AN APPROACH TO INDUSTRIAL STRATEGY

Note by the Chancellor of the Exchequer and the Secretary of State for Industry

1. The task we face is a daunting one - nothing less than a reversal of the relative decline of British industry which has been almost continuous since at least the end of the 19th century. This is not something we can achieve overnight. It will be a long haul and the full benefits will only emerge in the long term. But we must start the process now.

2. The attached document sets out the Government's proposals for the development of a long term industrial strategy. We believe that any approach to an industrial strategy must contain two ingredients. First, it must be realistic and flexible. Our proposals will involve a careful analysis of the performance and prospects of individual industries which will be open to continued adjustment as experience grows and circumstances change. This will not be a rigid strategy but a flexible framework within which strategic decisions can be made. Second, it is vital to engage the co-operation and drive of both industry and its work-people. We intend to do this by thorough discussion on a regular basis with representatives of both sides of industry, both at industry and at company level. We need better decisions both by companies and by Government.

3. The objective we seek is a coherent framework for the operation of the Government's new instruments of industrial policy. Although the framework is primarily concerned with long term problems, as it develops it will increasingly help short term policies to be framed against a longer term industrial perspective. We regard our proposals as a major and constructive step towards the development of a much greater common sense of purpose among all concerned with the future of British industry.

D W H
EGV

Cabinet Office
14 October 1975
Introduction

Our prime objective must be to become a high output-high wage economy. This can only be achieved by improving our industrial performance and raising our growth of productive potential. Our economic performance since the war has not been satisfactory, reflecting in large part our failure by comparison with our competitors to deal effectively with our industrial problems. The Government is introducing powerful new instruments to tackle these problems, in particular planning agreements and the NID. We must ensure that these, and the other weapons in our armoury, are used to purposeful effect. This calls for a soundly based industrial strategy for manufacturing industry. The other need for a strategy is as a guide for manpower planning. In some sectors of industry the pressure of international competition will force some shedding of labour. In others, technological improvements in productivity may mean that as modernisation proceeds, the same or a larger output can be produced with a smaller labour force. It is therefore of the first importance to develop a coherent industrial strategy so that action can be taken in good time by Government and companies to expand capacity and increase employment in sectors with good prospects or in others to take defensive action where this is necessary. Manpower policies (training, re-training, encouragements to mobility) must be geared in with this strategy.

2 The National Economic Development Council has held a series of discussions about the need for a greater degree of industrial planning and at the August Council me ting the Government undertook to produce a paper setting out a new approach to an industrial strategy which could then be fully discussed by all the parties. The development of any such strategy is inevitably a long and difficult task.
the approach which the Government considers likely to be the most realistic and fruitful. It is not a strategy but a programme for developing a strategy which will place responsibility on Government on unions and on management to improve our industrial performance.

Background

3. The health of our industry, and in particular manufacturing industry, which accounts for about 30% of our output and employment and over 80% of visible exports, is of vital importance to our national economic performance. Our manufacturing industry appears not to have responded adequately to changes in the pattern of world trade and to suffer from structural rigidities which show themselves in particular in bottlenecks — both in manpower and components in the early stages of upturns in the economy. The reasons for our relatively poor performance by international standards have been exhaustively analysed and discussed, not least in the Council and the Economic Development Committees, and there is no universal agreement on the reasons. Some important factors, such as an over-valued exchange rate and the burden of international responsibility, may now be less serious. Others, such as a limited supply of labour for industries to draw upon are inescapable. But the main relevant, and clearly inter-related factors are thought to include:

**Investment**

(i) a low rate of investment
(ii) inefficient use of capital, which has resulted in a poor increments output-capital ratio.
(iii) poor choice of investment.

**Labour**

(iv) inadequate development of a manpower policy and the consequent (regional and sectoral) shortages of skilled labour.
(v) low labour productivity reflecting poor management, inadequate consultation, restrictive practices, over-manning and disruption by industrial action.
(vi) attitudes to productivity and labour mobility based on views about appropriate pay and tax structures, reflecting long-standing attitudes to relative pay in industry.

Government (vii) sharp and frequent changes of economic regulators to meet the conflicting needs of economic and social priorities, making it difficult for companies to plan ahead.

(viii) pre-emption of resources by the public sector and by personal consumption to the detriment of industry's investment and export performance.

