
Discussion paper

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
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Global Value Chains and Production Networks: Promoting Capability formation in South Africa

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Remarks

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Note

This paper has not been formally edited.

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Abstract

This paper is an attempt to “operationalize” suggested UNIDO policy instruments to benchmark countries’ competitive industrial performance, taking South Africa as an example. It draws from the experience of the African Productive Capacity Initiative adopted by the African Ministers of Industry. The Initiative would become the national pillars of the respective sub-regional and national programmes in Africa on productive capacity and should help to identify the comparative advantages of regions, countries, products in Africa, using the global and local value chains approach as well as South-South Cooperation. Competition, innovation and productivity growth should take into consideration objectives such as the reduction of poverty contained in the Millennium Development Goals and social cohesion.

As the future component of NEPAD on sustainable industrial development, it was felt that selected policy instruments such as industrial scoreboards, index related to industrial capacity, capability, complexity, upgrading as well as industrial intensity, issues such as intensity of industrialization, quality export supported by specific industrial drivers could contribute to the transformation of national industrial governance.

Specific emphasis was given to the promotion of capability formation, which cannot take place without an improvement of the local absorption capability. The value chain and the production networks were redefined taking into consideration the power asymmetry between central and periphery actors of the production networks. It is also suggested to introduce the Competitive industrial performance divide index as one of policy instrument in the NEPAD-led African Peers Review Mechanism.



Abbreviations

\$ US	Dollar of the United States of America
AAG	Average annual growth
APCF	African Productive Capacity Facility
APCI	African Productive Capacity Initiative
AU	African Union
APRM	African Peers Review Mechanism
BL	Brand Leaders
BEE	Black Economic Empowerment
CIPI 1	Competitive Industrial Performance Index contained in IDR 2002/2003
CIPI 2	Competitive Industrial Performance Index contained in IDR 2004/2005 (forthcoming)
CIPD	Competitive Industrial Performance Divide
CIPI	Competitive Industrial Performance Index
CM	Contract Manufacturers
DTI	Department of Trade and Industry, Ministry of Trade and Industry, South Africa
EIU	Economic Intelligence Unit
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GPN	Global Production Networks
GVC	Global Value Chains
HT	High technology content
ICT	Information, Communication and Technology
IC	Industrialized countries
IDR	Industrial Development Report
ISIC	International Standard Industrial Classification
LDC	Least developed countries
LIC	Least industrialized countries
LT	Low technology content
MT	Medium technology content
MUV	Manufactures Unit Value (index of prices for manufactured exports from the five major (G-5) industrial countries (France, Germany, Japan, the United Kingdom, and the United States)
MVA	Manufacturing Value Added
NEPAD	New Partnership for Africa's Development
PRSP	Poverty Reduction Strategy Papers
R&D	Research and Development
RB	Resource based technology content
RECs	Regional economic communities
SITC	Standard International Trade Classification
UNCTAD	United Nations Conference for Trade and Development
UNECA	United Nations Economic Commission for Africa
UNIDO	United Nations Industrial Development Organisation



Summary



Summary

The paper draws on the experience acquired in preparing the African Productive Capacity Initiative (APCI), as a demand-driven approach on sustainable industrial development for Africa at national and regional levels. The main objective of the APCI is to support Africa's renaissance in promoting economic growth based on the development of productive capacities. The value chain approach was suggested by UNIDO and adopted by the African Ministers of Industry as a path for upgrading and harnessing innovation and entrepreneurship in support to sustainable industrial development and employment generation in a clean environment. Besides, industrial benchmarking in a global production networks system has been acknowledged a crucial policy instrument. Furthermore, the power relation embedded in the value chains and networking approaches to global production does influence countries industrial strategies and policies.

South Africa's difficulty to transform an economy previously dedicated mainly to benefit 5 million people into an economy aiming to provide well-being to 40 million people cannot bypass the industrial path. As a fundamental component of wealth generation in an interdependent world economy, there is a need for a strategic change in the way individual, small, medium enterprises/industries, firms, trade-unions, support institutions, governments and regional economic communities are operating in South Africa. World-wide competition, loss of comparative advantages and potential risks of marginalization in selected segments of the value chains are some of the arguments, which led to the search for operational approaches to benchmark industrial performance. The improved UNIDO competitive industrial performance index (CIPI 2) as well as relevant drivers will be used to benchmark selected countries and observe commitment and progress made between 1980 and 2000 in support to sustainable industrial development. A competitive industrial performance divide index is also presented as a policy tool to support NEPAD-led African Peers Review Mechanism.

The obsolete approach of promoting industrial development in "*isolation*" needs to be gradually replaced by a dynamic capability formation process based on sectoral value chain initiatives. Sectoral Road Maps as well as interdependent regular intra- and inter-firms relations are fundamental to up-grade, diffuse industrial technology and knowledge, sustain productivity and promote innovation at each level of segments of the value chains. Segmentation and fragmentation of the production system should not become an additional burden in the struggle against industrial poverty pictured as the gap between the lower and upper-end of the dynamic and power-led global production system. Profitability and employment generation for a country with almost one third of the labour force unemployed is a challenge, which cannot be overcome without strategic sound industrial governance. Networking approaches at the level of both enterprises and support institutions should enable a new culture of clustering of capabilities as well as diffusion of knowledge to emerge. That process needs to be owned and institutionalised. Promoting a South African Productive Capacity Initiative should be part of the way forward

Productivity, competitiveness, profitability, and enlarging tax base should be integrated to any industrial and economic policies in support to sustainable job creation. It cannot be done without revisiting national productive capacity initiatives. There are some chances of success if capability formation at the sectoral level is taken into consideration at the very early stage of the process of re-establishing trust and confidence among industrial stakeholders of the value chains. As a consequence, the definition of capability formation needs to be adjusted to "glocal", *i.e.* local and global, conditions. Suggestions are made on the structuring capability formation with respect to a "*central-periphery*" production networks system and the way forward in the South African context.



Introduction: Structural transformation through negotiation

Ten years ago, South African businesses were beginners at exporting. Worldwide economic embargo and commercial isolation from outside markets on the countries' products push local companies to concentrate on the domestic market. How to penetrate the global value chain and keep control on its firms' negotiating power in the global production networks system becomes then a real challenge. It is therefore central to identify key determinants of industrial performance and use them to measure countries industrial performance. Usually, productivity measures of industrial performance focused more on benchmarking local costs production with best international practices. UNIDO's approach will focus on a more global perspective, taking into consideration constraints of available industrial statistics.

Because of the new global industrial architecture, working in isolation and lack of common vision between dispersed professional associations and Trade-unions need to be changed. The sectoral approach and interdependent competitiveness strategies are becoming essential to ensure sustainable economic success. As an example, subcontracting and innovative inter-firms relations were hardly strategically used as a mean to re-enforce linkages between productive actors and to boost collectively South African capability formation. It contributed more to delocalise production (out of selected urban areas or outside South Africa). Most powerful productive entities of the inter-firms relations were used to take decisions on a *"one-way and top-down approach basis"* with priority given to lower costs than building future networks competitiveness. Innovations in South African firms were generally taking place *"through the acquisition of new machines rather than through new form of labour organization"*¹. Taking into consideration the globalisation process of the world economies, this approach to competitiveness is not sustainable if it is not supported by capability formation. It is likely to generate and perpetuate a new form of exclusion between skilled and unskilled workers with almost little chances for the latter to adapt to the evolving globalizing industrial environment.

As part of an historical process, globalisation is characterised by a worldwide-led policy focusing on liberalisation of finance and trade. As a result, national systems of production, finance and communication are getting integrated. In the industrial sector, the growth of cross-border flows of goods, service and capital needs to be presented against the uneven distribution of the impact in the countries. Widening gaps between Industrialized countries and Least industrialized countries seems to become structural and the lack of access to opportunities within and between countries implies rising inequalities. Lack of sustainable strong economic growth, high level of unemployment rates, concentration of knowledge in support of productive capacities in industrialized countries, polarisation of foreign direct investment in selected developing countries are some of the issues which should be taken into consideration in addressing integration and segmentation of production based on global value chain approach.

With a GDP moving from 111.9 billions in 1990 to 113.2 billions in 2001² and the share of manufacturing value added in total GDP decreasing from 24% to 19% during the same period while the industry value added (including mining) fell from 40% to 31% of GDP, and the MVA from 24% to 19% of GDP. South Africa's economy needs to undergo a structural transformation. The objective will be to enhance all citizens' chances to take advantages of opportunities provided by the new global production settings based on dynamic value chains and production

¹ B. Lynn Salinger, "Productivity, Comparative Advantage, and Competitive ness in Africa", Discussion Paper number 35, USAID, Washington, June 2001. Please also refer to the EAGER project in 1997: see also www.eagerproject.com/discussion35.shtml; South Africa competitiveness analysis on pp. 19-21.

² World Bank, *World Development Report 2003*, p. 192.



network systems. This structural transformation would have more chance to succeed if implemented through a negotiation process. Productive capacity should not be considered as an exemption to this assumption.

How to provide jobs to the large majority of South Africans? This challenge needs to be acknowledged in the context of a structural transformation of global and local competitiveness in the industrial sector. Cooperation and competition among companies are crucial. Mastering Capability formation is one of the prerequisites for structural industrial transformation. Capability formation will be characterized as a mean to promote inter- and intra-firms' relations in an interdependent value chains-led production system. How to do it without proxy perception of countries industrial performance?

In the Industrial Development Report 2002/2003³, UNIDO has developed a composite index called the Competitive Industrial Performance index (CIPI) with the aim to help policy makers streamlining their strategic decision based on the analysis of some of the key industrial indicators. With an improved CIP index (CIPI 2), South Africa's industrial performance will be benchmarked against selected countries committed to sustainable industrial development. As a matter of fact, CIPI might not capture properly specific aspects of Capability formation. Because of the lack of available statistics and difficulty to capture with quantitative figures countries' ability to sustain capability formation, specific drivers will be identified and benchmarked with selected South Africa's competitors.

More globally, competitiveness should also be seen as part of a collective effort of African leaders to up-grade their industrial and technological capacities. How South Africa will fit in the African Productive Capacity Initiative, which is in the process to become the NEPAD's component on sustainable industrial development will also be examined. Introduce a system of institutionalized negotiation mechanism among productive capacity stakeholders appears as an original challenge, which needs to be addressed.

With the forthcoming "full" implementation of the sub-regional free trade areas in Africa, competition will intensified not only between industrialized countries and African countries, but also among African countries. The new challenges for African productive capacity actors supposes that to sustain in this competitive environment, African enterprises need to upgrade their productive capacities and capabilities with the support of conducive environment provided by governments and support institutions, acting more as regulators or supporters through selected incentive policies. Most of the African economies will need external supports in its transformation process. Appropriate strategies, especially in the industrial sector, could attract new forms of resources, preferably non-debt generating resources. Too much confidence in endowment of natural resources have led several African decision's makers into "strategic traps" which materialized in the form of "concentration" on the non-processing of those natural resources and a lack of importance given to the productive capacity sector. Surely, high value added could be generated in the industrial sector and enable the Sub Saharan African economies to move from a resource based economy to an industrial- and services-led economy. It is worldwide acknowledged "competitiveness does not depend on the endowment of resources but on the technological capacity to process them"⁴.

³ See www.unido.org/idr as well as UNIDO, *Industrial Development Report 2004/2005* (forthcoming).

⁴ UNECA, *Enhancing Africa's Competitiveness. Policy Issues in Natural Resources and Science and Technology*, Note from the Secretariat, United Nations Economic Commission for Africa, June 2001, p. 7.



Reduction of local factors⁵ inhibiting fair and free competitiveness is becoming new “milestones” for global players in assessing the African countries’ commitments to economic governance⁶ and industrial development. Factors -such as lack of capability of absorption due mainly to shortage of skilled labour, weak-developed infrastructure both physical and institutional, poor quality infrastructure, lack of knowledge, technology innovation and diffusion, poorly integrated financial sector with little interests for productive capacity development, tax burdens, cumbersome regulations, lack of political stability, insecurity and corruption, lack of predictability, etc.- appear as constraints. But with Capability formation institutionalized, improvements could take place.

In line with the above, the structural transformation progression in South Africa requires a gradual but rapid adaptation to the global production system of value chain-led production network. It has more chance to succeed if implemented through a negotiation process which should bring to the forefront at least three strategic central theme raised in the APCI:

- Unemployment and job creation through entrepreneurship;
- Industrial performance through an upgrading culture; and
- Capability formation.

1. Employment and South Africa competitiveness

With sound economic policies against the background of the global economy, the real Gross Domestic Product (GDP) of South Africa is expected to rise in the forthcoming years: 3.1 % in 2004 and 3.5% in 2005 with inflation contained between 3% and 7%. According to the Government’s medium-term budget policy statement (November 2003), Government expenditures will be directed towards infrastructure, social services and public works, social and health security with specific attention to child benefits, healthcare and HIV/AIDS. One of the main characteristics of the post-apartheid economy is contained in the Black Economic Empowerment (BEE) Strategy Document⁷ which aims to “*substantially increase*” black and non-white participation in all sectors of the economy with specific quantitative target per sector.

Those political considerations need to be analysed against the path of South Africa to come forward as an emerging industrial country, which needs to compete in a global production system. Besides the commitment of the Government to support relaxing fiscal measures, it is expected to experience a budget deficit between 2.6% in 2003/2004 and 3.1% of GDP in 2004/2005.

Today, corporations are supporting the main part of the tax burden. In the long run, one of the options consists in broadening the tax base. Improving the level of workers’ revenues should become a prerequisite for ensuring a more balanced distribution of the tax burden. It should favour economic growth through an increased consumption of value added and locally produced goods and services. Generating wealth and finding best ways to leapfrog cannot bypass the ability of the Government and all supportive stakeholders to promote industrial capacities and capabilities in South Africa.

⁵ UNIDO, *Domestic Capacity-Building for Enhancing Productivity and competitiveness in Africa*, Vienna, 1998.

⁶ Please refer to the NEPAD “vision”:
http://www.uneca.org/eca_resources/Conference_Reports_and_Other_Documents/nepad/NEPAD.htm

⁷ *South Africa Economic Transformation: A Strategy for Broad-Based Black Economic Empowerment*, See
<http://www.dti.gov.za/bee/bee.htm>



With a growth rate of 2.2% in 2000-2001⁸ and just an estimated 1.9%⁹ of real GDP growth in 2003 comparing the 3.0% of 2002, it is expected that South African economy will recover in 2004-2005 and achieve an annual average of 3.3%. Both Manufacturing production growth (5.3%) and Gross Agricultural production growth (6.5%) were above the real GDP growth in 2002.

Unfortunately, and despite a positive record of an average of 2.8% of GDP growth over the last 10 years, South Africa is facing difficulty to create jobs. The level of the distribution income has worsened according to UNDP¹⁰. A real challenge will be to contribute to the “catch-up” of the black household income, which is estimated to be eight times lower than white household income. South Africa is committed to the Millennium Development Goals and various South African leaders including Thabo Mbeki, after his second term successful election (April 2004), have acknowledged the need to reduce poverty and promote sustainable job creation strategies and policies. Ability to institutionalise capability formation and absorption capabilities of medium and high technology will be critical for the success of South African future industrial upgrading if it should benefit the large majority of the population.

In the light of the above, any advice in support to the South African economic and industrial strategies and policies should take into consideration this pro-active will of the Government to transform the country with the aim to shift power on a more equitable basis to a larger group of the forty million citizens. Being the most powerful economy in Africa, the South African economy will not escape from being considered as a leading economy. From that perspective, the impact of South African economy on the New Partnership for Africa’s Development as well as its ability to improve the unemployment situation as an integrated part of industrial strategies and policies could serve as “best practices” elsewhere on the continent. The correlation between employment and income generation, productive capacity, capability formation, enlargement of the tax basis and social enhancement needs to be acknowledged. How to institutionalise capability formation in all productive sectors will be one of the major challenges of the South African Economy in the coming years? This paper will attempt to shed some light on capability formation taking into consideration the NEPAD component on sustainable industrial development based on the African Productive Capacity Initiative.

According to the figure of the census conducted in South Africa in 1996, the unemployment rate was 33.9% with 42.5% amongst black people and 52.4% amongst black women¹¹. An economy that cannot provide jobs to half of its black women could hardly be qualified as “nationwide economy”. Unemployment rate stood at 23.3% in 1999 and have risen: 26.3% in 2000, 27.9% in 2001, 29.9% in 2002, 31.0 in 2003 and 30.3% in 2004¹².

Between 2000 and 2004, the number of unemployed in South Africa (please refer to table 1) has respectively risen from 4.2 million to 5.6 million persons. Estimation of real Labour force in 2004 is around 16.6 million persons and only 11 million persons are employed. According to EIU forecasts for South Africa, the annual change in employment rate estimated at –0.6% will eventually overcome the level of the annual change in Labour force in 2008 estimated at –1.8%. Impact of newly created jobs may not be highlighted by an upward trend before 2008 (changes in the rate of employment in South Africa are negative till 2008, see table 1 point 1.4).

⁸ World Bank, *World Development Indicators*, 2003.

⁹ Economist Intelligence Unit Estimate, *South Africa, Country Report*, April 2004.

¹⁰ UNDP, *South African Human Development Report 2003, 3rd issue*, released on May 2004, www.undp.org/za/interimpage.htm

¹¹ Katsumi Hirano (Editor), *Japan and South Africa in a Globalizing world: Distant Mirror*, Publisher Ashgate Pub Co, June 2003, see “Mass Unemployment in South Africa: A comparative Study with East Asia”, pp. 167-192.

¹² EIU, *South Africa Country Forecasts*, April 2004



Comparisons between selected countries (see table 1) tend to indicate that the job creation path of South Africa need more time to adjust and convert an economy structured to ensure employment for roughly 5 million (mainly white) people into an economy with forty million people. Unemployment rate reached 31% in 2003 and need to be brought under control. The increase by 18% of the Labour force in 2000 for South Africa could be correlated with the increasing level of unemployment over the years (between 2000 and 2004). In fact, a large majority of the population was not formally registered as unemployed during the Apartheid Regime.

**Table 1: Benchmarking Labour Force and Employment of selected countries
1999-2008**

The Labour market	1999a	2000a	2001a	2002b	2003b	2004c	2005c	2008c
1.1 Labour force (% Change)								
Algeria	3.1	3.1	2.5	2.5	3.2	3.2	3.1	2.8
Austria	0.4	0.0	0.7	1.1	1.1	0.4	0.2	0.1
Brazil	2.0	1.5	1.2	1.5	1.5	1.4	1.3	1.2
Egypt	2.8	2.7	3.2	1.0	2.5	2.6	2.6	2.5
Germany	0.7	1.1	0.3	-0.1	-0.3	-0.4	0.8	0.1
Malaysia	3.2	4.6	3.0	0.3	3.5	0.2	2.2	2.3
Nigeria	2.6	2.5	2.6	2.6	2.6	2.6	2.5	2.4
South Africa	-12.6	18.3	-1.8	1.8	2.2	1.7	1.6	-1.8
South Korea	1.1	1.9	1.6	2.1	0.2	0.9	0.4	0.3
Thailand	4.2	3.6	3.3	2.4	2.2	1.7	1.4	2.4
1.2 Labour force (in millions)								
Algeria	8.6	8.8	9.1	9.3	9.6	9.9	10.2	11.1
Austria	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.5
Brazil	78.1	79.2	80.2	81.4	82.6	83.7	84.8	88.0
Egypt	18.4	18.9	19.5	19.7	20.2	20.7	21.3	22.9
Germany	42.2	42.6	42.8	42.7	42.6	42.5	42.8	42.8
Malaysia	9.2	9.6	9.9	9.9	10.3	10.3	10.5	11.2
Nigeria	49.1	50.3	51.6	53.0	54.4	55.7	57.1	61.3
South Africa	13.5	16.0	15.7	16.0	16.4	16.6	16.9	16.5
South Korea	21.7	22.1	22.4	22.9	22.9	23.1	23.2	23.6
Thailand	32.7	33.2	33.8	34.3	34.9	34.9	35.5	37.1
1.3 Unemployment (in %)								
Algeria	29.2	29.5	27.3	25.9	26.2	25.4	24.8	25.6
Austria	6.7	5.8	6.1	6.9	7.0	7.0	6.8	6.1
Brazil	14.1	13.3	11.3	11.7	12.3	10.5	10.1	9.0
Egypt	8.2	7.9	8.4	9.0	9.9	10.9	11.2	12.5
Malaysia	3.4	3.1	3.7	3.5	3.6	3.0	3.0	3.4
Germany	10.5	9.6	9.4	9.8	10.5a	10.2	9.9	8.0
Nigeria	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
South Africa	23.3	26.3	27.9	29.9	31.0	30.3	29.5	23.2
Korea Rep.	6.4	4.2	3.8	3.1	3.4	3.6	3.4	2.5
Thailand	4.2	3.6	3.3	2.4	2.2	1.7	1.4	2.4
1.4 Employment (% change)								
Algeria	1.3	2.7	5.7	4.5	4.2	5.0	4.0	3.5
Austria	1.0	0.8	0.5	0.2	0.9	0.4	0.4	0.8
Brazil	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Egypt	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Malaysia	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Germany	1.2	1.8	0.4	-0.6	-1.1	0.1	1.0	0.9
Nigeria	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
South Africa	N.A.	-1.8	-3.9	-1.1	-0.8	-1.0	-1.0	-0.6
Korea Rep.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Thailand	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

a: Actual ; b: EIU estimates; EIU forecasts;
 Source: EIU, *Countries Forecast, April 2004*.

Real GDP growth alone cannot address the core problem of employment. It is the way productive capacities and capabilities are created in South Africa, which could contribute to explain the unemployment situation and to think about alternative industrial strategies and policies. In 1996, Malaysian economy with the same level of per capita Gross National Product (GNP) did perform



better in terms of job creation as compared to South Africa¹³. Today, the situation has worsened. The average share of total labour force between 1998 and 2001 (please refer to table 2) was 23.3% in South Africa versus 6.7% in Austria, 9.6% in Brazil, 3.1% in China, 8.1% in Germany, 3.0% in Malaysia, 2.4% in Thailand, 8.3% in Turkey and 6.2% in High income countries¹⁴. In low-income countries, unemployment is the highest (more than 70%) in the primary level of education whereas for middle-income countries, it is in the secondary level. From the gender viewpoint, women are disadvantaged as reflected in Table 2.

Table 2: Unemployment in selected countries
Average of 1998-2001

Countries	Share of labour force (in %)	Male (as % of male labour force)	Female (as % of female labour force)
Algeria	N.A.	N.A.	N.A.
Austria	4.7	4.7	4.8
Brazil	9.6	7.2	11.6
China	3.1	N.A.	N.A.
Egypt	8.2	5.9	19.9
Germany	8.1		
Malaysia	3.0	N.A.	N.A.
Nigeria	N.A.	N.A.	N.A.
Senegal	N.A.	N.A.	N.A.
South Africa	23.3	19.8	27.8
Thailand	2.4	3.0	3.0
Turkey	8.3	7.6	6.6

Source: World Bank, *World Development Indicators*, 2003, pp. 50-52.

The migrant labour system is more difficult to trace. It was institutionalised in the previous regime. Such a system forced a large majority of the working population to leave separately from their close family. The consequence was the spread of HIV-Aids on workers. Its effects on the labour market should not be underestimated when designing industrial policies, which are focusing on knowledge diffusion and upgrading of human capital. According to USAID, “firms will need to learn how to cope with the effects of HIV/AIDS on workforce issues such as benefits policies regarding care, sick leave, and personal leave, as well as training policies to ensure adequate skills coverage either through multi-skilling of individual workers or planning for worker redundancies”.¹⁵ Any uneven development in the skills coverage at the sectoral level may lead to a lack of competitiveness at various levels of the value chain segments in the future.

Without an exceptional political will to fight the gap caused by past structural unemployment profile, market mechanisms and macro-economic policies will not be effective unless industrial policies are geared towards the harnessing of productive capacities. Promoting sustainable industrial development without taking into consideration the global production system may also lead to future difficulties. As the result of the segmentation and fragmentation of global production among global players, “digital divide” and “integrated partnerships and alliances” are paving the way for a new differentiation in competitiveness. Partners who built their competitiveness on “integration” (horizontal and vertical) are working more and more in a network arrangements at global level and have a special preference for clustering approaches at the local level. Countries that ensure that their Energy and Information, Communication and Technology (ICT) infrastructure is well performing are also those who will benefit from this evolving system. Initiatives pertaining to productive capacity development should concentrate on identifying specific industries and focus on selective segments of the value chains (local, national

¹³ Katsumi Hirano (Editor), op. cit., p. 176: “Comparison of Employment in Malaysia and South Africa in 1996”.

¹⁴ World Bank, *World Development Indicators*, 2003, pp. 50-52.

¹⁵ See cross-cutting issues on “Effects of HIV/AIDS on Labor and Competitiveness Challenges”, 2003, in *USAID RCSA: Global Competitiveness and Regional Market Integration*. The main outcome is that “African Businesses are coping with effects particularly at the level of firms and sub-sectors (clusters) and the immediate effect is on labor market attrition and decreases in productivity”: See: <http://www.sarpn.org.za/documents/d0000499/index.php>



and regional), which could put forward real comparative advantages. Any success in improving present and future competitiveness in South Africa should be considered those prerequisites as foundations for countries and regions industrial dynamics.

Improvement in product quality is also not enough; it is the whole quality infrastructure¹⁶ that is needed. The role of support institutions, especially those directly relevant to the private sector in terms of diffusion of knowledge, good practices, efficient management and promotion of upgrading and innovation culture, are part of the conducive environment which have a good chance to generate value added and create sustainable jobs. In an interdependent world, one cannot promote productive capacities in today's global production networks without building and linking local capacities and capabilities.

This paper will now attempt to highlight the importance of capability formation for inter-firm relations as a mean to support on-going industrial strategies and policies in South Africa.

2. Capability formation as a mean to promote inter- and intra firms relations in an interdependent value chains-led production system

South Africa industries have benefited from market protection and were almost forced to face increasing competition from outside. Taking the textile and clothing sector as an example, it is possible to state that mastering of technology and production system were much more advanced as compared to other African countries. Unfortunately, sectoral statistics (*“Textiles, wearing apparel, leather and footwear”* combined) indicated that the average annual growth rate for South Africa was -0.2 between 1992-2002, which reflected the downward trend of the share of this combined sector in the total MVA: from 8.6% in 1992 to 6.7% in 2002 (see annexe 8, Table 9.a).

