Department of Trade and Industry
Republic of South Africa

DISCUSSION DOCUMENT

"DRIVING COMPETITIVENESS: AN INTEGRATED INDUSTRIAL STRATEGY FOR SUSTAINABLE EMPLOYMENT AND GROWTH"

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INTRODUCTION BY THE MINISTER, ALEC ERWIN

The need to create employment and a better life for our people is the central objective of the economic policy of this government. The Reconstruction and Development Program (RDP) remains the basic policy framework to achieve this objective. The Growth, Employment and Redistribution (GEAR) program is the associated macroeconomic strategy used. At the beginning of this year the President announced an Action Plan to Accelerate Growth. This action plan marked an increased emphasis on microeconomic reform to further increase investment.

Within these frameworks one of the most contested areas has been that of an industrial strategy. Many have argued that this dimension of policy has not been explicit enough. Labour has been of the view that the government has, in effect, been pro−business as it has not been interventionist enough in support of employment. In the area of tariff reduction there has often been more common ground between the labour movement and segments of business.

These debates have been intense within the Alliance. The debate is healthy and it is unrealistic to expect that there can be agreement on all matters. Government has argued that there has been an industrial strategy but concedes that it may not have been made explicit enough or accessible enough to the economic actors. In the end, whilst debate may continue, the government needs to have a policy framework within which it acts and interacts with the main economic constituencies. It is important that there is predictability of policy over a meaningful period of time.

In order to make the industrial strategy more explicit and accessible and to deal with changing conditions a new policy statement needs to be made. This paper is a draft statement of such a framework that will provide the basis for a detailed interaction with the main economic and political constituencies. The outcome in a few months will have to be the policy certainty that will assist investors and other decision−makers.

The focus in this paper is on manufacturing and an industrial strategy. The paper does not deal with all aspects of the economy or economic policy. There is a danger in this since many other aspects of economic policy impact on manufacturing and its development. However, it is as problematic to deal with the whole scope of economic policy when the objective is to provide greater clarity and certainty within a more defined area. Accordingly, the approach taken by the DTI is to provide a limited number of major policy statements as separate papers. Within each paper a brief statement on how strategies are linked one to the other is provided.

The Department of Trade and Industry has produced a number of papers over the last few years and will shortly be producing a journal, Sisebenza Sonke. These provide the broader context of discussion and debate within which this document should be situated.

In this way it is hoped to provide both operationally specific policy frameworks as well as insight into the overall approach to economic policy.

By way of introduction to this paper the main conclusions of the overall analysis can be briefly stated in the following manner. The oft−used term globalisation does in fact have real content in that there have been major structural and qualitative changes in the working of the world economy and consequently in the relationships of national economies to that world economy.

Information technology and economic liberalisation policies have had the effect of greatly increasing the global integration and significance of markets and thereby increasing their impact on economies. This has major implications for the financial stability of economies, investment decisions, the location of production and economic activity and the dynamic competitiveness of manufacturing activities.

This does not mean that markets are now necessarily more efficient or that they should reign supreme. In means the role of the state and public sector has to change. The role of the state is not decreased but its actions have and must change if it is to be effective in promoting and protecting the interests of its citizens. The increased impact of markets also means a greater need for effective

commercial law and regulation – competition and consumer law being major examples.

In a developmental situation such as ours in South Africa the state will have to play a leading role. As important, it will have to have the political capacity to implement reform over a sustained period. The political economy of development is as critical as the technical economic programs, but a polity that ignores the power of the changes in the global economy does so at the peril of the wellbeing of its citizens.

This paper is based on the analysis that argues for a comprehensive response by the state within the context of the national and global political economy. The critical elements of this response can be briefly stated. There is need for an industrial strategy, located within a stable macroeconomic framework which requires a range of fiscal and financial reforms. The industrial strategy has to be supported by an international economic strategy and complemented by an effective socio−economic empowerment strategy. The last is to counter the powerful tendencies toward inequality, uneven development and marginalisation that characterise the globalisation process. It is also argued that such a response can only be effective within the context of a democratic and developmental state.

Turning to the paper at hand the focus is on ensuring that the South African manufacturing processes will be dynamically competitive so that we can raise the levels of employment and income for all of our people.

May 2001

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1. WHY AN INDUSTRIAL STRATEGY ?

1.1 Manufacturing is Important

Manufacturing makes an important contribution to national output and to employment. Moreover, the products of our manufacturing sector make up a significant share of our exports and they are critical inputs into other sectors of our economy. Manufacturing matters and government is committed to supporting a flourishing manufacturing sector.

1.2 A Good Manufacturing Strategy Promotes Investment

A clear and well communicated vision for the manufacturing sector on the part of government increases certainty, particularly for investors, and it allows the private sector to align its own strategies so as to take cognisance of both current and likely future government policies. The purpose of this document is to produce such a vision. This document outlines government thinking on the major global developments that will face our manufacturing sector, the likely areas for growth and the role that government will play to enhance the ability of our manufacturing firms to meet resulting challenges and opportunities.

1.3 Balancing Flexibility and Predictability

As is commonly acknowledged, the pace of change in the global manufacturing environment is increasingly rapid. Policies will need to be constantly adapted in response to these changes. As with firms and their employees, in a rapidly changing environment, government will need to be flexible. At the same time, too much flexibility will introduce uncertainty, undermining the credibility and hence the efficacy of policy and the confidence of the private sector. Government will strive for a balance between policy flexibility and predictability. Embedding changes in individual policies within a clearly defined and stable framework best does this.

This document therefore does not provide a detailed and comprehensive list of policies that government will inevitably follow. Rather, this document provides a framework – outlining the broad trajectory or thrust that government anticipates for its industrial policy over the next two decades, as well as the premises upon which it is constructed. To distinguish this framework from the individual policies pursued, the framework is referred to as a strategy.

1.4 Global Trends – the Implications for South African Manufacturing and the DTI

As we shall see, global changes have resulted in the manufacturing sector developing new forms of production that have simultaneously both substantially enhanced the importance of other non−production activities such as innovation and marketing and the importance of the effective integration of these activities with production. This has led to the traditional divide between production and other activities, and indeed between manufacturing and other sectors, becoming increasingly blurred.

Consequently, internationally, many government departments that have historically been concerned with manufacturing are increasingly widening their scope. As a consequence of this broader scope, they are also utilising new policy instruments. This is the approach adopted in this document. It is proposed that the DTI extends the scope of its policy to focus more upon new non−production activities undertaken by manufacturing firms; that the DTI extends its focus beyond the boundaries of traditional manufacturing to new sectors that are increasingly integrally linked with the manufacturing economy. Moreover, in order to secure its broader objectives the DTI will need to utilise new policy instruments. To capture this significant shift, we employ the concept of an integrated industrial strategy.

In addition, in order to be effective across this wider scope, internationally departments of trade and industry and their equivalents have had to develop new relationships with a range of other governmental ministries. This document similarly proposes that, in pursuit of its wider focus, the DTI enhances its linkages with other government departments.

2. THE CHANGING WORLD – THE GROWING IMPACT OF MARKETS

2.1 Exploding Markets; New International Trends

2.1.1 The Centrality of Market Forces in the Modern Era

From an economic policy perspective, arguably the single most significant development of the last two decades has been the massive extension of markets. This is most evident at the global level where technological change coupled with policy measures aimed at reducing barriers to the movement of goods and capital has led to an unprecedented integration between national markets. But it is no less significant within national markets where, once again, new technologies coupled with the withdrawal of the state from a range of activities has presaged the entry of private capital – or the market – into the provision of many basic commodities and services including infrastructure. The reasons for this cannot merely be ascribed to the ideological strength of an particular paradigm. There are important underlying structural changes occurring.

South Africa is not exempt from these developments. Our emergence from the isolation forced upon us by apartheid coupled with a reduction in tariff and other barriers to international trade have ensured that our domestic markets have become deeply integrated with those of the rest of world. And private capital – domestic and international – has penetrated areas of the national economy that were previously the preserve of the state, including steel, energy, telecommunications, transport and even the provision of health and education.

While trade and investment barriers have undoubtedly made important contributions to national industrialisation strategies and to the quest for national self sufficiency generally, protectionist policies were increasingly associated with inefficiencies. Consumers, including downstream producers, paid the price. By the same token, state owned enterprises protected from the process of competition proved increasingly incapable of delivering an effective service. Here, too, consumers generally paid the price. Indeed, because the state frequently took responsibility for providing the most basic goods and services – electricity, transport, telecommunications – it was often the poorest consumers who bore the brunt of the inefficiencies in the state−owned enterprises. Domestic industrial consumers of these critical inputs also suffered high prices and inefficient services. This significantly undermined their competitiveness. The result was stagnant economies and employment that was at extreme risk from significantly lower cost production in the global economy. To try and protect, let alone generate, employment by increasing tariffs and maintaining ineffective production only serves to prolong economic stagnation.

A lowering of protectionist barriers and the withdrawal of the state as a producer from key areas as part of an overall restructuring of the public sector is the strategic response adopted by governments.

2.1.2 The Limitations of the Market

However, a simple retreat on the part of the state did not provide the answer. Exposing domestic producers long used to protection to the harsh winds of international competition frequently occasioned more threat than opportunity. Replacement of state monopolies by private monopolies is likely to perpetuate the inefficiency and the abuse of monopoly power keeping costs of production high. The operation of the invisible hand of the market, if left entirely unrestrained, favoured the strong over the weak. In international trade it often favoured well−established producers from the industrialised countries; in the domestic market it favoured those private producers capable of monopolising their chosen spheres and foreclosing entry to actual and potential competitors. The unfettered play of market forces created as many problems as it solved. Clearly what was required was not the wholesale withdrawal of the state but rather a reconsideration of its role.

2.1.3 New Markets, New Role for the State: Towards a Rules−based Domestic Economy for the People

The principle insight underlying our industrial strategy is one that acknowledges the power of market forces − that the market is a force for low prices and extended choice, for innovation and for new entry into the economic arena. However, our industrial strategy also recognises that, like all−powerful forces, the market needs to operate under a clear set of rules. In the absence of clear and enforceable rules it runs the risk, indeed, the certainty, of capture by the most powerful participants and the undoing of all the positive outcomes associated with an effectively functioning market. Furthermore, even a soundly governed market, one that operates within a clear framework of rules, will under−provide in key areas. First it may provide outcomes that do not accord with the broader objectives of the society, with what is often termed the ‘public interest’. These objectives must then be provided for in the rules that govern the conduct of the market. Secondly, certain key inputs are subject to what economists refer to as ‘market failure’, that it, the market may fail to send the signals that result in the provision of key economic inputs – by way of example, research and development is often subject to market failure; or, another key example of market failure, the market does not provide the specific skills required for the realisation of our economic objectives, or may only do so with a very considerable time lag. In these and other areas, the state must step in – sometimes the state will act as the direct provider of these inputs, while at other times it may guide the market through the provisions of incentives designed to direct economic actors to produce desired outcomes.

2.1.4 Market Rules & Market Failure − Industrial Strategy in SA

Our industrial strategy rests on two pillars:

The first pillar of our industrial strategy consists of establishing and enforcing a set of rules that govern economic conduct. These rules are principally designed to ensure that markets function effectively, to ensure price and quality competition, innovation and easy entry into the market, and that markets are not dominated by the powerful at the expense of the weak. But, these rules also encompass provisions designed to secure the broader objectives of the society, the public interest.

The second pillar of our industrial strategy is designed to address market failure, to secure, in other words, the provision of key capacities that are not provided by the operation of the market alone.

This requires the state to act in various ways including as a producer of products and services. As we will see below many of these missing capacities may be grouped under the broad heading of 'knowledge.' Accordingly, the provision and enhancement of knowledge will be increasingly the hallmark of our intervention on the supply side.