(ix) nationalised industries' performance affected by Government intervention on pricing, investment and employment policies.

Finance (x) a declining rate of industrial profitability,

(xi) imperfections in the capital markets mainly at the medium and longer term ends.

(xii) a capital market which does not give priority to the needs of industry.

4. There is no reason to believe that our problems will sort themselves out as a result of favourable economic developments. Indeed, on the international front the situation is likely to become more rather than less difficult - intensified pressures from the developing world to set up its own manufacturing capability, increased competition from low cost producers, and a build up of pressures which could affect both our terms of trade and the security of supply of foodstuffs and key raw materials.

Elements of an industrial strategy

5. To tackle our underlying problems and to improve our industrial performance will call for action by all parties concerned, Government, management and the unions, underlining the need for an agreed national strategy towards industry on a long term basis. Such a strategy must involve:
i. the better co-ordination of policies affecting industry having regard to their contribution to growth through industrial efficiency. In particular this demands a more positive identification of the industrial implications of the whole range of Government policies, and the feedback of information from planning agreements with companies will be of particular value.

ii. the more effective use of specific instruments of industrial policy and the deployment of financial assistance to industry. Both planning agreements and the NED will be important instruments in this field.

iii. ensuring that industry, both public and private, is able to earn sufficient profits on its successful investment to spur management to expand and innovate and to provide them with the basic finance to do so. Adequate sources of external funds are also vital: some will be provided through the National Enterprise Board and some through Finance for Industry, but it will also be essential that the market should be able to meet the needs of industry.

iv. a more effective manpower policy, including measures to provide a better supply of skilled manpower for growth industries and to cope with the human problems of redeployment from contracting to expanding industries. Training and retraining will be crucial here, both in coping with the problems of the present recession and in enabling people to meet the needs of a re-oriented British industry. The NSC and its agencies will have an important part in this.

v. the improvements in planning, both in industry and by Government, which will flow from systematic and continuing tripartite discussion of the likely prospects of individual industries, allied to greater disclosure of information at company level, particularly, but not exclusively, in planning agreements.

Above all, the need is to get away from policies of confrontation to work together in the national interest towards agreed common objectives.

5. For its part, the Government will need to continue to balance economic and social objectives which often have conflicting implications for policy. Nevertheless, the Government intends to give greater weight, and more consistently than hitherto, to the needs
increase the growth rate through regenerating our industrial structure and improving efficiency. This will mean giving greater priority for the immediate future to industrial development over consumption or even our social objectives. Only in this way can we maintain the industrial base without which the Government’s whole programme of economic and social reform cannot be fulfilled. Success in achieving our aims will depend on a complex variety of factors needing support at national, industry and firm level and requires proper co-ordination of macro and micro-policies. But we must recognize that this is not a solution to the short term economic problems which we face now.

One response to the problem might be for the Government to set in hand a new National Plan. The likelihood is that any plan which erected a single complete and mutually consistent set of industrial forecasts and targets would rapidly be falsified by events and have to be discarded. This would once again discredit the process of industrial planning in this country, as have previous attempts which failed largely because they were based on unsustainable economic assumptions, and paid too little attention to the constraints affecting individual industries and companies. Our rational response to changes in circumstances and lack of early and visible success was to abandon the plan in question rather than like the French or Japanese, to revise it and try again. As a result resources have tended to be dissipated with too little result. Accordingly we find ourselves without any co-ordinated strategy to provide a consistent basis for Government and industry to consider the likely prospects of the most important industrial sectors over a period of 5 or more years ahead and to indicate their role in meeting the overall economic objectives. This should be discussed extensively with both sides of industry as part of the development of the closer and more positive relationship between Government and industry to which the Government is committed in the White Paper on the Regeneration of British Industry. The framework would need to be reviewed and if necessary adjusted, at
regular intervals, to take account of changing circumstances. This tie in with what the Government intends to do in planning agreements with major companies as well as with Government planning of public expenditure and nationalised industry investment.

The framework

8. The first step is the provision of a systematic statistical and analytical framework. Although this can ultimately be broadened to take account of other useful information, including work currently in hand in the National Economic Development Office, we propose that the framework should initially rest on two main elements:

i. An analysis of past performance of individual sectors of manufacturing based on a number of statistical indicators such as size, growth rate, trading performance, import content, growth of world demand and importance to other sectors. A key factor would be the competitiveness of the industry at home and abroad. This process will help identify the importance of individual sectors in achieving various objectives.

ii. The implications for different industries and sectors of alternative medium term growth assumptions, using as a starting point the Government's medium term projections.