From the selected countries, Tunisia had an impressive performance of AAG rate of 7.3%, above India with 5.8%. During the same period, South Africa performed very well in the “woods products including furniture” with an average annual growth rate (AAG) of 4.3% and in the *“Basis metals”* sector with AAG rate of 5.4%.

One should also be interested to understand *“capability formation”* from a regional and comprehensive perspective and not simply look for “best practices” which sometimes are difficult to implement because of countries' lack of absorption capability. From a regional perspective, (see annexe 8, Table 9.b) and based on the share of the industrial branches in Total MVA in 1992 and 2002, Sub-Saharan Africa (SSA) focused on the four main industrial sectors (priority order):

1. Food, beverages and tobacco;
2. Chemicals, Petroleum, Rubber and Plastic products;
3. Textiles, wearing apparel, leather and footwear;
4. Wood products including furniture.

Unfortunately, in most of the cases, this situation did not lead to any reduction of the competitive industrial performance divide between industrialized and Least industrialized countries mainly because of the lack or low level of technology content in the processing, the decreasing terms of trade for unprocessed goods, the lack of quality infrastructure and the overall policy favouring unproductive rent economy over productive capacity upgrading.

¹⁶ Institutions in charge of quality, norms, metrology, etc. need gradually to be led by private sector representatives.



South Africa did focused more on following industrial sectors (priority order) during 1992 and 2002 (see annexe 8, Table 9.a):

1. Metal products, including Machinery and Equipment;
2. Chemicals, Petroleum, Rubber and Plastic products;
3. Basic Metals;
4. Food, beverages and tobacco.

Nonetheless, South Africa with 40 million people was poorly prepared for global competitiveness challenges. Commercial isolation and domestic protection are part of the explanation as mention earlier. Productivity measurement of performance should be strengthened at the plant level and benchmarking analysis within and among the sectors, the countries and the regions should be promoted in order to sustain firms' competitiveness and identify best practices as part of policy instruments. Those prerequisite are fundamental to ensure a smooth and successful penetration of global value chains (buyer- or producer/supplier-driven).

According to several analyses, South Africa's competitiveness in textile and clothing industries is lagging behind¹⁷. There is a need for convergence in the strategy adopted by various independent professional associations. One of the interesting options is to prepare, as part of a Public-Private Partnership activities, sectoral actions plans and sectoral road maps based on the value chain analysis¹⁸. It should enable the stakeholders of the chain to better identify specific segments and niche opportunities for both national and foreign markets. One could concentrate on improving productivity and human capital as part of a clear strategic vision. In identifying the countries weaknesses at the sectoral level, one should be in a position to improve the negotiation/bargaining influence of organized actors of the sector. One of the key determinants of a negotiation/bargaining influence lay in the mastering of the Research and Development (R&D). Capability formation and improvement of human capital in a given industrial sector should enable the building, updating and mastering of the R&D institutions and innovation if one would like to sustain competitiveness. The country's sectoral workers' Union should be part of the overall process. Strategies which are based on evading sound analysis of future competitiveness versus strategies of "delocalisation" into lower wage rate countries within or outside SADC with the objective to keep away from implementing collective agreement reached with local Unions are not necessary sustainable in the long run.

It is the inter-firm relations in specific and interdependent value chain segments that need to be strengthened as part of the capability formation approach. Sub-contracting for example should not take place under pressure but should integrate predictable constraints such as taxes, wages, lack of technology, and lack of market... Organizing smooth inter-firms relations should be organized as a mean to build reciprocity and trust to achieve productivity on a sustainable basis. Providing a high level weight to "low costs" as comparative advantages over smooth intra-firms relationships as criteria to promote industrial development could become a strategic mistake. It definitively slowdowns the clustering process and represents a major burden on the interdependent innovation process within segments of the value chain. Collective investments in Internet-based management systems, regular up-grading training and learning improvement and computerization of workflows are some of the drivers to improve worker productivity. SA's firms should gradually

¹⁷ B. Lynn Salinger, *Productivity, Comparative Advantage, and Competitiveness in Africa*, Discussion Paper, Number 35, June 2001, funded by USAID, Bureau for Africa, Washington, see www.eagerproject.com/discussion35.shtml

¹⁸ Y. E. Amaizo, R. Atieno, D. McCormick, J. Onjala, *African Productive Capacity Initiative: From vision to action*, UNIDO Policy Papers, Vienna 2004. The 16th Conference of African Ministers of Industry adopted the APCI November 2003, in Vienna, Austria.



think about earmarking up to 3% of their turnover to support financially the upgrading of capability formation.

Capability formation should be seen as an attempt to move away from the “*business as usual approach*”. In addition to the search for up-grading and promoting innovation through the acquisition of new people, new machines, new technology, new management styles, etc., it is more and more important to accustom new forms of labour organizations and improve the specialisation of support institutions led by the private sector. **Capability formation in Africa appears as a mixture of new forms of interdependency based on firms’ renewed relations aiming at reducing decision makers’ tendency to work in isolation on one side, and building on existing codified and tacit knowledge, on the other.** “*Buying*” innovation cannot be the only option for upgrading when most of the small and medium enterprises (SMEs) do not have the necessary financial means and purchasing power to sustain such an approach. Capability formation is also a very pertinent way to generate value added, save costs, reduce transaction costs, develop intra- and inter firms’ productivity through Public and Private Partnership dialogue and make profit without jeopardizing social cohesion.

2.1 Competitiveness as an evolving concept

Although increasing importance is given to macro-economic consideration, wealth is generated at the micro-economic level and could lead to sustainable economic growth if productivity and innovative capacity supported by recurrent capability formation take place in a country. According to Michael E. Porter, **competitiveness is determined by the productivity with which a nation or region uses its human, capital and natural resources.** Industrialisation takes place when outputs such as wages, return on investment (wages, capital, natural resource endowments) are converted in standard of living for the benefit of the majority of the population. A productive economy is therefore an economy, which adds value to products and services in an efficient manner and simultaneously enhances its capability formation at the sectoral level. Competition takes place when productive entities perform within local and global industries. Productive entities could perform best in improving the pace of their absorption capabilities, which depends of the level of human and institutional capital in conjunction with technology and knowledge diffusion in the country.

In order to benefit from existing comparative advantages, location and institutional environments for business is becoming determinant to attract economic agents interested in making profit and creating jobs by adding value to goods and services. Because of difficult, dangerous, unpredictable or expensive environments, agents of transformation, -which are firms-, could choose on an agile basis, to produce during a limited period in a given territory and to sell on the most favourable place on the global market. At the national level, the interdependency between public and private entities needs to be organized in a coherent manner with the industrial strategy in support to an innovation-driven productive economy. Macro-economic and social fundamentals are therefore equally important in laying foundation for sustainable industrial development in a country. Thus, how to ensure that human and institutional capabilities of an economy are gradually established or strengthened in order to up-grade a country’s ability to compete locally and globally? Solutions start often with a system of “*capturing what is going on at the sectoral level*”. Benchmarking and producing reliable sectoral and branches’ levels industrial statistics are therefore crucial. The main objective will then be to take advantage of the opportunity of the global economy and to limit the collateral inconveniences caused by the globalisation process.

Producing in isolation, without productive interactions and slowing down the collective process of complexity (sophistication) of the process of creation of value through innovation will not



favour capability formation. This is valid for human capital as well as for support institutions. More important for transparent “competition” is also the consensus to be reached on the process of defining common standards, productive relationships, open communication and common strategic agenda¹⁹. Competition means also that power and capacity to influence, which does exist in sectors/segments/niches of specialization of world division of labour, should not be neglected.

There is therefore no fatality for countries to “stay” forever in factor-driven economy, using low content technology) or building their competitiveness on low wages with low level of value added generated. There is also no clear future path for countries to *limit their objectives to*” an investment-driven economy based on heavy investment in both capital and technology. While moving towards an innovation-driven economy, countries’ competitive development may finally depend primarily on their ability to structure on a sustainable and predictable basis their ability to “generate capabilities”. Capability formation can only be based on a partnership process involving all segments of the population with a strong weight given to knowledge diffusion. It is part of a cultural change and behaviour whereby industrialisation is more than the “destructive creation” of Joseph Schumpeter²⁰. Social cohesion and ethics needs to be re-integrated to sustain industrial development policies.

2.2 Global value chains and Global Production networks

Production does not necessarily take place in one location. The segmentation and fragmentation into distinct steps open new avenues for productivity and industrial performance. The possibility to move each segment or step (fragment) to the place where value added could be maximal is becoming the official unwritten rules. The existing trade system experienced the shift from the “exchange and production of final consumer goods” to the “exchange and production of parts and components”. According to the World Bank and data from the United Nations Comtrade Database, exports of parts and components -a proxy for participation in the global networks-increased by almost 2% faster than exports of total manufactured goods from 1981 to 2000²¹ worldwide. The first “generation” of production networks (from roughly 1990-2002) saw cross-border networks activities mainly among industrialized countries. The second “generation” (as of 2003) will see this cross-border networks spreading towards selected developing countries, especially those with absorption capacities and conducive capability formation environment.

Global networks have been facilitated by the progress in Data processing (ICT) and reduced cost of transport. It makes it easier for multinational firms to coordinate production at dispersed locations. The effect of improved environment in developing countries favours foreign direct investment (FDI) in those countries²² (see also annexe 5). On-going reforms on trade as well as the decline of average tariff rate on imports of parts of components did also contribute to a greater participation in global production systems.

A simple definition is offered in order to clarify the distinction between Global value chains (GVC) and Global Production networks (GPN). The value chain analysis is worldwide accepted. It opens the possibility to focus on a set of interdependent activities of interest to industrial performance. Based on previous definitions²³, **a value chain is therefore the sequence of productive**

¹⁹ Ben Fine, *Industrial Policy and South Africa: A Strategic View*, School for Oriental and African Studies, University of London, See: <http://www.und.ac.za/und/indic/archives/indicator/spring97/FINE.htm>

²⁰ Michel Drancourt, « Industrialisation : la destruction créatrice », in *Futuribles*, n. 297, May 2004, pp. 13-29.

²¹ World Bank, *Global Economic Prospects and the Developing Countries 2003: Investing to unlock Global Opportunities*, Washington, D.C., p. 55.

²² UNCTAD, *World Investment Report, 1998 and 2003*, Geneva and New-York.

²³ See 1. Dorothy McCormick, and Hubert Schmitz, *Manual for Value Chain Research on Homeworkers in the Garment Industry*, Institute of Development Studies, Sussex, 2002 see www.eldis.org; See 2: G. Gereffi and R.



activities or value adding activities leading to and supporting end users of a particular product or service. It is the chain of activities required to bring a product or a service from its conception to its final consumption. The sequence does not need to be vertical. The fact that sequences of productive activities take place across borders as well as intra-and inter-firms could be considered as a feature of global value chains.

According to J. T. Sturgeon, a *global production network is a combination of two or more value chains dispersed across firms and national boundaries, in which participants at different hierarchical layers are integrated to one flagship firm*²⁴.

A global value chain is mainly related to a set of interdependent activities related to a specific product or service whereas a global production network is related to a specific firm, which integrates productive activities, dispersed across firms and national boundaries. The new “*flexible boundaries*” of a GPN is structured around intra- and inter-firms coordination. The objective of GPN is clearly to improve its total factor productivity and to make global profit through knowledge sharing and diffusion within the network. Ability to absorb and environment facilitating capability formation are becoming key determinants to increase the competitiveness of the firms participating in Global production networks. South Africa needs to take advantage of both form of integration to the global production system: global value chains and global production networks. There are prerequisites for that. The need for improvement at the level of capability formation is crucial.

2.3 Defining Capability formation

Capability formation could be defined as a dynamic and systemic process of exchange of codified, explicit and tacit knowledge with special focus on technology diffusion and absorption capabilities for social enhancement in the global production network system. Channels of capability formation are twofold: it could be unsolicited or solicited, exogenous or endogenous, depending on who is taking the lead in the proactive dynamic part of the process such as following main actors: central flagship company, periphery network participant, institutional facilitator including local Government. When these three main actors are taking the lead to promote productive capacities in a country, *industrial capacities, capabilities, complexity, upgrading* take a rapid upward trends. Industrial performance is then validated through the high level of “*intensity of industrialization*” and “*export quality*”. Capability formation per se needs to be differentiated because of the embedded relations between absorption capacity and capability formation. Following drivers selected by UNIDO²⁵ should be used to support the benchmarking of selected countries: 1. Skills; 2. Technological effort; 3. Inward FDI; 4. Technology licensing; 5. ICT infrastructure.

The linear approach to value chain or production networks should not be promoted anymore in a global and competitive environment mainly because of five main reasons:

- The embedded power asymmetry;
- The complexity of transactions;
- The control over the codification of the transactions;
- The absorption capacity of countries and professionals networks/clusters participating in the network process, and

Kaplinsky, “The Value of value chains”, *IDS Bulletin*, 32 (3), special issue on Global Value Chains as well as 3: Y. E. Amaizo, R. Atieno, D. McCormick, J. Onjala, *Africa Productive capacity Initiative*, UNIDO Policy Papers, 2003, p.

²⁴ T. J. Sturgeon, “How do we define value chains and production networks”, MIT IPC Globalization Working paper 00-010, 2000.

²⁵ UNIDO, *Industrial Development Report 2002-2003*, see www.unido.org/idr



- The weaknesses of functioning facilitators institutions including governments.

Governments could become a major constraint to competitiveness if there are confusions over the function of “*regulator*” or “*facilitator*” often put in the shade by “state interference and direct management of the production system.

The knowledge led-economy is becoming the essential support of production and competitiveness. A country, which fails to promote its innovation capability, will be marginalized from the global value chains and production networks. Innovation takes place more and more if at least three conditions are fulfilled:

- Product innovation,
- Process innovation and
- Capability formation including ability to absorb, diffuse, duplicate and improve technology and knowledge as well as the need to upgrade the processing cycle efficiently.

The networking approach is becoming unavoidable for both actors (local and foreign) whose expertises need to be identified and promoted in each sector of the value chain. The African Productive Capacity Initiative adopted by the African Ministers of Industry is an attempt to raise awareness about the importance of such an approach for industrial performance and competitiveness. Any future industrial policy should ensure that its component on capability formation be structured around:

- Knowledge diffusion centres including universities, which are focusing on productive capacity, Dynamic entrepreneurs and firms liasing with actors of the knowledge diffusion centres,
- National collective goodwill, and last but not least,
- Commitment to promote industrial development based on regular consensus reached between Trade Unions and firms representatives.

Changes in products and processes are usually originating from firms based on the prospective vision of future profit. This transformation process should not be done at the expenses of collective interests and social cohesion.

It is therefore fundamental to recall that benefit from delocalisation based simply on low-costs wages is a trap in the long run. Sound industrial policies should favour productivity gains at all levels with special emphasis on non-complex or sophisticated activities. It does not mean that there is no need to upgrade from resource-based or low technology led production system to medium and high technology driven production system. Productivity gains should take place simultaneously with pro-active industrial policies, which may need to rethink Labour policies. Actuality, the global production network system is leading to new approach to contractual arrangements between firms and workers. It should be acknowledged when discussions take place with flagship firms.

Workers’ long-term contracts may gradually enter into competition with fix-term contracts, which needs to be supported by period of upgrading of capabilities embedded in the arrangements. Acquisition of additional knowledge and know-how could be performed on the job-site. New integration with Knowledge centres including the so-called flagship firms (presently mainly multinational companies) is fundamental for the process of acquiring knowledge on products quality and innovation of production processes. The overall trends towards “*outsourcing*” need to be institutionalised as part of the capability formation process.



3. Benchmarking with UNIDO's Improved Competitive Industrial Performance Index (CIPI 2): Using the Competitive Industrial Performance Divide as a policy tool

UNIDO developed a Competitive Industrial Performance Index (CIPI)²⁶. The overall idea departed from existing approaches relying exclusively on indices related to Business perception²⁷ and to provide useful tool for country to benchmark based on countries' ability to produce and export manufactured goods on a competitive basis. The concept of "*competitiveness*" was therefore narrowed to selected indicators and drivers which are attempting to highlight the "*capability*" of a country or a region to produce and exports manufactured goods competitively. Without claiming to be a comprehensive policy tool, the CIPI structured industrial performance and competitiveness into four main component indices structured in two categories. In the CIPI 2, selected component indices were improved.

- The first dealing with "*country's industrial capacity and capabilities in domestic and export markets*". Two main component indices used are: Manufacturing Value Added per capita and Manufactured exports per capita;
- The second (in CIPI 1) dealing with two issues: on one side, "*industrial and technology complexity*" based on the "*share of medium and high technology content activities in manufacturing value added*" and on the other one, "*industrial upgrading*" based on the "*share of medium and high tech products in manufactured exports*". Improvement of two of the component indices are currently suggested by UNIDO for the CIPI 2 and will be gradually integrated in the up-dated version of the UNIDO CIPI²⁸. "*Intensity of Industrialization*" will be based on two output indicators (see Table 3: 3.2.a and 3.2.b) and will consider both the share of "*share of medium and high technology content activities in manufacturing value added*" and the "*medium and high technology activities in Gross Domestic Product*" aggregated in one component indice and "*Export Quality*" based on both the "*share of medium and high technology products in manufactured exports*" and the "*share of Manufactured exports in total exports*" (see table 3 and annexe 6).

A group of six components indices (variables) is combined to capture countries' competitive performance called "*Competitive Industrial Performance index*". In the UNIDO CIPI 2, two of the component indices were improved (see table below point 3.1 to 3.2 and 4.1 to 4.2) and more countries' economies (93) are benchmarked in three years (1980, 1990 and 2000).

²⁶ UNIDO, *Industrial Development Report, 2002-2003: Competing through innovation and learning*, UNIDO, Vienna: see also www.unido.org/idr

²⁷ Please refer to *World Competitiveness Yearbook of the International Institute of Management Development* as well as World Economic Forum publications.

²⁸ UNIDO, *Industrial Development Report, 2004-2005 (forthcoming)*.



Table 3: Industrial Performance:
“Attempt to qualify competitiveness in domestic and export markets”
Country’s industrial capacity and capability in domestic and exports markets
Country’s technological complexity and industrial upgrading

<u>CIPI 1: Qualifying industrial performance</u>	<u>1. Industrial capacity</u>	<u>2. Industrial capability</u>	<u>3. 1 Industrial and technological complexity</u>	<u>4.1 Industrial upgrading</u>
<i>Component indices used in IDR 2002/2003</i>	<i>Manufacturing Value added per capita</i>	<i>Manufactured exports per capita</i>	<i>Share of medium and high technology activities in Manufacturing value added</i>	<i>Share of medium and high technology products in Manufactured exports</i>
<u>CIPI 2: Qualifying industrial performance</u>	<u>1. Industrial capacity</u>	<u>2. Industrial capability</u>	<u>3.2 Intensity of Industrialization</u>	<u>4.2 Export Quality</u>
<i>Improved</i>	<i>Manufacturing Value added per capita</i>	<i>Manufactured exports per capita</i>	<i>a. Share of medium and high tech activities in Manufacturing value added</i> <i>b. Share of Manufacturing value added in Gross domestic product</i>	<i>a. Share of medium and high technology in Manufactured exports</i> <i>b. Share of Manufactured exports in total exports</i>

Based on the UNIDO improved CIPI 2 (2004/2005), it is therefore possible to picture “countries’ industrial performance” and identify industrial weaknesses which should give room for improvements/adjustments in the implementation of industrial strategies and policies.

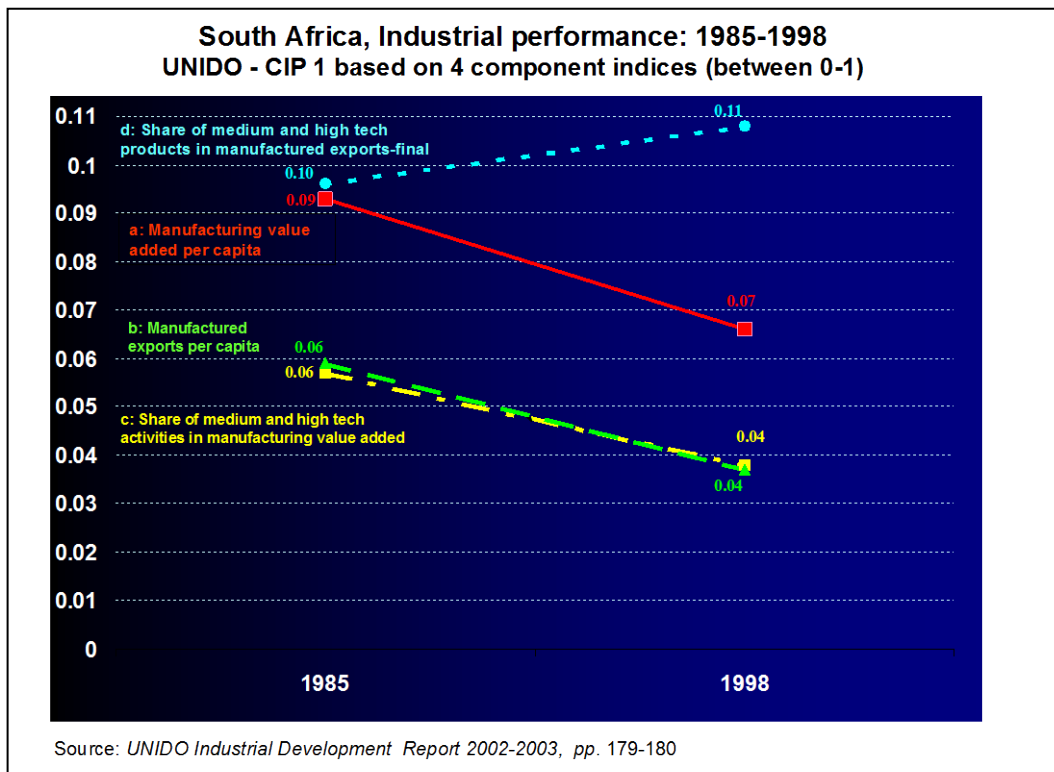
The graphs on South Africa’s industrial performance are presented below with the two versions of UNIDO CIPI (CIPI 1 contained in IDR 2002/2003 and CIPI 2 contained in IDR 2004/2005, see graphs 1 and 2).



Graph 1: South Africa Industrial performance captured in 1985-1998

South Africa's component indices of CIPI 1 are below expectations for the period 1985-1998. Except the Share of Medium and High technology contents in manufactured exports, which improved slightly, all other component indices dropped. The UNIDO component indice-values are comprised between 0 and 1 and become significant above component indice-value 0.2.

As a proxy for Capability formation, the component indice manufactured exports per capita was very marginal as part of SA's industrial development strategies (from 0.06 to 0.04).

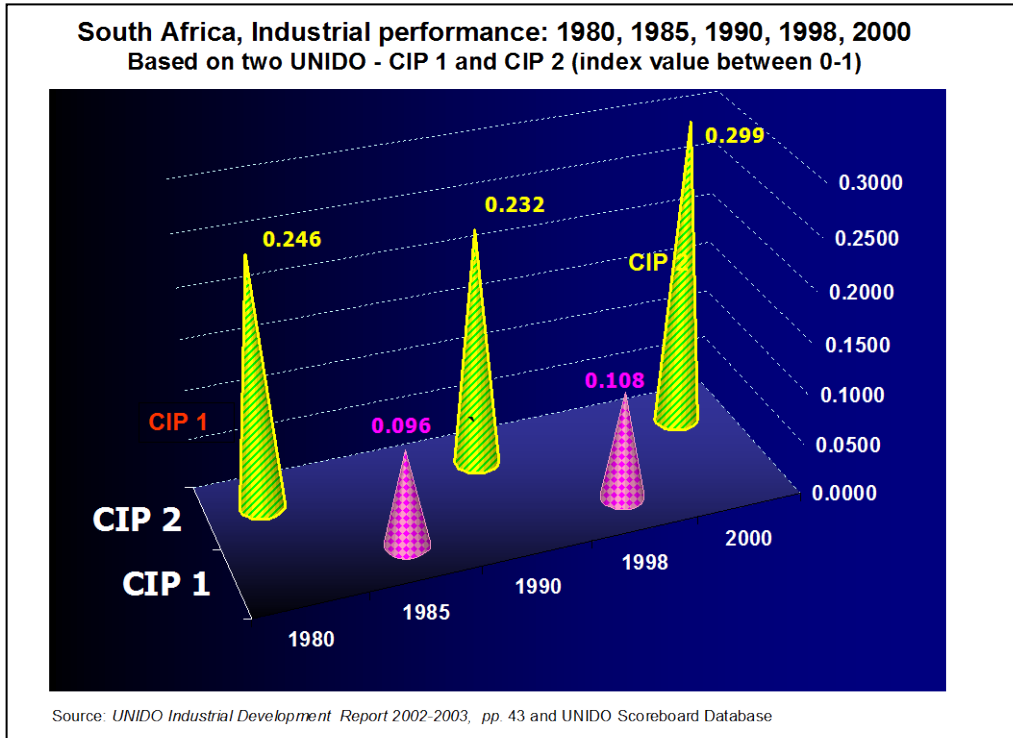




Graph 2 a: South Africa's industrial performance (CIPI 1 and CIPI 2)

South Africa's industrial performance analysed with two UNIDO CIPI confirmed an overall general increase independently from the level of the component indices reached in CIPI 1 and CIPI 2.

With the CIPI 2, it is clear that between 1980 and 1990, South Africa's industrial performance seems to have slightly declined, recovered between 1990 and 2000, from 0.246 to 0.232. Details could be highlighted with component indices in the Graph 2b.