Much of this document is taken up with a consideration of the latter set of programmes, with programmes designed to overcome market failure. These programmes are the bread and butter of our industrial strategy, representing the core activities of the Department of Trade and Industry.

Before elaborating on these core activities, we will briefly overview our approach to developing a rules based domestic and international trading system, to setting, in other words, the rules of the game that govern the conduct of economic life.

2.2 Balancing the Rules for Domestic and International Markets

While it is convenient to distinguish between the rules and institutions that govern domestic and international trade, the interactions between these markets should be appreciated. Hence, concern that a domestic product market is dominated by a small number of local producers will be allayed if ready access to imported commodities constrains the market power of the dominant domestic producers. But, that having been said, the availability of products on the international market seldom acts as a perfect constraint on the power of local producers who generally retain an advantage on the domestic market over international competitors. Accordingly, a liberal trade policy is rarely a substitute for competition rules governing the conduct of domestic producers.

By the same token those who have responsibility for maintaining domestic competition are obliged to recognise that in some instances the minimum efficient scale required to compete effectively on international markets may result in a firm that dominates its domestic market. While this seldom arises in the massive markets of the highly industrialised world, it is somewhat more likely in small economies such as our own. But again, while this possibility must be recognised in the rules that govern our markets, it should not be exaggerated. Research confirms time and again that the most effective international competitors are those who are tested by competition in their domestic markets. In other words while the correlation between scale and international competitiveness is a reality, it is seldom grounds for turning a blind eye to dominance and eliminating competition on domestic markets.

In summary, the rules for the conduct of trade on the domestic and international markets must be cognisant of the interactions between these markets. But because the interaction between them is seldom seamless each requires a distinctive approach. The respective approaches have in common the desire to ensure the effective functioning of the markets for which they are responsible, that is markets that ensure efficiency and promote access. However, the rules will also recognise that the unfettered play of markets may under−provide critical economic resources and threaten the development of others, and the operations of the market may, in certain instances, conflict with key national policy objectives.

2.2.1 Domestic Markets and the Role of Competition Policy

Economic activity on the domestic market is, in common with all other societies, subject to an array of regulatory requirements ranging from those intended to protect labour or environmental standards through to those designed to promote sound corporate governance. From an industrial policy perspective, a key part of the regulatory environment concerns the statutory framework designed to secure the effective functioning of markets. Here the key piece of legislation is the Competition Act, which came into effect in October 1999. The Competition Act attempts to promote a competitive market structure through the regulation of mergers. It also proscribes a variety of anti−competitive horizontal and vertical agreements and other practices – particularly when perpetrated by dominant firms – designed to secure or exercise market power.

The purpose of the Competition Act is, as its name suggests, to promoting and maintaining competition. However, it does not pursue competition for its own sake. As the Act specifies, competition is promoted in order to promote the efficiency, adaptability and development of the economy, to provide consumers with competitive prices and product choices, to promote employment and advance the social and economic welfare of South Africans, to promote international competitiveness, to promote the participation of small and medium−sized enterprises, and to promote a greater spread of ownership. These objectives do not simply represent a general set of principles and objectives but are rather embedded in the day−to−day functioning of the Act. Hence, in deciding the effects of a merger the competition authorities are obliged to consider the impact on competition and then to balance this against the merger's impact on efficiency and on a range of specified public interest criteria, namely, the sectoral or regional impact of the transaction, its impact on employment, on the ability of SMMEs and firms owned by historically disadvantaged persons to compete, and on the ability of South African firms to compete in international markets. By the same token an anti−competitive practice otherwise proscribed by the Act may receive prior exemption if the competition authorities are satisfied that the practice in question contributes to a number of specified objectives including the promotion of exports and the ability of SMMEs and firms controlled by historically disadvantaged persons to become competitive.

2.2.2 A Broader Mandate: Objectives for DTI Industrial Strategy

The promotion of SMMEs, Black Economic Empowerment and Employment Creation – all of which are recognised as important social objectives in the application of our competitions policy – are key objectives which are also integrated into all other aspects of our industrial strategy.

Black Economic Empowerment (BEE)

A fundamental concern is that, in our economy, black people remain excluded from financial and economic resources. Not only is this morally unacceptable, inequality is fundamentally impacting on our ability to attract investment and to grow the economy.

Three factors are especially important:

- The exclusion of black people has deep historical and structural roots. One of the key features of apartheid was the systematic exclusion of black persons from wealth creation.
- South Africa has the third most unequal distribution of incomes in the world. This combined with low rates of economic growth has resulted in development backlogs and rising levels of unemployment and poverty.
- The processes of globalisation favour those who already possess capital or skill.

The consequences of these factors fall disproportionately on black people.

Will market forces eradicate these inequalities? The answer is no – even well functioning markets, in the absence of counteracting social policy, will work to the advantage of those who, through their possession of skills or resources, already exercise considerable market power.

Our policies for BEE must be viewed as fundamental to the development of a sustainable growth path. Enhanced access of black people to real economic opportunities will however be best effected through integrated policies that will significantly increase the economic contribution and productivity of all South Africans.

EMPLOYMENT

While the magnitude of the unemployment problem depends on the definitions employed and the precise numbers are difficult to determine, there can be no doubting that South Africa has a massive unemployment problem. Moreover, although this may have been partially offset by new forms of employment opportunities, enumerated employment generally, and in the manufacturing sector in particular, has been declining.

High levels of unemployment impact negatively on our social and political structures, and they also undermine our ability to compete and attract investment.

In a real sense, unemployed resources, represent a significant – perhaps the most significant – market failure. At the same time, in a globalised market economy, there are distinct limitations to the role of the state as a direct creator of employment opportunities. Strategies that can potentially have a major impact on employment largely lie outside the realm of industrial policy – in areas such as land reform, wage subsidies, public works programmes and the extension of property rights. Moreover, enhancing employment through industrial policies is likely to be constrained by largely fixed technical coefficients or labour/capital ratios of technologies utilised. However, the existence of a competitive industrial sector that is growing is essential in opening the possibility of other forms of employment. In a sense the role of an industrial strategy is to create the necessary conditions for employment creation but it is not the necessary and sufficient condition.

Nevertheless, concern for employment creation must inform our industrial strategy. This entails, *inter alia,* ensuring that our supply side support programmes favour more labour intensive technologies and sectors; supporting SMMEs which are likely to be more labour intensive; enhancing the training of those employees whose skills are in demand; paying particular attention to enhancing the development of industry in regions where unemployment is high; and extending our policies to encourage investment and growth in those areas which are currently adding significantly to employment growth – notably the tertiary sector.

SMMEs

The National Small Business Strategy provides the broad framework for directing our efforts to grow SMMEs. This strategy seeks firstly to lower market barriers to entry and secondly to provide a number of supports and programmes that are designed to stimulate the participation and growth of SMMEs across all sectors of the economy. The latter will take account of the specific factors that underlie the difficulties and the weaknesses that limit the competitive advantage of small enterprises in these sectors.

With their generally lower capital/labour ratio, SMMEs have the capacity to make a particular contribution to employment creation and with their flexibility to make a particular contribution to innovation. They also enhance competition. Of particular importance in the South African context, SMME development is a principal mechanism for the enhancement of black entrepreneurs.

Certain broad areas have been identified to receive focused attention and to drive the growth and development of SMMEs – notably the policy and regulatory environment, access to finance, corporate partnerships and business linkages, skills development and access to information and market access facilitation.

The particular needs and concerns of SMMEs will be an integral part of all industrial development initiatives throughout the department. Arguably, the strongest spur to the development of SMMEs is high rates of development elsewhere in the economy. Accordingly, as with BEE, policies to promote SMMEs will be best effected through integrated policies that will enhance development broadly. Delivery and support mechanisms will need to be tailored to the requirements of SMMEs.

2.2.3 The Impact of New Technologies is Transforming the Role of the State

Competition law is principally concerned with regulating the exercise of private power. But competition policy has a wider remit taking in the activities of the state itself. The state, through its activities as a producer of goods and services and its ability to issue licenses for the production and distribution of goods and services to others, powerfully influences the level and direction of competition, that is, the performance of markets, in the economy.

The state generally intervenes as a producer or licensor of economic activity in order to overcome market failure, or to secure the realisation of social objectives that are not provided for by the free play of markets alone. Moreover, historically the state has intervened as a producer in activities where the minimum scale of production requires levels of investment greater than that to which the private sector is willing to commit. These activities – often referred to as 'natural monopolies' – are generally areas in which the minimum efficient scale of production ensures that only a single producer is capable of effective operation in an economy of South Africa's size. These are generally involved in the production of basic goods and services, 'basic' not only to the needs of all citizens, but also to the competitiveness of the economy. The best known examples are in telecommunications, electricity provision and transport, although, until relevantly recently even an area like steel production was thought to be subject to market failure and to be characterised by 'natural monopoly' features.

Technological development has significantly altered the landscape here. The upshot is that minimum efficient scale of operation has, in many key areas, (for example, electricity generation) reduced to the extent that private capital is now able to participate. The development of cellular telephony has challenged state monopolisation of this key service. Small, privately owned niche airline operators have challenged the erstwhile state−owned 'national carriers'. In areas like broadcasting private investment is significant and growing. However, most, although not all, of these areas require a degree of continuing state involvement. Natural monopoly features are still strong, in, for example, electricity transmission or passenger rail transport. And social considerations remain immensely significant and their realisation is, by no means, guaranteed by the free play of markets or by private investment decisions. In short, the state's role may have changed significantly, but it has not been eliminated. The quantum of state involvement may have reduced, but its qualitative significance is, for the most part, undiminished.

2.2.4 Balancing Acts: Public Service and Economic Growth

Regulating markets in these sectors is a critical part of the state's function. Clear and well−defined and well−enforced regulatory governance is critical to promoting investment. In particular, private investors will not enter these critical areas if they perceive that they will be competing against an incumbent favoured by its privileged relationship to the state. On the other hand, the state owned enterprises cannot be expected to compete effectively with the private sector if they alone are subject to onerous public service obligations. It must be emphasised that these areas are of critical significance to the performance of the national economy, to, in other words, the prospects for a successful industrial strategy. An effective transport system or communications network is the right of every citizen – but these are also vital industrial inputs, and significantly affect our competitiveness in the world economy.

For all these reasons, the areas of activity referred to above are generally subject to the regulation of dedicated sectoral authorities. However, for the most part the key duties of the sectoral regulators are to carry out the complex technical regulatory functions that characterise these sectors and to ensure compliance with the social objectives of the government. But ensuring the introduction of feasible levels of competition into these sectors is also vital. Transport, energy and telecommunications facilities will not be extended at affordable prices or at the required levels of competence if the providers are not subject to powerful disciplines and it is clear that market forces, or competition, is one such source of discipline. And we repeat: if our providers, public and private, do not provide world−class services at affordable prices, both individuals and business consumers will experience the consequences.

2.2.5. Effective Regulation Requires Cooperation Across Government

Regulating these sectors requires close co−operation between the responsible sectoral regulators. A recent amendment to the Competition Act confirms the competition authorities' duty to ensure the effective functioning of markets in these areas. Their regulatory functions are, of course, subject to the terms of the licenses issued by the responsible sector regulator. But while there are often cogent reasons for overriding competitive outcomes in these sectors, there is ample space for the introduction of competition.

This area is also naturally an important area of co−operation between the various ministries and government departments responsible for the regulated sectors. The need for effective inter−departmental co−operation is a major theme of our new industrial strategy. In no area is it more important than in the interplay between the private and public enterprise. The notion that the Department of Trade and Industry is somehow responsible for ensuring private investment while other departments are exclusively concerned with public investment and infrastructural provision is not a sustainable basis for industrial development.

2.3 Globalisation: Whom Does it Really Benefit ?

There is considerable concern and some evidence to the effect that income has recently been growing faster in some countries, notably the rich industrialised countries, than in others, notably the developing countries, and particularly the countries classified as least developed countries.