9. The Government would make an initial assessment on the basis of this statistical framework, taking full account of a wide range of qualitative factors, such as the scope for improving on past performance, the potential for import substitution, the development of new technology, the minimum economic size of plants, the security of future raw material supplies (for example our self-sufficiency in energy by 1980), the impact of EEC membership, the emergence of new overseas competitors and the industrial objectives and policies of other Governments.
10. The aim will be to identify those sectors most important for achieving our economic objectives, both for the Government's purposes and for those of private industry. This will entail a sector by sector analysis to identify those which are likely to have most potential and those which may be expected to present problems. This will involve a first grouping of the most important industries in the following way:

- industries which, judging by past performance and current prospects are intrinsically likely to be successful.
- industries which, though they fall short of the first category have the potential for success if appropriate action is taken.
- industries whose performance (as in the case of component suppliers) is most important to the rest of industry.

It is of course clear that any industry can contain sub-sectors and individual firms whose prospects may be better or worse than the sector as a whole.

The use of the industrial framework

11. This analysis is not in itself an industrial strategy. It is a starting point for the development of the Government's own industrial planning and a framework for discussion and action by the Government and by both sides of industry at national, industry and company level. At each level, the objective must be to tackle the problems listed in para 3 above, which lie at the root of our inadequate industrial performance since the war.

1. National Level

12. At the national level, there is a wide range of Government policies affecting industry. For these policies to operate effectively the Government should be able to assess their effects on individual sectors of industry to take account of them in policy formation. The proposed medium term industrial framework should contribute to this by providing a way of analysing the factors affecting the prospects for various sectors, including the impact of changes in the Government's general economic policies.
13. This sectoral framework can only be a part of the Government's total strategy governing its relations with industry. Quite apart from policies for selective intervention (discussed further below) industry will want the Government an assurance that a priority objective of economic management will be to allow it to earn a reasonable rate of return on capital. The Government has indeed made it clear that it accepts the importance of sustaining a vigorous, alert, responsible and profitable private sector of industry. Industry will also want closer consultation on medium term macro-economic prospects. We have made a start here by circulating to NEDC the main components of the Government's medium term projections and shall be ready to consider ways of carrying this further to complement the discussion of sectoral prospects which will take place on a regular basis as indicated in paragraph 19 below.

ii Industry level

14. There will need to be extensive discussions of the analysis of industry prospects with each of the industries identified within the groupings described in para 10 above. The IFDCs will have a great deal to contribute to this, and they will be able to draw upon the work they have been undertaking for the NEDC's Medium Term Industrial Review. The structure and operation of the IFDCs' machinery may have to be looked at in the light of this new development. Other sectoral organisations such as trade associations may also contribute to the discussions.

15. The indicators which NEDO are preparing (NEDC(75) ) will be valuable at this stage in assessing the scope for improving performance within each sector. Publicly owned industries will have an important role to play in improving our overall industrial performance since it is just as important that labour and capital resources are efficiently used in the public as well as the private sector. Just as they will be brought into the planning agreements system, it is the intention that the nationalised industries should come within the scope of the strategic planning process. This will, for example, enable the long term plans of the nationalised industries and their supplier industries to be related to each other and to the whole industrial framework. But since most of the nationalised industries are utilities rather than manufacturing industries, most of them are not, with the notable exception of steel, likely to feature in the grouping of para 10.
The detailed discussions are likely to throw further light on possible constraints to improved performance and the industrial implications of projections and decisions. They might also make specific recommendations for action by companies, trade unions and Government, although the selection of sectors is not intended to imply any commitment that the Government will necessarily intervene. While the Government must retain ultimate responsibility for the allocation of resources the industrial framework should provide a basis for determining priorities for action in specific areas of particular importance to the economy, within the inevitably limited resources available. This will contribute to the development of priorities for co-ordinated intervention and support not only by the Government itself but also by public agencies such as the NED and the Manpower Services Commission.