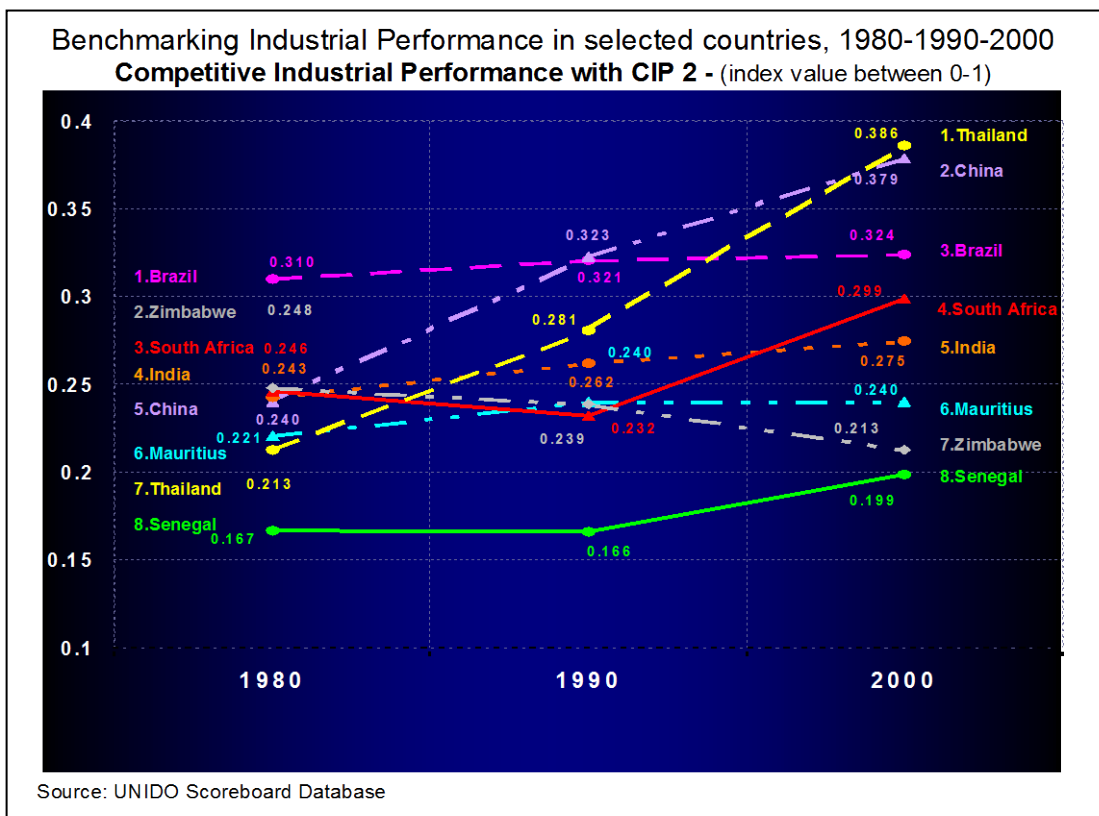




Graph 2 b: South Africa Industrial performance, 1980, 1990, and 2000 (CIP 2) based on improved composite indices

South Africa's CIP 2 index seems to indicate a period of stagnation between 1980-1990 and a new raising trend between 1990-2000, moving from CIP 2 0.246 through 0.232 to 0.299 for the respective three years; 1980, 1990, 2000.

As compared to other selected countries, the CIP 2 index of South Africa (0.246) in 1980 (almost same level as Zimbabwe (0.248), India (0.243), China (0.240) and Mauritius (0.221) did improve slightly to 0.299 in 2000. It did not improve as fast as Thailand (0.386) and China (0.379) in 2000.



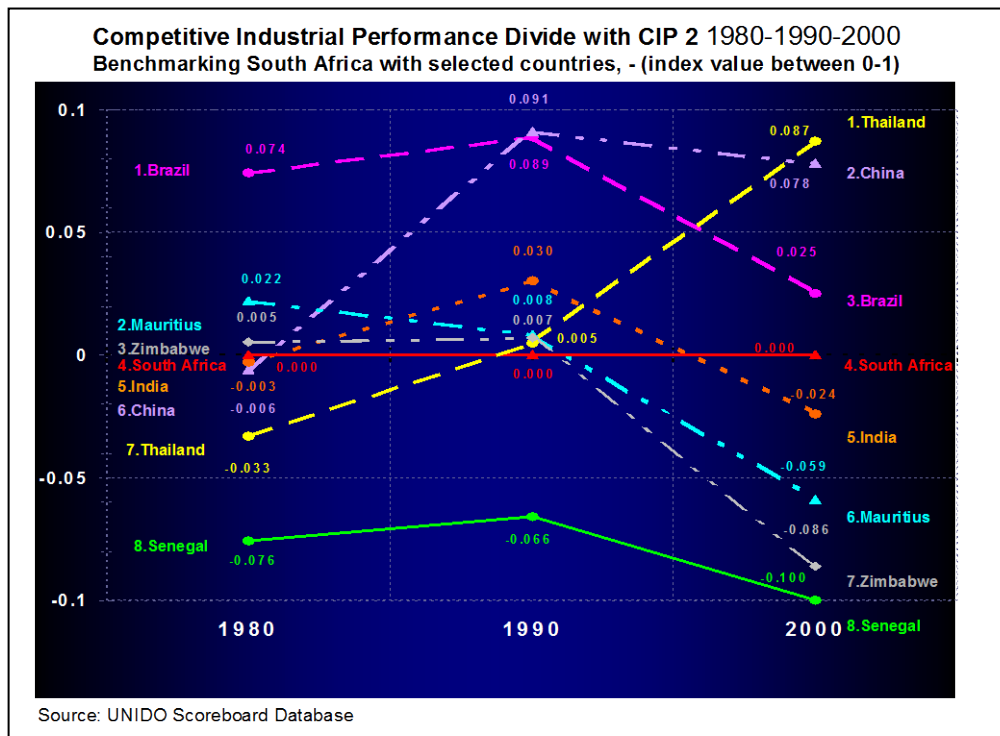


Graph 2 c: Industrial performance, 1980, 1990, 2000: South Africa Competitive Industrial Performance Divide:

The “*Competitive Industrial Performance Divide*” of the CIPI 2 between South Africa and selected countries is the difference over the years between South African CIPI and selected countries industrial performance.

Analysis the “*divide*” between the countries is a powerful policy tool especially in bilateral negotiations. In 1980, Thailand’s CIPD was negative (-0.033) as compared to South Africa. After 20 years of self-governing industrial development, the CIPD between Thailand and South Africa in 2000 is just reversed. It is now Thailand (+0.087) appeared as more “advanced” in terms of improving its industrial performance. Countries like Senegal saw their CIPD decreasing while other, who had the same path as South Africa like Zimbabwe experienced a real decline as of 1990. The “*catch-up*” process of China and Thailand are impressive.

More grounds for analysis could be found in exploring the component indices as well as benchmarking specific drivers between countries.



It is also suggested to use the CIPD as part of the NEPAD-led African Peers Review Mechanism and develop joint capability formation within and among African regions for private sector support institutions based on the “global” perception of countries competitive industrial performance.



With the integrated and segmented production systems growing in importance and in addition to usual physical/infrastructure, legal, institutional and conducive environment, it becomes fundamental to identify key “*driving force*” of industrial performance and competitiveness such as technological capabilities, transfer of and access to knowledge, absorption capabilities, foreign direct investment (FDI), etc. It was again acknowledged that the gap between industrialised countries (IC) and least industrialized countries (LIC) has widened as well as the gap between LIC and medium-industrialized countries.

Analysis of the UNIDO CIPI (1 & 2) indexes led to the conclusion that 42 developing countries did not change their technological and ability to improve their industrial capabilities between 1985 and 1998, which were the selected years of the UNIDO benchmarking analysis. Countries who were committed to industrial development and structure themselves (public and private sectors) to improve their industrial production through technology-intensive upgrading both products and institutions are also those who were classified among the most dynamic countries in terms of exports. It is therefore important for sound economic and industrial governance to ensure that there is no technology stagnation, nor institutional viscosity.

The governance of glocal (global and local) value chains should become an integrated part of the competition analysis of Governments. Governance patterns in the GVC²⁹ and Production networks as structured by “*flagship firms*” are not a fatality. Appropriate Government regulations and support-facilitating institutions might influence the dynamic of the networks in favour of social cohesion.

4. Focusing on Capability formation and benchmarking with specific drivers

4.1 Improving “*coo-petition*”³⁰ between central and periphery actors

There is no fatality in the fact that knowledge should be created in industrialized countries and diffused from industrialized to least industrialized countries. The experience of Japan, Korea, China and India in selected segments of the global production system is enlightening. It is possible to move from a per capita income of less than \$ US 100 in the 1950 and increase it by 100 times 40 years later. Large scale integrated companies “*chaebols*” of Korea with small and medium sized enterprises structured as periphery suppliers were used as the main driver of the dynamic process of Korea’s growth and industrialization. Special attention should be provided to the risk and damages caused by the extreme concentration of power in a few “*chaebols*”.

Nevertheless, the interesting part of the Korean “*chaebols*” experiences lies in the overall approach based on sectoral strategic “*road maps*” and the establishment of a dynamic process based on technology learning and capability formation. The main mistakes came from the lack of insight reading of the lack of industrial performance at the “*unit*” level of the group. Analysis based on segmentation and fragmentation of production unit may have led to a better understanding of the need to become agile in the process leading towards global production networks. Government of Korea was considered as a “*learning and capability formation*” facilitator and regulator. Other catch-up Asian countries such as Malaysia, Thailand did pursue this modern path with success. South Africa may consider this approach in the context of South African sustainable industrial development because Korea starts as an economy that went from being predominantly based on agriculture to a dominant player in the semiconductor industry.

²⁹ Gary Gereffi, John Humphrey, and Timothy Sturgeon, “The Governance of Global Value Chains”, forthcoming in *Review of International Political Economy*, available on since November 2003 on: <http://www.ids.ac.uk/globalvaluechains/publications/GVCframework.pdf>

³⁰ Coo-petition stands for “*cooperation*” and “*competition*”



Building on imitation and ending-up into innovation³¹ is still an interesting strategy for countries with no major flagships firms (Contract manufacturers or Brand Leaders) usually organized as the centre of a production or value chain networks. Starting as an “*industrial blips*”³² before becoming a competitive participant to the global production³³ networks through “*catch-up strategies*” has proven to be possible. The challenge for South Africa lies in the:

- Building of an awareness process with all stakeholders at the sectoral level on the new flexible form of industrial development through global value chain and production networks;
- Institutionalising industrial facilitator and regulatory mechanisms including at the Government levels (inter-ministerial levels in conjunction with organized representatives of the private sector and Trade-Unions and Knowledge centres)
- Providing incentives and support to private knowledge and technological centres of interest to specific segments of most proactive competitive industrial sectors in order to facilitate and boost the mechanism of knowledge transfer as a self-financed mechanism for the strengthening of individual learning and capability improvement for organizations.

Could South Africa bring its unemployment rate between 6-8% by 2015, milestone year of the Millennium Development Goals? Yes, if Productive capacities and capability formation are fully embedded in all interdependent strategic development policies of the countries. Capacity formation is finally about the real ability of a country and its human capital to upgrade on a sustainable basis. This supposes a strategic change in developing countries perception of industrial development. The new perception should take into consideration the systemic production networks system based on absorptive capabilities and knowledge diffusion (see table 4). The usual antagonism between global and local should be changed into “*glocal*” which highlights the new situation of moving out of dependency to interdependency³⁴. Cooperation and competition are no longer opposed in a value chain and network led system. One should use “*coopetition*” between central and periphery actors (firms or individuals). There is no way out in not analysing the new and recurrent changing profile of the segmentation and fragmentation of the global production system.

There are no networks which function on a Powerless basis. It is therefore fundamental for local industries candidate for industrial catch-up to keep in mind that Central networks companies identified as “*flagships*” companies (“*Contract manufacturers*” or “*brand leaders*”) may use their power not necessary only to ensure profitability of the network but also to secure their rent position. Empirical evidence emerging from existing firms’ strategies shows that firms active in a GPN are usually giving more priority to the promotion of vertical specialization whereas firms active in the GVC are assigning priority to the promotion of horizontal specialization. Most of the developing countries in Africa belong to the “*periphery*” companies.

South Africa will need to analyse at the sectoral level its industrial architecture in line with this new methodology in order to be in a position to suggest a fundamental change and transformation of the productive sector of the economy. The South African Productive Capacity Facility may

³¹ Linsu Kim, *Imitation to Innovation: the Dynamics of Korea’s Technology Learning*, Harvard Business School Press, 1997.

³² A situation or a process which is getting worse before getting better.

³³ *Global stands for “global” and “local”*

³⁴ Yves Ekoué Amaïzo, *From Dependency to Interdependency. Globalization and marginalization: any chance for Africa*, Publisher L’Harmattan, Paris, 1998, 432 pages (only available in French).



need to be funded as a mechanism to facilitate and support “*Productive capacities and Capability formation at the sectoral levels*”.

The strategic power relation between Central networks flagships firms as periphery firms are different depending on the type of relations: intra or inter-firm. The building of this strategic productive relational system depends, inter alia, on the control over capability formation, innovation, network transaction coordination, knowledge sharing and diffusion and cost benefit returns. Whatever position a local company might be identified with in the Co-opetition between Central network and Periphery companies, it cannot do “*business as usual*” without “*planning*” its future position in the production network system. The interdependency path with central network firms or any intermediate flagships (Contracting firms and Brand Leaders) should be acknowledged.

Inter-firms relations do favour more independent relations as intra-firms relations. But knowledge sharing and diffusion is definitively higher at the intra-firms level. Sectoral consensus on *co-opetitive* relations between focal flagships firms/suppliers and nodal networks suppliers as well as between higher-tier suppliers and lower-tier suppliers need to be negotiated on regular basis. In addition to the Government and the organized private sectors representatives, Trade Union representatives should be considered in this process as key actors, especially in South Africa.

The usual distinction between global and local or regional should gradually be metamorphosed into *glocal* production networks system approach. Organized actors needs to be identified at a very early stage in order to ensure that the overall objective of social enhancement and poverty reduction of the Millennium Development Goals is not bypassed. While planning for future sustainability of such partnerships structure, it is suggested that the local private sector take the lead in driving the process. In order to move from vision to concrete actions, two groups of outputs need to be clearly identified:

- Initiatives taken at the policy level to facilitate and regulate capability formation need to be based on Public Private Partnership actions at the industrial sectoral level;
- Support institutions -acting as facilitators and regulators taking into consideration the strategy of central and periphery networks approach which is based on the promotion of specific segments of the value chain- needs to be strengthened. It should not take place without institutionalised negotiations on Labour policies, productive capacity and promotion of capability formation take place.

A tentative overview of the holistic approach is presented below as the Capability Formation Matrix for developing countries, which may need to be integrated in any future negotiation with multilateral and bilateral donors, especially for Least developed countries (LDC) organizing their strategic programmes around the Poverty Reduction Strategy Papers (see table 4).



Table 4 - Capability formation in Developing countries:
Systemic Production Networks system based on absorptive capabilities and knowledge diffusion

Glocal production networks	Coo-petition between Central network and Periphery companies	Production Organizational structure based on:	Strategic Productive Relations based on:	Integrated versus Segmented/Fragmented Production system
<p>Global</p> <p style="text-align: center;">↑</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">+</p> <p>Local</p>	<p>1. Central Networks companies (Flagships companies structured in two main groups: 1. Contract manufacturers (CM) and 2. Brand Leaders (BL))</p> <p style="text-align: center;">Networking with</p> <p>2. Periphery Networks companies (flagships: Contract manufacturers, Brand Leaders, Suppliers)</p> <p style="text-align: center;">Structured into</p> <p>2.1 Secondary flagships CM, BL and suppliers</p> <p>2.2 Focal flagships (CM, BL, and suppliers),</p> <p>2.3 Nodal networks suppliers</p> <p style="text-align: center;">split into</p> <p>2.3.1 Higher-tier suppliers</p> <p>2.3.2 Lower-tier suppliers</p>	<p>Inter-firm: Contracts Manufacturers Outsourcing Suppliers Subcontractors Distribution and Marketing channels. Alliances Cooperative Agreements Joint Initiatives (on R&D, Knowledge sharing)</p> <p>Intra-firm: Subsidiaries, Affiliates, Joint ventures Outsourcing Rapid knowledge diffusion</p>	<p>Strategic power relations and control over:</p> <ol style="list-style-type: none"> 1. Capability formation 2. Innovation 3. Network Transaction coordination 4. Knowledge sharing 5. Cost benefit returns with differentiation between Central networks and Periphery flagships firms or Brand leaders and nodal networks suppliers <p>Institutional Facilitators:</p> <ol style="list-style-type: none"> 1. Support institutions; 2. Governments 	<p>GPN: Priority to the promotion of vertical specialization</p> <p>GVC: Priority to the promotion of horizontal specialization</p> <p style="text-align: center;">↑</p> <p style="text-align: center;">↓</p> <p>Local Production networks including clusters</p> <p>Local value chains</p> <p>Sectoral Actions Plans and Road Maps</p>
<p>Facilitation and regulatory initiatives at the policy level Public Private Partnership Actions</p>			<p>Support institutions and institutionalised negotiation process</p>	
<p>1. Taking advantage of global production networks and value chains systems for Developing countries with limited number of central networks firms supposes the establishment of policies and incentives for:</p> <ul style="list-style-type: none"> • Promoting Production Network participation • Upgrading of local absorption capabilities based on codified, explicit and tacit knowledge and technology diffusion • Strengthening of both the network competitiveness and the local industrial capabilities. • Establishing of national <i>Productive Capacity and Capability formation Initiative with special focus on sectoral and regional approaches</i> 			<ol style="list-style-type: none"> 1. Various systems of control at each level of the Central/Periphery production networks system with the objective of fulfilling of requirements on a competitive basis (mainly technical specifications, quality and product certification, on-time delivery, price requirements, overall reliability) 2. Special negotiated Labour policies complementing the capability formation process 	
<p>Suggested methodology to capture Capacity formation</p>				
<p>a. Using CIPI 1 and CIPI 2</p>			<p>a. Using CIPI 1 and CIPI 2</p>	
<p>b. Using specific component of CIPI 2:</p>			<p>b. Using specific CIPI 2 components indices</p>	
<p>Industrial capability: <i>Manufactured exports per capita</i></p>			<p>Industrial capability: <i>Manufactured exports per capita and Industrialisation intensity</i></p>	
<p>c. Using Drivers of CIPI 1</p>			<p>c. Suggested additional Drivers</p>	
<ol style="list-style-type: none"> 1. Skills 2. Technological effort 3. Inward FDI 4. Technology licensing 5. ICT infrastructure 			<ol style="list-style-type: none"> 1. Private sector development 2. Science and technological capabilities 3. Skills formation 4. Power and communication infrastructure 5. Non-debt generating resources 	
<p>Source: Inspired by the work of Ernst, D. and L. Kim (2002), "Global production networks, knowledge diffusion, and local capability formation: a conceptual framework", <i>Research Policy</i> 31, pp. 1417-1429.</p>				



4.2 Benchmarking South Africa's industrial performance with six component indices

Capturing the industrial capability formation is a real challenge for African countries, especially those who have slow done or postponed the upgrading to the International Standard for Industrial Classification Revision 3 the capturing of industrial statistical data due to structural adjustment considerations. Nevertheless, it is suggested to “capture capability formation” with the improved UNIDO CIPI 2 including selected component indices namely the *Manufactured Exports per capita* and the share of *Manufactured value added in GDP* in three selected years 1980, 1990 and 2000 as well as selected drivers, which need to be adapted to the country's priorities in terms of capability formation (see graphs 3 to 8 as well as examples of selected countries (Mauritius, Mexico, South Africa and Thailand in Annexe 10).

Out of six indices selected between 1980, 1990 and 2000 (see graphs 3 to 8), four South Africa performance indices dropped:

1. Industrial capacity: from 0.093 to 0.059;
2. Industrial capability: from 0.020 to 0.012;
3. Industrial intensity
Industrialization intensity A (industrial complexity): from 0.0735 to 0.582
Industrialization intensity B (CIPI 2)³⁵: from 0.477 to 0.474
4. Industrial Export Quality
Industrial Export Quality A (industrial upgrading): from 0.198 to 0.639
Industrial Export Quality B (CIPI 2): from 0.331 to 0.553.

Benchmarking with other countries enables the possibility to see the outcome of industrial policies and the achievements in two decades. The progress of Nigeria in Industrial capacity needs to be compared with the difficulty of South Africa. The need for South Africa to move from an economy structured mainly for 5 millions people to an economy for 40 millions people did have a direct impact on the component indice: “*MVA per capita*”.

The primarily criteria to benchmark capability formation appears to be the component indice “*Industrial capability*” based on manufactured exports per capita which indicate the ability of countries to produce goods competitively and implicitly to develop their capacity of absorption of evolving technologies and knowledge. One of the major constraint of this component indice is that it does not capture the local value added and may not give a full picture of the performance of local manufacturing capabilities, especially when one should benchmark different countries with different systems and market size. In addition to this component indice, it is recommended therefore to take into consideration another component indice, namely “*Industrialization intensity*”, especially the share of medium and high technology activities in total MVA (see graph 5) and the share of MVA in GDP (see graph 6). It needs to be complemented by drivers and sectoral analysis.

Nevertheless, in comparing Thailand and South Africa, component indice MHT/MVA of South Africa is higher than Thailand whereas component indice MVA/GDP that was similar between 1980 and 1990 changed between 1990 and 2000. Productive capacity became the leading agent of Thailand economy while for South Africa no significant changes take place. In addition to a voluntary commitment to industrial development, selected key prerequisites (captured by drivers)

³⁵ In UNIDO CIP 2, Only component indices 3.2 and 4.2 were improved and component indices 3.1 and 4.1 were “integrated into the improved component indices.

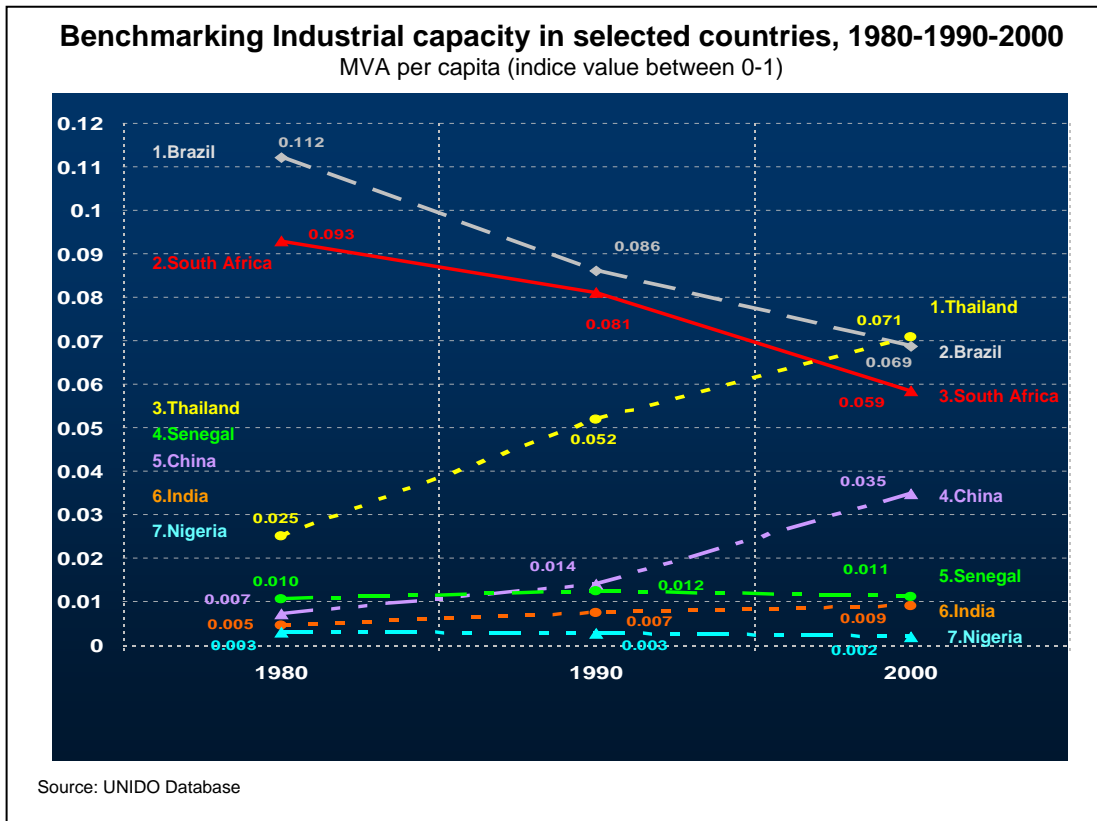


were in promoted in Thailand. It contributed the net improvement of this country (see also annexes 1 to 5, 7, 10).

With component indices *Export Quality*, one could see how South Africa, due to commercial “embargo” did not focus on improving its manufactured exports in total exports in 1980.

Although the situation improved in 2000, South Africa still lies behind most of the emerging countries. It is expected to see this situation improving in the forthcoming years.