While the jury is still out as to all of the causes of this growing international inequity, it is widely held that the rules of the game governing international markets for finance and particularly for goods and services, currently favour the powerful richer countries at the expense of the weak and poor. A major cause for concern is the extent to which expanded trade and investment flows have outstripped the ability of the international community to devise a framework of rules to ensure that it functions effectively in the interests of all nations and the diverse interest groups that make up each of these nations.

We are, insofar as international economic relations are concerned, in a position analogous to that of US policymakers at the turn of the century. This was the period when the 'robber barons' expanded trade and commerce in every conceivable direction. There can be no doubt that this represented great economic progress but, because of the absence of a coherent framework of rules to govern this expanded trade, it often came at the expense of the environment, of workers and, not least of all, of the competitive process itself. It is no accident then that this period of US history coincides not only with great labour struggles but also with the rise of anti−trust laws, the body of law that to this day is concerned to ensure access to the US economy. These regulations ensured the sustainability and diffusion of this rapid spurt of growth and innovation.

2.3.1 Levelling the Playing Fields? Multilateral Economic Institutions

Hence the critical role currently played by the multilateral economic institutions. These latter institutions are the agencies responsible for setting the rules necessary to govern the international market place. To date these agencies have concentrated on dismantling barriers. They now need to turn their attention to the task of making rules for this increasingly integrated world economy. They also need to extend the dismantling of barriers to certain critical and sensitive markets in the developed countries – most particularly in relation to agricultural commodities.

Since 1994, South Africa has been at the centre of a number of key controversies surrounding the rules governing international trade. The difficult and fraught process of concluding our trade agreement with the EU has thrown into sharp focus many issues of seminal importance not only to us but also to all developing countries. In particular it underlined the lengths to which the EU will go to foreclose access to key parts of its vast market, in particular its agricultural market. The use by the US of anti−dumping regulation to protect their steel industry is example of the protectionist measures employed by many of even the most strident supporters of trade liberalisation. The bitter conflict between the South African government and the multinational pharmaceutical companies is eloquent testimony to the necessity of revisiting the rules governing international trade in patented products and in intellectual property generally.

In relation to possible future rounds of the WTO, our policy will seek to bring developing countries together around a common agenda – the so−called G−South. It is evident that only a co−ordinated response from the South will be able to secure significant concessions from the powerful industrialised countries. A critical objective will be to secure a substantial reduction in protective measures that shield inefficient industries in the industrialised countries and so significantly improve market access for the developing world.

Furthermore, whereas previous WTO rounds focused on dismantling barriers to international trade, the coming round will have to address, in one or other way, the necessity for expanding the framework of rules governing international trade. These are the 'new' issues proposed for inclusion in the agenda for the next round. These are not, as is often implied, issues of secondary importance. Rather they recognise that, in the absence of a clear set of rules, first, there is the distinct possibility of the re−introduction of barriers to international trade. In particular, it raises the spectre that those who benefit immediately from the expansion of international trade and investment will attempt to consolidate their advantages by excluding others from these benefits. Second, trade without rules carries risk for the environment, for labour standards, for the weak generally. It is for this reason that the next round of the WTO will have to find a way of equitably dealing with matters such as international competition rules, international investment rules, international labour and environmental standards.

Just as a democratic South Africa has participated in the process that opened up the world economy, we now need to grasp the opportunity of playing a leading role in setting the rules within which this world economy will function such that development in South Africa, and in the developing countries in general, will be significantly enhanced.

2.3.2 The Importance of Bilaterals and Multilaterals: EU and SADC

Whilst the WTO will be the most critical organization we have to relate to with respect to global economic governance, it will also be critical for us to expand our regional and bilateral relations. This has been called the 'Butterfly Strategy' within the DTI as it opens new 'trade wings' from the body of our traditional trade with the EU and North America. In this way we will ensure that our economic relations are sufficiently diversified, through establishing strategic partnerships with key countries in the global trading system. We also thus avoid the potential consequences of a stalling of the multilateral process.

Two regional economic partnership arrangements in the form or free trade areas (FTAs) have recently been concluded. The Trade and Development Cooperation Agreement between the European Union and South Africa will lock our economy into a long−term partnership with a key northern economic grouping, which has historically been our major trading partner. This will ensure continued flows of investment and technology into our economy, and will secure access to an increasingly difficult market for our exporters. The Southern African Development Community FTA, on the other hand, consolidates our economic partnership with our immediate region. These two agreements form the platform on which our future global economic strategy is based.

It is currently envisaged that we will launch negotiations with Mercosur. India is another possible strategic partner for negotiations. Bilateral agreements with these, and possibly other countries in the South, are intended to ensure that South African manufactures in particular, expand rapidly into these markets. Moreover, the agreements underpin stronger alliances with key countries and this facilitates the development of common strategies by the South in relation to the multilateral trading system.

3. CURRENT INDUSTRIAL POLICY

3.1 The Learning Years:1994−1999

The apartheid regime's industrial policy was defined by import substituting industrialisation. Import protection combined with high levels of concentration of economic ownership resulted in high and distorted domestic prices. The manufacturing sector was inward focused and its relations with government were frequently characterised by rent−seeking behaviour.

Given this context, the new government sought to:

1. Liberalise imports and encourage exports via export marketing assistance and other measures. These measures sought to overcome inward bias and stimulate exports.

2. Shift from demand side measures (import controls, tariffs, subsidies, GEIS) to supply side measures. The supply−side measures aimed at reducing costs and improving the efficient use of inputs.

Certain input prices, principally unskilled and semi−skilled labour, were seen to be high (by comparison with many of our competitors) in relation to productivity and the structure of the wage system reflected past economic and political distortions. It was anticipated therefore (although less often articulated) that there would be some output and employment loss in the areas which were low skill labour intensive. This would however be compensated for as firms, in all manufacturing sectors, sought to adjust to heightened competition by "moving up the value chain". Supply−side measures e.g. the support given to innovation, were intended to encourage this movement.

Accordingly, with the partial exception of the auto assembly and components and the clothing, textiles and footwear industries, which had a number of sector−specific measures, a non−targeted approach was adopted. Supply−side policies were generally made available to all manufacturing firms.

3.2 Policy Logic and Coherence: 1994−1999

Policy formulation therefore proceeded in logical fashion. Based on an analysis of the problems, objectives were identified. A number of policies to address these problems and achieve the objectives were then initiated.

In relation to trade, a formal programme of phased tariff reductions and tariff harmonisation commenced in 1995 in terms of an Offer presented to the WTO in 1993. The tariff offer was the product of consultation between government, business and labour. Average tariffs, maximum tariffs and the number of tariff lines all decreased significantly. This process has led to a certain amount of debate in that the binding rate − a maximum − has been confused with the actual phase down schedules. This has led to the assertion that we have phased down the tariffs faster than our obligations. This is not the case. The actual phase down schedules reflect the desired reduction of tariffs to achieve our objectives.

Negotiation of a Free Trade Agreement (FTA) with Europe was completed in early 1999.

As trade liberalisation proceeded, the DTI developed a large number of supports to firms on the supply side. The DTI took a broad front approach initiating a wide raft of new policies that were designed to support firms.[1]

However, a broad front approach and the consequent multiplicity of new programmes introduced within a very short time period, has compounded problems in effective implementation, in communications with the private sector and, most importantly, contributed to a lack of coherence. With regard to policy coherency, what has been lacking is a well−articulated and accessible vision – an industrial strategy that gives thrust to policy and that provides a framework for the co−ordination of different industrial policies.

3.3 Policy Design:1994−1999 − Best Practice?

International best practice in industrial policy design is quite well defined and diffused. Very broadly, the design of our industrial policies generally conformed to such practices, with adaptations being made to accord with specific local circumstances. Thus, while there may be some areas of policy that are less developed than others, there are no immediately evident major policy gaps or omissions. At the level of individual policies, there are no obvious "winners" out there, at least within the conventional areas of industrial policy, which other countries have employed and which has been omitted here.

However, the DTI will be reviewing its suites of policies in each of the main areas of industrial policy. The purpose of the reviews will be to more systematically enquire as to any possible policy gaps as well as to assess the coherency of policies within the area in question and the capacity to implement – see Appendix.

3.4 Industrial Performance: Did our Policies Work?

In many respects industrial performance has conformed to expectations. **Manufactured exports** have consistently increased in importance. Exports have risen at more than double the rate of increase of the pre−1994 period and stronger export growth post−1994 has prevailed across almost all manufacturing sectors. (The fastest growing sectors include chemicals, metals and metal products, machinery and motor vehicles and components. Food, clothing and footwear saw a decline in exports). Whereas in 1994, 15% of the output of the manufacturing sector was exported, in 2000 this had almost doubled to 28%.

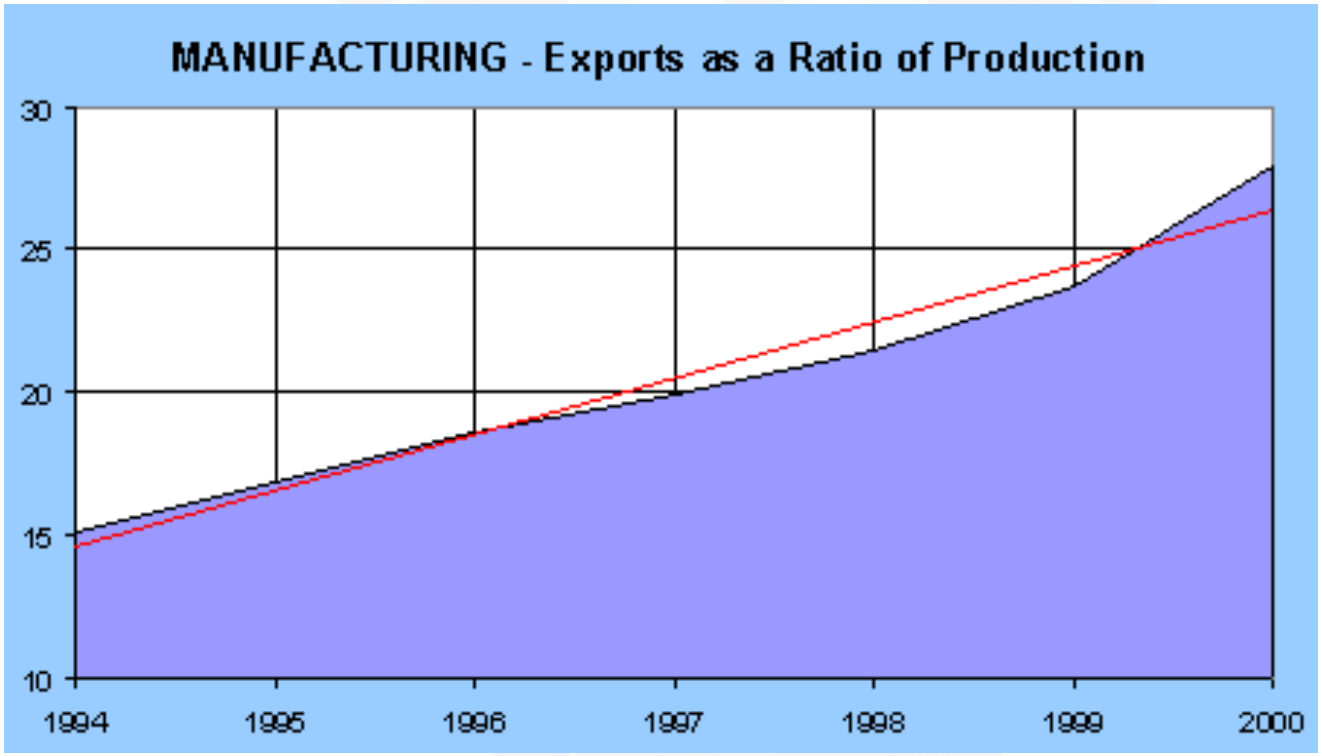


Table 1: Manufacturing − Exports as a Ratio of Production
Source: Statistics South Africa

1994	1995	1996	1997	1998	1999	2000
15.13	16.87	18.57	19.92	21.45	23.72	27.87

The unit value of exports has been rising, suggesting that there has been significant movement up the value chain on the part of exporting firms.