iii Company Level

The Government would also discuss the industrial projections and prospects and their implications with individual companies, primarily though not exclusively in the context of planning agreements. It is the individual decisions taken by management and unions at the level of the firm which will in aggregate determine the UK's industrial performance and planning agreement discussions should in due course provide a valuable means of influencing a significant proportion of the UK's manufacturing sector. While some firms will have opportunities it would be the aim to improve the overall standard of a sector which are not available to others in a given sector by raising the standard of average companies toward that of the best. At the level of the firm, the Government will be concerned to provide support where this is justified in individual cases - eg assistance for key investment projects - and the NED will have a role in promoting changes in the management and organisation of individual companies as well as by securing desirable restructuring of a sector. In deciding on the case for support to individual companies the Government will need to have regard to the criteria in NEDC(75)67, including the need to ensure that each company has the prospect of viability in the longer term. The framework and the development of a strategy
will provide a comprehensive base for Government policies both for companies in growth sectors and for dealing with the problems of companies in sectors with deteriorating prospects. More detailed knowledge of the Government's thinking, and the Government's commitment to take full account of the agreed strategic framework should allow companies generally to plan ahead with greater confidence.

iv. Procedure

18. As has been made clear the Government view the development of an industrial strategy not as a one-off operation but as a continuing and evolving process, with arrangements for regular review after the initial discussions and agreement.

19. The Government therefore envisage that in a normal year there would be a three stage operation on the following lines: First the late summer material would be put to the NEDC which would consist of three main parts:

i. a paper setting out the main components of the Government's medium term projection;

ii. a paper identifying the most important sectors grouped in accordance with para 10 and indicating the criteria (and indices) which had been used for this purpose. As the 30 or so sectors would have been chosen primarily for their importance to the economy, it is unlikely they will change significantly from year to year, although as experience of the system develops it may be possible to add further criteria for selection. Nonetheless the Government expects that the Council will wish to comment on the criteria chosen for any one year's review;

iii. separate annexes for each of the sectors listed. These would contain figures, where available, for the appropriate disaggregated part of the Government's overall medium term projections. They would also include a descriptive profile of the industry which would draw attention to its main problems and opportunities and in particular would attempt to identify areas where future trends were likely to differ from those in the past. Two specimens are attached as an appendix to this paper.
20. Second, subject to the Council's endorsement of the Government's approach to the year's review, material in iii. would be remitted to individual EDC's, or where no appropriate EDC's existed, to tripartite committees which at least in the early stages would be set up ad hoc. It would be in the EDC's, or ad hoc committees, that both sides of industry together with Government would attempt to identify areas for improvement and possible action.

21. Third, the results of these discussions will be pulled together, perhaps by an official group representing the Government, TUC, CBI and NEDO and submitted to the Council at about the turn of the year. This report would then form the basis for an important discussion by the Council on industrial policy and in particular on areas highlighted for action and improvement, at a suitable time of the year to influence Government thinking on macro-economic policy.

22. None of this would in any way prevent or inhibit discussions in the Council or the EDCs at other times of the year on issues related to industrial strategy or the particular aspects of industrial performance. But it would provide a framework which would relate NEDC's main discussions on industrial matters to the Government's own timetable.

23. At this initial stage of development, the timetable for consultations must be treated flexibly. As explained above, the preparation of a sound statistical base entails a good deal of work, because much of it is breaking new ground and requires the application of considerable resources to develop techniques. However, the aim is to produce an experimental analysis for consideration by the Council early in the New Year. After discussion in the Council, the detailed examination at sectoral level could begin, although again at this stage it might need to be regarded as to some extent experimental, and progress might usefully be reviewed by the Council about the middle of next year when revised medium term projections should become available. If we are to stick to this timetable the establishment of any additional groups that may be necessary will need to be set in hand quickly.
24. The Government recognise that the proposals in this paper deal largely with procedural matters and that the Council cannot take a view about the merits of the new approach until it has had the further paper we hope will be ready by the turn of the year. However the Government does attach great importance to this new approach because it is the right way to move towards a solution of our long term industrial problems. They therefore invite the Council to agree that the further work that has been described should be undertaken and should be brought forward for discussion early in the New Year.