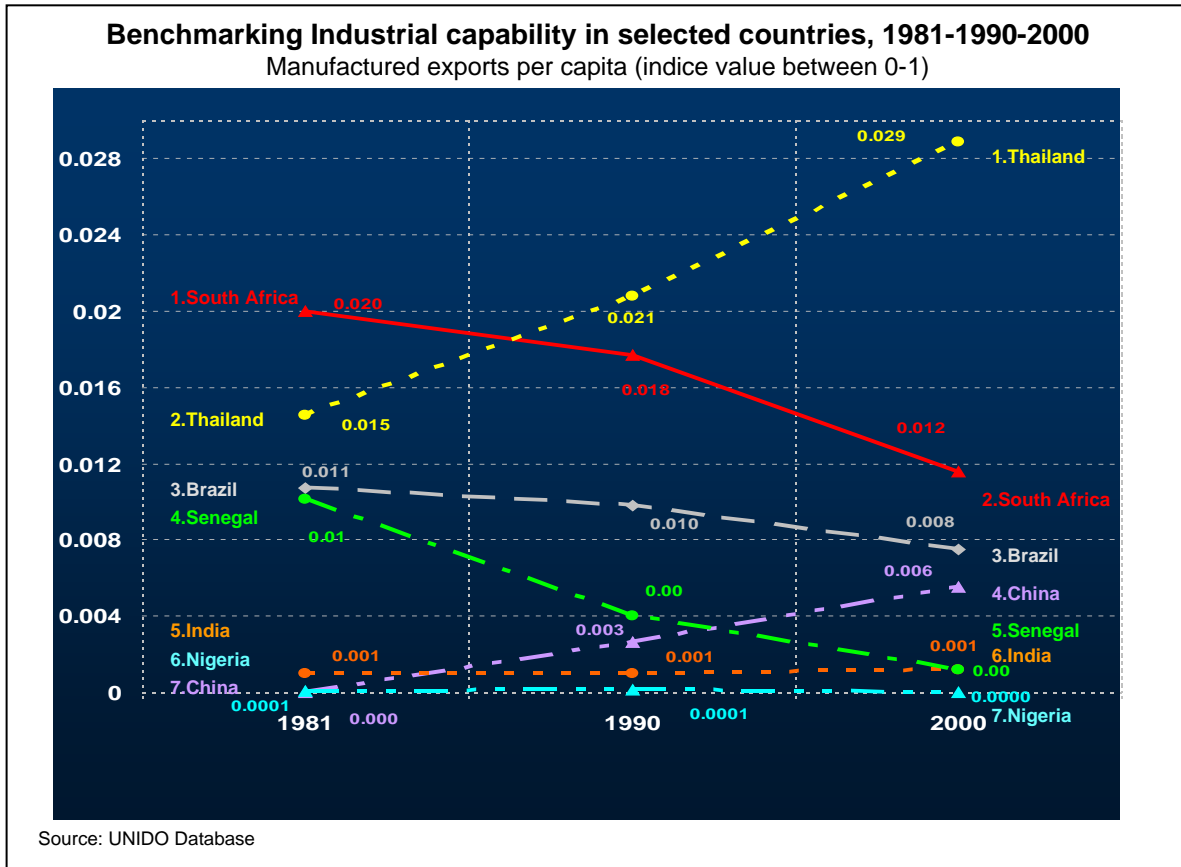
One of the main explanations of this improvement lies in the industrial policy and government commitment to support the industrial up-grading and complexity process by favouring conducive environment toward acquiring or producing with medium and high technology contents. As a consequence, the component indice “*Share of MHT in Manufactured Exports*” move up but still below the impressive path of Nigeria, which move up between 1981 and 2000 almost from 0.00 to 0.679, or Thailand from 0.132 to 0.687 while South Africa rose from 0.331 to 0.534 (see graph 3 as well as annexe 7).



Graph 3: Industrial capacity

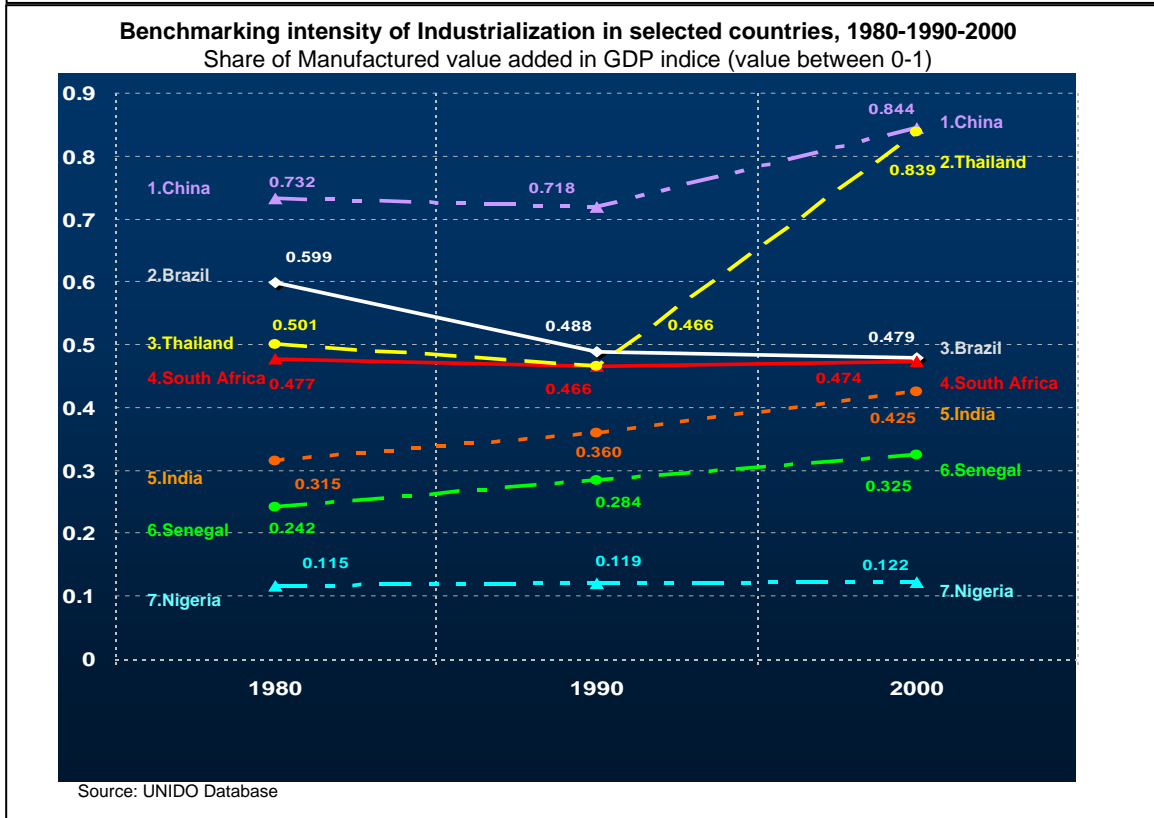
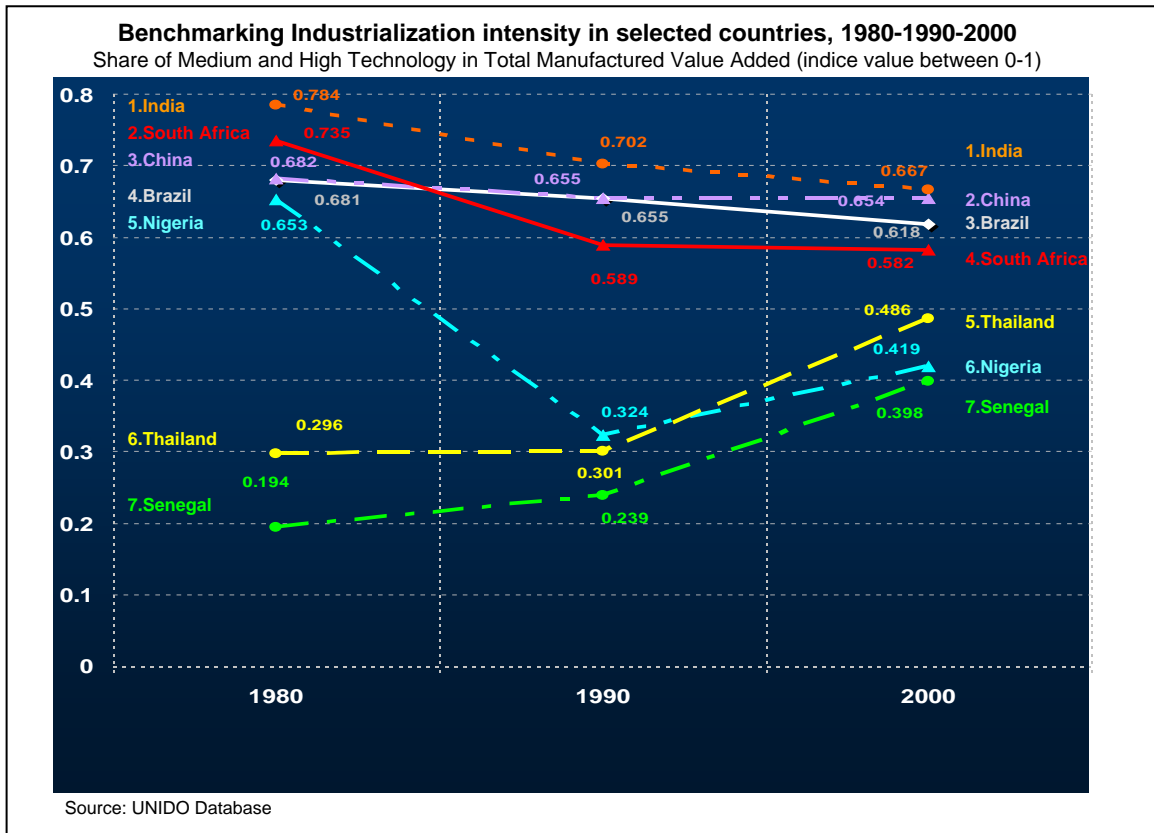


Graph 4: Industrial Capability, 1981-1990-2000



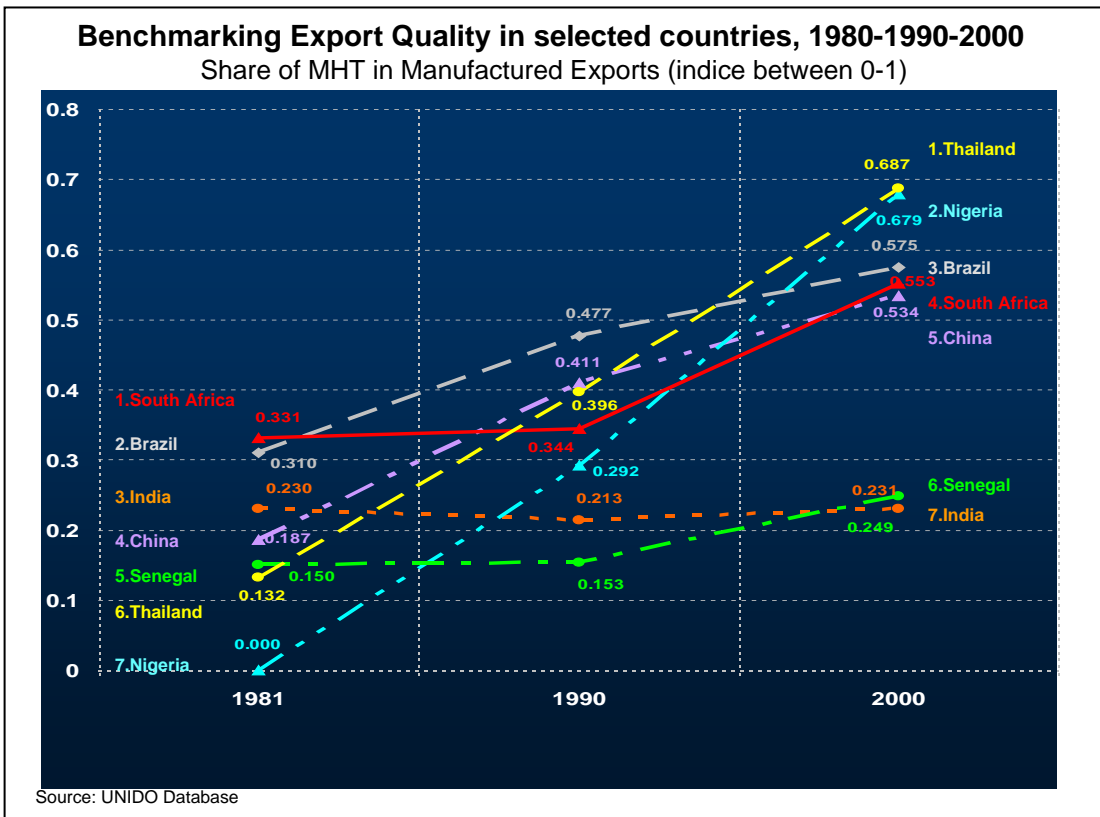
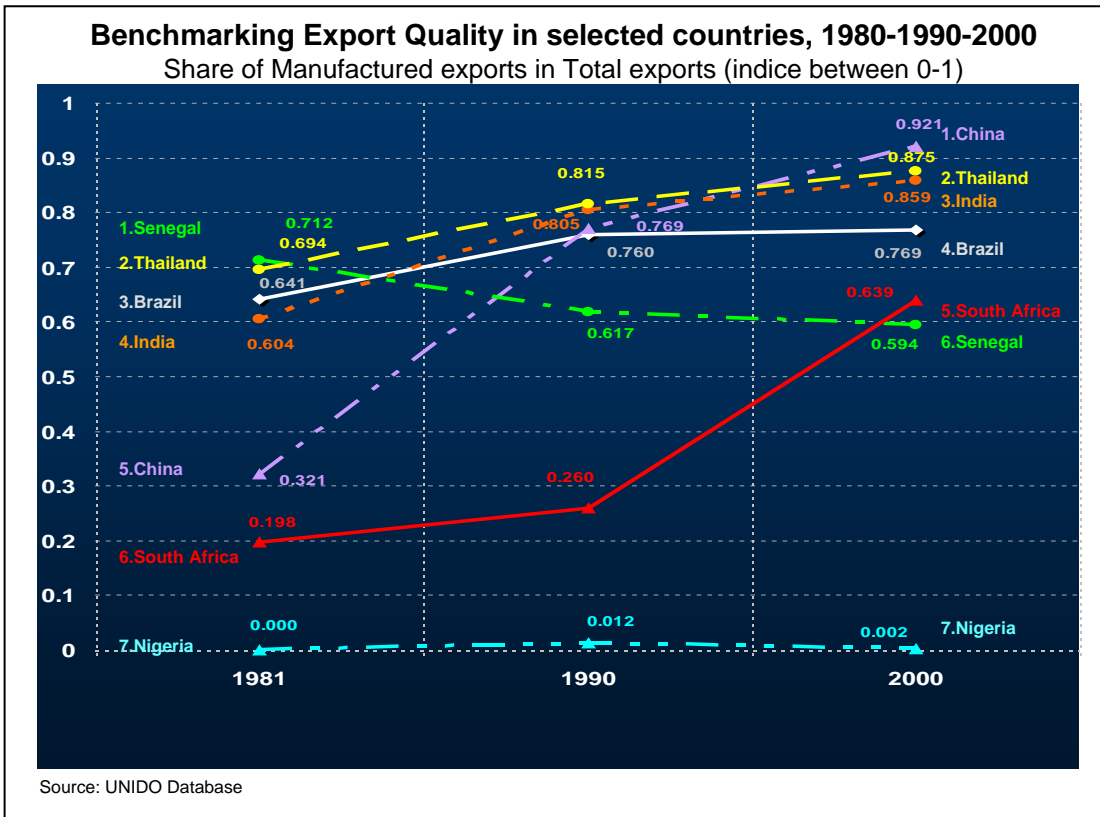


Graph 5 and 6: Industrialization intensity (A and B): MHT/MVA and MVA/GDP





Graphs 7 and 8: Industrial Export Quality





4.3 Selected Drivers analysis

In addition to the South African path on capability formation, it should be recalled that no fundamental changes took place in South Africa between 1981 and 2000 in the manufactured export performance expressed in world market shares of manufactured exports. South Africa will be benchmarked with China, Sub-Saharan Africa and East Asia and Latin America. With 0.4% in 1981 and in 2000, South Africa total share of manufactured exports stagnated and was below the Sub-Saharan Africa's export performance, respectively 0.7% and 0.6%.

East Asia and Latin America performed better during the two selected years, respectively: from 6.8% to 18.4% for East Asia with China moving from 1.0% to 6.5% and from 3.2% to 5.1 for Latin America. With respectively 1.8% to 1.6%, North Africa and Middle East countries followed the downward trend of sub-Saharan Africa. Significant increases in resources based (RB) Low-Medium and High technology contents (LT, MT, HT) explain the performance of East Asia whereas sub-Saharan Africa and South Africa stagnated in each of the categories except for resources based products (see table 5).

Table 5: World Market shares of Manufactured exports in selected regions and countries, 1981 and 2000
In %

Regions & Countries	1981					2000				
	Total	RB	LT	MT	HT	Total	RB	LT	MT	HT
East Asia	6.8	8.7	17.6	3.9	6.7	18.4	11.8	26.5	11.0	27.4
China	1.0	1.1	2.8	0.3	0.2	6.5	3.7	16.5	3.7	5.6
Latin Amer. & Car.	3.2	6.8	2.5	1.5	2.1	5.1	6.5	5.2	5.0	4.2
North Afr. & Mi. East	1.8	4.7	1.6	0.4	0.2	1.6	4.0	2.8	0.8	0.4
Sub-Saharan Africa	0.7	1.9	0.5	0.3	0.1	0.6	1.9	0.6	0.4	0.1
South Africa	0.4	0.9	0.4	0.2	0.1	0.4	0.9	0.3	0.4	0.1
Total Developing	13.1	22.5	24.2	6.2	9.2	26.8	25.6	38.8	17.5	32.3

Source: UNIDO Data base 2004 : Calculated from Comtrade Database

The overall UNIDO CIPI 2 indicated slight improvement of the industrial performance of South Africa between 1990 and 2000 as compared to the stagnation between 1980 and 1990 (see graph 2.1, 2.b and 2.c). With the component indices of 1980 and 2000, it appears that South African economy performed better than sub-Saharan African economies. South Africa improved significantly on its industrial capability, industrial technological upgrading as well as its industrial export quality. Difficulties arose in the industrial capacity as well as in the industrial complexity, which explained the unchanged position of the country in terms of progress on its industrialisation intensity. In comparison, Thailand improved its positions in all component indices, resulting in a CIPI 2 index, which increased almost by 50% between 1980 and 2000 (see annexe 10).

Comparisons between selected developing regions and industrialized countries (IC) highlight the Competitive industrial performance divide syndrome. But East Asia was able to move faster than IC on its industrial and technological upgrading in 2000 (see table 6). Future improvements should be considered as a clear sign that those selected East Asian countries are entering a terminal phase of industrial "catch-up" process. Thailand effectively reached the same level as IC in terms of industrial and technological upgrading and the indice for industrialisation intensity is close to those of the IC.



**Table 6: Component indices of the UNIDO Competitive Industrial Performance Index (CIPI 2)
 Benchmarking South Africa with selected world regions, 1980 and 2000**

Regions & Countries	Industrial capacity		Industrial Capability		Industrial complexity		Industrialisation Intensity		Industrial and technological up-grading		Industrial Export quality	
	MVA per capita, in \$		Manufactured Exports per capita, in \$		Share of MVA in GDP, in %		Share of MHT activities in MVA, in %		Share of Manufactures goods in total exports, in %		Share of MHT goods in Manufactured exports, in %	
	1980	2000	1980	2000	1980	2000	1980	2000	1980	2000	1980	2000
Industr. Countries	3,772	5,205	1,330	3,967	22.6	20.8	57.6	62.1	83.3	87.3	59.9	67.8
LAC	680	627	109	484	24.3	20.5	41.5	47.4	40.0	72.7	28.2	58.5
East Asia	107	462	60	489	25.3	34.7	41.9	58.0	57.8	90.8	37.5	63.2
Thailand	197	715	101	956	22.6	34.3	20.6	42.6	68.0	87.4	13.1	58.7
No. Afr. & M.East	247	376	97	212	9.5	16.0	28.6	37.9	11.2	35.3	10.4	24.4
Sub-Sah. Africa	87	70	25	48	14.1	12.5	43.4	41.2	17.2	37.4	17.5	28.6
South Africa	729	591	139	384	21.5	19.4	51.1	51.0	32.8	47.2	19.4	63.8

Source: UNIDO Scoreboard Database, 2004.

In the CIPI 1, five drivers of industrial performance were identified: skills, technological effort, inward FDI, technology licensing and ICT infrastructure. The challenge was to identify comparable quantitative data across a wide range of economies and to capture selected structural factors affecting industrial performance. The same approach will empirically be done for Capability formation.

It is suggested to benchmark South Africa and selected countries with drivers included in CIPI 1 and valid for CIPI 2, namely: 1. Skills, 2. Technological effort, 3. Inward FDI, 4. Technology licensing, 5. ICT infrastructure.

Taking advantage of existing statistics, it is suggested in addition to the above-mentioned drivers to concentrate on five extra group of drivers, namely: 1. Support to the Private sector development, 2. Science and technological capabilities, 3. Skills formation, 4. Power and communication infrastructure, 5. Non-debt generating resources (see graphs in Annexes 1 to 5 for selected items which could be adjusted to countries needs):

Most of the analysis based on the benchmarking of selected countries is self-explanatory with the graphs presented in the annexes 1 to 5³⁶.

4.3.1 Support to the Private sector development (see annexe 1):

1.1 Domestic credit to Private sector, 1990 and 2001

It was felt important in benchmarking capability formation to highlight the “commitment” of the country towards providing financial means to the private sector such as loans, purchases of non-equity securities, trade credits, other accounts receivable supported by a claim for repayment, and credit to public enterprises (in the process of being privatised). South Africa efforts are obvious: from 81% to 149% of GDP, better than China from 88% to 127% and Germany, from 89% to 121%. It would be interesting to distinguish between credits going specifically to support productive capacity and how much could be allocated to capacity formation structured in a “positive affirmative action policy”.

³⁶ It should be acknowledged that statistical constraints (availability or reliability) prevent us to benchmark different periods. Average years and whenever statistical data were available were adopted. Nevertheless, for some countries and on specific drivers, data were not available.



4.3.2 Science and technological capabilities (see annexe 2) with special attention to:

Scientists and engineers in R&D per million people, 1990-2000

4.3.2.2 Technician in R&D per million people, 1990–2001

Comparison between the two above drivers shows that South Africa has 992 scientists and engineers in R&D per million people between 1990-2000 while 1/3 are active as technicians in R&D (303 per million people between 1990-2001).

4.3.2.3 Science and technical journal/articles, in 1999

South Africa with 2,018 scientific and technical journal/articles published in 1999 represents almost 70% of sub-Saharan Africa publications, estimated at 3,612. South Africa, Korea with 2,319, Turkey with 2,761, have a similar path.

Expenditures for R&D, as percentage of GDP, average between 1989-2000

Data were not available for South Africa. Emerging or industrialized countries are at least spending 1% of their GDP to Science and Technology. It is recommended to increase it to 3% of GDP in South Africa.

4.3.2.5 High technology exports, in million of \$ US, 2001

4.3.2.6 High technology exports as percentage of manufactured exports, 2001

The export of High technology is an interesting driver of countries moving towards a “*knowledge driven economy*” out of an “*investment driven economy*”. With only 5% of manufactured exports in 2001, SA is above SSA, but at the same level as Senegal. Special needs to be done to reach the average level of emerging countries such as China with 20% or Thailand with 31% of High-technology exports as of % of manufactured exports. In parallel, Absolute figures shows that South Africa needs to build a “*catch-up strategy*” with reference to Brazil, Thailand, Korea and China.

4.3.2.7 Receipts and Payments of Royalty and Licence fees, in millions of \$ US, 2001

There is clear unbalance between Receipts and payments of royalty and licence fees in SA in 2001, US \$ 115 million versus US \$ 51 million which represented roughly half of SSA payments and 80% of SSA receipts. Emerging countries or industrialized countries have a clear industrial policy towards “*payments*”, acquiring knowledge. It should nevertheless be supported by a real absorption capability.

4.3.2.8 Resident and Non-Resident Patent Application filed, 2000³⁷

A patent provides protection for the invention (product, process, new technological solution to a problem) to the owner of the patent for a limited period, usually 20 years. As most of the developing countries, the substantial part of Patent applications filed is originating from Non-residents. The challenge for SA is to follow the Chinese path where Residents represented already 1/3 of the total Non-resident applications filed.

³⁷ Statistics are supposed here to capture the development of a knowledge market. Patents contribute to the diffusion of technology and knowledge providing that local absorption capability does exist.



4.3.2.11 Trade mark application filed, 2001

A trademark provides protection to the owner of the mark by ensuring the exclusive right to use it to identify goods and services or to authorize another or use it in return for payment. SA statistics were not available. India and Korea with impressive figures (respectively 66,378 and 110,073 trademark application filed) could serve as a model for SA.

4.3.3 Skills Formation (see annexe 3)

4.3.3.1 Expenditures on education, as percentage of total Government expenditures

4.3.3.2 Expenditures per student, as percentage of GDP per capita, 2000

SA with 25.8% of government expenditures in Education in 2000 is slightly above Thailand with 31%, Malaysia, 26.7%. Any additional efforts in ensuring that the 61% of GDP per capita which is earmarked to tertiary education be more selective and focused more on acquiring knowledge and technology in the productive capacity sectoral priorities for the Southern Africa subregion such as Processing of mineral and selected Agro-food products including Bio-products and reduction of Post harvest losses. The share of public expenditure per student in Senegal (244%) needs to be analysed with the objective to focus more on the needs of productive capacity entities. A better balance between Tertiary and Secondary might be needed.

4.3.4 Power and communications infrastructure (see annexe 4)

4.3.4.1 Electric power consumption per capita in kWh, 2000

SA's position in terms of consumption per capita (kWh) in 2000 is quite high. Unfortunately, the graph does not show the uneven distribution in the country. The challenge needs to be considered as part of the priorities of the crosscutting issues of the APCI.

4.3.4.2 Cost of an international call to the United States, US \$ per 3 minutes

4.3.4.3 Mobil phones per 1,000 people in selected countries

4.3.4.4 Internet Users in Thousand in selected countries

4.3.4.5 Personal Computers per 1000 people, 1998-2001

4.3.4.6 Expenditures on ICT per capita in 2001 in selected countries

4.3.4.7 Personal Computers in Education in selected countries, 2001

South Africa's telephone call costs are almost at the same level as in industrialized countries (0.33 in Germany or 0.59 in Australia).

It will contribute to increase the number of mobile phones per 1,000 people in the coming years as well as the number of Internet users.

S.A.'s number of Internet users, 3,068,000 in 2001 is slightly below Thailand, 3,536 but 8 times less than Korea, 24,380, 10 times less than Germany. This driver will become very important in the forthcoming years because of the fact that it contributes to the reduction of transaction costs and facilitates the diffusion of knowledge.

It supposes that the number of personal computers per 1000 people increased significantly in the forthcoming years. SA was in 2001 two times more "equipped" in PC per 1000 people than Thailand (28 per 1000 people).

S.A.'s expenditures per capita are equivalent to those of Brazil in 2001, and half of those of Korea but almost four times more than Thailand.

Linking the number of PCs and the PCs in Education, one should benchmark those drivers using different years and see the improvement. There is a direct correlation between the number of students having access to PCs in Education and the level of capability formation in a country.



4.3.5 Non-debt generating resources (see annexe 5)

Usually, on Foreign Direct Investment is considered as a driver. With the importance of private sector actors in development activities, it is more reliable to use at least two drivers: FDI as well as total resources flows, which are not generating debt.