There has, since 1994, been a steady rise in **labour productivity** – labour productivity increasing by 30% since 1994.

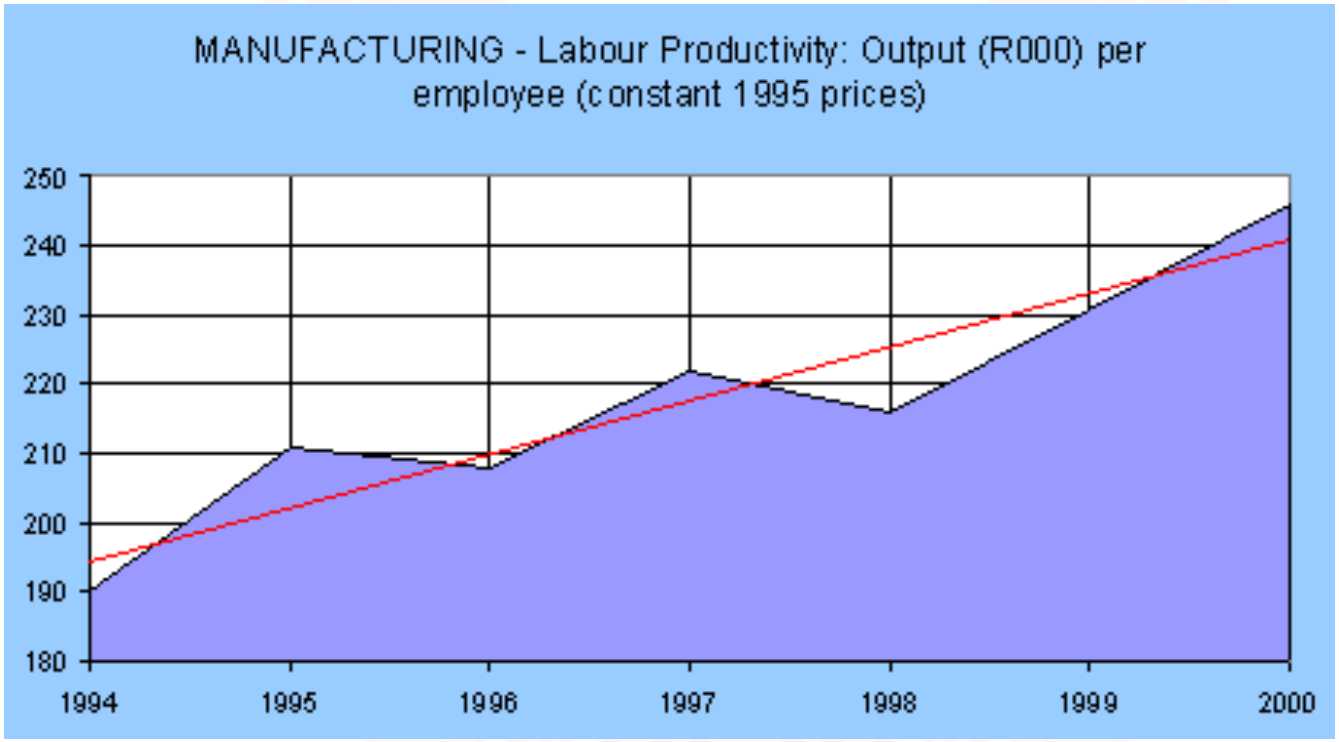


Table 2: Manufacturing − Labour Productivity
Source: Statistics South Africa

1994	1995	1996	1997	1998	1999	2000
190	211	208	222	216	231	246

Investment in some sectors of manufacturing has been rising rapidly (e.g. in glass and glass products and basic non−ferrous metal products).

However, on the negative side, **aggregate manufacturing investment** peaked in 1996 and, apart from a limited rise from the end of 1999, has since been on a declining trend.

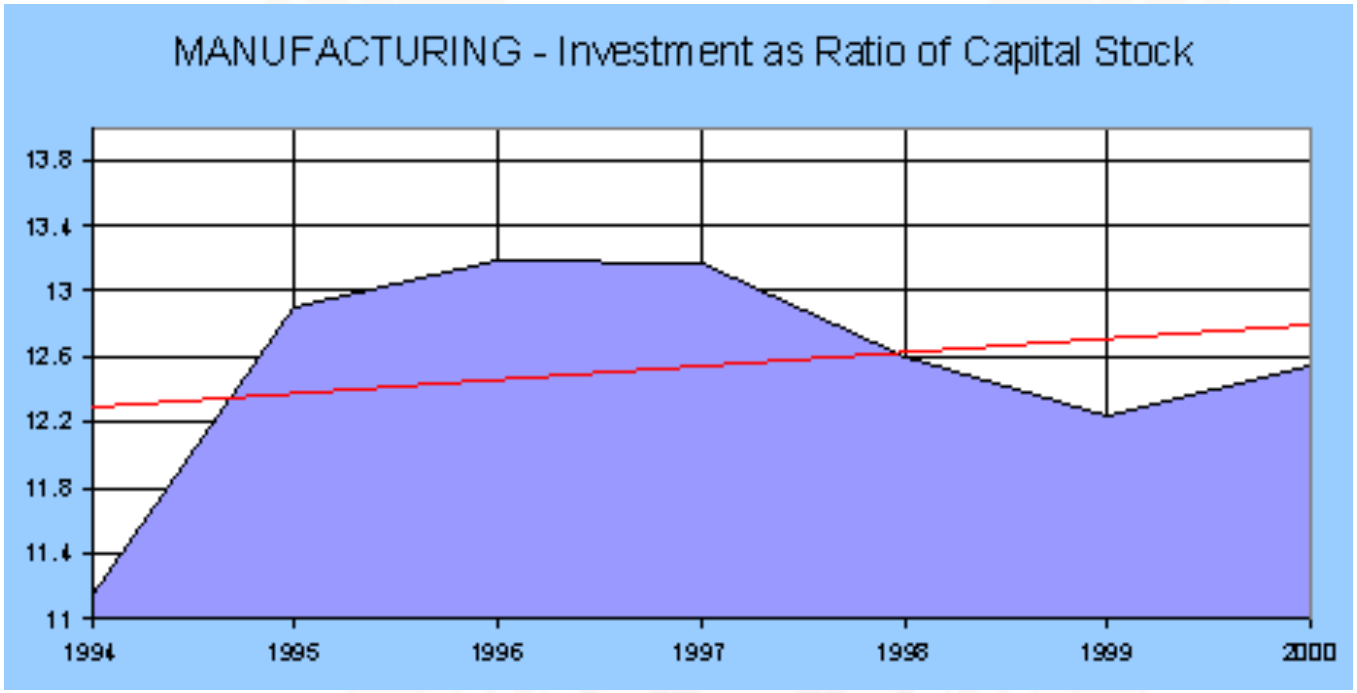
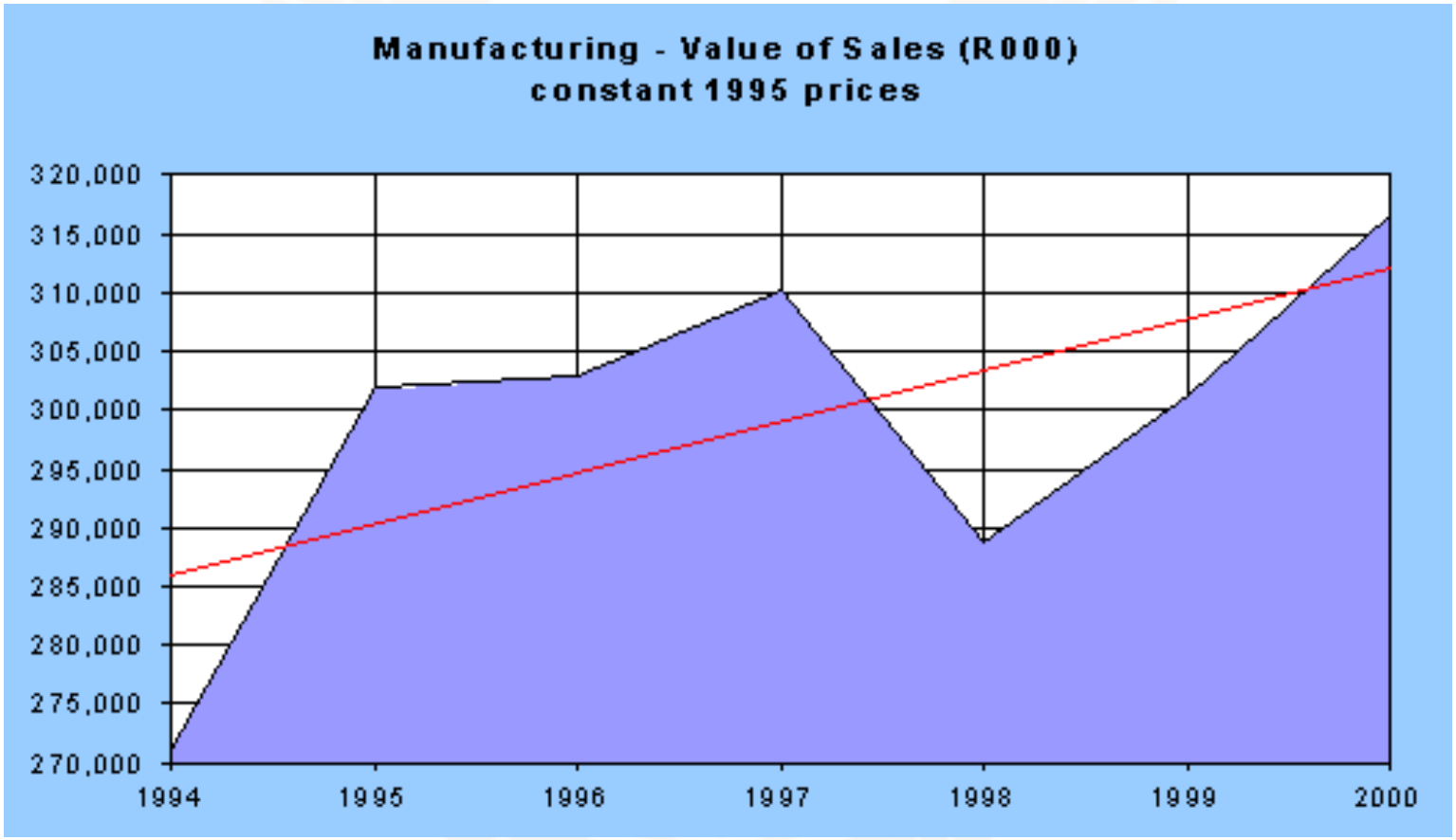


Table 3: Manufacturing − Investment as Ratio of Capital Stock
Source: Reserve Bank of SA

1994	1995	1996	1997	1998	1999	2000
11.15	12.90	13.19	13.18	12.59	12.24	12.55

Manufacturing output has been largely stagnant.

Table 4: Manufacturing − Value of Sales (R000) constant 1995 prices



Source: Statistics South Africa

1994	1995	1996	1997	1998	1999	2000
271,020,658	301,847,505	303,035,566	310,263,934	288,692,948	301,259,129	316,579,223

Of particular concern, has been the steady decline in **enumerated employment**. Between 1994 and 1996, there was a marginal increase in employment, but over the last five years enumerated employment in manufacturing has declined by 11.5%.