25. When these industrial strategy proposals have been developed, the Government will be in a position to examine the needs and problems of a wide range of industries and companies against a coherent framework, playing its part in helping to meet these needs and to overcome the problems the Government will bring to bear the whole range of its resources. It will be able to frame its general economic policies to take account more systematically of industrial needs. The NEB will be able to provide finance for companies in key sectors. Selective financial assistance will be used to encourage and assist viable projects and the sectoral discussions should enable appropriate schemes, like those for the foundries, machine tools, clothing, and textile industries, to be developed. The MSC and its agencies will have a major role to play in meeting the needs of growth sectors for suitable trained manpower in easing the problems arising from industries shedding labour. The Government is confident that the use of these instruments, and the resources at its disposal, in a coherent and planned way will make a major impact on the problems we have set out.
The petrochemical industry is defined as that employing large scale processes to chemically convert and separate organically based raw materials, mainly naphtha in the United Kingdom. However, it is difficult to define the sector more precisely because of the range of products, the extent and variety of the processes used in the manufacture of chemicals derived from oil and gas. The statistical category most nearly covering the industry is MLH 271.2, Organic Chemicals. The basic products of the sector are Olefins (ethylene, propylene and butadiene) produced by cracking; and aromatics (benzene, toluene and xylene) produced by reforming. The following figures give 1974 sales in thousand tons: ethylene (1,275), propylene (663), butadiene (212), benzene (696), toluene (252). The value of sales of the sector at actual prices rose from £413m in 1968 to £534m in 1971 and is estimated to have approached £1,500m in 1974. The synthetic resin, rubber and fibre industries are major users of the output of the petrochemical industry.

**RAW MATERIALS AND PROCESSES**

Naphtha, the major raw material for the petrochemical industry is itself a joint product with gasoline and heavy oil from crude oil. To a significant extent naphtha is produced at the expense of gasoline and thus rates of growth of gasoline consumption together with rates of expansion of cracker capacity can affect the availability and price of naphtha for use in the petrochemical industry. United Kingdom naphtha use in the petrochemical industry is around 6.1m tons of which slightly less than 4m tons is for the production of ethylene. In the course of 1973, naphtha prices rose from around US $25 to US $120 per ton in response both to administered crude oil prices and to demand derived from products of the chemical industry. Prices have fallen since early 1974, though not to earlier 1973 levels and there is no immediate shortage of naphtha. Various factors may be leading to the use of other feedstocks in future. Gas oil is relatively more abundant than naphtha and gives more co-products, particularly propylene. Natural gas liquids (ethane, propane and butane) are available in large quantities from the North Sea and may find a use in petrochemicals.

The production of ethylene is around 30% of naphtha input but the proportion can be varied within limits by varying the severity of the cracking. Propylene and butadiene are the major co-products; markets have been developed for these chemicals and they are now much in demand.
A problem in planning new capacity is to ensure that there are markets for all these products which have somewhat different market growth rates.

MKTAKTS

4 The main derivatives of the basic olefins and aromatics are plastic materials (polyethylene, polyvinyl chloride, polystyrene, polypropylene etc) with a wide range of uses in packaging, construction, household wares etc; synthetic fibres; plasticisers and solvents; synthetic rubbers and detergents.

5 The very wide range of products into which petrochemical derived products enter have led to estimates of demand for petrochemical products being based on estimates of the growth in gross domestic product. But this simple judgement needs to be amended by differing sectoral growth rates which affect petrochemical demand since petrochemical products are concentrated to some extent in particular sectors, and the effect of substitution of other materials for petrochemicals in production and consumption as a result of petrochemical price rises. The latter are thought to be slight by the industry. Also petrochemical and petrochemical derived product imports will affect the relationship between UK petrochemical growth and market growth and must be considered. The volume of organic chemicals (ML 271.2) output increased by 12% pa in 1968-73, or five times as fast as gross domestic product. Since the peak reached in 1974 output has fallen 20-30% in 1975. Demand may not have fallen as much because consumers have run down their stocks. Further sectoral analysis of the major organic chemicals markets and substitution patterns is necessary to arrive at a more market based estimate of output growth. However, the growth of output experienced in 1968-73 is not likely to recur between 1975-85.