4.3.5.1 Foreign Direct Investment, 1980, 1990, 2002

4.3.5.2 Resources flows, 1980, 1990, 2002

4.3.5.3 Private Resource flows, 1990, 1995, 2001

4.3.5.4 Public (Official net) Resource flows, 1990, 1995, and 2001

Due to the lack of reliable data in 1980, this year was not taken into consideration for South Africa. Nevertheless, it is important always to benchmark both FDI and Net resources flows in countries. These drivers are a real indication of the interest and confidence of the private sector investors in the country. Both FDI and Net resources flows is increasing steadily in SA. In comparison and using net resources flows, China, Brazil and Thailand have seen the confidence of investors in the country improving where as Nigeria “saws” the confidence of private actors approaching zero.

From another perspective, Nigeria supports its “development” with official net resources flows although in 2001, China is supporting his economy with both (public and private net resources flows). The latter appears as the ideal situation for upgrading of “capability formation” to take place rapidly.

Drivers are considered as a “proxy” to capture quantitative information and should be used extensively as part of a series of “collateral” indicators in support to component indices and CIPI.

5. NEPAD component on sustainable industrial development: the African Productive Capacity Initiative (APCI)

5.1 APCI as a mean to reduce Africa’s marginalization and created sustainable jobs

As a follow-up to the decision of the 57th General Assembly of the United Nations (Resolution A/57/L68) on the second Industrial Development Decade for Africa requesting the Donors to channel their financial support to industrial development through the New Partnership for Africa’s Development (NEPAD), the African Ministers of Industry, during various CAMI XV and CAMI XVI meetings (Conference of African Ministers of Industry since 29-30 October 2001, Yaoundé, Cameroon and reconfirmed in Abuja, Nigeria, 22-23 April 2004) decided collectively to:

- Concentrate on the improvement of the industrial performance at the sub-regional level and on the diversification of their productive capacities using Africa’s own natural resource base as input for the industrial transformation and up-grading process;
- Expand integration efforts and take advantage of existing support measures to access regional and global markets;
- Request UNIDO and United Nations sister organizations to cooperate with them to prepare a comprehensive framework of a programs to support Africa’s sustainable industrial development process as a mean to reduce poverty and create job in a clean environment;



- Ensure that the suggested comprehensive proposal, namely the Africa Productive Capacity Initiative (structured into five sub-regional initiatives), takes into consideration the objectives of the United Nations Millennium Development Goals, the NEPAD as well as the action plans or road maps of both the private sector communities and African civil society.

During the 10th General conference of UNIDO and through the resolutions GC.10/Res.3, the African Productive Capacity Initiative (APCI) was endorsed by the UNIDO Member-States (5 December 2003). These resolutions, *inter alia*, stated that UNIDO's operations in support of African industrialization should be organized within the framework of the New Partnership for Africa's Development in line with resolution 57/297³⁸ of the United Nations General Assembly (December 2002).

The decision of the UNIDO's Member States took into consideration the two resolutions adopted in this connection by the 16th Conference of the African Ministers of Industry (CAMI XVI, 28th November 2003) and also decided to “utilize” funds previously earmarked for the Industrial Development Decade for Africa (IDDA) and subsequently for UNIDO activities in the framework of NEPAD, to help launch the African Productive Capacity Facility, which should support Regional Economic Communities' initiatives related to the implementation of the APCI”.

The main outcome of the sub-regional meetings was the identification of sub-sectoral priorities and crosscutting issues for each sub-region and the importance of the dynamic value chain approaches in the implementation phases. An APCI framework was developed as a guide to move forward with organized representatives of the private sector, namely the African Business Round Table, in order to move from vision to concrete actions “*own both at regional and national level*” by sectoral stakeholders.

The African Productive Capacity Initiative is in the process to become the NEPAD industrial component and for joint activities with African Union, Regional economic communities (RECs), national public and private support institutions as well as United Nations Economic Commission for Africa (UNECA) and the UN Office of Special Adviser on Africa.

Furthermore, the African Productive Capacity Initiative should help to attract donors based on national commitments to support the flexible African Productive Capacity Facility (within UNIDO and outside UNIDO). This Flexible mechanism is in line with the Poverty Reduction Strategy Programmes' approaches.

It is important to recall the commitment of the African Ministers of Industry to move from *Vision to Action*³⁹. The latest proposed actions of the CAMI bureau chaired by the Honorable Minister of Industry of Nigeria are attached (annex 9) for information.

5.2 African Ministers Commitment to Development of Productive Capacity and Capabilities

³⁸ This resolution also decided to bring to a close the Second Industrial Development Decade for Africa and invited the international community, particularly the United Nations system, to support industrialization efforts in Africa within the framework of the NEPAD.

³⁹ Y. E. Amaizo, R. Atieno, D. McCormick, J. Onjala, *African Productive Capacity Initiative: From vision to action*, UNIDO Policy Papers, Vienna 2004. The 16th Conference of African Ministers of Industry adopted the APCI November 2003, in Vienna, Austria.



After several years or direct questioning of a “*state-centered development*” through structural adjustment programs, the return in terms of restructuring of African economies by privatizing public industries, reducing public services, reducing government budgets and eliminating restrictions on currency exchange and foreign investments and opening up to international trade did not favor a significant creation of jobs in Africa. Most of the loans received by African countries were not strategically focused on raising the productive capacity of the continent. As a result, most of the African States end up with important government budget deficit combined with a shrinking tax base. Because of various constraints, Governments favored short-term decisions process instead of long-term decision process. Measures such as taxes increase and sometimes inconsistency cost savings initiatives became usual practices of “*economic governance*”. Health, education and support to the private sector especially the industrial component were the most directly affected.

Several United Nations agencies acknowledged that structural adjustments programs focusing merely on macroeconomics aspects were not enough to support the dynamic on reversing the trend towards increased poverty. Direct support to dynamic sectors, including the informal sector, was often not considered as a priority. Failure to support more seriously the microeconomics components of a structural transformation of African economies is clearly acknowledged today. Besides, most of the structural adjustment reforms were not “*people-centered*”. As a result and instead of experiencing a high economic growth, numerous job creation, etc., ends up in Africa with an increased level of poverty as well as a worldwide inequality in acceding to jobs.

The role of transnational corporations and financial institutions in influencing economic activities and their ability to move, among other things, investment from one country to another, speculating on currencies and financial markets, pressing for further tax exemptions and insisting on deeper cuts in regulation etc. weaken most of the governments of least industrialized countries. Social programs and social advancement became a second-best priority. It is therefore not surprising that poverty alleviation became the cornerstone of all United Nations activities especially with the Millennium Development Goals.

It is assume that countries should target at least an average of 7 % of economic growth till 2015 in order to reduce by half, the extreme poverty. The correlation between on one side, the situation of large segments of the African population, which cannot maintain a minimum of standards of living including health and well-being and, on the other side, the lack of income and jobs became obvious. There is a direct causal relationship between the level of poverty and the level of employment. It is not possible to de-link industry and poverty alleviation. Income generation, in addition to being a direct outcome of employment creation in the productive sector, is part of the redistribution system promoted by small and medium enterprises, informal sector productive activities and self-employment.

However, it looks like a misunderstanding to think that economic growth alone with solve the poverty dilemma. Even the expansion of the productive sectors, if not properly prepared in a comprehensive strategy could produce unexpected results. It is suggested to rely on an up-to-date value chain approach taking into consideration the importance of the actors, the power relation, and the advantage to work in a network or cluster... Value chain should be considered from a systemic analysis taking into consideration the global production networks system. How Africa and its people could benefit from this new architecture of production network is the challenge, which should be addressed during the Conference.

The role of State interventionism and regulation needs therefore to be revisited. Support measures such as provision of land to the landless, minimum needs satisfaction programs for the rural poor, schemes to assist socially disadvantaged groups, programs to fully integrate and invest in women,



socio-economic programs for minorities, programs to develop drought prone and desert areas, health and education programs for the poor, improvement of infrastructure as part of the reduction of transaction costs, incentives for nascent endogenous productive entities including enterprises etc. are some of the numerous measures which will contribute to the success of a productive capacity initiative.

The role of industry thus clearly emerges:

- The healthy development of the productive sectors, in particular industry, will generate economic growth, and directly create incomes and jobs.
- A prosperous industrial network of productive capacity entities will generate resources. As a consequence, it should contribute to create additional resources for saving and investment. Measures of affirmative action for weak influential groups should also be identified as part of the overall architecture to help poor people/enterprises.
- The trend towards the acceptance by private sector industry of its corporate social responsibilities will enable industrial firms to finance and undertake many of the measures aimed at reducing poverty.

In addition to jobs creation, industries are increasingly moving towards establishing better working conditions such as developing education and human resource development programs; providing health care to workers and their families; providing schooling facilities to workers' children; recognizing the needs of both men and women and establishing economic and social welfare schemes required for their full participation.

These contributions toward social development are only possible if industries are prosperous and profitable and the redistribution system fairly implemented. Hence, it becomes obvious to create the necessary predictable and enabling environment for viable sustainable industrial growth. Promoting productive capacity, as part of the industrial component of the Millennium Development Goals, can help achieving competitive growth, social development as well as contribute substantially towards the generation of employment, the alleviation of poverty and the achievement of social integration.

Industrialization is therefore becoming the missing link. The term "*industrialization*", however, tends to have a broader connotation and embraces a wider spectrum of productive activities linked to and indeed sparked off by the manufacturing sector. These backward and forward inter-linkages are of crucial importance in understanding the direct impact of industrialization on social and structural changes. Of special interest in the process of industrial transformation is the dynamic relationship between agriculture, industry, trade and investment. Interdependencies need to be reintroduced in order to get full benefit from operational implementation of activities at the ground. As an example, agriculture and industry have a two-way relationship. While the outputs of the former sector become inputs of the second sector, there is a reverse stream with the outputs of industry serving as inputs to other main sector (commerce or agriculture).

The process of industrialization gives birth to the concept of an "*industrial and entrepreneurial culture*". Introducing performance, efficiency can only succeed if all concerned actors are requested to participate in the design as well as the implementation of the entire process which is less and less linear and more network oriented. Ownership and commitment to deploy resources to the best optimum possible level are fundamental in reaching productivity and foster the process of innovation, essential for up-grading, technological innovations. The overall participative approach should be considered as a "*highway*" to sustain value added and generate resources.



In the light of the above, it is not surprising that the African Ministers of Industry, collectively decided to launch an African Productive Capacity Initiative as the industrial component of the NEPAD. Most of the UNIDO's on-going activities such as the integrated programs and various initiatives related to support trade facilitation should be considered as an integrated part of the APCI. In order to facilitate social enhancement through industrial development, job creation and promotion of selected segments of the global and local value chains need to be promoted with the private sector representatives. For that reason, it is important to raise awareness of the African Heads of States on this crucial role of the African Productive Capacity Facility in support productive activities, which will impact positively on the private sector. Any additional blessing of the collective of the African Ministers of Industry by Heads of States is fundamental. It is important to recall the decision of the African Ministers of Industry.

The entire United Nations system as well as donors community should respond positively and support the APCF through the provision of seed money NEPAD industrial sub-regional activities, the establishment/ strengthening of industrial facilitators and regulatory mechanisms including concrete actions in cooperation with African regional institutions as well as technical expertise. The overall approach adopted was based on a bottom-up approach. Sub-regional meetings provided the opportunity to experts, high officials and Ministers in charge of industry to discuss and to come to a consensus on a common approach. It is expected now to get the support of other United Nations institutions as well as Development partners and the Private sector community in order to start implementing the APCI on a coherent manner.

It should be highlighted that the United Nations Economic and Social Council during its 44th session (7 June- 2 July) 2004⁴⁰ highlighted the role of UNIDO in providing support to NEPAD through the APCI which will become the industrial component of NEPAD.

5.3 Sectoral and cross-cutting priorities to be implemented at the regional levels

Regional CAMI meetings have selected particular sectors to be given priority. Most have identified two or three sectors, with certain sectors being chosen by several regions (see Table below).

Overall, eight sectors have been given priority by at least one sub-region⁴¹:

- a) Food processing
- b) Textiles and garments
- c) Leather and leather products
- d) Mineral products, including metals
- e) Wood and wood products
- f) Automobile equipment and assembly
- g) Pharmaceuticals
- h) Building materials

All or nearly all of the sub-regions have selected two of these: food processing and textiles. The remaining sectors appear in only one sub-region's priority list. The table shows both the sectors as named by the sub-regions and their official industrial classification (ISIC) number. In some

⁴⁰ United Nations Economic and Social Council: 44th session of the Committee for Programme and Coordination, 7 June-2 July 2004, Item 4 (b) on the NEPAD: *United Nations system support for the New partnership for Africa's Development*, Document E/AC.51/2004/6

⁴¹ See Y. E. Amaizo, R. Atieno, D. McCormick, J. Onjala, op.cit.



cases the named sector corresponds exactly to an ISIC grouping, while in others the ISIC grouping contains activities not included in the chosen sectors.

Table 6 bis: Regional Distribution of Sectoral Priorities in the APCI

ISIC Rev. 3	Sectors*	Eastern Africa	Central Africa	Western Africa	Northern Africa	Southern Africa
Food products, beverages and tobacco (ISIC 311/2/3/4)	Agro-food	x	x	x	x	x
Textiles and wearing apparel (ISIC 321/2)	Textile	x	x	x	x	***
Leather and footwear (ISIC 323/4)	Leather	x				
Wood and cork products (ISIC 331)	Wood		x			
Metallic and non-metallic mineral products (ISIC 281, 361/2/9)	Mineral					x
Transport equipment (ISIC 384)	Auto equipment and assembly				x	
Chemicals (ISIC 351/2)	Pharmaceuticals					x
	Building materials**				x	

Source: Conclusions of the Ministerial sessions of various Sub-regional CAMI Meetings, 2002 and 2003. For Southern Africa, choice is subject to confirmation at the CAMI meeting, which will be held in mid-November 2003.
 * The sectors are structured according to the International standard Industrial Classification (Revision 3) of All Economic Activities (ISIC). It should facilitate statistical comparisons among regions, countries and contribute to promote smoothly the peers review mechanism through benchmarking exercises. It should also be recalled that the segments of the value chains with comparative advantages are not necessary the same per regions.
 **Part of support provided by donors programmes
 *** Textiles and Wearing apparel is a priority for selected countries in SADC.

In addition, it was also clearly spell out that harmonisation of industrial strategies, policies and regulations be promoted as to promote private sector investment in the priority value chains. Crosscutting issues such as technology and knowledge diffusion, quality infrastructure, access to energy, ICT (information, communication and telecommunication) were qualified as priority areas to focus on in terms of regional programmes. There are crucial for value chains upgrading. Although these are matters for future planning, they are important to consider at a very early stage of the building of productive capacity initiative.

5.4 APCI on-going follow-up activities:

The CAMI Bureau, presently chaired by the Honorable Minister of industry of Nigeria, has suggested the following path:

1. The first component will focus on supporting RECs and the private sector to prepare sectoral Actions Plans and Road Maps (Green and White sectoral Papers) at national, regional and continental levels which should lead to comprehensive NEPAD/RECs regional industrial programmes with the objective to include them in the on-going countries and regional poverty reduction process as well as to facilitate Africa's negotiation on Trade, AGOA, European Union development initiatives (Everything but Arms, Cotonou Agreement) as well as forthcoming competition among developing countries such as China...
2. The second component will support selected technical cooperation activities in support to institutional and promotional arrangements together with the CAMI/NEPAD core group and concerned stakeholders
3. The third component will constitute focused on identifying financial support in line with decision taken during the Conference of Monterrey (2003) in order to facilitate the launch of pro-active regional programmes/projects in line with NEPAD/APCI priorities. The



flexible African Productive Capacity Facility will enable each supportive financial institution earmarked some resources to support the APCI.

It is expected at the end of the process to contribute to the objective of the United Nations Millennium Development Goals. South Africa would be most welcome to take the lead in this Africa challenge.

Conclusion: Promoting Capability formation in national Productive capacity initiative

The growing importance given to trade and investment over Productive capacity should be corrected if employment creation and economic growth are considered as crucial determinant of poverty reduction. Promoting exclusively trade performance⁴² and knowing the downward trend of terms of trade of most of non-processed goods may reinforce in the long run dependency on non-processed goods. According to the World Bank Commodity price index, Non-energy commodities prices⁴³ lost a significant share of their value due to drop in their terms of trade as compared with processed goods, based on the Manufactures Unit Value (MUV) index⁴⁴.

Based on an index value of 100 in 1990, between non-energy commodities prices plunged from index value 156 in 1970 to index value 86 in 2002 with a peak of 159 in 1980 whereas MUV index of five industrialized countries improved from 28 to 96 for the same period with a peak of 117 in 1995⁴⁵. Over dependency over non-processed goods, shrinking of Africa's share in world commodities exports, price volatility and recurrent decline in terms of purchasing power of manufactured imported goods may simply delay the chances of the continent to reach the Millennium Development Goals in 2015.

Alternative solutions supposed that a renewed and dynamic relation be found between Trade, Production, Investment and Employment. Level of prices between producers and final consumers should not favour only powerful participants to the value chain. Benefits of productivity improvements should more equally distributed at each level of the segment of the value chain. Progress made in transportation and ICT related transaction costs as well as the emergence of “*oligopolistic*” buyers have changed the linear simple value chain approach. The non-written understanding that least industrialized countries may need to continue with simple “*value chain*” approach while industrialized countries will perform in a “*production network*” system need to be revisited.

Nothing stops a country such as South Africa to take advantage from both interdependent systems especially if it is perceived as a “*glocal*” issue. Mastering capability formation as part of the structural transformation of the country should be considered as an integrated part of the BEE policy towards more equal distribution among stakeholders of the productive capacity system. A renewed commitment to support national, sub-regional and continental Productive Capacity Initiative, in addition to the establishment of appropriate Productive Capacity Facility mechanism

⁴² UNCTAD, *Economic Development in Africa: Trade Performance and Commodity Performance*, United Nations, Geneva, March 2004, UNCTAD/GDS/AFRICA/2003/1 under E.03.II.D.34

⁴³ The non-energy commodity price index contains 37 price series for 31 non-energy commodities.

⁴⁴ The Manufactures Unit Value (MUV) index is a composite index of prices for manufactured exports from the five major (G-5) industrial countries (France, Germany, Japan, the United Kingdom, and the United States) to low- and middle-income economies, valued in U.S. dollars. The index covers products in groups 5-8 of the Standard International Trade Classification (SITC) revision 1. To construct the MUV G-5 index, unit value indexes for each country are combined using weights determined by each country's export share; see also (<http://www.worldbank.org/prospects>).

⁴⁵ World Bank, *World Development Indicators, 2003*, see Primary Commodities Prices.



could mitigate the adverse effects of the low-level weight provided to sustainable industrial development as part of Government's overall strategy.

It is almost unworkable for a country to sustain its competitiveness without concentrating on Capability formation defined as a dynamic and systemic process of exchange of codified, explicit and tacit knowledge with special focus on technology diffusion and absorption capabilities for social enhancement in the global production network system. Monitoring appropriate scoreboards and drivers is a fundamental tool to estimate, benchmark, and take appropriate and corrective actions towards wealth and employment generations based on productive capacity.

There is a need to improve the capturing of quantitative data related to Capability formation. Any attempt to come to a consensus should also integrate statistics related to growth of labour productivity, growth of total factor productivity and the share of manufactured value added in total outputs per capita (see table 7). Unfortunately, South Africa data are not available from the main source we are using. Progress in capability formation could be identified in selected countries when on a sustainable basis *Growth of Labour productivity rate* is higher than *growth of Factor productivity rate*. Based on estimates from 2003 and 2004, Malaysia South Korea, Thailand and Algeria seem to be eligible. Additional benchmarking on selected drivers related to skills and labour might contribute to provide more insights on the reasons of this forecasted robust growth in selected countries (see table 7).

Growth of Labour Productivity	1999	2000	2001	2002	2003	2004	2005	2006	2008
Algeria	1.8	-0.3	-3.4	-0.1	2.8	1.3	4.2	2.0	1.4
Austria	1.6	2.6	0.3	1.1	-0.1	1.0	1.5	1.5	1.7
Brazil	0.5	0.5	0.5	1.1	-4.1	1.2	1.5	1.4	1.3
Egypt	3.0	1.4	0.5	0.1	1.2	1.4	1.4	2.0	3.0
Germany	0.8	1.1	0.4	0.8	1.0	1.3	0.8	0.8	1.1
Korea Rep.	7.5	4.0	1.8	4.1	3.2	5.8	4.0	3.3	3.2
Malaysia	3.1	3.5	-2.1	3.6	1.7	3.9	3.1	3.0	2.9
Nigeria	-1.3	1.2	1.4	0.6	1.6	0.9	0.6	1.5	1.0
South Africa*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Thailand	2.5	2.6	-0.4	2.2	4.4	4.1	3.2	2.1	1.8
Growth of Factor Productivity	1999	2000	2001	2002	2003	2004	2005	2006	2008
Algeria	1.8	0.0	-2.1	1.8	3.7	3.1	5.5	1.0	1.0
Austria	0.4	1.1	-1.3	-0.3	-0.8	0.4	0.8	0.9	0.7
Brazil	-0.8	0.5	-0.5	0.4	-3.3	0.0	0.7	1.1	1.1
Egypt	3.3	2.0	0.7	0.3	1.4	1.4	1.4	1.4	1.4
Germany	0.6	1.1	-0.1	0.8	0.8	1.0	0.8	0.7	0.8
Korea Rep.	6.3	3.6	0.6	2.4	1.7	2.0	2.6	2.5	2.5
Malaysia	2.9	3.4	-2.8	2.2	1.5	2.5	2.5	2.5	2.5
Nigeria	-3.0	-0.5	-0.3	-1.0	-1.2	-1.2	-0.8	-0.9	-1.0
South Africa	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Thailand	3.4	3.4	0.4	3.1	4.7	3.0	2.8	2.5	2.6

* Data not available or considered as not reliable.
 Source: EIU, Countries Forecast, May 2004

In addition to the UNIDO improved competitive industrial performance index (CIPI 2) as well as special component indices, additional specific drivers will need to be adjusted according to priorities based on outcomes of negotiation between stakeholders at both local and global levels. Based on a negotiated flexible objective, it is possible to take advantage of the existing global value chain and production networks system in terms of speed of knowledge converted in terms of quantity and quality into national productive actors (individuals, firms and support institutions).



Capability formation acquired through the local absorptive capacity and the strength of the converted technological and knowledge base determine the level of industrial complexity while the intensity of institutionalized facilitation and regulatory initiatives at the policy level speed-up the industrial upgrading processes. The UNIDO CIPI 2 component indice “*intensity of industrialization*” based on the share of medium and high technology component in the manufacturing value added could serve as a good starting point to pattern local conversion efforts leading to structural industrial transformation in a country (see graphs 5 and 6). It should be complemented with the analysis of CIPD (see graph 2c).

South Africa should use the forthcoming transition period (2004-2009) to depart from the usual strategy of Least industrialized countries to integrate global market which is largely based on the exploitation of labour cost differentials and the promotion of resource based or low technology contents products. A pro-active strategy and policy should endeavour taking advantage of global production networks and value chains systems through the improvement of capability formation. It could be facilitated with conducive policies and special facilitation and regulatory mechanisms in support to:

1. The promotion of participation in sectoral value chain and Production Network as a country industrial strategy and policy;
2. The upgrading of local absorption capabilities based on codified, explicit and tacit knowledge and technology diffusion
3. The strengthening of both the network competitiveness and the local industrial capabilities through Public-private partnership mechanism such as establishing various systems of control at each level of the Central/Periphery production networks system with the objective of fulfilling of requirements on a competitive basis (mainly technical specifications, quality and product certification, on-time delivery, price requirements, overall reliability);
4. The establishment of *National Productive Capacity and Capability formation Initiative* preceded by a “*Green/White Papers*” containing sectoral actions plans and Road Map on countries’ competitiveness strategy and policies and concrete actions;
5. Negotiated labour policies complementing the capability formation process;
6. Priority and incentives given to central and periphery firms committed to corporate social responsibility.
7. Establishing the flexible South African Productive Capacity Facility embedded in existing and new financial mechanisms.

One of the leading economic schools of thoughts classified among the “*Evolutionist theory*” considers technological progress and innovation as the key drivers of sustainable economic growth. Innovation is defined as a sophisticated and interactive learning and up-grading processes through which productive entities such as firms or support institutions exchange complementary technology and knowledge. It takes the form of a systemic multidimensional system leading to periodic upgrading of products, processes as well as flexibility in introducing functional and chain upgrading⁴⁶.

⁴⁶ Source: Following definition are extracted from: Raphaël Kaplinsky and Mike Morris, *A Handbook for Value Chain Research*, IDRC, see also <http://www.ids.ac.uk/ids/global/pdfs/VchNov01.pdf>

Process upgrading	Increasing the efficiency of internal processes such that these are significantly better than those of rivals, both within individual links in the chain (for example, increased inventory turns, lower scrap), and between the links in the chain (for example, more frequent, smaller and on-time deliveries)
Product upgrading	Introducing new products or improving old products faster than rivals. This involves changing new product development processes both within individual links in the value chain and in the relationship between different



It is crucial to acknowledge that “*non-technological innovation*” is important too. Issues such as organisational improvements, marketing, branding, social technology and knowledge, better integration of codified, explicit and tacit knowledge... are essential accompanied measures. Innovation should not be limited to large firms of high-technology driven companies.

Often, small and informal sectors productive capacity entities are at the origin of crucial innovative thinking leading to upgrading or knowledge conversion in support to capability formation. Networking, “*coo-petition*” as a mix of cooperation and competition should be encouraged because of its ability to mitigate risks associated with uncertainty and complexity of the industrial upgrading process. Microeconomic environment were often weakly supported as compared to macroeconomic environment. Capability formation does provide the opportunity to link and focus on a more proactive and productive initiatives between microeconomic and macroeconomic actors. Business performance should not be done at the expense of social enhancement⁴⁷.

A networking process of global and local production system accompanied changes in global business organization. Intra-firm and inter-firm production system developed worldwide. Unfortunately, in 2000, Developing countries’ parts and component exports were highly concentrated in a few countries, namely China with roughly 28%, Mexico 17%, Korea and Malaysia, 14%, Thailand, 5%. All other developing countries share was less than 8%⁴⁸. Benefits captured by local firms from the participation in the global production networks are not uneven distributed because central networks firms (mainly multinational companies) enjoy a monopsonist position and have a wide choice of production locations. A tight competition among periphery network companies (mainly suppliers) drives prices down. The paradox of this network participation could lead to a situation where local companies’ productivity and investment in industrial upgrading are de facto transferred to the central network firms and subsequently to powerful main periphery network companies. One should therefore be very careful while advising African countries, South African in particular, on the participation into the global production networks as a panacea for all countries.