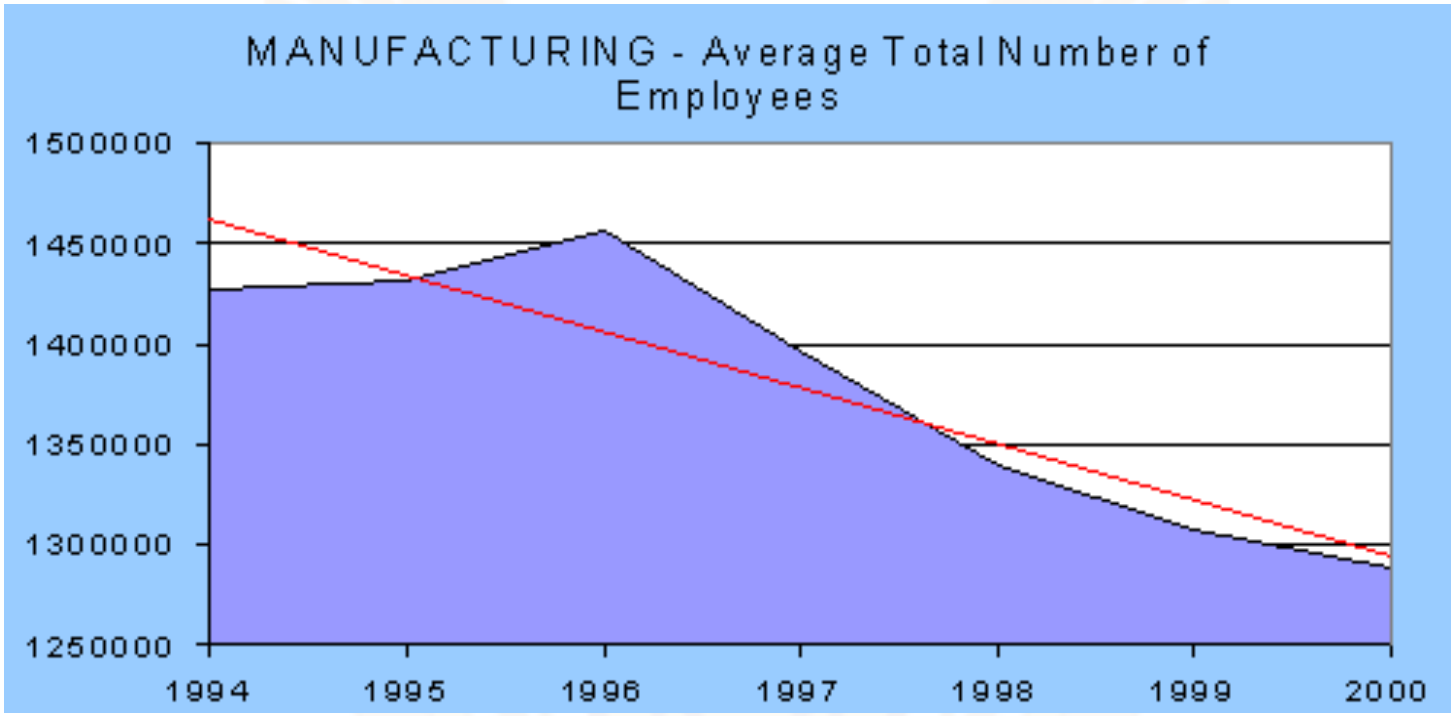


Table 5: Manufacturing− Average Total Number of Employees
Source: Statistics South Africa

1994	1995	1996	1997	1998	1999	2000
1,427,045	1,431,008	1,456,393	1,396,429	1,339,328	1,306,933	1,288,438

The employment decline is of particular concern. Employment decline has complex causes, but the evidence does not suggest that it is the consequence of trade liberalisation.

3.5 Policy vs Performance 1994−1999: an Assessment

What is not clear is the contribution of policy to manufacturing performance. Clearly, a wide range of factors other than policy has affected performance. Moreover, it is very likely that any effects that industrial policy may have, will be manifest only after a considerable lag. In the absence of clearer and more systematic assessment measures, we are, as a consequence, currently only in a position to surmise what has been the link between the policies followed and the industrial performance achieved.

There is an urgent need for developing much better criteria for monitoring and evaluation of the impact of policy. It is necessary to enhance the information flow as between manufacturing firms and the department (see below).

Certainly, it is evident that our current industrial policies are not having the desired impacts in particular areas – employment creation and SMME development, most notably. Indeed, some critics regard policy as significantly contributing to poor performance. In particular, trade liberalisation is seen as the source of employment loss. However, the empirical evidence is that employment creation through enhanced export growth has more than compensated for declines in employment due to increased imports – albeit, and this is of significance, employment growth has been very largely located in skill intensive occupations.

Despite our cautionary observations about drawing links between industrial policy and industrial performance, it is probably fair to surmise, based on limited evidence, that industrial and trade policy has had some positive impacts on industrial performance.[2] Moreover, these impacts conform, very broadly, with many of the expectations that underlay the formulation of our policy.

If this is correct, and if it is accepted that our policies in general conform to best practice, there is a strong case for retaining the broad direction of policy with regard to supply side measures, albeit with refinements which will follow the review processes outlined in the Appendix.

At the same time, an appreciation of global trends combined with a deeper analysis of our manufacturing performance strongly suggests that simply refining our existing policies will not be sufficient to achieve the objectives of government – most especially in relation to employment creation.

4. HOW TO DO BETTER: AN INTEGRATED INDUSTRIAL STRATEGY FRAMEWORK

4.1 Key Factors Affecting Manufacturing: ICT, Innovation and Demanding Customers

Manufacturing firms are faced with a myriad of changes – in the markets in which they operate, in the technologies that they utilise and in the manner in which they organise their activities. Trade and investment liberalisation has significantly increased competitive pressures on manufacturers internationally. South African manufacturing firms face similar challenges.

Amongst the most important changes that are changing the way in which manufacturers undertake their business are the following –

Changes in information technology, that are transforming all aspects of the manufacturing process and relationships with customers and suppliers and the manner in which products are marketed and sold.

Utilising the Internet, customers can now access information about new products and suppliers. ICT is revolutionising distribution and supply chain management. ICT is enabling a much tighter integration between manufacturing and both downstream and upstream activities – from the management of inputs and design to marketing and sales

Rapid advances in innovation, which is constantly transforming products and production, requiring increasing investment on the part of manufacturing firms.

New technologies have led to new families of products and the reduction in shelf life of older products. Advanced technological products are being added to or combined with traditional products – electronic devices in white goods − for example.

Changing consumer demand, particularly, but not exclusively in the industrialised countries, which requires more sophisticated, more customised and more environmentally sound−products.

As consumer income rises, a higher proportion is spent on higher quality, more sophisticated and customised products – many of them services rather than manufactures. The ability to guarantee these features, rather than the ability to merely engage in manufacturing production, is becoming ever more important as firms compete for market share.

4.2 Old Modes of Competitiveness Count for Much Less

Many of the more traditional modes of securing competitive advantage employed by manufacturing firms are becoming increasingly less significant:

Access to cheap raw material inputs. Firstly, in a globalised economy where such resources are increasingly traded internationally, where duties and other trade barriers are coming down and where transport costs are declining, manufacturers, wherever they are situated, will face similar prices and delivery conditions for most raw material inputs. Secondly, raw material commodity prices are at historically low levels and the predictions are that, while prices may rise in the short term, in the medium−long term they are likely to be depressed – at least, by comparison with the prices of manufactured inputs.[3] Finally, raw materials are a declining share by weight in many manufactured articles and of little or any significance in most rapidly growing service activities, giving rise to notions of “the weightless economy.”[4] Accordingly, abundant and cheap raw materials are only a competitive advantage if most or all of the other factors discussed below also apply.

Access to cheap unskilled labour. First, the changing nature of consumer demand with its stress on quality, variety and customisation is less conducive to production by unskilled and untrained labour. Second, technological changes affecting manufacturing are increasingly unskilled and semi−skilled labour saving and skilled labour and capital augmenting. Finally, as the large population countries, notably India and China, increasingly integrate into the global economy, the supply of unskilled and semi−skilled labour has risen dramatically, with consequent impacts on the prices of products which are unskilled and semi−skilled labour intensive.

Access to proprietary production technology. Production knowledge diffuses ever more quickly while the market for technology is increasing rapidly. The globalised operations of multinational companies make it far less likely that firms will retain a clearly superior production technology for any lengthy period. While firms will have to acquire much of their technology from abroad, effective acquisition and assimilation is not costless and requires effective institutional development and high skills level − underlining the need for institutional and skill development.

Privileged access to markets. This opening up of markets is the consequence of two interrelated factors – namely liberalisation of trade and investment and, in very many countries, stronger legal prohibitions on monopoly powers and market restrictive practices.

As the more traditional mechanisms of securing a competitive position – access to cheaper raw material inputs, unskilled labour, proprietary production technology and markets − decline, so the ability of firms to compete will depend on their capacity to adapt and to take advantage of the new manufacturing environment, as outlined above. [5]We will see the management of information and innovation and satisfying the requirements of a rapidly changing consumer demand increasingly driving company strategies.

4.3 South African Manufacturing: What Must Be Done?

What effect is this likely to have upon South African manufacturing firms, in the short and the longer term?

4.3.1 Don't Rely on the Old Ways

A considerable share of our manufactured production, and more particularly exports, are raw material and energy intensive. However, with access to cheap raw materials being of declining significance, this is not a firm foundation for a competitive position. Moreover, a higher share of so−called intangibles such as design, branding and marketing that constitute an ever larger share of the value added and more profitable activities are increasingly being located closer to the market and away from the production and processing of raw materials.[6] Even where our raw material−intensive producers are competitive, they are therefore likely to find their profitability declining overall − in deciduous fruit canning and many processed agricultural products, for example.[7]

There will be some exceptions. However, in the main, access to cheap raw materials, and energy, is not a firm basis on which to sustain our manufacturing sector.

4.3.2 Don't Bank on Cheap Labour

Many have argued that policy should aim at reducing the cost to employers of unskilled labour and at increasing flexibility in the labour market for the unskilled and semi−skilled. This is a complex issue with clear political and economic considerations. However, the trajectory of industrial development does not suggest that cheap and flexible unskilled and semi−skilled labour could be the basis of a sustainable industrial policy. Rather as globalisation proceeds, it would appear that a combination of factors are raising the demand for skilled labour and lowering the demand for unskilled and semi−skilled labour. The same phenomenon is evident in South Africa. Hence, at least over the short term, the predictions are for declining demand for unskilled and semi−skilled labour and rising demand for skilled and professional occupations.[8] Lowering the cost and increasing flexibility in relation to the unskilled and semi−skilled labour, leaving aside other considerations, will not provide a sustainable basis for the very larger part of South African manufacturing industry.

4.3.3 Forget Protection

Privileged market access and position is of declining significance. This is an international trend. [9] In South Africa, government is committed to the further liberalisation of trade. This entails further bilateral trade agreements. It also entails possible further offers within a new WTO round. Government is committed to seeking a new round of world trade negotiations that will correct the current imbalances that impact negatively on development in third world countries. Consequently, manufacturers will be faced with ever more competitive markets, both domestically and internationally.

4.3.4 Pay Attention to Innovation

With a very few exceptions, the development of proprietary technology, has not been a feature of South African manufacturing industry. [10] South African manufacturing firms are generally characterised by low spending on innovation. While increasing innovation activities will be an important feature of policy (see below), the major source of new technology will continue to be transfers from abroad. Such technologies will be similarly available to producers located elsewhere.

4.3.5 Enhance Knowledge Capacities

There is a structural shift in the pattern of world trade away from commodity production and raw material intensive simple manufactured goods and towards increasingly knowledge−intensive goods and services. As the more traditional bases of securing a competitive advantage decline for South African manufacturing firms, the ability to compete will increasingly turn on their capacities to master information technology, to innovate and to address the precise needs of their customers. These activities are all highly knowledge intensive. This is important for established firms, but it is also critical for new entrants.