STRUCTURE, SUPPLIES AND CUSTOMERS

6 The large scale and capital intensity of plant in the petrochemical industry together with the inter-dependence of products and processes has led to heavy concentration of the industry. The four companies manufacturing ethylene in this country are either integrated with the oil production and refining industry which produces naphtha (BP Chemicals, Royal Dutch Shell and Esso) or with the manufacture of other organic and inorganic products (ICI). Each of these companies have plants overseas and have to plan increments to capacity not only to conform with their estimates of United Kingdom market growth and each company's share of this, but also with reference to capacity surplus and shortfalls of their overseas plants.
The most economic size of an ethylene plant is now about 500,000 tons provided it is run at full capacity and its cost some £120 million. There is increasing evidence of petrochemical companies jointly planning and building capacity; BP and ICI have jointly announced a plan to build an ethylene plant to come on stream on Teeside in 1977. This has the obvious advantage of spreading the risk and the cost: but another most valuable benefit is that it eases the task of arranging for the absorption by the market of this very large increment to capacity.

TRADE AND INTERNATIONAL COMPETITION

8 Estimates of UK trade in organic chemicals at current prices for the years 1966-74 and for the first half of 1975 are shown below. They inadequately represent the importance of the industry for overseas trade since products of the industry are also an important element in other UK exports, for example in plastics products.

TRADE IN ORGANIC CHEMICALS

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports</th>
<th>Imports</th>
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<tbody>
<tr>
<td>1966</td>
<td>70</td>
<td>85</td>
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<tr>
<td>1967</td>
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<td>1973</td>
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<td>506</td>
</tr>
<tr>
<td>1974</td>
<td>214</td>
<td>209</td>
</tr>
<tr>
<td>1st Half 1975</td>
<td></td>
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<tr>
<td>Exports</td>
<td>Imports</td>
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</tbody>
</table>

9 The very strong rise in exports and imports of organic chemicals in 1973 and 1974 partly reflects the large price increases stemming from the increase in naphtha costs. After adjusting for changes in prices it is estimated that the volume of exports has grown at about 11% per annum while the growth of imports has been slightly lower in periods of slack domestic demand and slightly higher in periods of peak domestic demand. Figures for the first half of 1975 reflect the weak demand in both the UK and overseas.

10 In 1973 and 1974 exports accounted for around one-third of domestic production while imports accounted for around one-third of consumption. Consumption of petrochemicals in Western Europe has grown at almost twice the rate in the United Kingdom and is expected to continue to do so.

INVESTMENT

11 The volume of organic chemicals investment averaged £115m pa, at 1970 prices, in 1970 and 1971 but fell sharply to average only £55m pa in 1972 and 1973. Since then investment has recovered slightly.
If ethylene demand and output in 1975-85 increased at half the 1968-73 rate, or at about 6% pa, one more 500,000 ton ethylene plant will need to be built to satisfy UK demand in addition to the cracker planned for 1977. If UK ethylene demand and output in 1975-85 increased at two-thirds of the historical 1968-73 rate, or at about 8% pa then two additional 500,000 ton crackers would be required, bringing installed capacity to 3m tons. Estimates of the downstream investment needed to take advantage of new ethylene capacity have been put at about four times the cost of an ethylene plant.

EMPLOYMENT

12 Between 1970 and 1973 employment in the organic chemicals (MLH 271.2) sector fell by 3½ thousand while during the same period output rose very strongly. Although changes in employment must tend on the whole to be influenced by past changes in output, it seems unlikely that employment in 1975 will be higher than in 1973. Average rate of increase in output per head in the period 1963-71 was 7.8%, based on Census of Production data. Although direct employment in the petrochemical industry is low, the indirect employment created if output is processed domestically is higher.

PROSPECTS

13 The particular advantages of siting petrochemical production in the UK lie in the political security of North Sea supplies of oil, gas and natural gas liquids, their proximity and availability and the existence of sites with deep water access. Attention has, therefore, been focussed on the question whether these advantages would enable the UK to capture a larger share of the European market and by adding value to a greater proportion of these North Sea feedstocks to gain benefits in terms of balance of payments and employment.

14 It is unlikely that UK companies, even if they had the financial resources, could expand their share of European markets quickly enough. The best chance of exploiting these feedstocks seems to be through overseas companies with established European markets building in the UK to serve those markets, plants which would otherwise have been built on the Continent. A number of such firms have expressed interest, but the present depressed market and uncertain economic outlook is inhibiting major investment decisions.