According to UNCTAD, rising manufactured exports through networks may not be accompanied by increased value added in manufactures. It even possible that network participation may simply mean the continued use of unskilled labor in low value added activities rather than the development of the manufacturing sector⁴⁹. It is therefore crucial to work at the sectoral level and ensure that all supportive policies are geared towards networks that enable countries to move from low-value and low-technology content to medium and high technology and knowledge contents. The particular upgrading approach relies obviously more on the country’s ability to harness capability formation. Recently, China succeeded in upgrading from a provider of low-wage, assembly operations productive capacities to the leading producer of electronics across a

Functional upgrading	Increasing value added by changing the mix of activities conducted within the firm (for example, taking responsibility for, or outsourcing accounting, logistics and quality functions) or moving the locus of activities to different links in the value chain (for example from manufacturing to design)
Chain upgrading	Moving to a new value chain (for example, Taiwanese firms moved from the manufacture of transistor radios to calculators, to TVs, to computer monitors, to laptops and now to WAP phones)

⁴⁶ C. A. Margarinos, L. Yongtu and F.C. Sercovich, *China in the WTO. The Birth of a New Catching-Up Strategy*, Palgrave, Mc Millan, 2000.

⁴⁷ World Bank, *Global Economic Prospects and the Developing Countries*, 2003, op. cit., pp. 62-65.

⁴⁷ World Bank, *Global Economic Prospects and the Developing Countries*, 2003, op. cit., pp. 62-65.

⁴⁸ See UNCTAD, “Trade and Development Report 2002, Geneva.



wide range of industries⁵⁰. It is therefore not surprising to see China's component indice on intensity of industrialization (share of MVA in GDP) moving from 0.599 in 1980 to 0.844 in 2000 (see graphs 5 and 6).

Improving capability formation in countries such as South Africa needs to follow a path of negotiation process based on sectoral productive capacity initiatives led by the private sector but settled with Trade-Union actors and the Government acting as facilitator and regulator. Support of international specialized agencies should contribute to come out with a negotiated country's sustainable industrial Road Map, which should be embedded in the national Productive capacity initiative.

This paper should be considered as a modest contribution to the definition of South Africa's industrial policy⁵¹ during the transition period leading to the full opening of the South African market to international competition.

As part of the African renaissance policy, it could become for the continent new exploring avenues in support to a renewed commitment to productive capacity at the continental level.

The overall objective of this benchmarking approach is to help policy makers to structure their strategy and policies towards a collective goal: bringing the competitive divides between countries and within a country by 2015 to a more acceptable level taking into consideration local and cultural considerations.

⁵⁰ Michael Borrus, Dieter Ernst and Stephan Haggard, eds., *International Production Networks in Asia*, Routledge, London, 2000.

⁵¹ Lluís Navarro, *Industrial policy in the economic literature. Recent theoretical developments and implications for European Union policy*, Enterprise Papers, n. 12, 2003, Enterprise Directorate-General, European Commission, 21 p.



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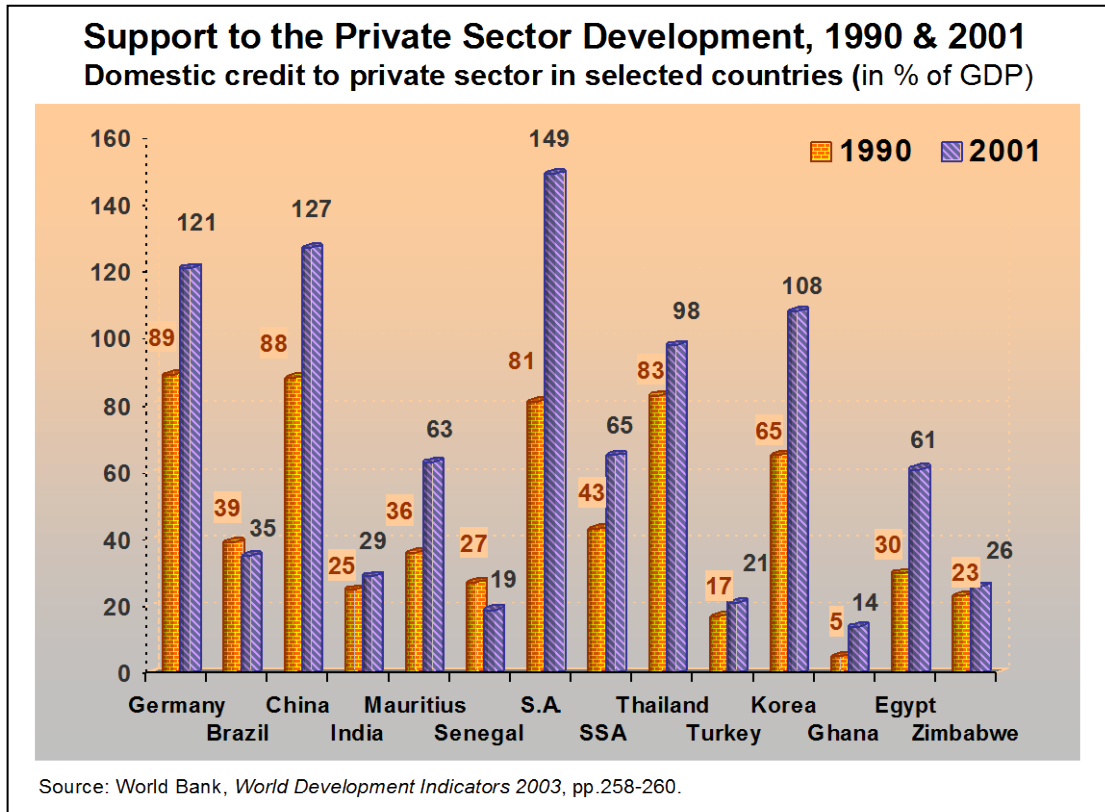
⁵² All statistics figures are extracted from World Bank, *World Development Indicators 2003* and World Bank, *Global Development Finance, 2003* or from the UNIDO Scoreboard Database, 2004.





Annexe 1. Drivers on the Support to the Private sector development

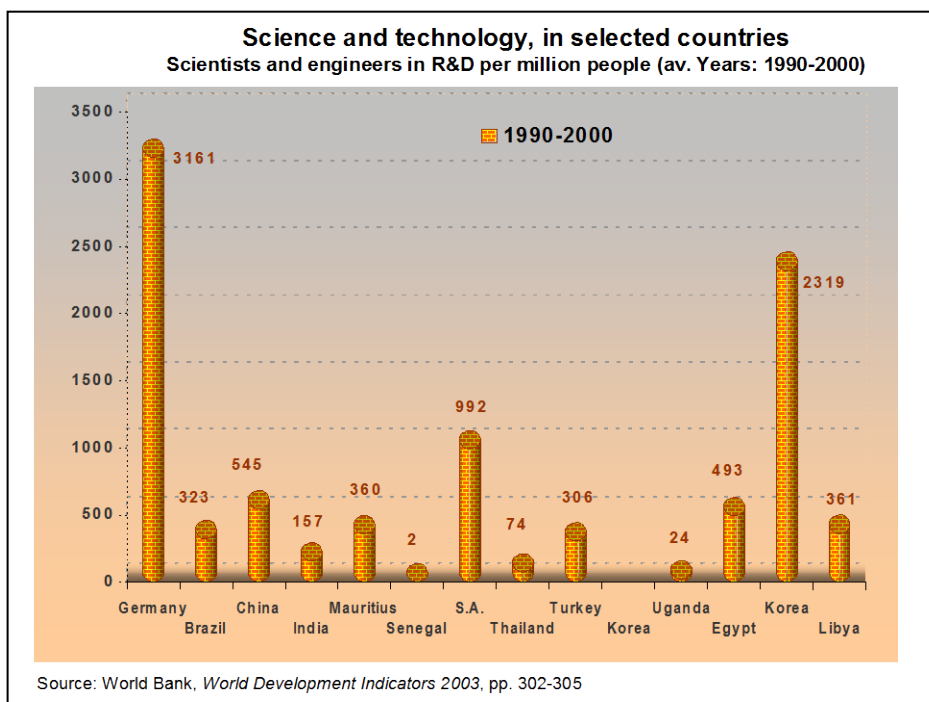
1.1 Domestic credit to Private sector, 1990 and 2001