Clearly, the type of knowledge and the importance of exploiting this knowledge will vary as between different industrial sectors and between firms in the same sector. In many knowledge intensive industries, the knowledge costs of entry are far more important than the financial costs of entry.[11]. In other industries, knowledge plays a lesser role. However, for all manufacturing firms, across the sectors, from traditional small scale firms to larger firms at the technology frontier, securing a competitive position will increasingly turn on the ability of the firm to exploit all of the knowledge resources available to the firm – both internal and external.[12] Our industrial strategy will need to reflect these important shifts.

We later look at how firms can exploit knowledge and the role that government could play in helping firms do this effectively. We now consider the link between our current and our projected future industrial strategy.

5. INDUSTRIAL STRATEGY IN SA − CONTINUITIES AND NEW DIRECTIONS

5.1 Continuities: Preserving the Best of the Old

As outlined earlier, there is a strong case for the continuance of core elements of our existing policy. Subject to the review process, as outlined in the Appendix, a wide raft of supply−side policies covering all of the major areas of industrial policy will remain in place. Such policy support will generally still be accessible to all manufacturing firms.

Supply−side policies will be designed to improve the capacity of those industries that currently are internationally competitive to enhance their position. Thus, for example, government will continue to support and facilitate their export activities. Other industries are not currently competitive and still enjoy measures of protection. Here supply−side measures will be aimed, as currently, at providing support and incentives to facilitate their gaining a competitive position.

Further tariff reform will be based in the main on trade agreements and the possibility of a new round in the WTO. In addition tariff reform should now be targeted at meeting specific industrial strategy objectives within sectors or production chains and clusters.

Thus, there will be a measure of continuity – both of focus and of policy. However, at the same time, new policy directions will also be required if government is to enhance development in other areas.

5.2 New Directions: Towards a Knowledge−Intensive Manufacturing Sector

Based on economic theory an objective of policy has been to eliminate inward bias, such that firms would face the same prices in domestic as in international markets. This correction of price distortions will facilitate growth in sectors and activities in which South Africa has an existing comparative advantage. South African producers would become more specialised and this will promote more efficient output and the overall welfare. This has been the main thrust of our supply side policies and of our industrial strategy.

In the context of our comparative strength in raw materials and energy, many of our export industries continue to rely heavily on these inputs. While our export growth in manufactures has been notable, there is some evidence to the effect that this is largely concentrated in those manufacturing sectors and products characterised by slow growth in the world economy.[13] In many of the most dynamic areas of manufacturing in which demand is growing most rapidly and which are generally non−material intensive our performance is weak – electronics, for example. In some other areas, evident weaknesses in the activities of innovation and product customisation makes it difficult for producers to retain their own brands and participate in the increasing share of the profits and value added that accrue to such activities.[14] Furthermore, while there are some dynamic industrial sectors, it is nevertheless clear that employment and output gains are being increasingly concentrated outside of manufacturing in the so−called "new" economy, largely the services sector. Our current industrial policies have little or no impact on developments here.

Because of the cumulative nature of technological change and firm level learning, existing patterns of specialisation are likely to be reinforced through time. Thus, if our industrial policy in the future is to be **solely** a continuation of our existent policy, we are likely to reinforce patterns of existent specialisation and activity within the manufacturing sector. Industrial policies will have little impact upon our capacity to develop some of the more technologically dynamic and fast growing areas of manufacturing and of the new economy.

The rapidly growing manufacturing sectors, those activities in manufacturing which generate higher returns and the new economy sectors are all highly knowledge−intensive – requiring both in−house knowledge creation and the assimilation of knowledge from outside of the firm. There is accumulating evidence to the effect that the dynamic areas of international trade are knowledge−intensive and that investments in knowledge activities generate very considerable positive externalities.

For these reasons, some economists argue that countries that specialise in technologically progressive knowledge−intensive industries will experience faster growth than those that do not. They argue that there is accordingly a case for government to go beyond the market and to intervene selectively to change the pattern of specialisation and enhance the development of more knowledge−intensive sectors and activities.

Recognising the critical importance of knowledge−intensive sectors and activities and the extent to which the market will under−provide, a major new thrust of our industrial strategy will be designed to enhance the ability of our manufacturing sector, more especially but not exclusively knowledge−intensive manufacturing, and the new economy services sectors, to compete effectively through the production and utilisation of knowledge.

5.3 An Integrated Industrial Strategy

As stated earlier, the development of ICT has facilitated the integration of manufacturing with upstream activities, such as development and design, and with downstream activities, such as marketing and sales. It is increasingly the capacity of industrial firms to integrate and manage these activities successfully that yield the highest returns.

Our industrial strategy cannot therefore focus solely on production. It will seek to integrate both backward and forward linkages with production. Of particular importance here will be the development and enhancement of our existent capacities in knowledge−driven activities. This will rest upon the development of leading edge logistics − an essential foundation for this integration.

South Africa is part of a region where there are complementarities in many areas. South Africa has some significant capacities in knowledge−driven activities, particularly compared to the rest of the region. Our industrial strategy will aim to harness these complementarities in order to lower production costs, promote economies of scale and develop an integrated regional production system. This

will entail closer economic integration – expressed in relation to trade, notably the SADC Free Trade Agreement and measures to encourage South African investment in the region, but also in other areas such as infrastructure, notably the SDI programme. This gives a second integrative dimension to our industrial strategy.

Accordingly, our industrial strategy is an **integrated industrial strategy.**

5.3.1 Why Knowledge Intensity is Key

South African wage rates are considerably above those of the large population economies of the East and wage rates in the region, but much lower than for the industrialised countries. Our industrial prospects are therefore currently likely to be best in areas of medium level wages that also require a significant measure of logistics and other knowledge−driven activities.

To take but one example, the further development of the textiles and clothing industry, will depend critically on technology upgrading, supply chain management and design− all knowledge−intensive activities. It is the capacity of South African clothing firms to provide the logistics, the quality control and design that is demanded by US retailers, that gives the local industry its competitive edge over other lower−cost producers under the AGOA, from Africa and elsewhere. (Environmental regulations and good labour practices also play a part).

DTI studies in a wide variety of other sectors have identified knowledge−driven activities, such as innovation and marketing intelligence, as the prerequisite of their further development. These include wine, chemicals, pharmaceuticals, ICTs and jewellery.

Knowledge−driven activities are increasingly essential to firms securing a competitive edge even in very traditional and very labour intensive areas. In deep−level mining, for example, knowledge−driven activities such as exploration, construction management and finance and other activities are central. Enhancing our knowledge−driven activities can therefore deepen our comparative advantage even in areas where we have traditionally been strong, such as raw material extraction.

Accordingly, a focus on knowledge is by no means a strategy only for high−tech industry. Nor is it a strategy that drives technology at the expense of employment. Finally, it is not a strategy that abandons the existing sources of our comparative advantage, especially in cheap energy and raw materials.

Before considering the constraints and tensions inherent in such a reorientation of policy and concretely what sort of policies an integrated industrial strategy might entail, we need to consider the timing and sequencing as well as the constraints and difficulties entailed in such a reorientation of policy.

5.4 Phasing in Policy Changes

Government anticipates a progressive shift in policy. The continuance of existing policy and focus will be combined with a progressive re−orientation of policy designed to enhance the ability of workers to engage effectively in knowledge−intensive activities and the ability of firms, in both manufacturing and in the new economy sectors, to increasingly compete through effective knowledge production and utilisation. Government will accordingly be seeking policies that can enhance those areas of and activities in manufacturing which generate higher returns and in the new economy sectors. However, as was outlined earlier, while of more importance in certain sectors and to certain activities, the ability to effectively assimilate and utilise knowledge, will be of increasing significance to **all** sectors and activities of manufacturing and their employees.

Accordingly, government support to **all** manufacturing firms and sectors will increasingly take the form of policies that are designed to enable firms to effectively produce and assimilate knowledge. Government will seek policies which, for example, facilitate the more effective use of knowledge on the part of internationally, competitive raw material−intensive manufacturers. Such policies will aim at further enhancing their competitive position in existing activities, but also encourage them to engage in those activities downstream and closer to the market, which tend to be more knowledge−intensive, and that could generate higher returns, employment and value added. For those industries that are not currently competitive, policies will similarly progressively seek to enhance their competitive position by facilitating the more effective production and use of knowledge.

It is important to stress that in this progressive re−orientation of our industrial policy, government will not therefore be neglecting its traditional constituency of manufacturing firms and manufacturing activities.

The existent capacities and activities of the local economy and the manufacturing sector will decisively shape our capacity to engage in and develop new knowledge intensive areas and activities. Thus, we particularly need to examine the experience of other raw material−intensive economies in generating new knowledge−intensive sectors, which are dynamically linked to such extractive activities.[15]

5.5 Our History, Our Special Concerns

Within the context of our integrated industrial strategy, other policies and objectives will be developed. Three particular areas stand out as critical – namely the development of Small and Medium Enterprises (SMMEs), Black Economic Empowerment and employment creation (see above). More detailed papers on these areas will be produced in the coming months.

6. CONSTRAINTS AND TENSIONS IN MAKING THE CHANGE TO A KNOWLEDGE−BASED ECONOMY

6.1 Constraints:

Two key constraints stand out – namely human resources and a sound infrastructure and market structure for telecommunications

6.1.1 Human Resources

South Africa's current capacities in knowledge−based activities are embodied in a number of key institutions. In the public sector, these include high quality universities and science councils and, in the private sector, sophisticated business services and financial sectors and a number of leading ICT companies with a strong international presence. Advanced ICT based business practices, such as e−commerce, are diffusing quite rapidly. In many instances, locally trained professionals are on par with the best internationally. South Africa currently has a competitive advantage in a number of activities which are skilled−labour intensive, and this is reflected in our performance on international markets.

However, the extent of South Africa's existent knowledge−driven capacities should not be over−estimated.

In particular, our skills base is far too limited. We are currently experiencing significant shortfalls in skilled labour – more especially highly skilled labour. Moreover, there is a significant brain drain of skills. Unprecedented demand for IT related−skills in the industrialised countries combined with ageing populations, will result in the industrialised countries significantly stepping−up their recruitment of skills from the developing world. This is a problem we share with many other countries. At the same time, the inflow of skills into South Africa is at a historic low − and declining.

Not only is our existing skills base under threat. It is far too narrowly based. Preponderantly skills are highly skewed both by race and by gender.

Accordingly, if our integrated industrial strategy is to succeed, we will need policies to ensure an ongoing and substantial augmentation of these capacities – particularly among hitherto disadvantaged groups. We will need policies to both hold and attract skills generally, but more especially in critical areas where international competition for those skills is most intense.

6.1.2 A Good Infrastructure and Market Structure for Telecoms

In addition to skill requirements, a sound telecommunications infrastructure is fundamental to knowledge−intensive activities and to business generally. South Africa has an advanced fixed line system and a large and very rapidly developing mobile system. Currently however, business is not being well served by the existing structure.

Our industrial strategy will require that the evolving market and ownership structures promote high levels of investment and serve the needs of business for an increasingly sophisticated and diverse range of value−added services. This means high levels of competition combined with an effective regulatory regime.

6.2 Tensions

The proposed re−orientation of our industrial policy is not without its tensions. Two are particularly evident.

6.2.1 Breaking Down Departmental Barriers for the New Economy

The DTI has, in the past, exclusively focused on manufacturing industry as traditionally defined. The new economy service sectors are principally the responsibility of other governmental departments whose concerns are not generally with output and employment creation, but rather with delivery, accessibility and equity. If government is to play a role in implementing policies designed to enhance the development of these sectors, new mechanisms will need to be found within government to put this in to effect.