15 The Departments of Industry and of Energy are alive to the opportunities and to the possibility that, at the right moment, a Government initiative might be necessary. In the meantime the petrochemical sector is a candidate for the first round of planning agreements.
Ferrous founding involves the remelting and refining of iron or steel, pouring the molten metal into a mould. On removal from the mould, limited amounts of finishing are carried out according to the end use of the product. Ferrous castings are classified under EH 311 and 313 and are essential components for many industries. Over one-third of the tonnage is used by the vehicle and tractor industries; a similar proportion goes to engineering with the remainder serving a wide variety of industry including coal mining, railways and construction. The supply of ferrous castings was a serious constraint during the 1973 industrial upturn and this might well be so again.

Market Trends

The value of UK production in 1974 was £648m for iron castings and £125m for steel castings. The total tonnage has fallen since the early 1960's due in part to substitution by alternative materials, particularly in the building sector. In contrast the tonnage supplied to the vehicle industry has increased:

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<th>1,000 tonnes</th>
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<tr>
<td></td>
<td>Production of</td>
<td>Deliveries of</td>
</tr>
<tr>
<td></td>
<td>iron castings</td>
<td>steel castings</td>
</tr>
<tr>
<td>Vehicles</td>
<td>558</td>
<td>803</td>
</tr>
<tr>
<td>Tractors</td>
<td>287</td>
<td>260</td>
</tr>
<tr>
<td>Engineering industries</td>
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<td>745</td>
</tr>
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<td>Building and allied</td>
<td>455</td>
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<tr>
<td>Domestic goods</td>
<td>117</td>
<td>64</td>
</tr>
<tr>
<td>Pressure pipes and fittings</td>
<td>523</td>
<td>340</td>
</tr>
<tr>
<td>Ingot moulds and bottom plates</td>
<td>451</td>
<td>420</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>348</td>
<td>304</td>
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<td>included above</td>
<td>10</td>
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<tr>
<td>Total:</td>
<td>3718</td>
<td>3190</td>
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Meanwhile, there have been substantial improvements in product quality eg lighter spheroidal graphite (SG) iron has substituted for grey iron for pressure pipes and fittings and in some sectors of the
vehicle industry. Improved engineering design has led to the use of thinner walled castings. This has meant that the overall decrease in tonnage of castings produced has been compensated to some degree by an increase in value per ton. Expressed on the basis of 1970 constant prices, in the 10 years from 1964 to 1974 the value of iron castings by 24% and steel castings by 17%.

The pattern of demand for castings is strongly cyclical and the troughs in the cycle have accentuated a number of the serious problems the industry.

Balance of Trade

Direct trade in castings is extremely small. In 1974, expressed as rough castings, UK exported 5% of steel castings output and 0.5% of iron. Imports in tonnage terms were less than half exports.

Employment

In 1974 iron foundries employed 83,900 and steel foundries 20,600. Employment in iron foundries has dropped markedly over the past 10 years with particular effect amongst the smaller foundries.

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>1963</th>
<th>1968</th>
<th>1973</th>
<th>1974</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50</td>
<td>822</td>
<td>568</td>
<td>458</td>
<td>427</td>
</tr>
<tr>
<td>51-200</td>
<td>351</td>
<td>284</td>
<td>224</td>
<td>237</td>
</tr>
<tr>
<td>201-500</td>
<td>96</td>
<td>85</td>
<td>71</td>
<td>69</td>
</tr>
<tr>
<td>501-500</td>
<td>28</td>
<td>12</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>1001 and over</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Steel foundry employment has also fallen but to a much less marked extent, the number of operating foundries having dropped from 104 to 84 in the same period.

Regional Concentration

Traditionally the industry has been located near to its major customers and hence there is a heavy concentration in the West Midlands (32% of iron foundries). Other major areas are East Midlands (18%...
Yorkshire and Humberside (13%) and Scotland (11%).

Structure of the Industry

There is a considerable diversity of size in both iron and steel sectors as demonstrated by the numbers of foundries in three broad size categories in 1974:

<table>
<thead>
<tr>
<th>Size</th>
<th>Iron</th>
<th>Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual output (tonnes)</td>
<td>No.</td>
</tr>
<tr>
<td>Small</td>
<td>Under 1,200</td>
<td>415</td>
</tr>
<tr>
<td>Medium</td>
<td>1,201-5,000</td>
<td>220</td>
</tr>
<tr>
<td>Large</td>
<td>Over 5,000</td>
<td>133</td>
</tr>
<tr>
<td></td>
<td>758</td>
<td></td>
</tr>
</tbody>
</table>

Types of company range from independents, tied foundries operated by engineering and vehicle companies, and foundries in the public sector including British Steel Corporation and British Rail. Major companies in the iron sector include Birmid Qualcast, Glynwed, BSC and BILC. In the steel sector F H Lloyd is the largest group (in fact the largest steel castings group in Europe) and the Heir Group is also sizeable.