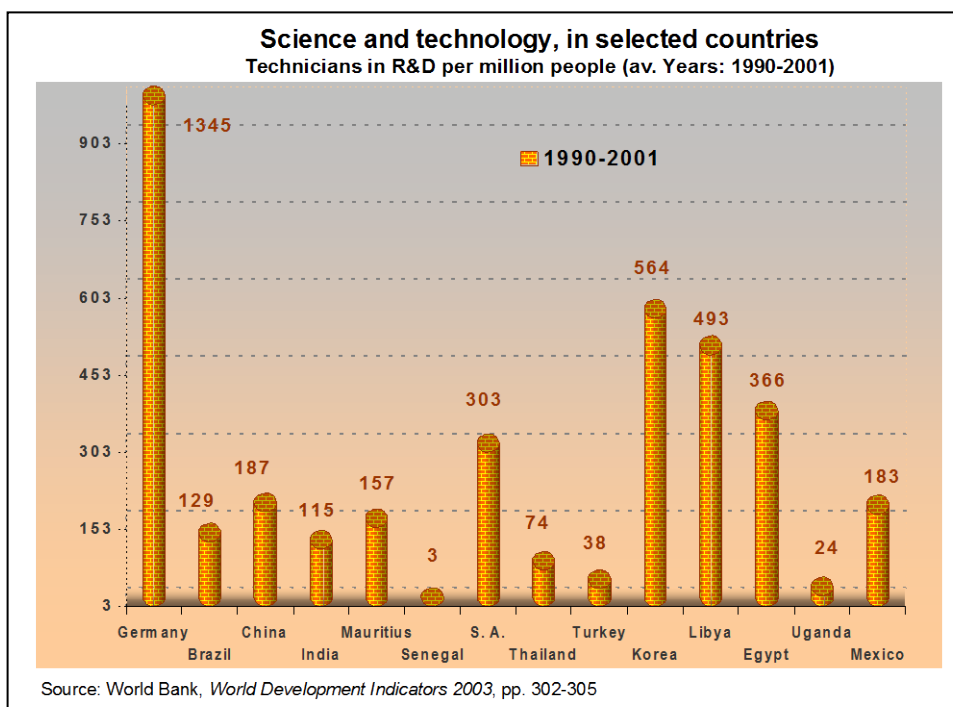


Annexe 2. Drivers on Science and technological capabilities

2.1 Scientists and engineers in R&D per million people, (average years between 1990-2000)

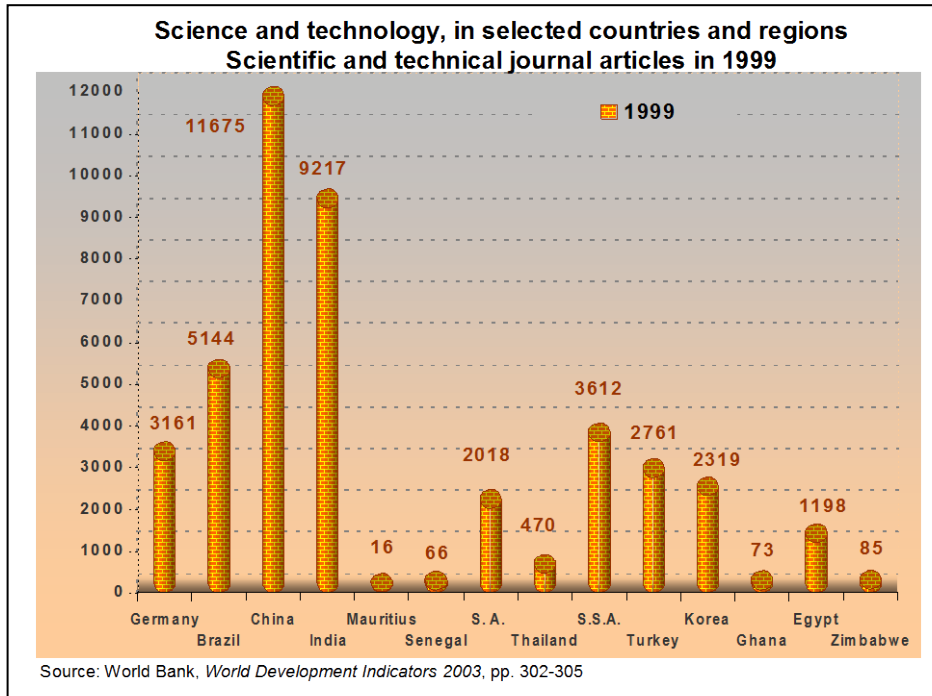


2.2 Technicians in R&D per million people, (1990–2001)

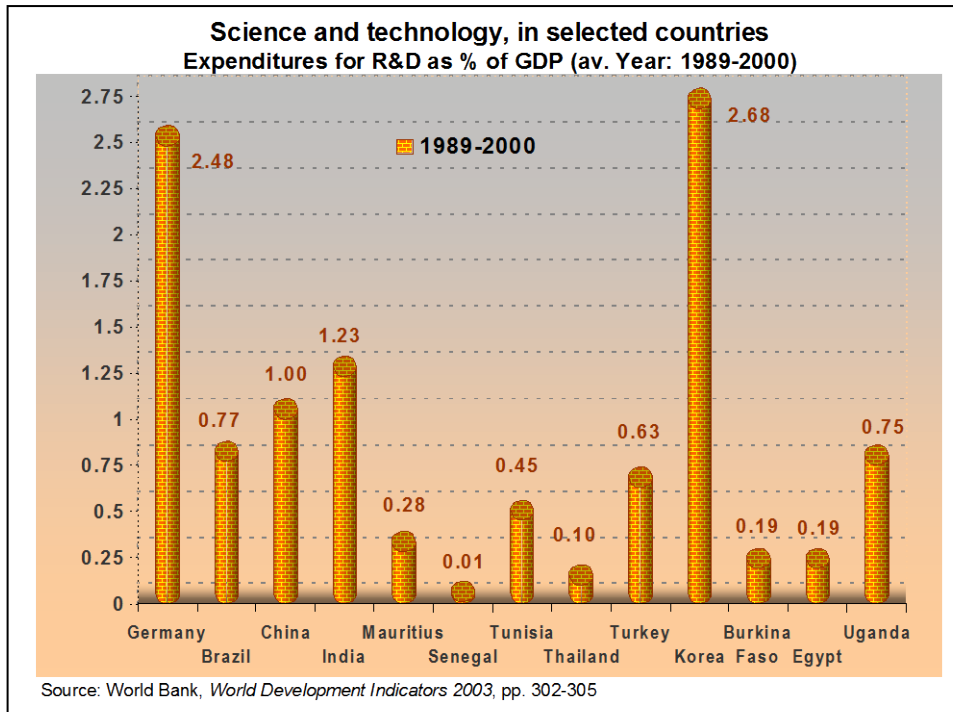




2.3 Science and technical journal articles, in 1999

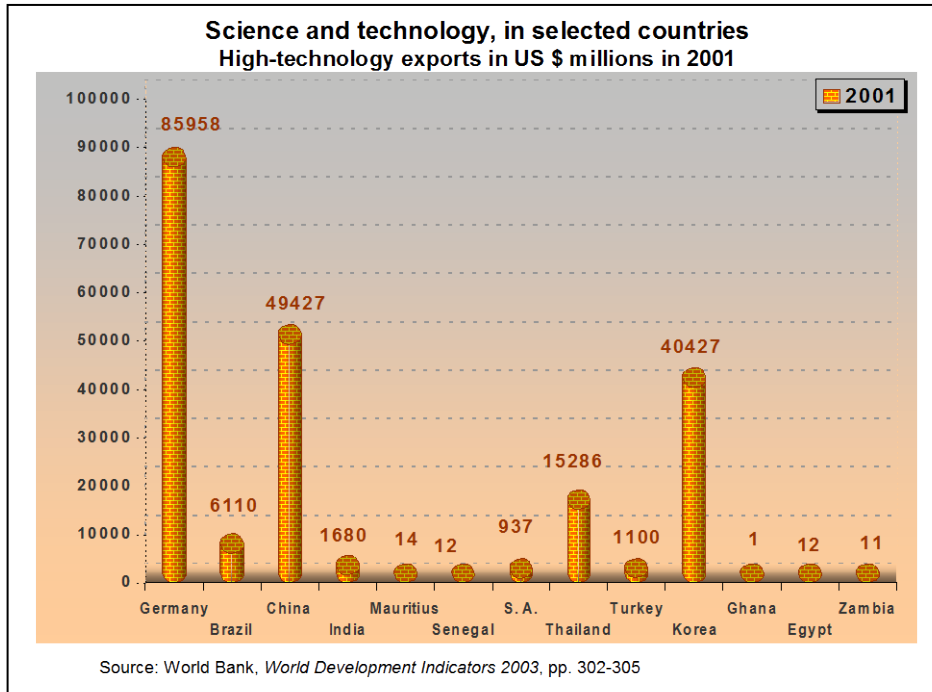


2.4 Expenditures for R&D, as percentage of GDP, (average 1989-2000)

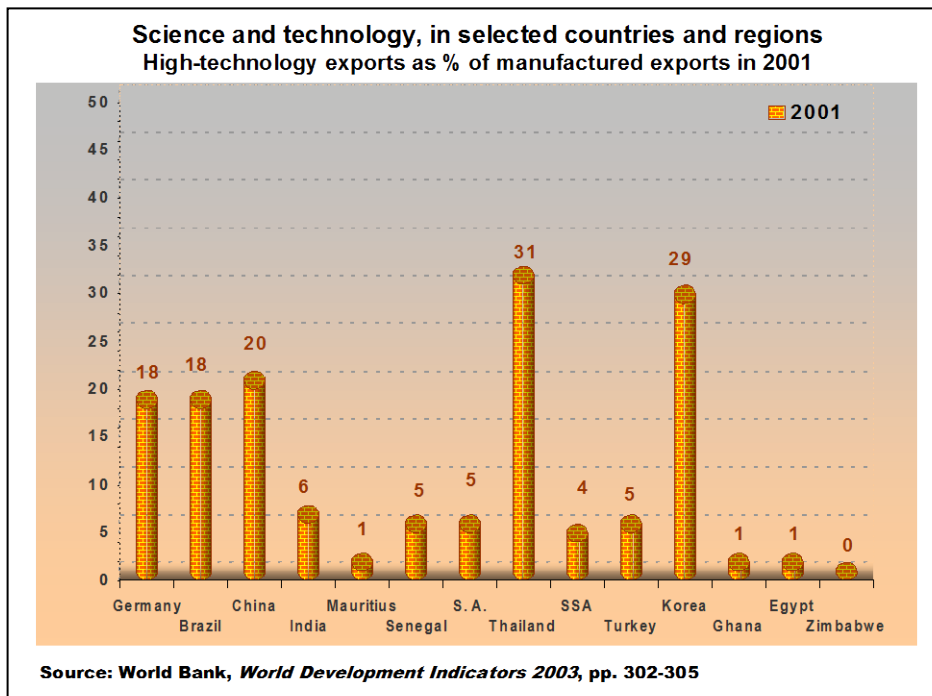




2.5 High technology exports, in million of \$ US, 2001

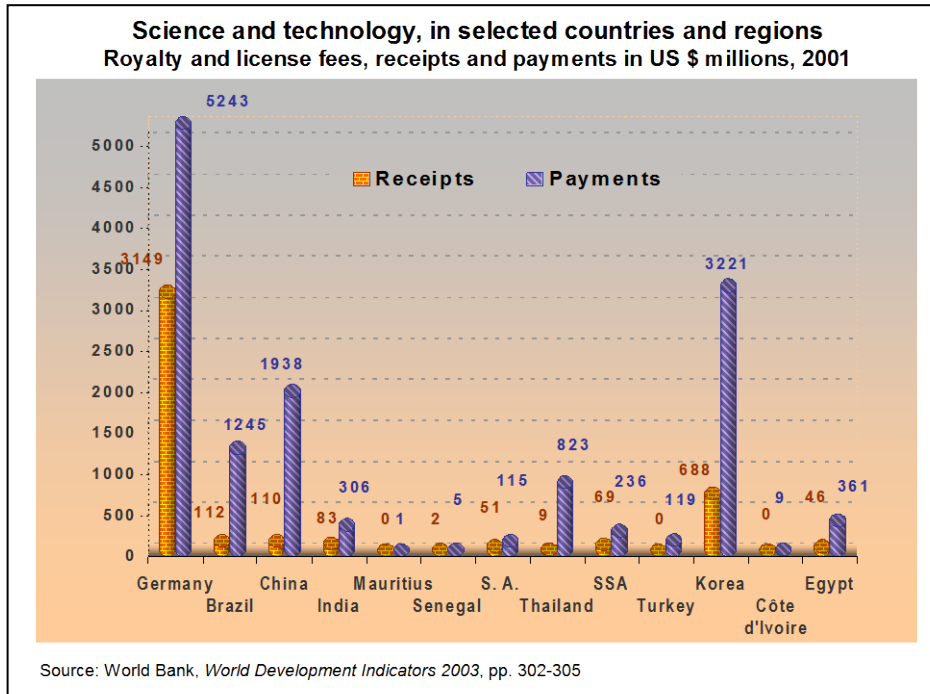


2.6 High technology exports as percentage of manufactured exports, 2001

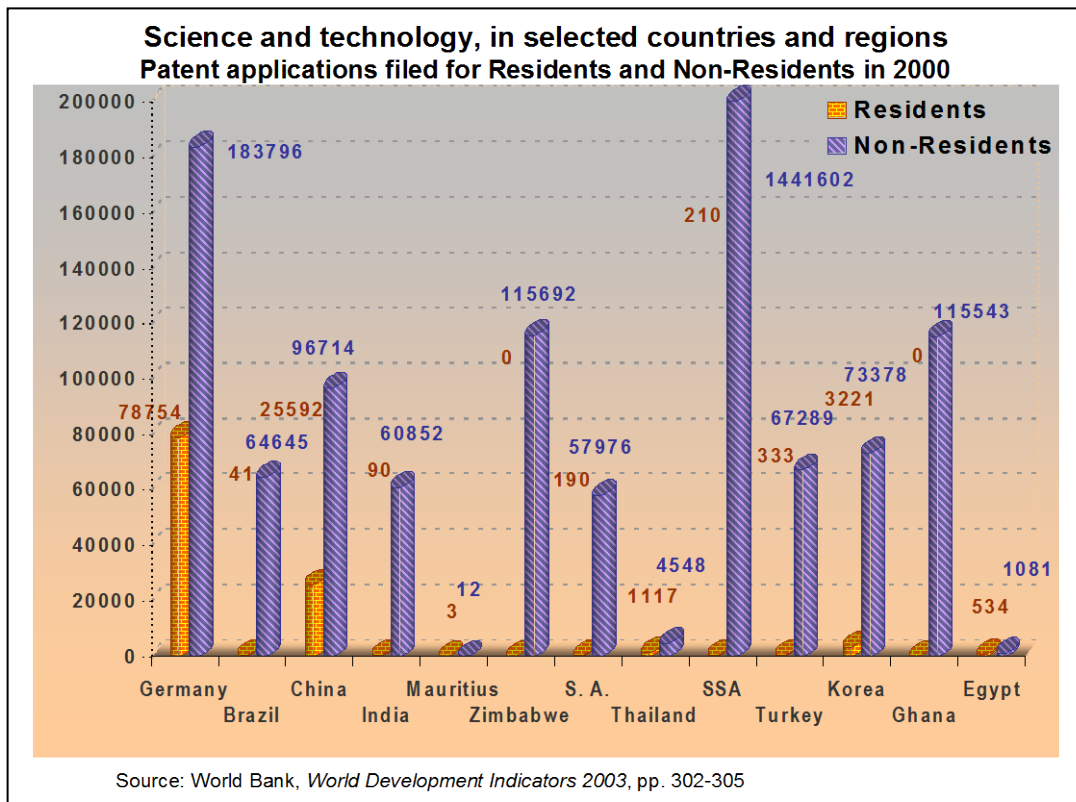




2.7 Receipts of Royalty and Licence fees, Receipts and Payments, in millions of \$ US, 2001

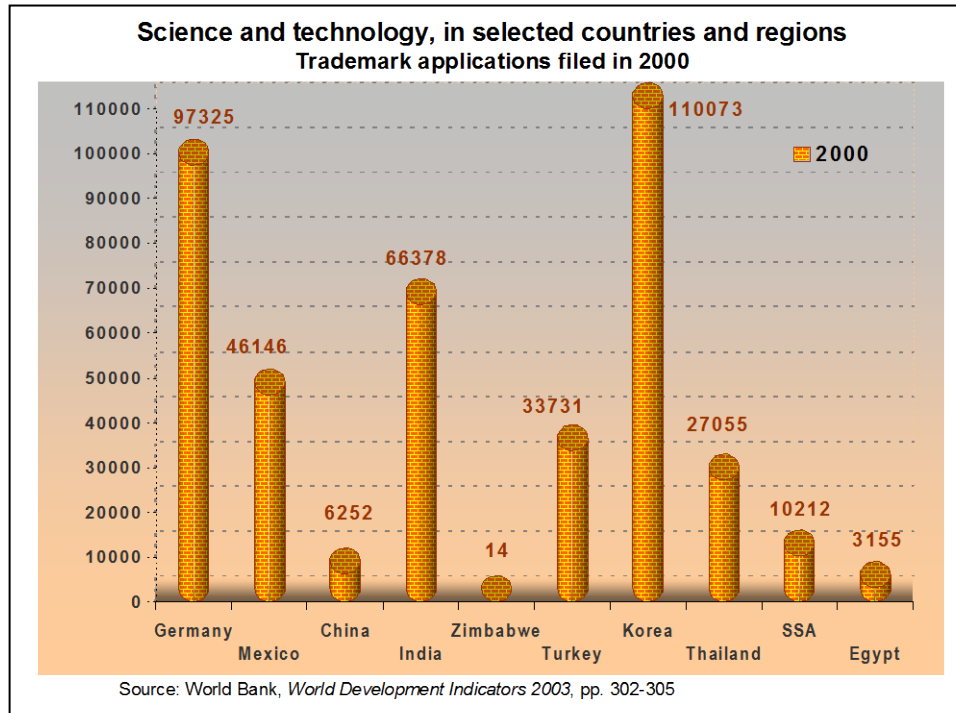


2.8 Patent Application filed: Residents and Non-Resident, 2000





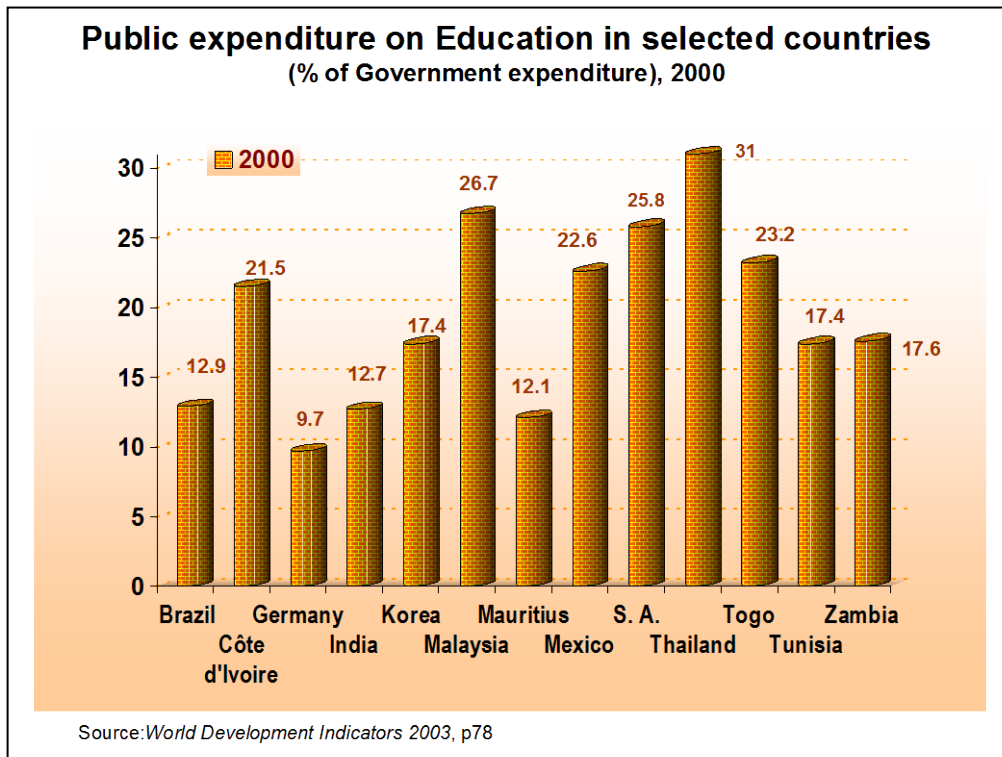
2.9 Trade mark application filed, 2000



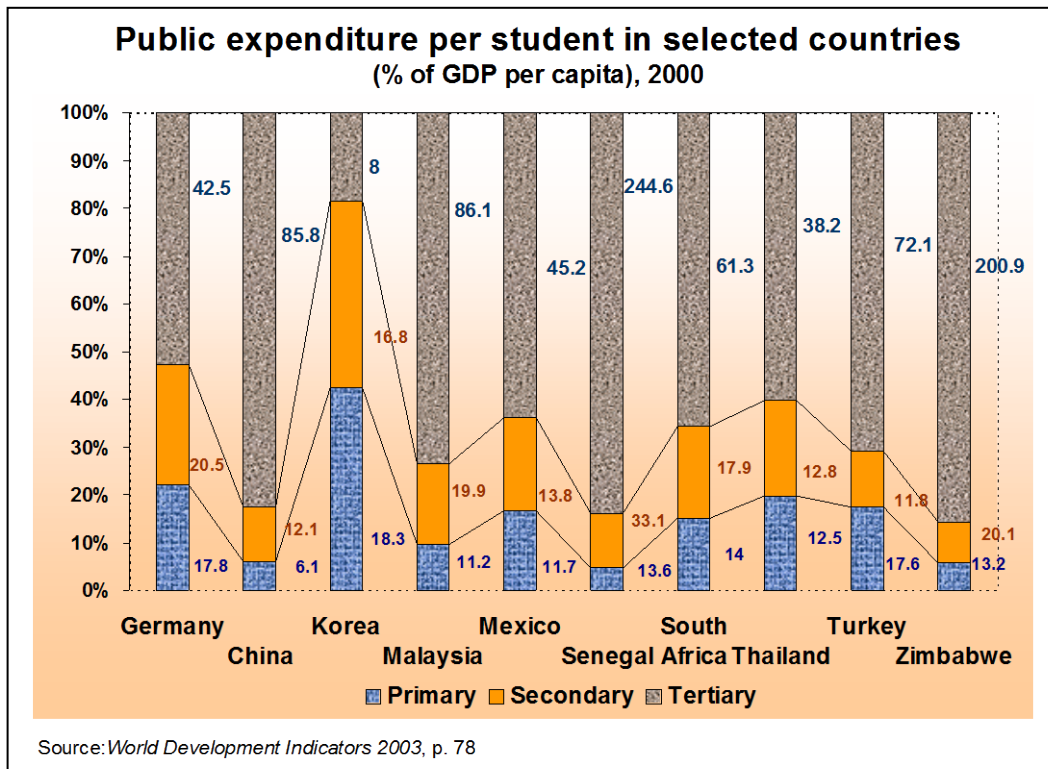
Annexe 3. Drivers on Skills Formation



3.1 Expenditures on Education, as % of total Government expenditures, 2000



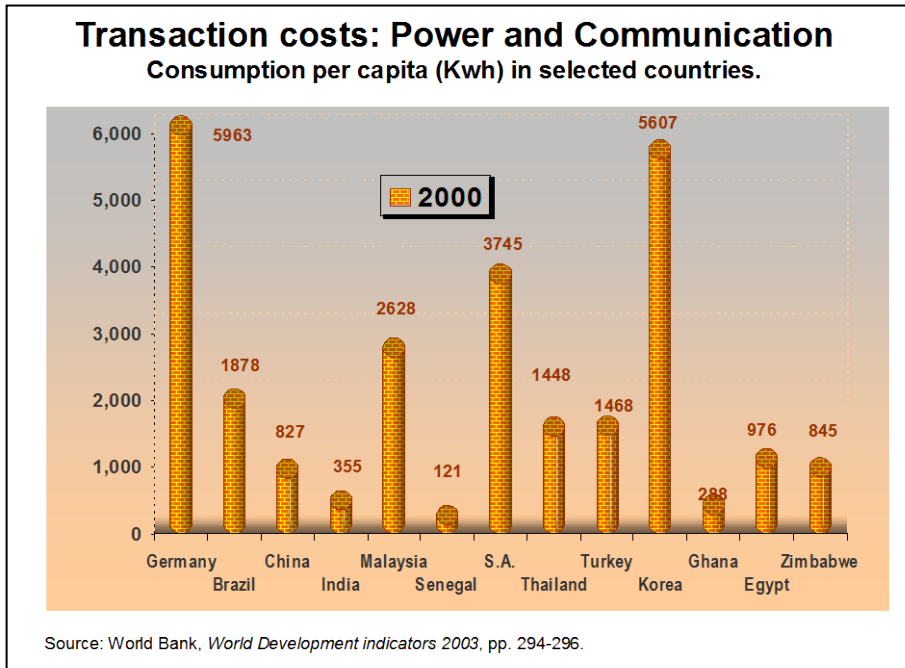
Expenditures per student, as % of GDP per capita for selected countries in 2000



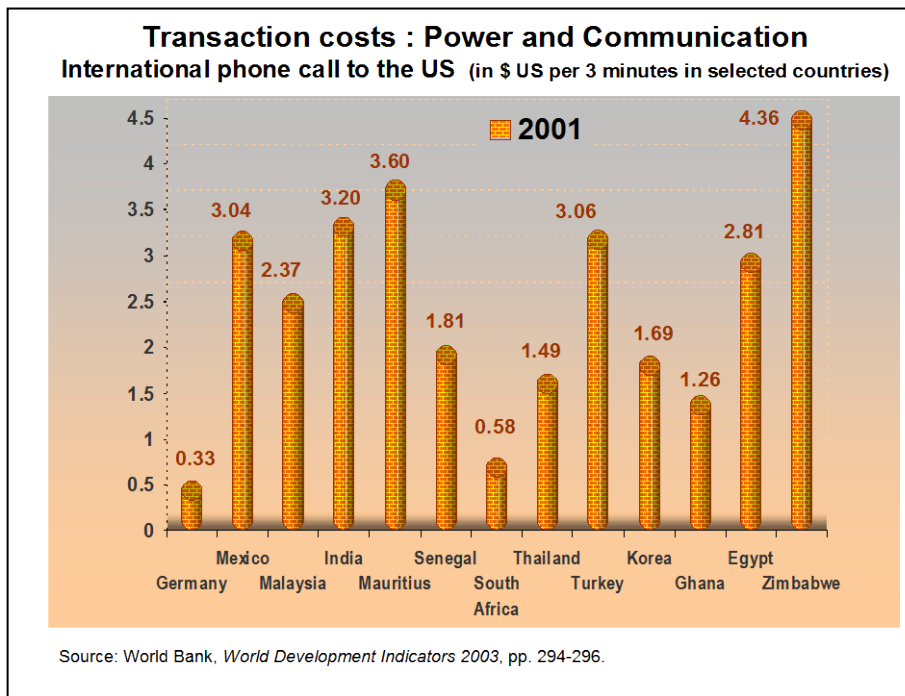


Annexe 4. Drivers on Power and communications infrastructure

4.1 Electric power consumption per capita in kwh, 2000

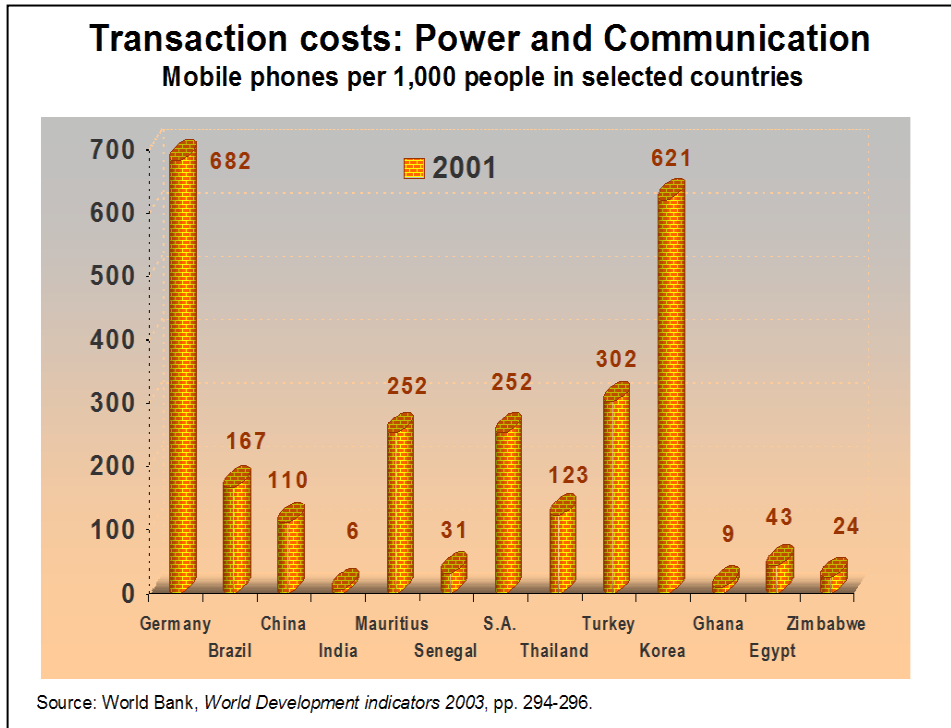


4.2 Cost of a call to the United States, 2001, in US \$ per 3 minutes

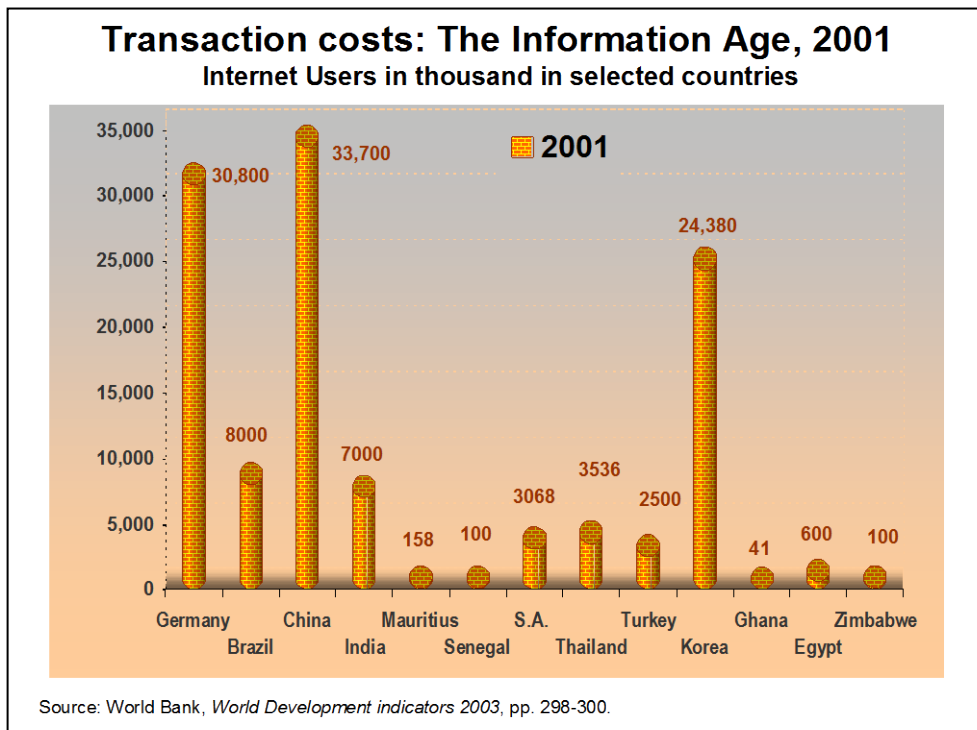




4.3 Mobile phones per 1,000 people, 2001

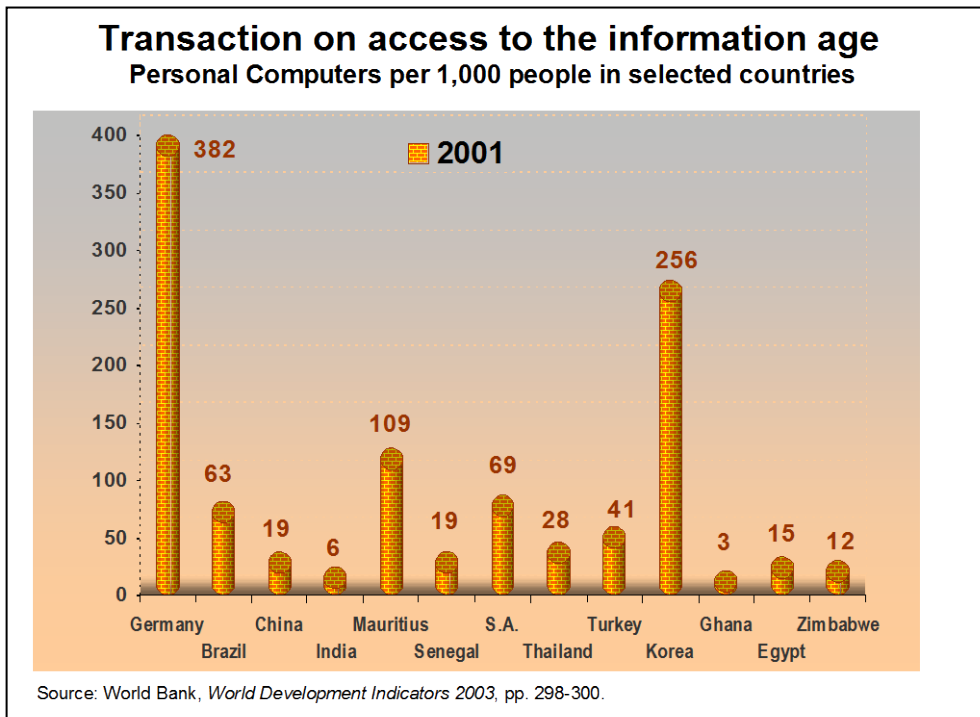


4.4 Internet users in (000) in selected countries, 2001

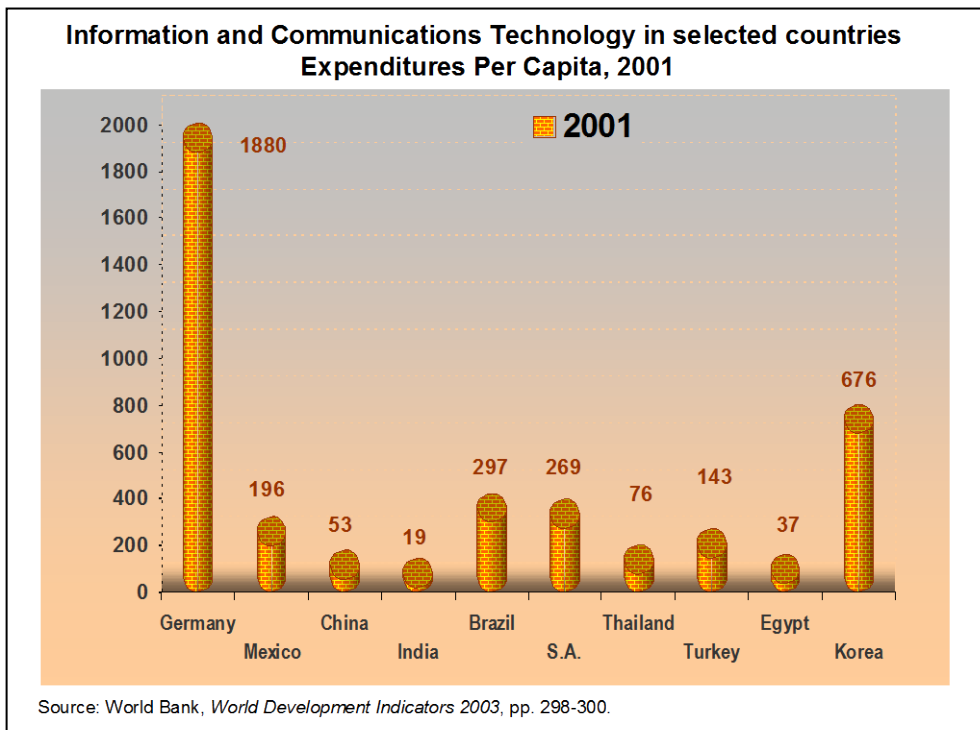




4.5 Personal Computers per 1000 people, 2001

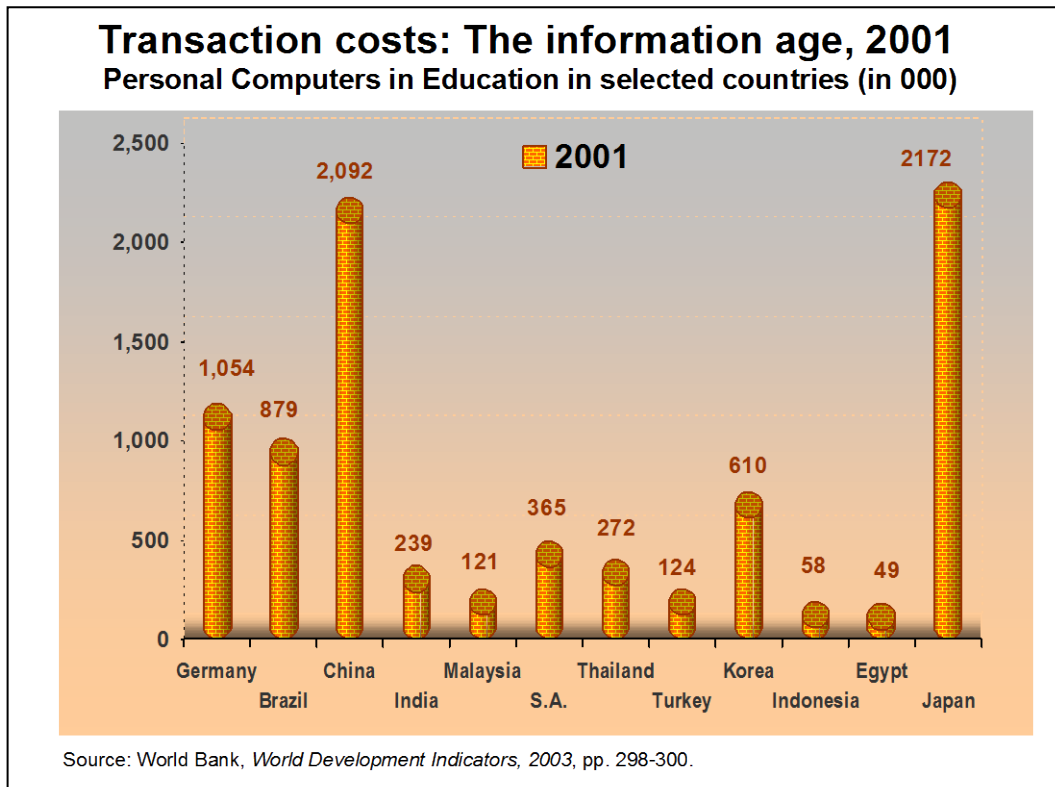


4.6 Expenditures on Information Communications Technology per Capita, in 2001





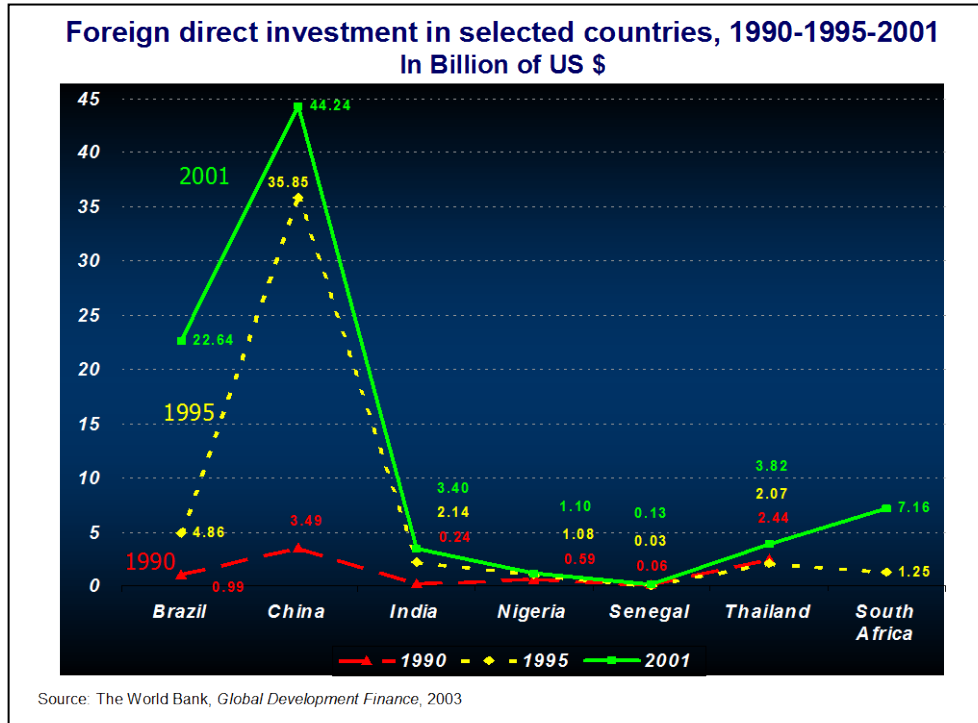
4.7 Personal Computers in Education, in 2001



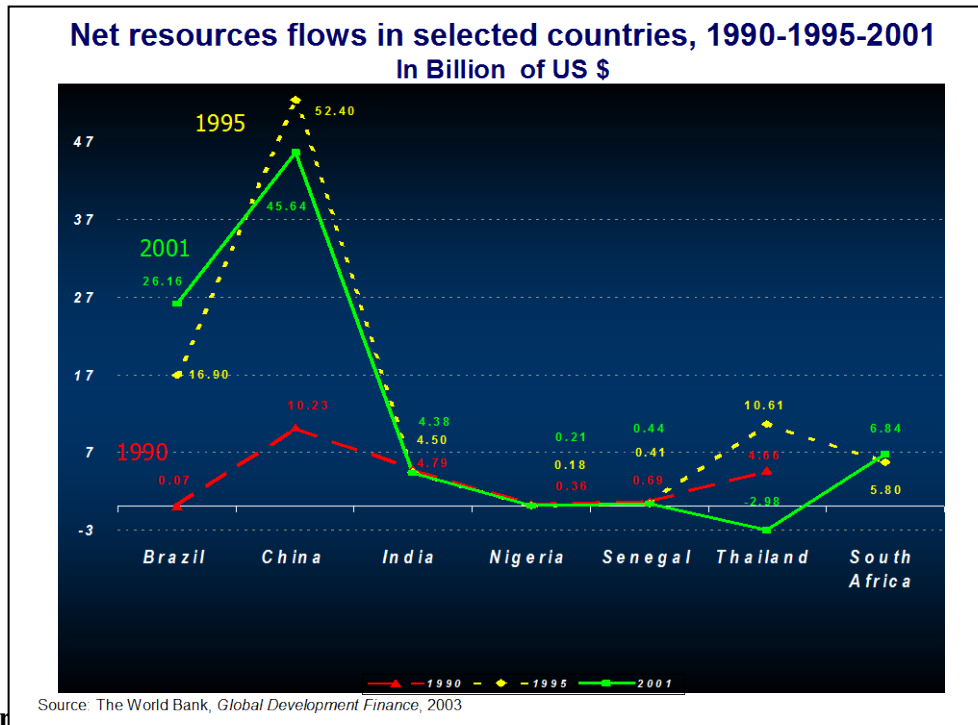


Annexe 5. Drivers on Non-debt generating resources

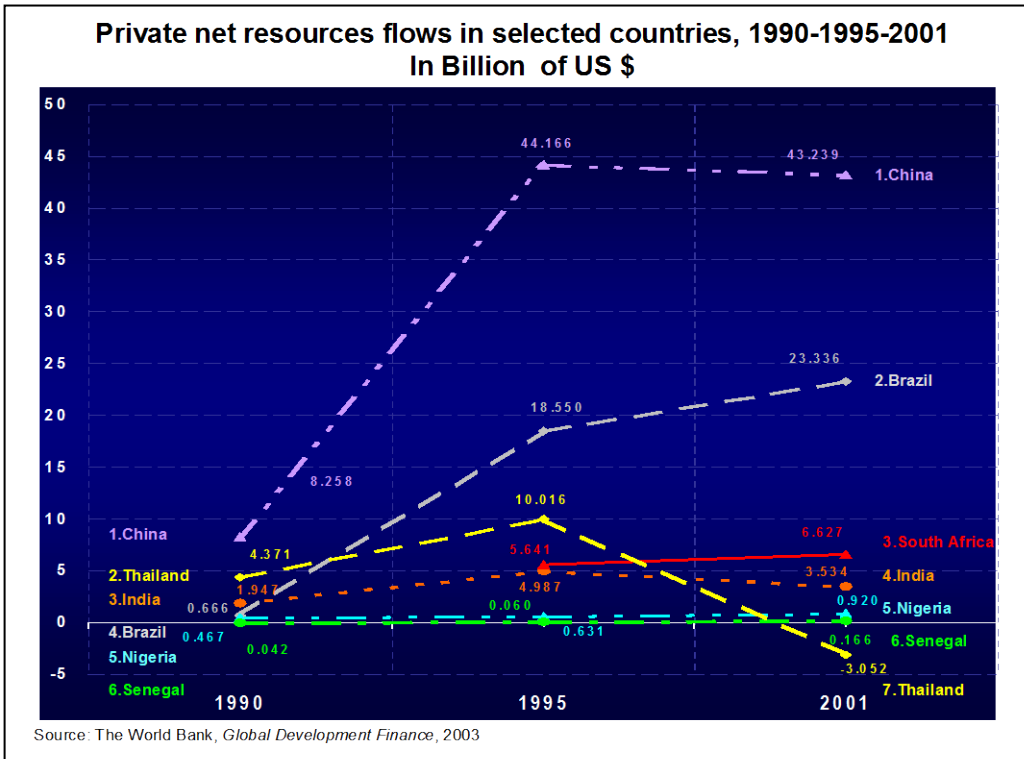
5.1 Foreign Direct Investment, 1990, 1995, 2001