6.2.2 Employment Levels

The second potential source of tension relates to employment. One of the key objectives of government policy in general, and of our industrial policy in particular, is the enhancement of employment. Our manufacturing strategy will particularly seek to bring knowledge−intensive activities to bear in the labour−intensive and more traditional sectors, thus enhancing their growth and long−term sustainability.

However, traditional manufacturing industry is not likely to be a source of significant employment gain. This is a broad generalisation and the reasons for it are debatable, but it is evident in the data for many countries and in the data for South Africa. Current predictions are for further declines in South Africa manufacturing employment in the medium term.[16] By contrast, the new economy is currently seeing rapid rates of employment growth with employment creation increasingly being concentrated in the services sector. It is also clear that there is a significant potential here for further employment growth – in tourism, health services and telecommunications services, for example.

Extending the scope of industrial policy, in so far as it is successful in encouraging the development of these service areas, has the potential to impact significantly on aggregate employment. Indeed, it might be argued that government's employment objectives require that the development of these sectors and activities receive high priority.

However, it is also important to recognise that, the new employment opportunities generated in these areas are likely to be preponderantly for skilled workers. As with other productive sectors, including traditional manufacturing, fewer employment opportunities are being generated for unskilled and semi−skilled workers. This underlines the importance of widespread education and training − a basic requirement for effective integration into the knowledge society.

7. MAKING IT WORK: INDICATIVE POLICIES

Accessing, creating and exploiting knowledge on the part of firms is complex and multi−faceted. Firms will need to source knowledge from within the firm itself and from outside. Internally, it will need to draw on all of its divisions and employees while externally a firm's partners and customers will be critical, but also its suppliers and competitors. Finally, firms will draw on other knowledge producers – science councils and tertiary education institutions, in particular.

Knowledge has always been important to manufacturing. Many of our existing industrial policies – those relating to innovation such as THRIP and SPII, for example – are intended to help firms acquire and exploit knowledge more effectively. But, we can go a lot further. What follows is an indication of the sort of industrial policies that would be considered in order to support firms in accessing, creating and exploiting knowledge. Such policies can be grouped under four main action areas – namely policies relating to skills development, the acquisition and creation of new knowledge, the utilisation of information and communication technologies and the establishment of networks and best practice.

7.1 Skills Development

South Africa is poorly endowed with skilled people. Many of the recent Foresight Studies, including that of Manufacturing and Materials, identified skill shortages as the key constraint to further development.

The recent Technology Foresight crosscutting report on human resource development offers some interesting pointers and suggestions as regards human resource needs. The needs of the particular sectors examined in the foresight exercise were considered and combined. These needs were then clustered for each sector. A factor impact, which measured the attractiveness to the country of developing this expertise, was developed for each cluster.

The foresight report provides interesting pointers to skill shortages and what combinations of skills that it would be particularly attractive to develop. The issue that needs addressing is how this work might be taken forward so as to prioritise the development of particular skills or combinations of skills, identify the magnitudes and provide more detail as to how this might be concretely done. To be brief, we now have a sense of many of the skills that will be most needed and which are attractive to develop, but we are still some way from translating this into definite objectives and policies

In Canada, government has identified a number of knowledge−intensive areas where Canada is already strong or where there are significant opportunities for growth − including aerospace, automotive, environmental technologies and IT. An Expert Panel on Skills was established to report on the skills needed to improve Canada's position in these industrial sectors; to identify the expected shortages – both in quantity and in quality; how skill requirements might be monitored; the options available to ensure skills provision and how stakeholders can best work collaboratively in order to ensure adequate provision. In Britain, a Skills Task Force has been established as a non−departmental public body and it identifies skill shortages at an economy−wide level and makes recommendations to the Secretary of State for Education and Employment on how best such shortages might be addressed.

Skills development linked very closely to economic need is essential to effective participation in knowledge−intensive activities. The DTI will investigate the knowledge−related activities undertaken in various industry sectors and, in cooperation with other government departments, will devise policies to ensure that the specific needs of sectors are realised. Other government departments have recently undertaken a number of important initiatives in respect of education and training strategies. These initiatives include:

- The National Skills Strategy, led by the Department of Labour
- The integrated Human Resource Development Strategy led by the Departments of Education and Labour
- The National Plan for Higher Education led by the Department of Education.

These strategies will require a leading role for the DTI, particularly in the identification of the requisite knowledge−intensive activities and in the integration of these initiatives with other policies designed to support our industrial development.

In the short term, special programmes to allow individual firms to tackle particular skill shortages could be developed. Such programmes are currently being experimented with in a number of countries. In the UK, for example, the DTI and the Department of Education and Employment are launching a new programme to help manufacturers – particularly small and medium sized enterprises – deal with shortages of engineering and technician skills.[17] Other schemes include a University for Industry and various schemes to integrate higher level studies with work−based learning.

7.2 Acquiring and Creating Knowledge

Spending on innovation both increases the firm's own knowledge base and it also helps firms to develop in−house knowledge and capacity to recognise and exploit technologies produced outside of the firm. Studies have shown that the societal returns to innovation expenditure substantially exceed private returns.

The White Paper on Science and Technology sets out a framework for effecting a more integrated National System of Innovation wherein linkages between the business sector and other performers of innovation are enhanced. But, South African manufacturing firms are, in the main, not innovation intensive.[18] Currently, business R&D is supported through a number of programmes – namely

PII, SPII and THRIP. These are essentially matching grant schemes to support innovation and R&D. A number of countries, notably OECD countries, allow for significant R&D tax credits – and some of these are specifically targeted at smaller manufacturing firms.

In some countries, the development of particular technologies with high potential receives governmental support – biotechnology for example. Opposition to such selection on the part of government is on the grounds that government should not itself engage in picking winners. Joseph Stiglitz has recently argued that governmental support for particular technologies is justified where such technologies generate substantive externalities.[19] The case for such support in South Africa is advanced in some of the recently completed Foresight Studies. Foresight also identified particular technologies that are candidates for enhanced support. In his state of the nation address, the President identified investment in research and development as a focal point of an integrated plan to achieve a cutting edge in biotechnology.

Unlocking the knowledge potential in tertiary institutions is vital; in a number of countries there are a multiplicity of programmes to link businesses more effectively with tertiary education institutions. In South Africa this is principally given effect to through support for research and training cooperation between tertiary institutions and firms – principally through THRIP and the Innovation Fund. One other modality is to promote the flow of persons as between tertiary institutions and business – both the UK and the US, for example, support such programmes.

R&D and innovation are important, but placing too much emphasis on this stresses the generation of technology rather than the effective use of technology. South African firms access most of their product and process technology from abroad. Government will investigate additional mechanisms by which the transfer of technology from abroad can be facilitated and whereby firms could be aided to access and assimilate technologies developed abroad.

7.3 Information and Communications Technologies

Recent evidence suggests that sectors and countries that have experienced the most rapid diffusion of ICTs, have also experienced the most rapid rates of employment and output growth.[20]

A cheap, effective and technologically sophisticated telecommunications service is a prerequisite for the application of knowledge−intensive activities and for the development of business in general. E−commerce has the potential to transform the way in which business is transacted. This is particularly true for the new economy areas, but it impacts on all business – large and small.

Strong competition overseen by effective regulation is key to achieving the market structure that can best achieve this objective. Our industrial policy will also aim at providing the right environment to ensue rapid diffusion of ICTs. For the larger and more sophisticated corporates, this will suffice. However, smaller firms, for whom ICTs paradoxically hold out particular promise, are likely to require further support. Government will accordingly investigate policies to improve ICT performance on behalf of SMMEs.

Our policies in this area will be closely coordinated with other governmental departments, especially the Department of Communications.

7.4 Networks and Best Practice

Government is committed to encouraging best practice and the development of efficiency enhancing networks. Spurred to a significant extent by developments in ICT, sharing and trading information with other firms is a major way in which firms can expand their knowledge and enhance their competitive position.

There are existing measures to support firm networking and the diffusion of best practice– the Sector Partnership Fund and the Competitiveness Fund – but further policies are envisaged. Of particular importance will be encouraging the development of supplier networks.

7.5 Consultative Policy Making

We have identified the main directions of industrial policy and provided illustrations of specific policies that government might develop in its attempts to support firms effectively create and assimilate knowledge. However, before turning ideas into concrete policies, further investigation will be necessary. In particular, government will want to consult with all stakeholders to develop workable and effective policies. As has happened in the last decade in South Africa the trade union movement and its shop steward structures can play an important part of such a process.

As firms will need to be in close and constant touch with their customers in order to supply what is really needed, so with government and industrial policy. International experience strongly demonstrates that a productive relationship between government and the private sector, including the trade union movement, is a *sine qua non* of a successful industrial policy. Informational flow from the private sector is critical to all aspects of industrial policy – formulation, implementation and monitoring and assessment. Similarly government is an important source of informational flow to the private sector.[21] Government can play an important role in signalling to the private sector, whose vision is necessarily short−term and bounded by its own particular experiences and activities, major changes that are likely to affect the environment for business.

Government is accordingly committed to strengthening and deepening consultative mechanisms with all industrial stakeholders, particularly firms. We will also pay more attention to generating new forms of enterprise that are essentially co−operative and participative in nature. This latter aspect of policy will be dealt with more fully in the papers on enterprise development and empowerment.

8. GOVERNMENT IMPLEMENTATION OF THE NEW INDUSTRIAL STRATEGY FRAMEWORK

8.1 Extending “Industrial” Policy Across Departments

The growing importance of the so−called new economy services sectors in the expansion of output and employment creation has been outlined. Many of these sectors, which were previously dominated by public sector or quasi−public sector producers, have been increasingly opened to competition on the part of private firms – health and telecommunications services, for example. However, the governmental agencies and departments that oversee the development of new economy service sectors have traditionally not had to concern themselves with the development of policy aimed at supporting private firms in a commercial environment. In relation to now commercialised or privatised service entities, these governmental departments are principally concerned with improving service standards and promoting access.

By contrast, the DTI has traditionally dialogued with private firms and focussed on these issues, albeit only in relation to manufacturing industry. The DTI’s experience in this area and the fact that many of our policies are increasingly as appropriate to other new economy services sectors, strongly suggests that, while there will still remain some policies specifically designed in relation to manufacturing industry, the DTI should develop a strategy which has broader applicability.

8.2 Utilising New Policy Instruments: Business and Consumer Regulation

The scope of many of the traditional instruments of trade and industrial policy is being increasingly circumscribed – particularly as a result of agreements at the WTO. At the same time, a number of “new”, or at least substantially transformed policy instruments, have come increasingly to the fore. They include regulation; competition policy, R&D support, and investment incentives.

In South Africa these “new” instruments have been increasingly deployed – the development of new regulatory authorities and regimes; the creation of a new Competitions Act and corresponding institutions; the coordination and enhancement of R&D under the national system of innovation and the significant expansion of investment incentives.[22]

The creation of more competitive markets is of particular importance. Competitive markets spur productivity and innovation, enabling firms to gain their required inputs at competitive prices. There is some indication that in South Africa domestic firms maintain substantial market power. This enables them to raise prices and to put up with substantial inefficiencies in production. Increasing competitive market pressure will therefore be an important complement to raising company−level efficiencies. This will be effected principally through trade liberalisation and application of the new Competition Act, but also through policies which aim to spur the creation of new businesses.

Strong and knowledgeable consumers also play a major role in encouraging efficient and competitive business, and disciplining inefficient businesses and business practices. This is a much−neglected aspect of policy in South Africa. The DTI is currently examining the issue to see how consumers might be better informed and how businesses can be encouraged to follow good practices. This will be an important complement to our industrial strategy.

