3.1)

Performance Indicators - Research and Professional Services

P7 and P8: Number and Value of Research Grants

- (1) that indicators relating to research grants be confined to those derived specifically from external research funds;
- (2) that three comparative indicators be defined to reflect different aspects of research grant allocation as follows:
 - (a) average number of research grants for each 10 EAS classified according to source (indicator P7(a));
 - (b) percentage of individual academic staff to whom external research grants are awarded (indicator P7(b));
 - (c) average value of research grants awarded for each 10 EAS, classified according to source (indicator P8);
- (3) that the total number and value of research grants awarded to each institution be recorded as separate indicator scores and classified by field of research;
- (4) that the indicators as defined above be implemented at the national level.

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- (5) that institutions identify each research grant with a dual classification indicating both the relevant AOU and specific research field to which it applies. (Section 6.1.1)

P9: Average Publication Rate

- (1) that for national comparative purposes the indicator be redefined as the average number of publications per year for each 10 EAS, classified in three distinct components as follows:
 - (a) books and monographs, a single composite index incorporating as differentially weighted components the three elements listed under Commercial Books and Monographs in Appendix 7 (authored books, edited books and separate chapters);
 - (b) refereed journal articles; and
 - (c) published conference papers;
- (2) that institutions be requested to provide the necessary data in this form on an annual basis, and to confirm its accuracy by checking against detailed listings in the annual research report;
- (3) that for purposes of general publication the indicator be accompanied by a corresponding three year average measure to improve the reliability of comparison;
- (4) that the Commonwealth support further empirical research on the effects of composite publication indicators with different weightings for the various indicator components. (Section 6.1.2)

P10: Productivity Rate of Other Original Works

- (1) that for national comparative purposes the Productivity Rate of Other Original Works be redefined as the average number of individual works per year for each 10 EAS, classified in three distinct components as follows:
 - (a) public broadcasts and recordings, including contributions as author, editor or composer only;
 - (b) registered patents, inventions and designs; and
 - (c) commercial and other published computer software;
- (2) that institutions be requested to provide the necessary data in this form on an annual basis for a three year trial period, and to verify the aggregate data against a listing of individual works;

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- (3) that for purposes of general publication the indicator be accompanied by a corresponding three year average measure to improve the reliability of comparison. (Section 6.1.3)

P11: Paid Consultancy Rate

- (1) that the Average Consultancy Rate be redefined as the number of paid consultancies, each valued at more than a specified minimum level, per year for each 10 EAS, calculated by individual AOU and classified according to category of client;
- (2) that institutions be requested to provide the necessary data in aggregate form on an annual basis for a three year trial period, and to verify the data against a listing of individual consultancies;
- (3) that for purposes of general publication the indicator be accompanied by a corresponding three year average measure to improve the reliability of comparison;
- (4) That an additional indicator, defined as the percentage of individual academic staff engaged on professional consultancies of a specified minimum value, be implemented for a trial period of three years in association with the Average Consultancy Rate. (Section 6.2.1)

Professional Service Activity

that the indicator as defined in the trial analysis be implemented on a national basis for a three year trial period, and that institutions be requested to provide the necessary data in an appropriate form. (Section 6.2.2)

Participation and Social Equity Indicators

S1: Academic Staff Gender Ratio

that the indicator as defined for the trial analysis, including all categories of academic staff weighted in terms of equivalent full time load, be implemented on a national basis. (Section 7.1.1)

S2: Commencing Student Gender Ratio

- (1) that 'external' students be excluded as a separate category in the classification of commencing students by gender and type of enrolment; and

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- (2) that with this modification the indicator be implemented on a national basis as defined in the trial analysis. (Section 7.1.2)

S3: Academic Program Diversity

that further research be undertaken on possible methods for determining the relative diversity of academic provision across institutions in a more consistent way with a view to implementing an appropriate form of indicator as soon as possible. (Section 7.2.1)

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APPENDIX B
PERFORMANCE INDICATORS RECENTLY PROPOSED IN
THE NETHERLANDS
PROPOSED INDICATORS AND VARIABLES