Plant and equipment

A large part of the plant and equipment in the industry is antiquated, as a result of inadequate investment over many years of cyclical activity with the associated problems of cash flow and profitability. In many foundries, although the capacity is nominally adequate in tonnage terms, the plant is inadequate to meet present day requirements of higher quality castings and safer and cleaner methods of production.

Average age of ferrous foundry plant in years

<table>
<thead>
<tr>
<th>Plant Type</th>
<th>Iron</th>
<th>Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings</td>
<td>41</td>
<td>40</td>
</tr>
<tr>
<td>Melting plant</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>Sand plant</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Finishing plant</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

It has been estimated by the industry and REDO that the cost of replacing buildings, plant and equipment at current replacement cost is £63m in the iron sector and £140m in the steel sector. On a 15 year replacement basis, this implies annual capital expenditure of £5m.
Environmental Control and Safety and Health Requirements

11 In addition to replacement and modernisation of existing plant, the industry is faced with increasingly stringent requirements both with respect of tighter environmental control standards, particularly on melting plant, and a more rigorous application of the Safety and Health at Work Act. The industry has estimated that compliance with these requirements over the next 5 years will cost about £90m, the burden being particularly heavy at the very smallest and the very largest foundry locations.

Financial Position of the Industry

12 The ferrous foundries have had a persistently low level of profitability. Recent data from NEDO and the industry has demonstrated that in the past 4 years gross profit (after depreciation and before interest and tax) has been in the order of 6-9% of turnover for both sectors. Expressed as a percentage of net assets, the iron sector in the order of 15-21% and the steel sector 6-14%.

13 Against this background the industry and NEDO have estimated the extent to which the industries would be able to raise from internal generated cash flow, the additional funds required for modernisation over the next 5 years.

<table>
<thead>
<tr>
<th></th>
<th>Average annual net cash flow (1971-74) £m at 1975 prices</th>
<th>Average annual investment required £m (1976-1980)</th>
<th>1974 cash flow as % of forecast requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>43</td>
<td>54</td>
<td>80</td>
</tr>
<tr>
<td>Steel</td>
<td>7</td>
<td>14</td>
<td>51</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>68</td>
<td>74</td>
</tr>
</tbody>
</table>

Thus the industry's ability to finance the necessary investment from internal funds would fall short by some 26%. Given in particular the depth of the current general recession and the extreme difficulty foundries would have in achieving higher prices for their products, is a serious position.

Problems faced by the industry

14 Given its present position the ferrous foundry industry faces a formidable task over the next few years. The reasons for this may be summarised:-
(a) the vulnerability to market demands which are strongly cyclical
(b) a decline in the overall tonnage demand with a shift in demand towards higher qualities requiring re-equipment and better techniques
(c) the reduced number of operating foundries with capacity for specialised jobbing and high quality repetition work.
(d) difficulty in attracting and retaining skilled labour
(e) abnormally low level of investment in the past
(f) increasing demands now being made on environmental control and safety and health at work.

Areas for consideration

15 The likely level of capital investment will need to be considered against the potential demand for castings. This should take account of the effects of the £25m allocated for the Ferrous Foundries Scheme of financial assistance under Section 8 of the Industry Act recently announced.

16 In addition it will be important to consider the means by which the industry can improve its level of profitability and devise better methods of coping with the trade cycle by diversifying products and improved marketing in consultation with major users. In this connection the activities of the newly formed EDC for ferrous foundries could improve the process of consultation with user industries and enable companies to see their own position better in a national context.

17 The problem of manpower supply, labour relations and training in the foundry industry is also one which will need careful study and effective action by the industry. Its efforts in this direction have been assisted in recent years by the Foundry Industry Training Committee (under the umbrella of the Engineering Industry Training Board) and recent initiatives for training and retraining by the Secretary of State for Employment will be of particular assistance to the foundry industry.