Where open competitive markets are not possible, regulation will be central. Regulatory certainty is a major determinant of investment and growth. The importance of regulatory certainty is evident for some South African manufacturing sectors such as pharmaceuticals, but is especially important to the development of the “new economy” sectors such as education, health and communications. As barriers to trade in commodities decline, the regulation of the services sectors will become an ever more critical issue. Experience has shown that effective regulatory institutions are not easily created or maintained. More will need to be done in this regard.

Provision for effective regulation will accordingly occupy a central role in our future industrial strategy.

8.3 Joined−up Government: Working With Other State Departments

Extending the focus of the DTI far more broadly than manufacturing industry and emphasising “new” tools of policy, particularly in the field of regulation in order to secure output and employment objectives, inevitably entails greater co−operation with a number of other government departments. This is especially true in relation to those departments, which have formal responsibility for many of the new economy sectors, such as health and communications. It is also significant in relation to departments that are concerned with the supply of key infrastructural inputs to business – such as energy, transport and telecommunications.

The developing thrust envisaged in the industrial strategy towards enhancing the ability of firms to access, produce and exploit knowledge will only be effective with the co−operation of a number of governmental departments – education particularly, but also labour and arts, culture, science and technology. In the absence of an integrated approach in government, industrial policy will have a very limited impact. The importance of government, in all its spheres, taking an integrated approach to meeting economic challenges was a major theme of the State President’s state of the nation address in February this year.

Cooperation between government departments with DTI playing the lead role, will become increasingly central to the processes of formulating and implementing industrial policy.

9. GOVERNMENT AS A LEARNING ORGANISATION – THE IMPORTANCE OF MONITORING AND EVALUATION

Given the myriad of changes in markets, in technologies and in business practices, industrial policy will always have to be developed in a situation of limited information. “Mistakes” are therefore inevitable. Indeed, the existence of strong uncertainty ensures that there is not one unique optimal policy and that judgement calls are inevitable. What is important is that government possesses firstly the ability to assess and learn from experience and secondly that there be the flexibility on the part of government to adjust policy in the light of experience. In the managerial language of the day, effective governments, like effective firms, must be structured as “learning organisations.”

Indeed, many of the principles outlined for effective participation in the knowledge economy on the part of firms apply equally to government. To be effective, government too needs to be innovative, to make much more extensive use of ICT, to network and, in particular, to respond to the diversified needs of customers whose needs are constantly evolving. The major organisational restructuring of the DTI currently underway has, as its overriding objective, ensuring that the DTI and all of its programmes and policies, function as a customer−driven organisation.

However, in relation to our industrial policies, governmental knowledge is currently very limited. Up to now, assessment of the impact of our industrial policy in general, and of particular policies, has been lacking. Continuous consultation with firms and other stakeholders will play an important role in our policy assessments. We will seek to complement this by developing broader statistically−based information systems that will provide ongoing data on the type of firms making use of our industrial policies and the impacts that such policies are having on firm performance.

Policies will be constantly reviewed and adjusted in the light of the information received. However, the broad thrust of our policy – our industrial strategy – will continue to increasingly aim at equipping our firms to secure a competitive position through making optimal usage of knowledge.

APPENDIX – A REVIEW OF EXISTING POLICIES

DTI will review our existing policies. The broad purpose of this review is to assess the efficacy and coherency of policies and the capacity to implement. The review will also enquire as to any possible policy "gaps" or omissions. Amongst other things, this will entail looking at best practice internationally.

Rather that examining each individual policy in turn or alternatively examining all of our policies together, reviews will be undertaken of **each broad arena of industrial policy.** This will entail the formation of six working groups.[23]

The table below summarises the six main arenas of industrial policy. In addition it summarises the rationale for policy within each arena; indicative policies of that arena and the policies actually adopted by the DTI currently in each modality. It is evident that the DTI has new and active policies in all of these arenas.

The working groups would address a number of issues. For example:

a. Are there any evident "gaps?" This identification of "gaps" should also examine the rationales for policy. In relation to technology learning, for example, many of our policies are currently centered on supporting innovation. However, it has been argued that effective technology transfer from abroad and diffusion plays a more major role in local technological learning than local innovation. Currently, very few policies of the policies designed to promote technological learning address the issues of technology transfer from abroad or technological diffusion.

b. Do the policies hang together as a coherent whole? Is there a clear and coherent "vision" governing the application of policies in each arena? Is this vision communicated and discussed with the private sector and employees?

c. Do the individual policies complement, conflict or overlap with each other?

d. Is the requisite capacity in place to implement policy? What could be done to enhance capacity?

e. How could policy achievements in this arena be monitored and assessed in the future?

A DTI official will manage the review of each arena. Local experts from outside of the DTI, international experts in each area as well as the private sector constituencies will be involved.

The outcome would be a report. The reports from the different arenas would then be combined into a synthesis that would provide direction as to the current suite of DTI policies. A coherent vision and framework for supply side policies would then be developed. Finally, this would be communicated and consulted with key stakeholders.

INDUSTRIAL POLICY − A BROAD OVERVIEW

Arena	Promote Technological Learning	Promote Competition and Markets	Promote Investment and Employment	Promote exports− liberalise imports	SMMEs Empowerment	Promote Competitiveness and Productivity
Rationale	High social returns, market failures	Eliminate rent seeking, promote productivity, Innovation and new entry	K Market failures. Externalities and learning, market access	Change composition of trade; efficiency gains	Market failures; externalities social stability, equity	Market Failure Significant Externalities Endogenise Learning
Indicative Policies	Tech. Transfer DFI, licensing, R&D support. Industry extension services	Regulatory regimes; promotion of competition	Directed credit; subsidies; tax holidays	Export marketing support; tariff liberalisation	Directed credit; procurement policies	Policies to encourage training and skills development; networking; supply chain upgrading.
Current DTI Policies / Programmes	THRIP SPII PII Technology Transfer Agency Innovation Fund	Competitions Act Competitions Tribunal and Commission	Trade and Investment SA SMEDP SIP Critical Infrastructure Fund SDI Industrial Participation	Export Guarantees for SMMEs Export Marketing and Invest. Assist.	Khula Ntsika Govt. Procurement Preferences National Empowerment Fund	Competitiveness Fund Sector Partnership Workplace Challenge

SELECTED BIBLIOGRAPHY

Baily, Martin Neil and Lawrence, Robert Z. (2001), 'Do We Have a New E−Economy?' National Bureau for Economic Research Working Paper 8243, Cambridge, MA.

Ha−Joon Chang (1997), 'Evaluating the Current Industrial Policy of South Africa' TIPS Seminar Paper, Mimeo.

Hirsch, A. and Hannival, S. (1998), 'Industrial Restructuring in South Africa: the Perspective from Government.' Paper presented at the Trade and Industry Policy Secretariat (TIPS) 1998 Annual Forum, 2−22 September.

Human Sciences Research Council, Unit Labour Market Analysis (1999), Skills Needs of the South African Labour Market, 1998−2003. HSRC, Pretoria.

Institute for Manufacturing and Department of Trade and Industry, UK (1999), Fit for the Future. The Knowledge Edge, DTI, London.

International Labour Organisation (ILO) (2001), World Employment Report 2001: Life at Work in the Information Economy. ILO, Geneva.

Jonsson, G. and Subramanian, A. (2001), 'Dynamic Gains from Trade: Evidence from South Africa' IMF Staff Papers, International Monetary Fund vol. 48.

Kaplan, D E and Blankley, W. (1997), Innovation Patterns in South African Manufacturing Firms. Report on the survey of innovative activity in South African manufacturing firms, FRD, Pretoria.

Kaplan, D. E. and Kaplinsky, R. (1999), 'Trade and industrial policy on an uneven playing field; the case of the deciduous fruit canning industry in South Africa,' World Development, WD 929.

Kaplinsky, R. (2000), 'Globalisation and unequalisation: What can be learned from value chain analysis?' Journal of Development Studies, vol. 37.No. 2.

Kay, John (1999), 'Business Strategy in the Knowledge Driven Economy' in Department of Trade and Industry and Center for Economic Policy Research The Economics of the Knowledge Driven Economy. DTI/Pub 4636/1.

Quah, Danny (1997), 'Increasingly Weightless Economies' Bank of England Quarterly Bulletin, vol. 37, No. 1.

Rodrick, Dani (1999,) Making Openness Work: The New Global Economy and the Developing Countries John Hopkins University Press, Baltimore.

Stiglitz, Joseph E. (1999), 'Knowledge in the Modern Economy' in Department of Trade and Industry and Center for Economic Policy Research The Economics of the Knowledge Driven economy. DTI/Pub 4636/1.

UK Secretary of State for Trade and Industry (1998), Our Competitive Future – building the knowledge driven economy White Paper, Cm 4176. London.

Institute for Manufacturing and Department of Trade and Industry, UK (1999,) Fit for the Future. The Knowledge Edge, DTI, London.

[1] Hirsch and Hannival, 1998

[2] For example, trade liberalization through reducing prices, particularly of industrial inputs, is likely to have had a positive impact on our productivity growth. Jonsson and Subramanian, 2001.

[3] In fact, in real terms, commodity prices have been depressed for two decades. The 1980s saw a drastic fall in real commodity prices. From 1990 to 1997, there was no significant trend upwards or downwards, but after 1997, following the Asian crisis, there was a further sharp decline. The World Bank estimates that real commodity prices in 2007 will be 16% below the 1998 average – almost all of this decline attributed to a projected rise in the unit value of manufactures exported by the G−8 countries.

[4] Quah, 1997

[5] "If your competitors can quickly imitate technology, if raw materials are cheap and plentiful, if finances are awash around the world, distinctive advantage is going to rely more and more on tacit knowledge, on people, on routines and skill."

Leadbeater, Advisor to the UK DTI on the Knowledge−driven Economy, quoted in DTI 1999:18

[6] Kaplinsky, 2000.

[7] Kaplan and Kaplinsky, 1999.

[8] HSRC 1999.

[9] “Across the century, competitive advantage has migrated from factors that were based on market position, on size and market power…. to competitive advantages which are based on the incorporation of knowledge into no longer important raw materials.” Kay , 1999:35

[10] Exceptions are in relation to defense equipment and oil and chemicals from coal.

[11] Institute for Manufacturing and DTI, UK (1999): 9

[12] The British government’s White Paper, DTI (1998), makes a strong case to the effect that the knowledge driven economy is relevant for all businesses and that traditional businesses will need to find new ways to innovate, develop and deliver their products, processes and services if they are to survive.

[13] Tsikata (1998)

[14] Evident for example in the furniture and deciduous fruit canning industries

[15] Ha−Joon Chang (1997)

[16] HSRC 1999, predicts a decline to 2003. Employment loss will be significantly ameliorated in periods of cyclical growth.

[17] UK, DTI, 1999:38

[18] For a survey of the innovative activities of South African manufacturing firms, see Blankley and Kaplan, 1997

[19] “The objective of government is not to pick winners, but to identify externality−generating innovations. While critics of industrial policy recognise the necessity of government support for basic research, they fail to see that there is no bright line between basic and applied research; many applied research projects generate large externalities. The objective of government policy is to identify winning projects with large externalities. In this they have had remarkable success.” Stiglitz 1999: 52

[20] ILO 2001; Baily and Lawrence, 2001.

[21] One of the major success factors in the industrial policy of the East Asian countries is held to be the establishment of dense institutional co−ordination which facilitates information flows as between government and business and also between firms themselves.

[22] Many commentators stress the critical importance of subsidising and incentivising investment e.g. Rodrick, 1999. Such measures are now widespread in the industrial strategies of many countries.

[23] Some policies will be too newly instituted to be assessed e.g.. in the competitions and markets arena. Some policies will overlap e.g. Export Marketing and Investment Assistance. This policy would then be assessed in its contribution to both export and investment promotion arenas

* This Internet− and PDF version compiled by the DTI webmaster@dti.pwv.gov.za