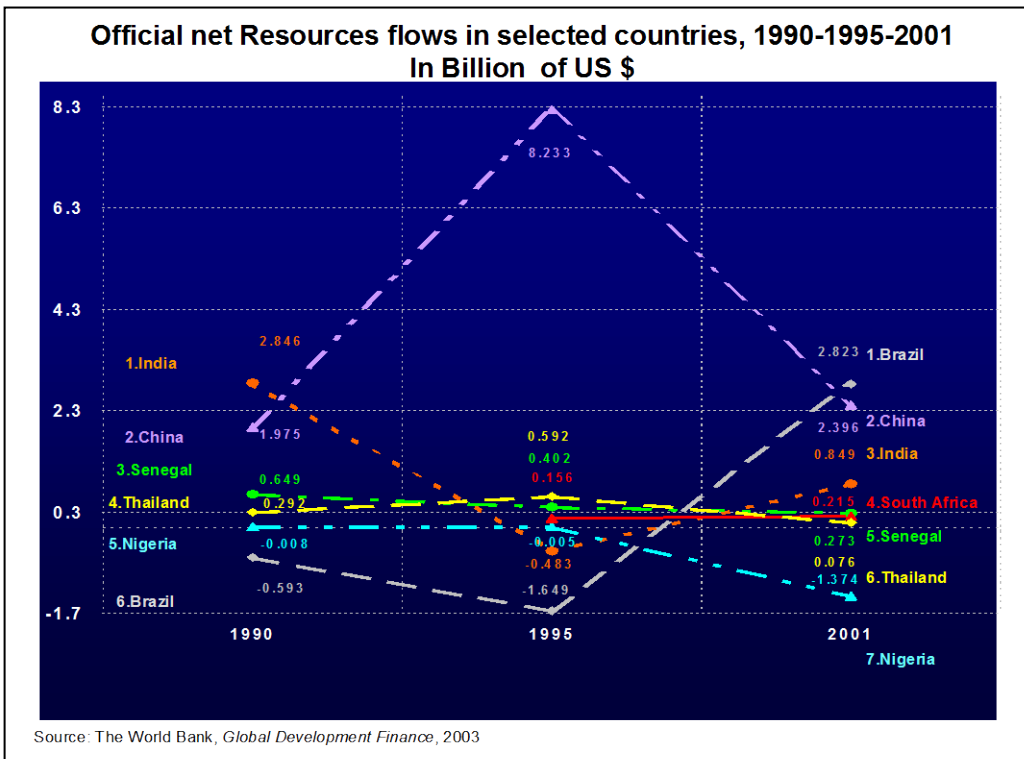
5.2 Net Resources flows 1990, 1995, 2001



5.3 Pr



5.4 Public Resource flows: 1990, 1995, 2001





Annexe 6: Definition of four main UNIDO component indices of UNIDO CIPI 2

Note: No a priori weight is attached to any component indice.

1. Industrial capacity proxied by component indice MVA per capita: basic indicator of a country's level of industrialization
2. Industrial capability proxied by component indice: Manufactured exports per capita: ability of countries to produce goods competitively and to adapt to changing environment through improved technological and capacity absorption.
3. Industrialization intensity: proxied by two combined indices: measurement of a simple average of the share of MVA in GDP and the share of Medium and high technology activities in MVA; it captures both industrial and technological complexity as well as ability to “move into faster growing activities”, summarized as absorption capability.
4. Industrial Export quality: average of the share of manufactured exports in total exports and the share of MHT products in manufactured exports

Source: UNIDO, *Industrial Development Report 2004/2005* (forthcoming).

Industrial Performance Scoreboard: Principe adopted for the computing of CIPI 1 and 2

Competitive Industrial Performance Index computing

Source: UNIDO IDR 2002/2003, www.unido.org/idr

UNIDO' s performance scoreboard was developed in three stages:

1. First a database of industrial indicators MVA per capita, Manufactured export per capita, share of MHT in manufacturing production and share of MHT manufactured exports.
2. Second individual indices of performance $I_{j,i}$ were standardized according to the general formula(GF).
3. Third stage consisted of computing a composite index based on~~one~~four performance indicators selected according to CIP index formula.

From
GF:

$$I_{j,i} = \frac{X_{j,i} - \text{Min}(X_{j,i})}{\text{Max}(X_{i,j}) - \text{Min}(X_{j,i})}$$

To:

$$CIP_i = CIP_i(1) = \frac{1}{4} \sum_{j=1}^4 I_{j,i}$$



**Annexe 7: Benchmarking South Africa and selected countries
with six components indices, 1980-1990-2000**

Table 8: Benchmarking South Africa and selected countries with six Components indices, 1980-1990-2000						
Periods	1980	1990	2000	1980	1990	2000
Components	MVA per capita (US \$)			Manufactured exports per capita (US \$)		
Mauritius	210	495	784	319	1129	1252
Mexico	600	601	781	35	159	1450
South Africa	729	661	591	139	288	384
Thailand	197	424	715	101	339	956
Components	Share of MHT in MVA (%)			Share of MVA in GDP (%)		
Mauritius	20.1	13.4	13.7	13.8	19.8	20.5
Mexico	37.6	40.9	42.8	18.5	19	20.8
South Africa	51.1	46.6	51	21.5	21.5	19.4
Thailand	23.7	42.6	22.6	22.6	27.2	34.3
Components	Share of MHT in manufactured exports (%)			Share of manufactured goods in total exports (%)		
Mauritius	3.1	6.2	4.6	97.5	97.8	97.6
Mexico	62	64.1	76.3	50.7	50.5	86.3
South Africa	32.8	28.8	47.2	19.4	25.7	63.8
Thailand	13.1	33.3	58.7	68	80.6	87.4

Source: UNIDO Scoreboard database



Annexe 8:

Table 9: Benchmarking industrial branches for selected countries and regions

Table 9a: Benchmarking selected countries at the industrial sectoral level: (Industrial Branches)			Share of the Industrial Branch in total MVA (in %), 1992-2002										
Countries			Brazil	Egypt	India	Indonesia	Mauritius	Mexico	Nigeria	South Africa	Thailand	Tunisia	Turkey
ISIC (Rev.2) Branch	Indicators	Periods											
31. Food, beverages and tobacco	AAG rate*	1992-2002	2.2	8.6	3.2	3.4	1.5	3.4	-2.8	0.5	4.2	4.4	4.4
	MVA structure**	1992	15	17.3	11.9	16	30.8	21	30.3	14.9	17.6	19.7	17.2
		2002	14.9	28.7	6.9	17.6	30.1	20	28.6	13.2	19.9	18.6	18.6
32. Textiles, wearing apparel, leather and footwear	AAG rate*	1992-2002	-2.8	-3.2	5.8	3.5	2.7	2.1	-3.4	-0.2	-4	7.3	2.8
	MVA structure**	1992	12	15.5	15.9	11.2	45.9	5.8	20	8.6	23.4	20.8	13.3
		2002	7.6	8.5	12.6	11.3	48.7	4.7	15.2	6.7	11.5	29	12.3
33. Wood products including furniture	AAG rate*	1992-2002	-0.2	1.7	0.7	-2.9	-1.8	1.5	-0.4	4.3	3.3	3.7	7.3
	MVA structure**	1992	2	0.4	0.4	6.8	1.5	0.5	1.5	3.4	5.3	4.5	0.8
		2002	1.8	0.4	0.2	4.4	1.2	0.4	1.7	3.9	5.2	4.5	1.1
34. Paper, printing and publishing	AAG rate*	1992-2002	1.4	-0.6	7.5	7.5	5.7	2.4	-4	1	13.5	2.2	0
	MVA structure**	1992	6.1	2.5	3.8	3.1	3	3.7	5.3	8.7	2.2	2.1	3
		2002	5.5	1.7	3.4	4	4.6	3	3.9	7.9	4	1.7	2.2
35. Chemicals, petroleum, rubber & plastic products	AAG rate*	1992-2002	2.9	-0.5	7.2	4.4	-0.3	3	0.9	2.1	2.3	2.5	3.6
	MVA structure**	1992	22.3	37	21.9	40.8	5.7	22.8	18	20.2	9.8	30.7	29.8
		2002	23.2	27.2	20.2	43.3	4.4	19.4	23.5	20.9	9.1	24.2	30
36. Non-metallic mineral products	AAG rate*	1992-2002	2.3	5.8	11.5	0.7	3.2	2.3	-1.4	0.5	1.8	3.6	4.4
	MVA structure**	1992	3.6	6.3	5.1	2.6	2.1	7.3	6.9	4.6	6.7	10.4	8.4
		2002	3.4	8.6	6.9	2.4	3.2	6.2	7.2	4	6.9	10.1	8.7
37. Basic metals	AAG rate*	1992-2002	2.5	6.7	6.8	5.2	2.8	5.9	..	5.4	1.3	1.7	3.7
	MVA structure**	1992	7.3	8.6	13.8	8.5	0.7	9.6	1	12.2	1.6	2.5	6.1
		2002	7.7	10.6	12.3	9.6	0.8	10.2	1.3	15.9	1.3	1.8	6.4
38. Metal products, incl. Machinery and equipment	AAG rate*	1992-2002	2.9	6.9	10.4	-0.8	-2.3	7.3	-0.3	2.5	5.9	5.5	4.4
	MVA structure**	1992	30.5	12	26.8	10.6	7.3	29	16.5	25.6	24.5	8.4	21.1
		2002	34.6	13.9	37.5	7.3	4.7	35.8	18	26.1	31.5	9.4	20.4
39. Other manufacturing industries	AAG rate*	1992-2002	..	6.4	-1.5	-11.3	-1.1	4.3	..	0.6	..	0.6	10.3
	MVA structure**	1992	1.3	0.4	0.4	0.5	3.1	0.4	0.4	1.8	9	1	0.2
		2002	1.4	0.5	0.1	0.2	2.4	0.4	0.5	1.5	10.6	0.8	0.4

*AAG rate = Average annual growth rate in %

**MVA structure = Share of the Industrial Branch in total MVA (in %)

Source: UNIDO Industrial Statistics Database



Annexe 8: Table 9b

**Table 9b: Benchmarking World regions at the industrial sectoral level (Industrial Branches),
Share of the Industrial Branch in total MVA (in %), 1992-2002*****

Regions			Developed market economies	Latin America and Caribbean	South and East Asia and Oceania	Sub-Saharan Africa	Transition economies
ISIC (Rev.2) Branch	Indicators	Periods					
31. Food, beverages and tobacco	AAG rate*	1992-2002	1.1	2.3	4.4	2.6	-0.7
	MVA structure**	1992	11.9	21.3	14.3	35.6	20.2
		2002	9.5	21.4	12.7	36.4	19.5
32. Textiles, wearing apparel, leather and footwear	AAG rate*	1992-2002	-2.1	-1.3	1.3	1.4	-6
	MVA structure**	1992	5.5	9.8	13.5	15.3	13.5
		2002	3.1	6.8	8.4	13.5	7.5
33. Wood products including furniture	AAG rate*	1992-2002	1	0.7	-0.1	-1.3	0.7
	MVA structure**	1992	3.1	1.7	2.6	5.3	2.9
		2002	2.3	1.5	1.5	4.6	3.1
34. Paper, printing and publishing	AAG rate*	1992-2002	1.3	2	5.3	-0.7	3.4
	MVA structure**	1992	9.1	5.8	3.9	4.2	1.9
		2002	7.3	5.6	3.4	3.9	2.6
35. Chemicals, petroleum, rubber and plastic products	AAG rate*	1992-2002	2.6	2.7	6.3	1.9	0.4
	MVA structure**	1992	17.1	23.8	21.5	18.6	13.7
		2002	15.7	24	22.2	20.4	13.9
36. Non-metallic mineral products	AAG rate*	1992-2002	1.2	1.8	5.2	2.5	-0.6
	MVA structure**	1992	3.9	4.7	5.1	4.2	4.1
		2002	3	4.4	4.9	5	3.7
37. Basic metals	AAG rate*	1992-2002	1.3	3.9	5.5	2.7	0.3
	MVA structure**	1992	5.3	7.2	7.6	3.9	8.6
		2002	4.1	8.1	7.2	5.9	8.3
38. Metal products, incl. machinery and equipment	AAG rate*	1992-2002	7	3.2	8.5	-1.7	2.5
	MVA structure**	1992	43	24.9	29.9	11.3	31.6
		2002	53.9	27.3	38.4	8.3	38.8
39. Other manufacturing industries	AAG rate*	1992-2002	1.1	2.3	-0.6	7	-2.4
	MVA structure**	1992	1.2	0.9	1.7	1.7	3.5
		2002	0.9	0.9	1.2	2	2.6

* AAG rate = Average annual growth rate in %
 ** MVA structure = Share of the Industrial Branch in total MVA (in %)
 ***Bold = First among World regions
 Source: UNIDO Industrial Database



Annexe 9:



22 April 2004

Actions: 1st CAMI-16 Bureau

Draft Proposed Actions
of the CAMI-16 Bureau

Abuja, Nigeria, 22-23 April 2004

In order to ensure a sustainable operationalization of the African Productive Capacity Initiative (APCI) and to establish the modalities for appropriate consultation, the Bureau decided to:

1. Formally communicate the African Productive Capacity Initiative (APCI) and the African Productive Capacity Facility (APCF)] to the Chairman of the African Union (AU), Professor Alpha Omar Konare with copies to the NEPAD Secretariat (Professor Wiseman Nkhulu).
2. Formally request for inclusion of APCI on the agenda for consideration during the forthcoming Executive Council meeting (30 June – 3 July 2004) of the AU and for its subsequent inclusion for debate and endorsement by the African Union Summit (6 – 8 July 2004).
3. Request that resolutions be adopted during the African Union Summit calling on African countries' commitment to contribute financially to the APCF in order to underline African ownership.
4. Call on African Union Summit to direct a resolution to the international community, namely G-8, major donors and donor institutions such as European Union (especially as part of the ongoing negotiation on Economic Partnership Agreements as well as the Cotonou Agreement), Japan as well as supportive development financial institutions starting with African Development Bank (ADB) to formally pledge support for the APCF.
5. Formally request NEPAD Secretariat (through the AU Summit of July 2004) to make the APCI the sustainable industrial development component of NEPAD. In addition, directives be given for the APCI to be submitted to the NEPAD policy organ (namely the NEPAD Implementation Committee which is composed of special representatives of African Heads of State) and also to agree that NEPAD would then become the main entry point for advocacy.
6. Call for support of the popularization of the APCI to all main development stakeholders as well as to the African civil society including the African Diaspora to ensure mobilization of resources and expertise for the implementation of the APCI.
7. Collaborate closely with Regional Economic Communities (RECs) with strong support from UNIDO to promote activities of the APCI.



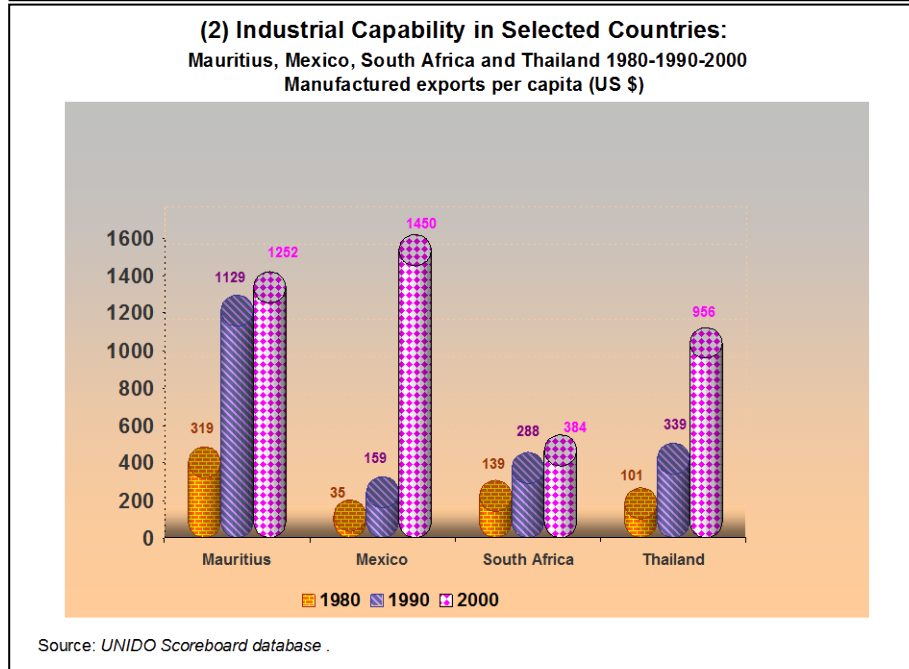
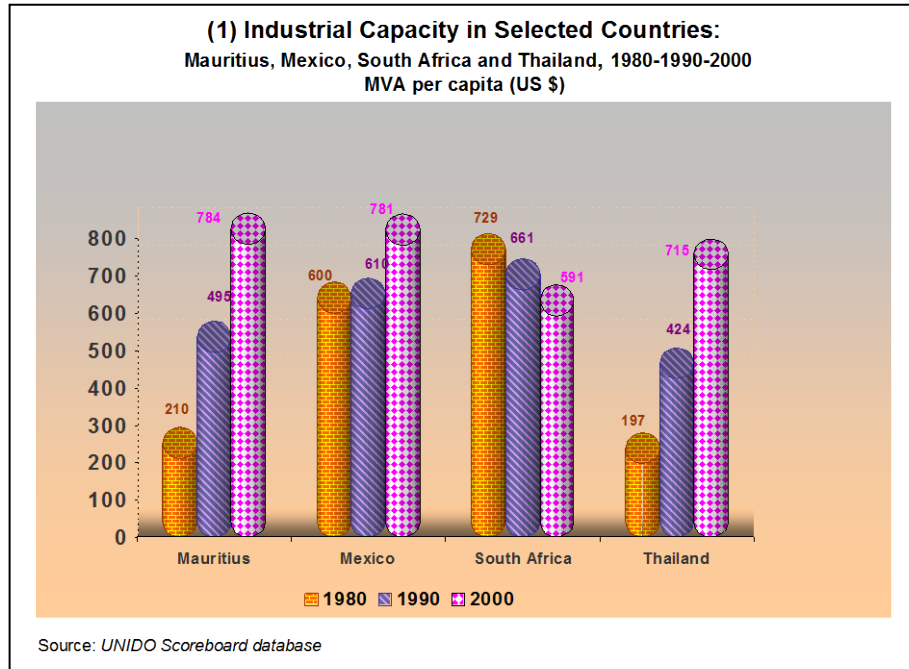
8. Request UNIDO as well as AU, NEPAD, RECs and the private sector representative institutions such as the African Business Round Table (ABR) to prepare sectoral action plans (at national, sub-regional and regional levels) and sectoral road maps (at continental level) in order to increase Africa's organized negotiation capacity on Africa's industrial development. Specific projects should ensure that the African private sector gradually take the lead in order to facilitate and promote diversified forms of public-private partnerships.
9. Request the endorsement of the seed money concept for the implementation of the APCI in supporting forthcoming sectoral, promotional, funds and resource mobilization gatherings as well as institutional arrangements.
10. To request UNIDO to support and join the AU's 4-year plan of action on sustainable industrial development based on the APCI and the value chain approach as well as to assist in presenting the APCI to the NEPAD policy organ.
11. Send a letter to all member countries reminding them to respond to the call under Resolution No.2 of CAMI-16 Conference requesting all African governments, the private sector, civil society and development partners to contribute financially and technically to the APCF.
12. The Bureau shall act as the core group for resources mobilization. The Chairman should invite NEPAD, AU, ABR, UNIDO and interested members states to join the core group.
13. Produce a paper detailing the rationale and justification for establishing a Secretariat for CAMI. This paper will be forwarded to AU for consideration, and hold consultations between the two member countries (Egypt and Côte d'Ivoire) that have offered to host the CAMI Secretariat as well as the facilitation for the running of the Secretariat.
14. Endorse the following theme for the 2004 African Industrialization Day:

"Strengthening Productive Capacity for Poverty Reduction within the Framework of NEPAD"
15. Hold two CAMI-16 Bureau meetings per year with the possibility of ad-hoc meetings on a sub-regional rotating basis. The next meeting will be held in the Eastern Africa sub-region (Ethiopia) prior to the AU Summit.
16. Consider the appeal for information made by the AU representative regarding the upcoming election of the UNIDO DG, call on UNIDO to provide the UNIDO constitution and forward it to the AU Secretariat. The Chairman of CAMI and the Chairman of AU should go into consultations for appropriate actions.



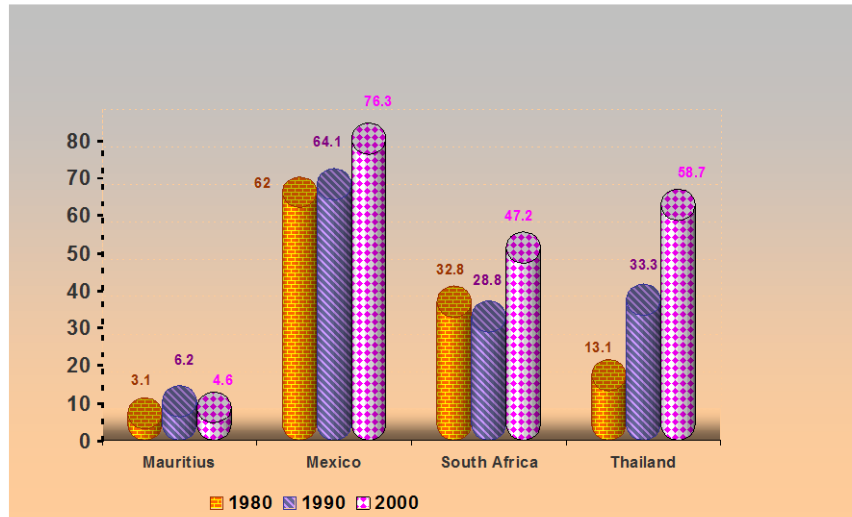
Annexe 10: CIPI 2:

Component indices for selected countries, Mauritius, Mexico, South Africa and Thailand



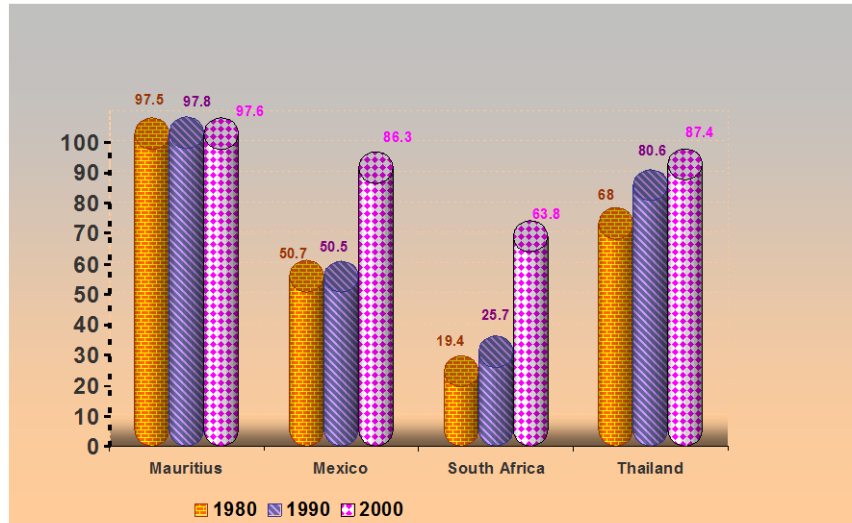


(5) Export Quality A: (Industrial Upgrading) in Selected Countries:
Mauritius, Mexico, South Africa and Thailand, 1980-1990-2000
Share of Medium-and High-Tech goods in Manufactured exports (%)



Source: UNIDO Scoreboard database.

(6) Industrial Export Quality (B) in selected countries
Mauritius, Mexico, South Africa and Thailand, 1980-1990-2000
Share of Manufactured goods in total exports (%)



Source: UNIDO Scoreboard database.

(4) Industrialization Intensity (B) in selected countries:
Mauritius, Mexico, South Africa and Thailand, 1980-1990-2000
Share of MVA in GDP (%)