Indicators quantitative	Qualitative Variables
TEACHING	
<ul style="list-style-type: none">- structure of staff by age- percentage of staff with given number of years of working experiences- staff mobility- average number of publications by department- number of staff with completed dissertations by faculty (universities)	<ul style="list-style-type: none">- educational qualifications of staff- staff's motivation to teach- staff-recruitment policy
educational climate	<ul style="list-style-type: none">- educational philosophy- innovative orientation
infrastructure and material facilities	<ul style="list-style-type: none">- quality of teaching space used
<ul style="list-style-type: none">- amount of hard-ware by faculty, by HVE-institute (e.g. computers)- amount of software in audio-visual centre by member of staff, by faculty, by HVE-institute (e.g. computer programmes)	
educational supply	<ul style="list-style-type: none">- scope of freedom-of-choice curriculum (subjects, modules) in relation to the volume of the compulsory curriculum- range of choice of major subjects- supply of fields of study: regular, free and experimental- possibilities for part-time training, in-service training contract- education, postacademic training

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Indicators quantitative	Qualitative Variables
<hr/> curriculum	<ul style="list-style-type: none">- effectivity of procedures for development on revision of existing programmes or new courses- clarity in and clear descriptions of the aims of the course- relevance of the aims of the course with regard to professional reality- agreement between content and aims of the curriculum- realization of the curriculum functions- correctness, plausibility, completeness and level of the aims of the curriculum
<hr/> policy	<ul style="list-style-type: none">- institutional system of quality assurance- agreement with other institutions concerning distribution and concentration of tasks- democratic implementation of policy
<hr/> student flow <ul style="list-style-type: none">- number of students passing propedeutic examination by field of study (percentage)- passed "doctoral" examination by field of study- time spent by field of study- drop-out percentage	
<hr/> student outflow <ul style="list-style-type: none">- average time-lag between graduation and first job by field of study- unemployed/graduates ratio field of study- percentage of graduates with completed dissertations after x-years by faculty (universities)	<ul style="list-style-type: none">- relevance of education in relation to professional activities x-years after graduation (higher vocational education)- demand for/supply of trainee places, graduation assignments from the labour market (higher vocational education)- adequacy of the output "adequate" with regard to the labour market and society

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Indicators quantitative	Qualitative Variables
RESEARCH	<ul style="list-style-type: none">- internal and external mobility of research personnel- availability of competent guidance for research- personal policy: recruitment; current personnel
material means	<ul style="list-style-type: none">- number of research grants received, funding from Ministry Research agencies and private sector by HVE-institute- percentage of research expenditure by institution
organisation and implementation of research	<ul style="list-style-type: none">- aims of the program: practicability, foundations- scope of the program, considering it's aims- scientific value of the program (universities)
policy	<ul style="list-style-type: none">- evaluation of research by the institute- relation between aims of research and recent policy plans concerning that particular field of interest- stimulation of research by the institution
collaborations	<ul style="list-style-type: none">- interdisciplinary research collaboration with institutes and research stations- international contracts through accomplished research (universities)- contacts with relevant projects (national, international)

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Indicators quantitative	Qualitative Variables
publication and citation data <ul style="list-style-type: none">- number of scientific publications in (inter-)national journals by year- number of articles in (inter-)national journals with reference systems by year- number of dissertations by year (universities)	<ul style="list-style-type: none">- quality of the publication
potential merits	<ul style="list-style-type: none">- usefulness of research results for trade and industry- usefulness of research results for education- scientific merits: research results generate new understandings, solve fundamental problems in scientific know-how- esteem on national and international level (universities)

SERVICES

Indicators quantitative	Qualitative Variables
external services	<ul style="list-style-type: none">- research on behalf of government, companies, societies- relations with external organisations- contract education- contract research- permanent-educational activities for outsiders: number, duration, participation- circulation of scientific results for the population- use of facilities by departments, by HVE-institutions in the process of amalgamation, by other major courses- study counselling and information- tutoring

APPENDIX C
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University Management Statistics and Performance Indicators
(CVCP: 1989 Edition)

(Produced each year about each programme, in each university)

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